Climate Resilient WASH – Afghanistan

Report

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Introduction

Climate change and the resulting weather extremes threatens the lives of millions of children worldwide. Water is the medium through which the effects of climate change are first felt– through floods, storms, droughts and sea level rise. With the growing number of extreme weather events, the security of water sources are increasingly threatened, investments in WASH infrastructure are lost and the lives of millions of children are at risk.

The UNICEF WASH section is committed to strengthening its involvement in the systematic reduction of vulnerabilities to slow the onset stresses such as climate change, disasters and conflicts through risk-informed country programmes that help build climate resilience. This approach also ensures the sustainability of WASH services.

Countries in the South Asia region, such as Afghanistan, have extensive WASH programmes focusing on improving water and sanitation facilities and services. These programmes include environmentally sustainable and climate resilient WASH interventions in various forms. However, the type and extent of these interventions and the potential for them to be scaled-up need to be identified and carfuly assessed. Water and sanitation programmes implemented by UNICEF, include environmentally friendly and climate resilient elements which have often not been acknowledged or recognised as addressing climate change mitigation or adaptation aspects.

All UNICEF WASH programming is to move towards becoming Climate Resilient WASH (CRW) programming by the end of 2021. An assessment and mapping of the country office's Climate Reslient WASH interventions is key to determining the future direction of such interventions. In order to support the development of proposals that target the new climate funding schemes, solid evidence is needed on how such interventions have fared in the past. As evidence and documentation on on-going CRW initiatives has been rather limited, this document aims to support the development of proposals that would help to scale up future climate resilient intervention.

Purpose of this document

The purpose of this document is to provide information on the extent and types of climate resilient WASH interventions that have taken place, are ongoing or are proposed in Afghanistan. The document will attempt to answer the questions whether there is a climate rationale behind the interventions, if there are any gaps, and provide a comprehensive database of these interventions; outlining their scope, applicability and effectiveness as well as providing options for scaling up the CRW interventions. The document will review the Water and Sanitation projects that have been undertaken by the Afghanistan Country Offfice (CO) during the last three years and that have included a climate resilient components. An anlysis will be provided on the current WASH policies and how (if) they take climate resilience into account. Finally, the ongoing intiatives will be reviewed for their effectivenes and insight will be provided into whether they are scalable to enable the development of strategic proposals for climate financing opportunities. The overall information should provide readers with examples of good practices, challenges and potential opportunities.

Climate Risk Profile

Afghanistan is ranked among the most vulnerable countries (ranked 24th, 2018 by German Watch[1]) in the world to the adverse impacts of climate change. The institutions lack climate data and have limited technical capacity to analyze such data. Afghanistan's Second National Contribution (INC) report has documented an increase of mean annual temperature of 1.8°C since 1950. From the Climate Knowledge Portal (World Bank) - According to several literature reviews, key projected climate trends include:

Temperature

- Average annual temperature is projected to increase between 1.4° C and 4.0° C by the 2060s, and between 2.0° C and 6.2° C by the 2090s.
- Spring and summer are projected to experience the fastest rate of warming under these projections with pretty uniform warming over the country's regions. The eastern regions of Afghanistan are projected to see the largest change in heat wave duration.
- The frequency of 'hot' days and nights per year are projected to increase throughout the middle and late 21st century. 'Hot' days are projected to increase and occur on 14-25% of days by the 2060s and 16-32% of days by the 2090s, while 'hot' nights are projected to increase and occur on 16-26% of nights by the 2060s and 19-36% of nights by the 2090s. Both 'hot' days and nights are projected to increase most rapidly in the summer months of June-August.

Precipitation

- Annual precipitation projections from the Fifth Assessment Report of the Intergovernmental Panel on Climate Change indicate that there will be little or no change in precipitation over Afghanistan throughout the 21st century.
- Projections for maximum 1- and 5-day rainfall indicate small increases in every season but March through May.

However, looking more closely at the seasonal projections, the decrease of precipitation during spring will have a detrimental impact to the food supply, since the country is largely dependent on direct rainfed agriculture and the main agricultural production takes place in the regions with the highest levels of productivity in Afghanistan (East, North, and Central Highlands). In combination with the overall increase in temperature, and the related increase in evapotranspiration across the country, this will most likely negatively impact the hydrological cycle, agricultural productivity, and availability of water resources. Climatic changes are also likely to impact upon the spread of water, food and vector-borne diseases, presenting considerable health risks to both urban and rural populations. Finally, the climate-induced risks and challenges can enhance social inequalities, poverty, and food insecurity causing considerable and fundamental threats to human life, livelihoods, property, political stability, the economy, and the environment in Afghanistan.

From the historical analysis of precipitation patterns, this reveals that mean annual quantities have not changed significantly across the country, however precipitation patterns have decreased during springtime (March-May) by approximately 40.5mm. The total annual precipitation has only slightly decreased by approximately 30mm, since there is a slight increase in precipitation from June until November. The decline in spring precipitation impacts rain-fed, larger agricultural regions of the country.

[1] Global Climate Risk Index 2020, German Watch

This implies that Afghanistan is already beginning to experience the initial adverse impacts of climate change.

Climate projections, based on regional climate models and representative concentration pathways (RCPs)[2], indicate that Afghanistan will face an overall strong increase in mean annual temperature, considerably higher than global mean projections, when compared to a baseline period of 1986-2006.

Table 1: Climate RCP Model Projections

Temperature	Region	Y2050	Y2100	Comments
RCP (4.5)		1.5°C (rise)	2.5°C (rise)	a higher temperature increases at higher altitudes compared to the lowlands
RCP (8.5)		3°C	7°C	a higher temperature increases at higher altitudes compared to the lowlands
Precipitation				
Spring (March – May)	Central Highlands/ North and East	5% to 10% Drop		Increase in evapotranspiration across the country
	Hindu Kush	Stable precipitation		Increase in evapotranspiration across the country
	South	No significant change year-round		Already existing arid conditions will not change significantly
Winter	Hindu Kush	Increase of 10%		

Each region will need to be addressed differently based on down-scaled climate projections and the impact for WASH services and water resource supply. Based on the Second National Communication, the current amount of water availability for each river basin region can be found in table 2.

[2] Representative concentration pathways (RCPs) are GHG emission scenarios adopted by the IPCC to describe four possible climate futures depending on the levels of future global GHGs emitted. There are four RCPs: 1) RCP2.6, which assumes that GHG emissions peak between 2010-2020 and then decline; 2) RCP4.5, which assumes that GHG emissions peak around 2040 and then decline; 3) RCP6, which assumes that GHG emissions peak around 2080 and then decline; and 4) RCP8.5, which assumes that GHGs emissions continue to rise throughout the 21st century.

Table 2: Current Water Availability in Afghanistan (Second National Communication)

River Basin	Water density/year		Area		Population	Potential water availability/person
	Billion m^3	Total %	Thousand km^2	Total %	Million	m^3/year
Panj-Amu	22.00	39	91.5	14	3.4	6,470
Harirod-Marghab	3.06	5	78.4	12	2.1	1,457
Helmand	9.30	16	264.9	41	7.1	1,310
Kabul	20.76	36	77.7	12	8.9	2,333
Northern	1.88	3	71.7	11	3.3	570

Climate Change Impact

Based on these climate change projections, Afghanistan's environment will experience considerable changes over the remainder of this century. Climate change analysis of climatic changes and uncertainties, must be mainstreamed into sectoral planning to mitigate the negative impacts of climate change in Afghanistan and increase resilience, both in rural and urban areas.

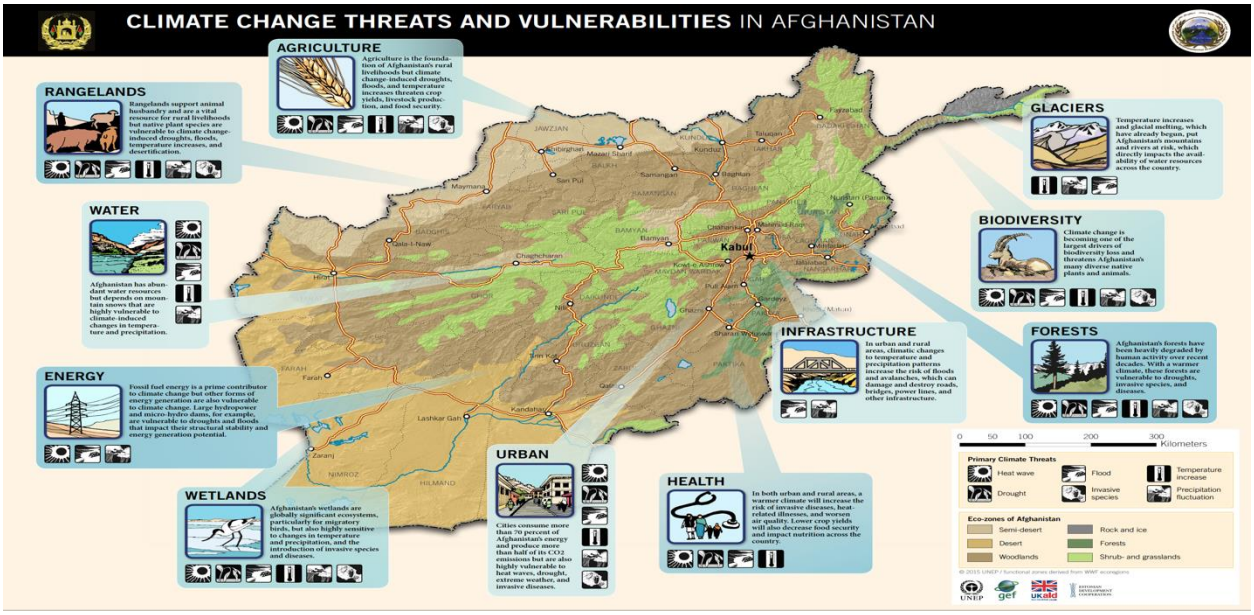


Figure 1: Climate Threats and Vulnerabilities in Afghanistan[3]

Specific to the WASH services sector, there are four types of climate hazards directly impacting water resource availability. These can be distinguished by two types of drought and two types of floods because they are caused by different climate variables and affect different areas and livelihood groups:

1. Drought caused by localized lack of spring rainfall, with the highest impact on rainfed agriculture and pastoral areas;
2. Drought caused by reduced snowmelt in upland areas in spring and summer, mostly affecting downstream irrigated areas;
3. Floods caused by localized heavy spring rainfall, affecting all livelihood zones;
4. Floods caused by increased snowmelt in highland areas during the spring and summer, mostly affecting downstream agricultural livelihood zones, particularly areas located along rivers.

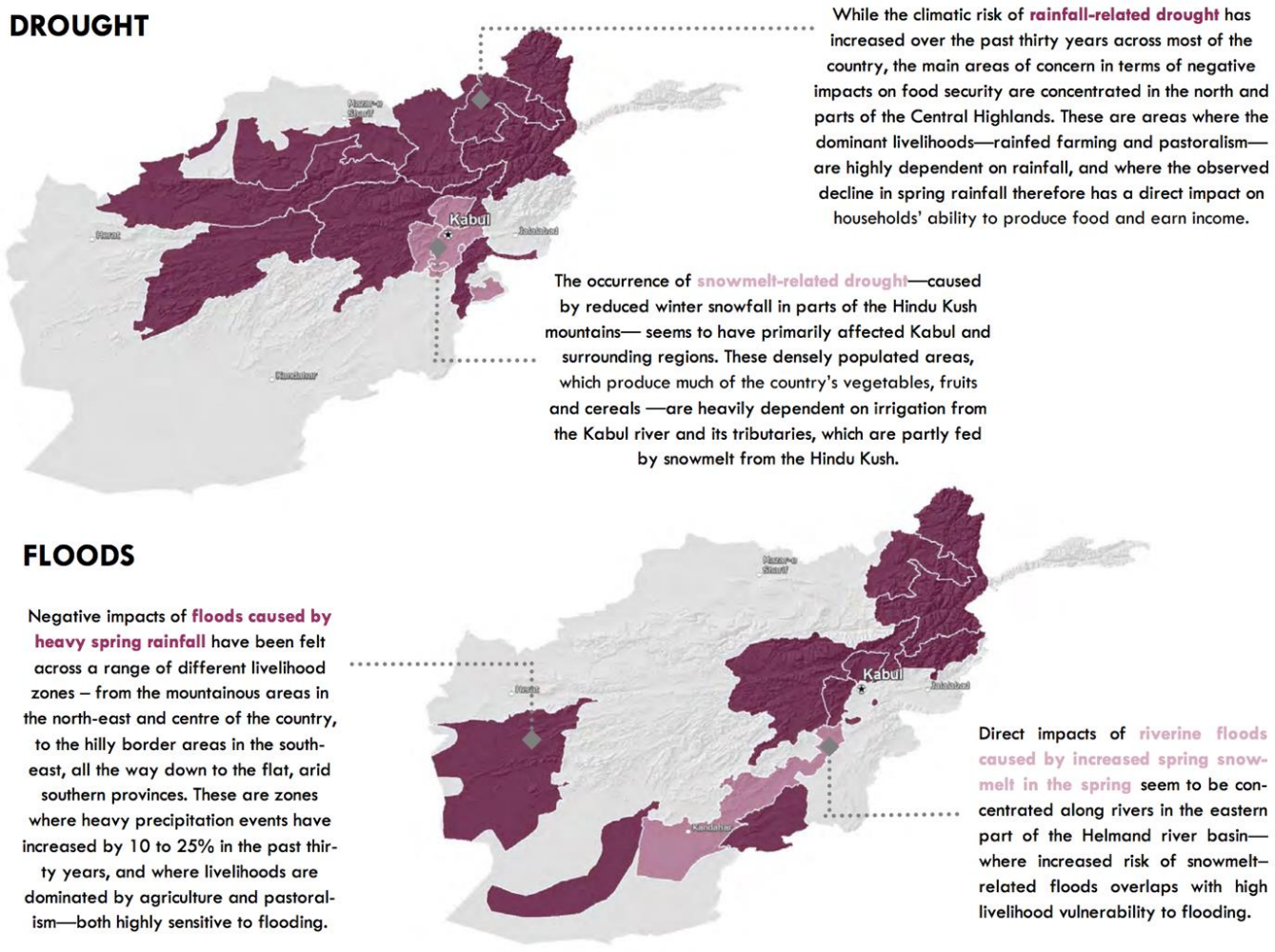


Figure 2: Afghanistan Drought and Flood Prone Areas
Source: https://postconflict.unep.ch/publications/Afghanistan/Afg_CC_RuralLivelihoodsFoodSecurity_Nov2016.pdf

Key sectors impacted by variable projected rainfall and temperature include:[4]

Agricultural Production

Projected hotter and drier conditions will affect agricultural production by challenging water access and storage capacity. Irrigable land, which produces 70 percent of farm output, is predominantly reliant on runoff from snowmelt in the spring and summer months. Crops cover 12 percent of the total land area, with wheat as a staple crop. About 45 percent of the land is used for rough grazing, and cattle are important as draft animals and for milk production. The recent prolonged drought has contributed to a marked decrease in livestock numbers.

Water Resources

With projected economic and population growth, Afghanistan's water storage limitations and reliance on snowmelt and transboundary watershed creates significant climate change vulnerability. Mountain snow feeds the country's five major river basins, providing 80 percent of water used. Available water varies throughout the year and its location is not always near settlements and irrigable land. Low water storage capacity and conflict-damaged irrigation and water supply distribution systems render the country sensitive to the effects of floods, droughts and other changes in precipitation patterns.

Human Health

Climate change-induced stresses, especially increased vectors and reduced water supplies, could pose significant challenges to the sectoral gains of the last 10 years: expanded access, reduced infant mortality and improved life expectancy. Malaria is already a major risk to those living at elevations below 2000 meters. Food insecurity and severe weather events compound health risks. For example, in 2006, reduced rainfall left nearly two million people in the west and north in need of food assistance. In 2014, flash floods affected 125,000 people in the north.

Energy and Infrastructure

Only 43 percent of the country's population is estimated to have access to electricity, and hydropower generates 79 percent of total supply. Renewable energy – including wind, solar and hydropower – is a sector with large growth potential. Infrastructure damaged during conflict includes the country's meteorological monitoring system; stations were destroyed or are no longer operational.

Country Socio-economic Condition

Afghanistan is susceptible to a number of natural hazards including earthquakes, floods, landslides, avalanches and droughts with the frequencies and intensities of climate-based phenomena expected to be exacerbated by climate change. The country's low socio-economic development makes the country vulnerable and heavily impacted with limited ability to recover and adapt (build back better) from disasters with frequent losses to lives, and livelihoods. Additional challenges for the country include population pressure[5], armed conflict that has caused damage to irrigation and water systems, high incidence of malnutrition and diarrhea, deforestation and under-realized renewable energy potential as just some of the factors faced. Thirty-six percent of the population live below the poverty line and 85 percent are directly or indirectly reliant on agriculture.

[4] USAID – Climate change Risk Profile Afghanistan

[5] Urban areas are also seeing a significant increase in population growth, and it is expected that the urban population will double within the next 15 years. (Afghanistan Second National Contribution)

With competing demands on government and donor funding, CoVID impact and security restrictions completing any fieldwork to understand risks and assess adaptation options within Afghanistan is challenging. According to the Human Development Index (HDI) for 2018, Afghanistan is ranked 170 among 186 countries, making it the lowest in Asia. Poverty is widespread, affecting more than a third of the country's total population. Nevertheless, over the past 15 years, gains have been made in the areas of water, sanitation, education and health. More children than ever are going to school, and literacy rates are also increasing with more than half of youth (15-24 years old) able to read and write[7].
Moreover, more than 65 per cent of Afghans have clean drinking water through 'improved drinking water sources' that are protected from outside contamination – a marked progress from a decade ago when drinking water reached only 20 per cent of people. Although a little more than 80 per cent of families have toilets or latrines, about 43 per cent are improved and safe – meaning they hygienically separate human waste from human contact. Open defecation continues to be a dangerous challenge in Afghanistan because human waste near waterways and living environments spreads diseases quickly and puts children and their families at risk.

Water Resources

In most rural areas of the country, water resources are under stress because of poor infrastructure management leading to water shortages, particularly for irrigated agriculture. The subsequent low water productivity is a result of (i) outdated and inadequate rural infrastructure, (ii) limited capacity to adapt to changing climatic conditions, and (iii) insufficient usage of technological innovations widely applied in other rural areas in the world. Many local farmer communities lack the knowledge or resources to make a change and initiate more sustainable integrated water resources management principles and multi-use practices, and ensure adequate operation and maintenance arrangements (which lack is the one of the key issues on water in the country), for their local water resources and irrigation systems to provide and sustain WASH requirements. All of these conditions impact focus on WASH and resilient Afghan agriculture livelihood, since 80 percent of Afghans depend on agriculture for their livelihoods and 95 percent of all water resources used is for agriculture. Climate adaptation WASH efforts would need to be incorporated as part of agricultural and other sectoral efforts tapping into this focus on improving livelihoods.

The key concern connected with water resource management for Afghanistan is coverage of irrigated agriculture which stalled or even declined from 3.1 million ha in 1957 to less than 2.8 million ha in 2016. Considering that the population in Afghanistan is expected to grow from the current 31.6 million in 2018 to about 40 and 50 million in 2030 and 2040, respectively, the Government is very concerned about food security in Afghanistan.[8] Wheat production, a key indicator used for food security in Afghanistan, has been directly linked with the reliability of irrigation systems, particularly during the critical months of June and July. In 2018, growth in agriculture shrank from 3.8% to 2.0% as drought affected more than half of the country, causing wheat production to fall by 71% in rainfed fields and by 6% in the much smaller irrigated area. This is the main focus for development for the country with WASH requirements being met as part

[6] Human Development Report 2019 - UNDP
[7] Afghanistan Second National Contribution - https://www4.unfccc.int/sites/SubmissionsStaging/NationalReports/Documents/9486351_Afghanistan-NC2-1-SNC%20Report_Final_20180801%20.pdf
[8] ADB: https://www.adb.org/projects/51079-002/main

of improvements in agricultural practices, WASH water demand is less than ten percent of the water resources in comparison to agriculture.

Firstly, the number of small communities that need support for WASH programmes largely outnumbers the coverage of existing programs. The Ministry of Rural Rehabilitation and Development (MRRD) estimated that about 18,400 communities are waiting for support, with 12,000 expected to benefit through completed and ongoing interventions through the CCNPP over the last 3 years. Secondly, the impacts of climate change, i.e. higher temperatures and the increasing occurrence of extreme flood or drought events, are increasingly being felt by local communities. For example, local irrigation systems are more often damaged by local floods, while increasing numbers of the traditional karizes[9] systems are drying up due to the lack of upstream infiltration. Lastly, technological innovations are not reaching sufficient farmers.

Key Government WASH Policy and Programs

The government of Afghanistan has prioritized drought adaptation actions which has a direct relationship with WASH for availability and sustainability of water resources, these include:

1. Improved water management and use efficiency, development of a disaster risk management strategy, and installation of an early warning system. Improved water management and efficient use; integrated land and water management
2. Development of a disaster management strategy
3. Climate related research
4. Establishment of an early warning system which will help Afghans adapt and increase their resilience to climate-related impacts in the future.

Most of the capital inflow into the country relates to establishing a sustainable livelihood focused agricultural and energy sector which will take up the majority of water resources. The challenge for WASH projects and programmes is to connect and partner with these identified projects, to meet these basic needs identified, since less than five percent of the water usage can be attributed to WASH services even though they have a large positive impact on the health and wellbeing of the community. A further challenge is that WASH being not discussed as a priority. While discussions about water, water supply are held, comprehensive WASH tends to fall between the cracks as discussion is focused on big water interventions, such as dam, canal construction and irrigation projects.

National Development Policies and Programs

Key government policies and programs have incorporated climate change and adaptation within their frameworks, which will impact focus on development of Climate Resilient WASH programmes including the National Adaptation Programme of Action (NAPA) in 2009. This programme identifies as its highest priority the improvement of water management and use efficiency which directly impacts WASH services. Afghanistan submitted its Initial National Communication (2012) as well as its Second National

[9] Gently sloping underground channels to transport water from an aquifer or water well to the surface for irrigation and drinking, acting as an underground aqueduct.

Communication (SNC) in December 2017. At present, Afghanistan is finalizing its national Climate Change Strategy and Action Plan (ACCSAP) as well as its National Adaptation Plan (NAP). Some additional noteworthy examples of policies and plans that have successfully and explicitly integrated climate change include:

- ACCSAP (Afghanistan Climate Change Strategy and Action Plan);
- Draft NAP (National Adaptation Plan for Afghanistan);
- NDC (Nationally Determined Contribution to the Paris Agreement);
- NAMA (Nationally Appropriate Mitigation Actions for Afghanistan);
- NAPA (National Adaptation Programme of Action for Climate Change);
- INC (Initial National Communication);
- SNC (Second National Communication).
- Afghanistan National Renewable Energy Policy (ANREP); 2013
- National Water and Natural Resource Management Priority Programme
- Strategic National Action Plan for Disaster Risk Reduction (SNAP); 2011
- National Environmental Action Plan (NEAP)
- National Biodiversity Strategy and Action Plan (NBSAP); 2013
- National Water Safety Framework Plan (National Rural WASH Policy 2106-20)
- National Sanitation and Hygiene strategy and costed sector plan for Afghanistan
- Water Act (Afghanistan Water Law Gazette No. 974 - 28 February 2009) – creation of the Afghan Urban Water Supply and Sewerage Corporation (AUWSSC)
- Water Law No -1367 passed in 2020
- National Rural WASH Policy principles, guidelines and standards – Rural WASH Technical Manual 2nd Version, National CLTS Implementation Manual, MRRD WASH Implementation Manual

While the majority of these plans touch on the need to prioritize water and sanitation resources, there is limited direct recognition of the impact and focus of WASH services. The one plan that addresses it is the National Rural WASH Policy (2016 – 2020) which fully endorses and supports Sustainable Development Goal (SDG) 6 and its corresponding targets which are by Y2030:

1. Achieve universal and equitable access to safe and affordable drinking water for all
2. Achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
3. Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
4. Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
5. Implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
6. Protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes (2020)
7. Expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

8. Support and strengthen the participation of local communities in improving water and sanitation management

Each of the government listed policies and programs provides attributes for the WASH framework within Afghanistan climate change adaptation, but there are limited mainstreamed policies that connects WASH and climate change adaptation. With the effort in addressing CoVID and the importance of WASH to help reduce the spread, there is an opportunity to further modify the plans and policies to include WASH and advocate for CRW as the sustainable and perhaps preferred approach.

Institutional Framework

Afghanistan's lead regulatory agency for environmental management and climate change is the National Environmental Protection Agency (NEPA). Through increased institutional capacity building over the years, NEPA's role is now recognized by other sectoral development ministries, although environmental issues are not fully mainstreamed throughout development initiatives and attention to environment and climate change is not adequate.

Three other key institutions mandated to address the impacts of climate change are the Ministry of Agriculture, Irrigation and Livestock for implementation of response measures, the Afghanistan National Disaster Management Authority (ANDAMA), which has a coordinating role in developing an early warning system and disaster risk reduction strategy coordinating emergency WASH services, and the Afghanistan Meteorological Authority, the lead agency in collecting, processing and reporting weather data. At a regional level, Afghanistan is member of two important organizations–ECO Member States and South Asian Association of Regional Cooperation (SAARC) –which enhance regional partnerships and cooperation in response to climate change. The National Water Affairs Regulation Authority is the leading water agency based on the new law from 2020, it is the umbrella organization for all water activities, including coordination and regulation.

Roles and Responsibilities

Multiple specific governmental organizations share responsibility for WASH services in Afghanistan:

- Rural Areas - Water, Sanitation and Irrigation Department in Ministry of Rural Rehabilitation and Development (MRRD). Two other Ministries are involved in the provision of rural WASH services: the MoPH and the MoE.
- Urban Areas - Afghan Urban Water Supply and Sewerage Corporation (AUWSSC)

In developing and implementing future Climate Resilient WASH initiatives they will be the key coordinating agencies within Afghanistan.

<u>Rural Sector</u>
Currently the role of the Government is specified as policy development, national planning, coordination, monitoring and evaluation, and collection of data while direct service delivery will be outsourced

eventually to the CDCs, private and NGO sectors. It further plays a major role in service delivery, issuing and managing contracts through CDCs. The thrust is to carry out demand-driven water supply and sanitation services with emphasis on empowering the community who will be responsible for planning, designing, implementing, with the assistance of partner organizations and subsequent operation and maintenance.

The overall oversight of WASH Projects in rural Afghanistan is the responsibility of Water, Sanitation and Irrigation Department in Ministry of Rural Rehabilitation and Development (MRRD), headed by the National RuWatSIP Program Director. The organization is tasked to provide basic service for all, improved health through integration of health and hygiene education with water supply and sanitation, Community-Led Total Sanitation (CLTS), community cost-sharing, ownership and management including operation and maintenance (O&M) and implements large scale rural water programming.

The overall goal is improvement in the quality of life of people through improved access to safe, convenient, sustainable water and sanitation services, and increased adoption of hygienic practices at the personal, household and community levels, resulting in:

- reduced morbidity and mortality rates (particularly under-five child mortality)
- enhanced people's productivity and well-being.

To achieve the overall goal, the Rural Water Supply and Sanitation Program, in which UNICEF plays a supporting role, consist of the following components:

1. Water Supply
2. Sanitation
3. Hygiene Education
4. Community mobilization and organization
5. Operation and Maintenance
6. Data collection
7. Capacity Building of community, private sector and government.

The basic service level is defined as follows: (This is a key baseline parameter for development)

(a) Basic water supply service level facilities

1. Quality: safe (clear, odorless and acceptable to the community, and meets WHO guidelines in physical, chemical and bacteriological parameters. In due course, the Afghan Government will formulate the standards that can be achieved country wide
2. Quantity: 40 liters per capita per day (lpcd) on premise where possible
3. Access: Public water points each for maximum 20families.

(b) Basic sanitation service level facilities

1. Access: Access to sanitary latrines that can contain human waste in a hygienic manner before final disposal.
2. Knowledge: Knowledge through Hygiene and Sanitation Education leading to clear understanding of good hygiene practice and changes in hygiene behavior.

With the above standards indicated and accepted as a baseline, the concept of climate adaptation additionality can be measured versus development. UNICEF and sister agencies have worked with funding

agencies to strive to meet these goals and some of these efforts have been identified in Past and Ongoing Efforts relating to the WASH section. All projects are coordinated by the RuWatSIP through a Joint Project Management Committee (JPMC) comprising of respective Project Managers and advisors of different projects. The RuWatSIP co-ordinate different projects supported by UNHCR, USAID, UNICEF and others through a JPMC for respective projects headed by the Director of RuWatSIP. The aim is to enhance the capacity of MRRD, Water and Sanitation Department to be able to implement streamlined approaches. (see Appendix 1 for more details on Roles and Responsibilities)

Sanitation Effort: Beyond the education and behavioral activities, the Community Led Total Sanitation (CLTS) – UNICEF program operationalized with the Ministries of Rural Rehabilitation and Development, Public Health, and Education, as well as local and international partners, have joined forces to end open defecation by 2025. They support communities to become 'open defecation free' by using the 'Community-Led Total Sanitation' approach, where a combination of shock, shame, disgust and pride, motivates people to build and use their own latrines.

Open Defecation (OD) is a huge risk to the health of children as well as the dignity of women in many parts of Afghanistan. High rates of child mortality due to diarrhea and pneumonia as well as the risk of polio and high prevalence of stunting are threatening the lives and growth of children in the country. The prevalence of open defecation in the country is estimated at 13% nationally 18% in rural areas. While around 80% of households make use of some form of traditional latrine facility, the national coverage of improved sanitation is only 39%.

Since 2010 the country was able to declare over 1000 communities as Open Defecation Free. Out of those communities 89 were declared ODF in 2015. USAID funded project account for 611 ODF villages while UNICEF supported the MRRD to declare the rest. Some NGOs also tried implementing the CLTS approach in the country. The country developed a national plan to end open defecation by 2025.

Operation and Maintenance

Water Users and Sanitation Committees (WUSC) are established and compulsorily registered according to the national institutional act, to empower community members and provide an enforcing authority to the elected committee members. Necessary legal bases prepared to legalize aspects of water at source, keep the environment clean, maintain the quality of water and increase the participation of the private sector.

- MRRD prepares and implements plans to provide direct implementation in rural water supply and sanitation schemes, and transitions ownership and responsibility for O&M of all schemes to CDCs.
- A simplified and transparent procedure for the registration of WUSC will be introduced. The procedure will ensure participation of more women, elders, maliks and school teachers, for the O&M of WASH services at village level.

Urban Sector

These principles are also followed by the Afghanistan Water and Sanitation Activity (CAWSA) program which was designed to develop a viable commercial business model for urban water and sanitation service delivery in Afghanistan. The drafting and passing of the new Water Act (Afghanistan Water Law Gazette No. 974 - 28 February 2009) provided for the formation of the new Afghan Urban Water Supply and Sewerage Corporation (AUWSSC), a corporation aimed at running the urban water utilities according to commercial principles. The organization spearheaded work with local urban utilities as the central

authority on water supply and sewage in cities. The autonomous organizational structure is presented in Figure 4.

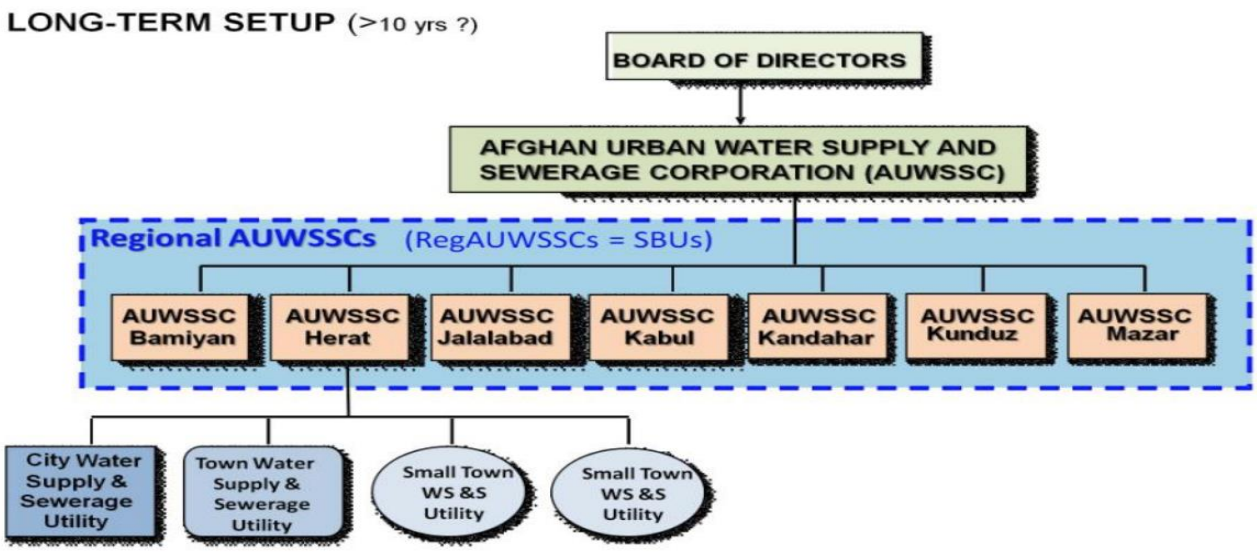


Figure 4: General Organizational Structure of AUWSSC (Urban WASH)

The mandate for the organization is to provide management training, including improving the accuracy and effectiveness of financial and administrative reports and procedures, and establish key monitoring and evaluations methods and practices. These basic skills were supplemented with additional training on water utility management, basic water works operation, water testing and quality control, water distribution, and conservation programs. Its aim for the urban utilities included:

- Improve the operating efficiency of the local water utilities by implementing standardized work methods, inspections, inventory management, systematic equipment maintenance, and other practices that can help control costs
- Improving financial management by revising revenue and rate structures, improving cash flow, and improving billing and collection practices—which, in combination with improved efficiency, can reduce the need for government subsidies
- Reducing water loss by better metering of water flow and by conservation practices
- Establishing key performance indicators, performance targets, and measurement methods to provide a yardstick for maintaining acceptable standards of service at reasonable cost
- Providing the managers and employees in local utilities with the capacity and tools to sustain improvements into the future and to replicate them in other cities after ICMA's involvement ends.

Within the urban context UNICEF WASH will need to work with this organization to further embed climate resilience WASH with water resources and sanitation sector.

Past and Ongoing Efforts to Support WASH

Increased variability of rainfall, a greater frequency/intensity of other climate change impacts have had adverse impacts on the livelihoods, health and food security of communities. There have been several national initiatives to address these climate change impacts. Such responses have tended to focus on alleviating impacts to livelihoods in conjunction with climate change impacts rather than focus strictly on WASH initiatives.

Programme Title	Funding Source	Implementing Agency	Executing Agency	Duration	Amount (USD)	Status	Children/youth reflected. WASH Elements (If Applicable)
UNICEF WASH Rolling Work Plans (2016 to 2019) plus extension (2020 to 2021) – Rural Water Supply	USAID and UNICEF (thematic, RR and humanitarian funds, etc)	MRRD	Ministries of Rural Rehabilitation & Development (MRRD), Ministry of Public Health (MoPH) and the Ministry of Education (MoE)	6 years	$30M (Grant)	Underway - Currently the WASH programme is active across all five regions (Central, North, East, South & West). RWS programme is active in 26 of the 34 provinces across Afghanistan. Further details can be seen in the RWPs & Annual Reports.	Piloting Waters Safety Planning in Solar-Powered water supply systems Climate-resilient water supply targeting the highly vulnerable in coastal areas, specifically women and girls. Implementation of climate resilient drinking water solutions at HH community and institutional levels.
Adapting Afghan Communities to Climate-Induced Disaster Risks (2018 to 2023)	LDCF	Ministry of Agriculture, Irrigation and Livestock	Ministry of Agriculture, Irrigation and Livestock	5 Years	$71.1 M	Enhancing gender-sensitive disaster risk reduction in, and by, vulnerable communities; Establishing community-based early warning systems; Promoting climate-resilient agricultural practices and livelihoods; Working with national, provincial and district-level government institutions to better	Focus on provinces of Jawzjan and Nangarhar Project will help reduce losses and damages resulting from climate-driven disasters; facilitate recovery from climate-shocks;

						integrate climate change into planning.	
Project for City Resilience in Afghanistan (Pcr) (2017 to 2020)	Japan	MoF		3 Years	$3.3 M	Outcome 1: Enhanced urban communities' resilience to disaster and climate change Outcome 2: Strengthened municipal capacity for people centered preventive DRR Outcome 3: Strengthened national capacity for risk-sensitive urban development to contribute to Sendai Framework implementation/ monitoring	Locations: Kabul, Mazae-i-Sharif - The community level activities will target six GAs and 30 CDCs that consist of about 6,000 HH. The direct beneficiaries at community level will be around 54,000 people and 4,250,000 at city level. Lessons Learned:
GCF Readiness Proposal – NDA Strengthening and Country Programming	GCF	MoF	Economic Cooperation Coordination Division	2 Years	$0.9 M (Grant)	Underway	Prepare and increase capacity of the NDA to support and develop stakeholder led country level programmes for adaptation priorities, develop appropriate workplan and identify access to finance.
Strengthening the Resilience of Afghans Vulnerable Communities against	UK DFID	UNEP	Afghan Resilience Consortium (ANDMA, MAIL etc.)	4 years	$12M	2015 to 2019	Working in disaster-prone districts of nine of Afghanistan's most disaster-prone provinces, namely Badakhshan, Takhar, Bamyan, Samangan, Ghor, Balkh, Sari Pul, Jawzjan and Nangarhar. Institutional Strengthening for Disaster Planning and Response

Natural Disasters (SRACAD)							Community and School based disaster preparedness Household Resilience Research and Advocacy on DRR and Climate Change Risks
ADB – IWRM Investment Program	ADB (Grant)	ADB	Ministry of Finance	TBD	$222 M	Proposed	Outcome: Improved management and use of water resources in the Arghandab River basin Outputs: Dahla Dam optimized Hydropower powerhouse installed and transmission lines completed Main urban water supply to Kandahar city completed Reliability of irrigation water supply increased Stakeholder capacity in water resource management and use strengthened
ADB – Water Resources Sector Development Project - Community-Driven Irrigation Management	ADB (Grant)	ADB	Ministry of Finance	TBD	$100		Outcome - Strengthen water resources management in rural areas Outputs: modernization of community-based irrigation schemes construction of small-scale rainwater harvesting structures for sustainable land management application of water and energy efficiency in local water management.
ADB - Addressing Health Threats in	ADB – Technical Grant	ADB	Regional – ADB (Central and West Asia Department)	July 2020 to	$3.9M	Joint approaches to regional health challenges strengthened	Outputs: Capacity to respond to COVID-19 pandemic enhanced

Central Asia Regional Economic Cooperation Countries and the Caucasus				July 2023			Capacity to prevent, prepare for, and respond to regional health threats developed. Regional health cooperation strategy toward 2030 and investment framework (2022 - 2026) developed.
World Bank Afghanistan COVID-19 Response Development Policy Grant (	Grant	WB	Ministry of Finance	July 2020 to TBD	$100 M from IDA and $100 M form Afghanistan Reconstruction Trust Fund (ARTF)	Appraisal Stage - In development	support vital policy and institutional reform measures under two pillars: i) strengthening the policy framework to support relief and recovery for vulnerable people and firms; and ii) strengthening the policy framework for recovery and resilience in infrastructure provision. iii) changes to the regulatory framework to facilitating increased access to finance for small and medium-sized enterprises; iv) changes to the regulatory framework to facilitating wider use of e-money v) the issuance of guidelines to health facilities ensuring adequate protection of healthcare workers, vi) action plan to raise awareness on gender-based violence in schools and CoVID response. second pillar (strengthening the policy framework for recovery and resilience in infrastructure provision), the proposed operation will support: i) Partnership Agreement between the Ministry of Finance and the electricity utility including measures to reduce public sector arrears support improved financial performance through the COVID-19 crisis

							ii) the approval of Emergency Response Plans for main urban water utilities
Climate Change Adaptation (UNDP)	Grant	UNDP		2014 - 2019	$10M (GEF (LDCF Fund))	Completed	Training on climate risk and appropriate response measures for national and provincial officials at the Ministry of Agriculture, Irrigation and Livestock; the Ministry of Rural Rehabilitation and Development; the Ministry of Energy and Water; and the National Environmental Protection Agency. Training for farmers and pastoralists on climate risk and appropriate response measures. Enhancing the Ministry of Agriculture, Irrigation and Livestock's capacity to respond to climate change in targeted provinces. Designing livelihood projects in targeted communities. Designing small-scale irrigation projects in targeted communities.
Northern Flood-Damaged Infrastructure Emergency Rehab Fund	Grant	ADB		2014 - 2018	$46.6 M	Completed	

A diverse array of baseline investments has taken place, with focus on water resources restoration, livelihood improvement, capacity building, climate change risks and the promotion of Integrated Resource Water Management and Sanitation. These projects have tended to use a business-as-usual approach, with interventions such as: i) community-based natural resource management; ii) education and awareness programmes; iii) research and data collection; and iv) the promotion of alternative livelihoods. Despite considerable achievements out of these investments, a number of gaps persist.

Several baseline investments, for example, focus on water resilience and livelihood improvements taking climate change impacts into consideration but with limited focus on WASH programming. Consequently, local communities within projects are being trained on how to climate-proof their livelihoods and to maximize the benefits of surrounding ecosystems for building climate resilience, but WASH considerations are secondary. The baseline investments that do include climate change adaptation tend to take a technocentric approach, using "hard" engineering approaches to adaptation. These investments have generally not made use of a cross-sectoral or collaborative approach to governance, with interventions remaining "siloed" and with insufficient consultation with local communities. Efforts and investments are consequently needed to fully climate-proof existing baseline projects considering WASH needs.

UNICEF WASH Work Plan and Alignment with CRW

UNICEF coordinates the WASH Emergency Cluster in Afghanistan. During natural disasters as well as in continuing armed conflict, cluster partners provide safe drinking water, sanitation facilities, and hygiene education to children and families in need. UNICEF mobilizes partners in assessing the situation and planning both preparedness and response actions to reach vulnerable persons. In 2018, following displacement due to drought and conflict, UNICEF strengthened its WASH humanitarian response to provide emergency water services and long-term sustainable solutions such as water facilities in places of origin, and increased the use of sustainable technology.

The UNICEF WASH Program in Afghanistan, based on the last three Rolling Work Programs, has developed and signed joint-WASH work plans with the Government of Afghanistan, through the Ministries of Rural Rehabilitation & Development (MRRD), Ministry of Public Health (MoPH) and the Ministry of Education (MoE). This has ensured that the UNICEF WASH program, and projects undertaken through it, have been done in line with government priorities, as reflected by the Nation Rural WASH Policy 2016-20. Currently the WASH programme is active across all five regions (Central, North, East, South & West). The Rural Water Supply program is active in 26 of the 34 provinces across Afghanistan.

Over the last 3 years there has been a significant shift in the UNICEF's Afghanistan Rural Water Supply program, where before 2016 around 50% of interventions was through basic service drilling of shallow boreholes fitted with hand-pumps. In 2019, only around 5% of the water supply program was delivered through these basic water points, with 72% delivered through more sophisticated solar-powered systems. This trend is set to continue into 2021 where it is anticipated that all projects will be delivered through solar-powered or gravity-fed piped systems. Groundwater mapping has also been introduced at MRRD, with the establishment of a dedicated GIS/hydrogeological unit, which will help to better map and monitor available water resources across the country. Climate risk is not addressed as part of groundwater mapping and will be required to sustainably build long-term reliable water resources.

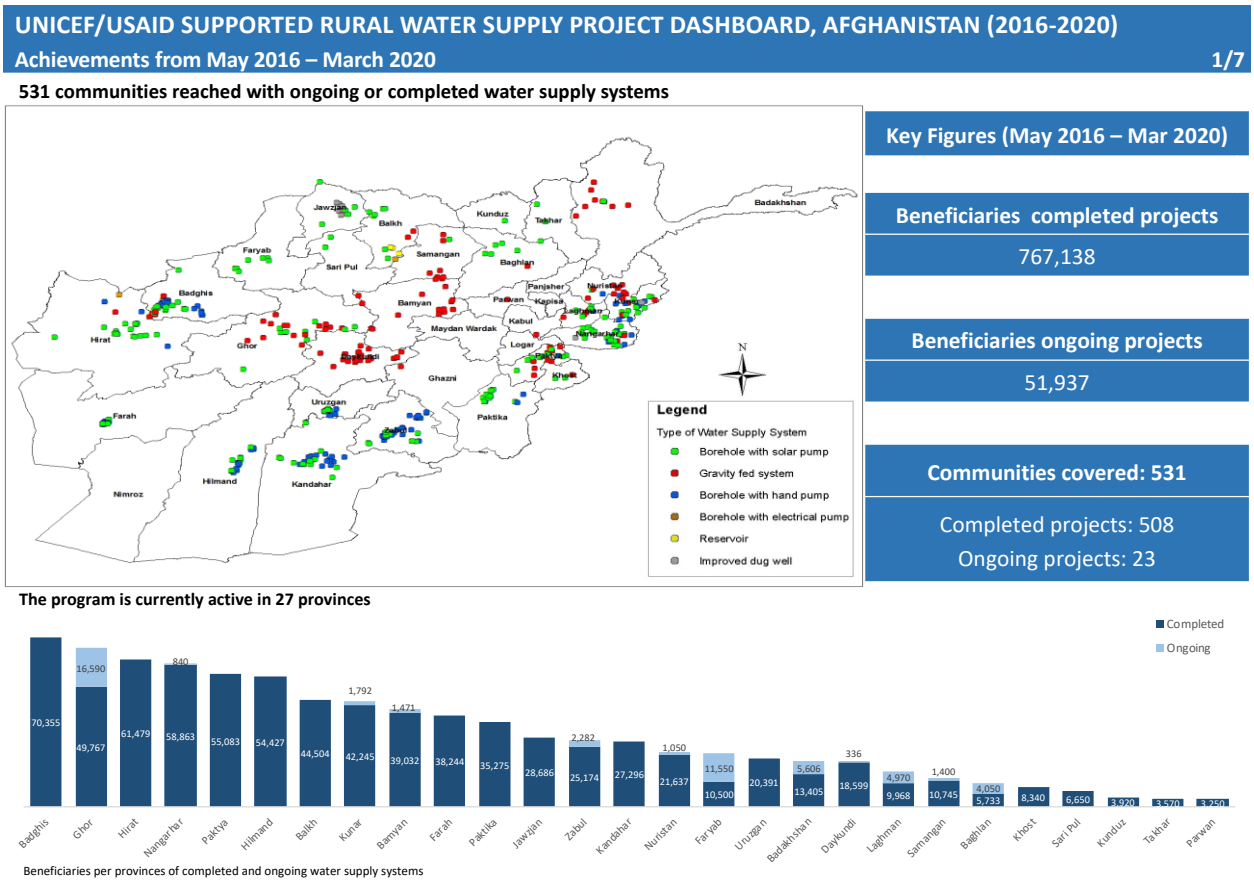


Figure 5: Extent of UNICEF programme (USAID water grant funded only) over the last four year

UNICEF is piloting Waters Safety Planning (WSP) in conjunction with the installation of Solar-Powered water supply systems, gravity fed systems and handpumps and it is being scaled up in 2021 from the initial pilot stage. The WSP process identifies risks and potential risks to the safety of water, extending from the source to the moment of consumption. Simplified WSPs systems were developed and piloted in target villages which installed solar-powered piped system with public taps. In addition, it was recognized that the integration of WSPs and Community Led Total Sanitation (CLTS) further benefited the communities during the pilot where CLTS teams were trained in the WSPs process. The results of this pilot were positive: drawing-based booklets were developed depicting potential risks to water safety and were found to be both useful and easy to understand by people at the community level.

UNICEF CRW Programmatic approach is aiming to address projected climate risks and their impact to water and sanitation systems (effectively WASH infrastructure components) considering 25Y to 50Y timeframes and ensuring that the infrastructure design options (costs effective analysis of the solutions that address the risks to WASH) is reviewed with this lens is the next stage of development. Developing climate informed interventions including water safety plans, operations and maintenance programs with community engagement with the concurrent support of behavioral changes to the impacted communities will ensure sustainable CRW.

The medium-term (post 2021) Rolling Working Plan goals will include:

- Climate resilient water supply systems & higher service level provision as standard (Using only green/sustainable energy, improved water resource planning & use/management, metered household connections, regular WQ testing & capacity at regional level)
- Building WASH private sector including mechanics associations/service providers for provision of O&M services
- Establishment of new partnerships & initiatives to deliver urban water supply, including AUWSSC, Private Sector and NGOs.
- Strengthening and increased use of GIS systems for better targeting and planning of water projects, delivering integrated WASH services, & to provide real-time status of water systems for better O&M and sustainability
- Improved mapping/data collection (incl. remote sensing) of water resources (surface water systems and aquifers. Significant improvements in water productivity could be made through the precision (laser) land leveling to support the sustainable usage of solar energy pumping facility installations, and water balance studies using remote sensing data is available freely online.
- Government restructuring of the water sector including establishment of the National Water Affairs Regulation Authority (NWARA), which will lead to improved gov't capacity and more integrated water resource planning & use, and will also change working modalities in RWS including with major IPs such as MRRD.

CRW Evaluation Based on 9 Steps

UNICEF Afghanistan's current level of preparation in transitioning from current WASH to Climate Resilient WASH based on 9 aspects:

A. Conduct a stakeholder analysis reviewing structures and capacities (Step 1)

UNICEF is well aware of the key stakeholders as it supports the development of joint-WASH work plans with the Government of Afghanistan, (with Ministries of Rural Rehabilitation & Development (MRRD), Ministry of Public Health (MoPH) and the Ministry of Education (MoE)). This has ensured that the UNICEF WASH programme is mainstreamed with national priorities with WASH programmes in Schools, Health Facilities and rural water projects undertaken through it.

B. Review Existing climate and WASH national and sub-national priorities (Step 2)

The CO has progressed on a number of policy and strategic areas but limited in application of climate change at national and sub-national layers. However, they are supporting the next phase of the Nation Rural WASH Policy development and with inclusion of Climate Change risks, the climate informed water security can be developed. The NAP development is underway with the FAO and the related NAPA and NDC, with recognition for children and vulnerable communities. The CRW Shift is reflected by:

1. Climate Resilient WASH services: improved use efficiency for water; consideration of levels of groundwater extraction and future water supplies with climate risk; awareness of water management; development of climate proofed infrastructure, water quality or wastewater treatment is not addressed and provides a point of opportunity of UNICEF.
2. Resilience of communities - drought resistant agriculture and community-based forest and water management related to water security is highlighted.
3. Low Carbon energy: not discussed within the NAP and NAPA.

4. Enhancing climate resilient WASH through the intent to increase renewable energy in rural areas and through ecological engineering capacity building intent.

C. Assess climate risk to WASH and set the climate rationale for UNICEF Interventions (Step 3)

UNICEF Afghanistan may require some technical capacity assistance in delivering CRW in a systematic method, especially related to developing and attributing climate risk and rationale within the development of sustainable solutions. The CO will need support in the application of the GWP-UNICEF risk assessment approach with the regional office.

D. Identify a longlist of potential options and then shortlist to address prioritized risks for UNICEF support. (Steps 4 and 5)

This aspect is in the early stages of development and utilizing climate rationale in developing existing programs and projects is not yet programmed. Solar power utilization for ground water extraction rather than the traditional approach with diesel or distribution electrification is well employed in rural programs and is expected to continue as part of baseline development. However, the government, with UNICEFs support, will need to develop climate informed guidelines (enhanced climate informed water safety plans) with options for adaptation and mitigation and with the new NAP Climate Change policies. A national WSP framework is still to be established, and this will be developed during this process. This was planned for 2021, but is likely to run into 2022 under the new UNICEF Country Programme. In terms of WASH in institutions, there are also certain initiatives that can serve as an entry point to integrate climate resilience more strongly (as well as behavior change). Communities have been engaged in the identification of options but little follow-up on the success/appropriateness related to climate risk adaptation has been completed to date.

E. Screen, assess and manage the potential environmental and social implications of UNICEF Climate Resilient WASH Initiatives (Step 6)

The CO is in its early stages of understanding the application of Environmental Social Safeguards reporting and mainstreaming into their programs, they will require HQ for further support and relevant examples.

F. Adjust Work Plans to be climate resilient and implement (Step 7)

Current AWP for 2020-21 includes support in the utilization of the Best practices approach (next section) in the development of WSP and long term water security options. There is little discussion on the inclusion of Climate resilience in the AWP which will be needed in the next iteration. Further integration of climate resilience in the annual and rolling work plans with elements in both National and State level programmes will be required.

G. Identify different financing options and develop fundraising concepts and proposals (Step 8)

Multiple climate financing options have been explored with GCF, GEF and Adaptation Fund. UNICEF CO will focus on GCF Readiness (partnership with FAO) and private sector in addition to reviewing successful projects that are in GCF, GEF and AF to better position and understand the climate rationale requirements. They will need support from the Regional Office to raise awareness and possibly partner in the future.

F. Design SMART Indicators for CRW and integrate monitoring systems. (Step 9)

AWP and CDP will be reviewed for incorporation of CRW into existing metrics and indicators, as well as develop new requirements. It is recognized that application of technologies without proper siting and installation will require further holistic scrutiny rather than simply the type of technology used.

Best Practices Process Approach for CRW

UNICEF objectives are three-fold relating to developing Climate resilient WASH programmes:

1. To ensure the WASH infrastructure, services and behaviors are sustainable, safe and resilient to climate resilient risks. This goes hand in hand with the sustainable use, protections and management of surface and groundwater resources and resilient waste management.
2. To ensure that resilient WASH programmes contribute to building community resilience to help them adapt to the impacts of climate change. To achieve this, inequalities in service provision that disproportionately expose vulnerable groups to climate threats, or restrict their capacity to respond effectively, need to be addressed first. Further WASH contributions to community resilience can be achieved through capacity development and by fostering income generation, as a well as food, energy and ecosystem resilience.
3. To work towards a low carbon WASH sector by improving water and energy efficiency and ensuring where possible, the use of renewable energy for water and sanitation operations to lower green-house gases (GHG) emissions, and energy generation from waste.

Managing climate change is primarily an additional risk management exercise, and as such, it is important to know the impacts projected under both high and low GHG emissions scenarios, regardless of the likelihood of each scenario. To meet the UNICEF objectives, it will take an integrated approach which requires multi-disciplinary teams and technology systems to deliver sustainable infrastructure, enhanced institutional capacity, and impactful sustainable community programmes that reduces climate risk and ensures baseline WASH services are robust. The WASH sector is integral in climate change adaptation due a number of key factors:

- Climate change threatens achievements already made in WASH service provision and sustainability, and is changing the context (on both supply and demand sides) in which we need to extend water and sanitation services.
- Climate change impacts affect people and regions differently: poor people, including children and women tend to suffer first and hardest. Addressing vulnerability is critical to poverty reduction.
- Successful climate change adaptation can only be achieved through cross-sectoral approaches, and with many impacts likely to be felt via water, the water and sanitation sector is particularly important

There a number of approaches that can be takes to reduce the local climate risk which will require, in some sense, a step wise approach:

Establishing the Climate Rationale

Climate change adaptation activities can take a wide variety of forms and can be the main reason for an intervention or it may require modifications to accommodate anticipated impacts (such as updated

infrastructure design), or it may provide an additional motivation to make familiar development investments, such as livelihood diversification or strengthening traditional resource governance mechanisms. From a CRW WASH perspective, the focus of climate change impact will largely manifest through changes in the water cycle with many necessary adaptation efforts involving more/better/different water management (Integrated Water Resource Management and/or River Basin Management as good prime examples), which may go beyond regular development.

The beginning for development of climate change adaptation requires a strong climate-based rationale[8] which requires data from the countries MET system with sufficient number of weather stations and historical records to provide the granularity necessary to build the regional or local level climate model. Based on the presentation Climate Rationale for GCF Water Projects, the elements of a strong climate rationale include:

Drawing on credible science – downscaling industry used climate projections[10] to the proposed project area with near term implications (next 30 to 50 years) to the keys climate factors. Working with the Country Meteorological Department (or partners) to produce downscaled,[10] internationally recognized climate models, to determine how key climate factors are exacerbating the risk exposure, vulnerability and hazard/extreme events of the project region.

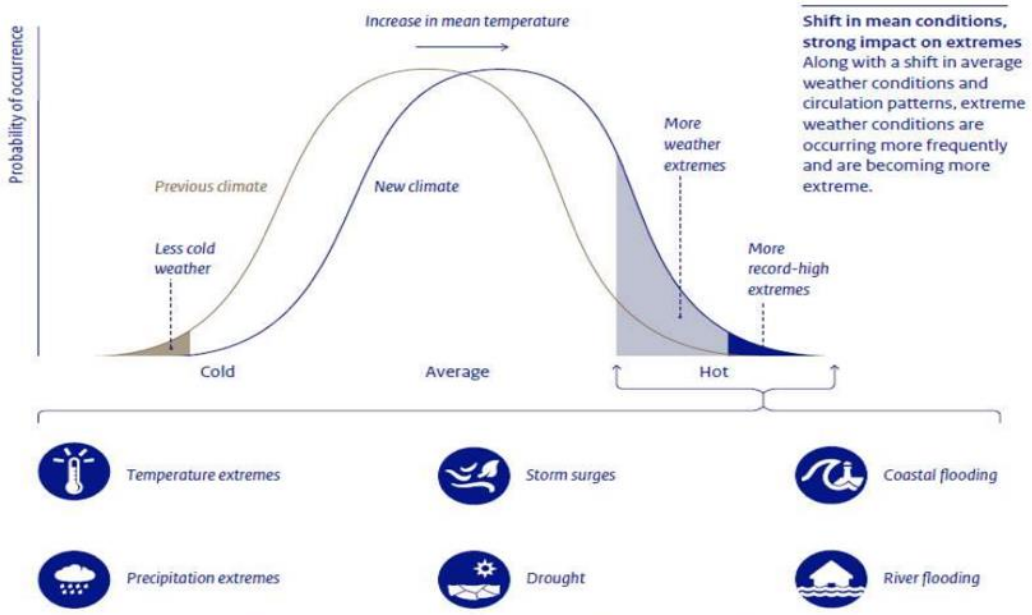
1. Downscaling techniques can be divided into two broad categories: dynamical and statistical.

    - Dynamical downscaling refers to the use of high-resolution regional simulations to dynamically extrapolate the effects of large-scale climate processes to regional or local scales of interest.
    - Statistical downscaling encompasses the use of various statistics-based techniques to determine relationships between large-scale climate patterns resolved by global climate models and observed local climate responses.

2. These relationships are applied to Global Climate Models (GCM) results, to transform climate model outputs into regional or local climate impacts studies.

    - For instance, in the model shown below, this depicts the change of rising temperatures in the region with more weather extremes and higher extreme temperatures
    - The next step is to develop the narrative to understand how these climate phenomena has exacerbated the impact and compromised existing infrastructure, services or livelihoods.

[10] Downscaled – to apply the climate models to a smaller region within the country so that specific climate attributed specific to this region are determined.



Source: Ligtvoet W. et al. (2018), The Geography of Future Water Challenges, The Hague: PBL Netherlands Environmental Assessment Agency

Simplified Example of CRW Best Practices Approach – Longer Droughts and Extreme Rainfalls causing flooding in River Basin

1. Identify countries Most Vulnerable Population – based on socio-economic conditions or identified with NAP and NAPAs as most impacted or priority areas and sectors.
2. Identify region of study.
3. Complete downscaled rainfall models and temperature index models within region of study.
4. Determine or quantify the decrease in rainfall (number of days without rain < 1mm) etc. projected over the next 30 to 50Y's.
5. Determine the number of increase heavy rainfall days or prolonged periods of rainfall that increase flood conditions.
6. Compare to historical records and quantify the difference – determine the attributes due climate change. Example – if past historical droughts averaged max number of days equals 40 during the dry period, what will the new projected number of days for the dry periods. If the downscaled RCP8.5 models indicate that there is a possibility for up to 60-days drought due to anthropogenic changes then the difference of 20 days can be attributable to climate change.

Determining the additionality

1. Based on the Climate models, the next step is to determine what are the additional climate induced risks, impacts and vulnerabilities attributable to climate change specific to the target project area.[12] Factors of climate include:

    - Temperature Extremes – higher global temperatures resulting in increased evaporation, evapotranspiration, and/or increased water use

- Precipitation Extremes – landslides, river flooding, etc. – due to increasing storm frequencies and intensities resulting in changing river flows impacting erosions of the riparian ecosystems and dependent infrastructure.
- Droughts – rainfall variability, number of days without significant rain, degrading soil and vegetation conditions, access to surface and ground water.
- Storms Increasing Intensities – stronger storms resulting in severe infrastructure (roads, energy, water and wastewater, urban and rural communities etc.) damage, ecosystem damage etc.

2. Establishing the extent of impact of Climatic change - For each of these factors, updating the vulnerability to the livelihoods, water security (groundwater and surface water) and WASH services sustainability will be required in assessing next steps. There are a number of tools and technologies that can be used to help fully incorporate climate risk into actionable interventions.

   a. Floods – develop and utilize flood inundation mapping updated models using climate change projected rainfall data to determine possible extent of inundation. (derived from aerial or satellite imagery such as LANDSAT or more topographic intensive Digital Elevation Model based watershed and stream analysis methods).
   b. GIS Hydrological and Water Balance modelling and studies – updating and/or alignment with the downscaled projected climate change rainfall variability, glacial melt, etc. implications with the targeted geographic area and document the possible impacts.
   c. Updating maps that include developing new topographic maps to better understand the implication to flow direction, drainage network and slopes.
   d. Strengthening and increased use of GIS systems for better targeting and planning of water projects, delivering integrated WASH services, & to provide real-time status of water systems for better O&M and sustainability. Improved mapping/data collection (incl. remote sensing) of water resources (surface water systems and aquifers. Significant improvements in water productivity could be made through the precision (laser) land leveling to support the sustainable usage of solar energy pumping facility installations, and water balance studies using remote sensing data freely available online.
   e. Each country has its own indicative and quantitative based drought definitions and updating hydrological drought simulations with projected climate data will be required, taking into account increased higher temperatures (day and night), periods of days without rain, etc. resulting in higher evapotranspiration rates (affected farming) etc. within the region of study.
   f. Frequency and Intensity of extreme events – cyclones, storms, flash floods, landslides etc. are all influenced by changes in climate. Understanding the socio-economic impact will be key
   g. In addition to the need for improved technological capacity, it must be emphasized that greater stakeholder engagement will be required to truly understand and document the scope of impact and throughout the entire process of project and programme development.

It is understood that every country does not have the technical data or institutional capacity or funding to produce the level of detail necessary to produce the necessary data and reports hence the focus should be projectized to address the most vulnerable populations or sectors first and these details are found in the National Adaptation Plans or equivalent documents.

Simplified Example of CRW Best Practices Approach – Longer Droughts and Extreme Rainfalls causing flooding in River Basin – Determine Additionality

1. What are the addition number of drought days that are projected in the future?
2. Complete evapotranspiration studies of the region of study to determine impact on agriculture livelihoods (how are the dominant crops within the region impacted?).
3. Complete or review existing groundwater studies to understand potential level of impact. Due to drought conditions, will water table lower to the point where it cannot be safely used?
4. Complete flood hydrodynamic studies or the river basin area in comparison to historical data to describe the extent of more intense flooding the region - geographically or frequency.

Establish the Level of Impact

1. Determine the impact to the infrastructure, livelihoods, ability to cope (socio-economic factors) to the changing climate.
    a. Does the community have water storage capacity to cope with the additional drought days?
    b. What practices (Demand-response, conservation, modification to Hygiene practices etc.) are employed to response?
    c. How has water quality been affected by the additional drought days? Increase salinity in the surface water – is it more prone to pollution sources then in the past?
    d. Draw down of ground water – does the existing infrastructure need to be adapted, or relocated (due to dried up water sources etc.)?
    e. Are existing sanitation and hygiene systems impacted by the lack of water or are they in the new flood zones determined by the projections. What adaptation or relocations of community services will be needed to compensate?
    f. Is flooding causing infiltration by pollution and sanitation.
2. Perform economic loss analysis or provide narrative for not adapting to additional risks.
3. Determine capacity of institutions to respond both strategically (policy and programme), technically, and financially to meet the additional challenge.
4. How informed is the impacted community to the new risks and impacts posed by climate change? Are they involved in the creation of sustainable solutions?

Determining the interventions and solutions

To address the results of analysis from the climate rationale impact studies, the next step is the determination of the interventions resulting in a paradigm shift in sustaining livelihoods, ecosystems and the particular focus of this report – WASH services. The interventions are not strictly infrastructure based, they must consider policy and institutional strengthening (including Operations and Maintenance funding), and national level to community level buy-in, to utilize properly and support long-term behavioral change and to fully adapt and become climate resilient.

Where technology selection is demand-led, there is a need to ensure that information on climate resilience, as well as on cost and other factors, informs programme design. This means tailoring the ‘menu’ of water security and sanitation options or designs to areas with different hazard problems and linking this with area- specific support for the supply of locally available and affordable materials and construction expertise.

All major WASH technologies can, to varying degrees, be adapted to account for climate risk. In many cases the adaptations available and the governance arrangements in which they are embedded are ‘no

regrets' options – desirable regardless of climate change or a particular climate scenario. This is because they reduce the overall vulnerability of services, and help maintain access to safe water and sanitation, under a range of climate and non-climate hazards and pressures.

Some indicative examples of interventions from an adaptation perspective include:

1. Integrated Water Resource Management[13] and River Basin Management – these methods use the results of the studies holistic tools to document water usage. Results may incorporate:

    a. Develop climate resilient drainage master plans and upgrade systems in high priority areas
    b. Develop climate resilient flood management infrastructure systems - Comprehensive assessment of river flows and water management structures to help identify locations for the necessary climate proofed infrastructure
    c. Develop climate resilient water schemes that manages degraded lands around water sources.
    d. Consider Multi-Use irrigation principles to secure water for agriculture as well as potable water for the community suitable for WASH services

2. Impact on Water and Sanitation Security – both water quality and quantity – review of existing and future usage (irrigation, potable, sanitation, hygiene, livelihoods, industry etc.) and map out consequences to water availability for WASH.

    a. Develop climate resilient Rainwater capture systems (community and household level) where ground water is compromised due to pollution or salinity or provide water during drought periods.
    b. Utilize understanding of flood potential with projected climate data to strengthen, ensure ease of rebuild or site sanitation infrastructure outside the new zones.
    c. Sea-wall or eco-based mangrove restoration – for protection/mitigation from sea level rise or improved protection from increase in storm intensities.
    d. Eco-based adaptation for river slope or hillside management – protect water resources, water courses, etc.

3. From the GCF SAP Guidance document[15] they have identified three categories for of interventions for water security including: implementing IWRM, Integrated Flood Management (IFM) and Integrated Drought Management (IDM). They include best practice examples within these categories as follows:

    a. Water resources monitoring and information system – for both water quantity and quality.
    b. To maintain water resource quantity and quality, recommended Operations and Maintenance measures include:

- Sustained practice of clearing waterways to prevent flooding.
- On-farm water harvesting and irrigation
- Land-use regulation in line with institutional capacity building and policy development.
- Greywater recycling at household level

In all cases, for infrastructure-based interventions, proper siting and construction will become increasingly important as programmes tackle more difficult areas and harder to reach populations, conduct regular post-construction audits of infrastructure and services. Each of these interventions will

need to undergo an options analysis (for example SWOT method or no-regret options) to ensure best fit using and help to establish narrative for the long-term sustainability of the interventions.

Institutional Capacity building

Recognition in the importance of WASH and connection to climate change will require incorporation of this into National Adaptation Plans, Health-National Adaptation Plans, Water and Sanitation Master plans, policies and programmes at all government levels. Partnerships with private entities will help support and strengthen climate-resilient value-chains and market linkages for alternative resilient livelihoods. From the perspective of alignment, with the approach indicated in the previous sections, the institutions will need to secure the technical and system capacity to successfully support the long-term viability of the interventions in partnership with the impacted communities.

Long Term Behavioral Change

The new interventions and better understanding of the impact of climate risk will require behavioral change that will ensure sustained reduction of risk. Some indicative examples include:

a. Demand-responsive measures – conservation of water practices understanding that future drought conditions may be impacted by climate change or that floods are exacerbated thereby potentially impacting water security or quality.

b. Water Safety Planning – incorporate climate informed water safety plans into community vulnerability assessments and water security planning. Consider the additional impact of more extensive floods or longer droughts. Climate proof infrastructure and improve last mile communication. Develop new hygiene measures that take into account the climate risks.

Additional analysis

To attract external funding in support of climate change adaption will potentially need to include:

Cost benefit or Cost avoidance analysis (economic analysis)
Estimate cost per beneficiary and analysis including description of economic losses in the intervention area due to climate related events and events of future losses with an understanding of how the intervention will be alleviated with proposed interventions.

Environmental Social Safeguards and Environmental and Social Assessment System (Plan) – provides a framework for achieving improvements in environmental and social outcomes while also addressing any potential adverse impacts from the proposed interventions.

Gender Analysis - A gender policy and action plan should be developed to ensure and enhance adherence to equitable access to development benefits, gender responsiveness, and inclusiveness. The policy and action plan are applied in conjunction with the ESMS.

Development of Operations and Maintenance plan

Fundamental to long-term sustainability of the proposed interventions, they must include institutional capacity building at all levels of the country (national, provincial, community and individual). This needs to encompass both public and private entities. Typical requirements include:

1. Roles and Responsibilities for each institution responsible, providing or regulating the WASH service.
2. Secured budget for maintenance and asset replacement for infrastructure based on life cycle with documented financial commitments to meet the above.
3. There is a need to ensure that information on climate resilience, as well as on cost and other factors, informs programme or project design. This means tailoring the 'menu' of sanitation options or designs to areas with different hazard pro les and linking this with area- specific support for the supply of locally available and affordable materials and construction expertise. It also implies using risk-based assessments of the threat to water quality from latrines alongside household-community mobilization and demand-creation.
4. The programs need to consider the importance of good quality construction to ensure long term life cycle costs are considered. For instance, a poorly constructed and engineered well or borehole is much more likely to fail during a drought or become contaminated during a flood than a well-constructed one. Proper siting and construction will become increasingly important as programmes tackle more difficult areas and harder to reach populations conduct regular post-construction audits of infrastructure and services.

The aim would be to learn lessons for future programmes in terms of performance (including performance under climate stress) and check standards against contracts and invoices to assess corruption risk (see Calow et al, 2012).

Please refer to Annex 1: GCF Project Methodologies and Steps Examples based on Best Practices Section which provides a step by step description of applying these principles.

Recommendations/Path Forward

UNICEF needs to continue identify and engage key local stakeholders such as health offices and local experts to identify locally-appropriate risk mitigation measures, and to support the overall implementation of their climate resilient WASH. Such an approach will greatly contribute to the sustainability of CRW implementation within these communities.

Based on the Simplified Results Framework for CRW - UNICEF Afghanistan is proceeding along this path. The upcoming Annual and Rolling work plans reflect this strategic shift, with key Outcomes Indicators working to the goals:

Outcome indicators	Baseline (2015)	CP target (2020)	CP target (2021)
Percentage of the population using basic drinking water services	63%	69%	70%
Proportion of the population practicing open defecation	14%	12%	11%

% of population in rural areas using improved sanitation facilities	33%	44%	45%

Table 4: Work Plan Achievements with USAID Funding (2015 to 2020)

In review of the Afghanistan Annual workplan and the climate change context explained in this report with the Best Practices section, UNICEF Afghanistan may need to further focus their cross-cutting approach in developing their Climate Resilient WASH program to address the current development needs. In supporting building WASH infrastructure, behavioral, education and health programmes UNICEF will need to first identify and rank climate change projected risks and then provide specific long-term sustainable solutions to meet the needs for increased projected impacts due to climate change. This will need to be in alignment with other climate adaptation projects as partnerships rather than identifying Climate Resilient WASH standalone projects.

The programmes should consider the importance of siting or site-specific groundwater investigation (recognized by MRRD in improving their technical capacity in groundwater mapping with the establishment of a dedicated GIS/hydrogeological unit). Water sources should be located where groundwater resources can provide reliable and safe supply, and will do so in circumstances where climate extremes (and water demands) are increasing. In some areas, groundwater is widely available at relatively shallow depths and little or no hydrogeological investigation is needed to ensure water security. In environments that are more geologically heterogeneous, however, investigations ranging from simple field observation to more costly surveying and exploratory drilling may be required. Even modest investment in resource assessment and siting can pay dividends in terms of higher drilling success rates and in locating higher- yielding, more resilient sources (MacDonald et al, 2005).

In addition, the need to consider the importance of good quality construction is fundamental. A poorly constructed and engineered well or borehole is much more likely to fail during a drought or become contaminated during a flood than a well-constructed one. Proper siting and construction will become increasingly important as programs tackle more difficult areas and harder to reach populations, it will be key to conduct regular post-construction audits of infrastructure and services. Some of these audits should involve the complete dismantling and inspection of water points to check on materials and construction. The aim would be to learn lessons for future programs in terms of performance (including performance under climate stress) and check standards against contracts and invoices to assess corruption risk (see Calow et al, 2012).

Sanitation:

The overriding concern about the vulnerability of sanitation to climate change lies in its response to heavy rainfall, floods and storms, and the associated threats to infrastructure, water and wider environmental quality; which can, in turn, affect the underlying demand for safe sanitation in riskier settings. The use of climate informed risk-based approaches to the siting of drinking water sources and latrines needs to be mainstreamed and established, and should form an integral part of the CATS/CLTS process, along with climate-informed situation analyses, formative research, market surveys and institutional assessment. The latter may need to consider financing options for households living in vulnerable areas – for acquiring a latrine or for rebuilding one damaged by flood. The impacts of climate change on sanitation relate to both the ability to sustain and extend sanitation services, and the risk of inadequate sanitation to the quality of drinking water sources and the wider environment.

Where technology selection is demand-led, there is a need to ensure that information on climate resilience, as well as on cost and other factors, informs program design. This means tailoring the 'menu' of sanitation options or designs to areas with different hazards and linking this with area- specific support for the supply of locally available and affordable materials and construction expertise. It also implies using risk-based assessments of the threat to water quality from latrines alongside household- community mobilization and demand-creation – through Community-led Total Sanitation (CLTS) or Community Approaches to Total Sanitation (CATS).

All of the major WASH technologies can, to varying degrees, be adapted to account for climate risk. In many cases the adaptations available and the governance arrangements in which they are embedded are 'no regrets' options – desirable regardless of climate change or a particular climate scenario. This is because they reduce the overall vulnerability of services, and help maintain access to safe water and sanitation, under a range of climate and non-climate hazards and pressures.

With climate variability and change is currently impacting surface and groundwater security, with the situation expected to intensify in the future based on climate change projections. To facilitate consideration of climate-related impacts within the pilot water supply systems, a number of modifications to the existing WSP approach were made focused on driving Climate Resilient WASH solutions, include:

- Differentiate clearly the development needs versus additionality:
    - Separate adaptation from development (the additionality argument) – adaptation funding typically assumes that baseline development has been completed for the region and that climate change is directly impacting the existing services.
    - Connect with detailed downscaled models for specific regions to key vulnerabilities that are impacting existing WASH services. Modify the interventions to account for the possible projected climate risk. Without a clear argument of climate change and increased risks specific to the project region and the impact of the project doesn't get too far in the review process.
- Broadening the traditional WASH scoping quality, to include a greater focus on access to adequate quantities of safe drinking-water incorporating climate projected risks
- Inclusion of climate-related expertise on the existing team including provision and analysis of down-scaled climate models to vulnerable areas to ensure a thorough understanding
- Broadening the focus of the system-specific risk assessments to consider climatic hazards/hazardous events and extreme weather events
- Development of improvement plans incorporating climate-related mitigation (or control) measures
- Development and implementation of climate-related emergency response and management plans.

At this point, UNICEF Afghanistan may be valuated at Step 3 since they do not currently incorporate climate risk into the WASH program and do not provide or analyze long term sustainable solutions based on climate rationale. Focusing on the UNICEF annual and Rolling Work Plan, the Outcomes, Outputs and Activities will need to be updated to reflect the climate lens applied to both current and future risks. This will be a major component/strategic shift within the new CPD (2022-26).

Building on from these recommendations, UNICEF should position itself to support the Government and the communities by:

- Greater intersectoral collaboration on climate resilient WASH between the health ministries and other relevant sectors
- Accurate and sound scientific analysis of climate change impacts and adaptation measures should be brought to the attention of policy-makers to encourage further mainstreaming of climate considerations into sectoral planning and reduce the adverse impacts of climate change on the country's population.
- Civil Society and Non-Governmental Organizations (NGOs), particularly involving women and youth, should be involved in awareness-raising events and capacity building activities to generate greater public awareness of climate change and foster greater political will to address Afghanistan's urgent climate change needs.
- Climate change should be integrated into higher education curricula to promote further mainstreaming across relevant disciplines as well as build national capacity to understand and apply key climate change adaptation and mitigation approaches.
- Inclusion of a climate resilient WASH investment strategy within the WASH Sector Development Plan.
- Further the inclusion of climate consideration into both the rural and urban water supply, sanitation and hygiene sector plans
- Development of capacity at national through to local levels on climate change and health, WASH and water safety planning, improved management of climate-related risks within urban and rural water supply systems, including greater emergency preparedness and response. The technological needs for both adaptation and mitigation should be identified for each sector and vulnerable area. Current efforts, which include those through the Climate Technology Centre and Network (CTCN), should be expanded and prioritized in the national development agenda.
- Public-private partnerships should be promoted to increase availability of funds and resources for climate-friendly technologies, particularly in the areas of decentralized energy and rural electrification.
- Infrastructure projects should integrate climate-proofing (preferably with ecosystem-based adaptation) in order to better protect roads, bridges, water supply, energy, and other infrastructure from extreme weather events and ensure that development progress made in recent years is not undone.
- UNICEF will look at advocacy with all major stakeholders that are critical in the development of an enabling environment to deliver CRW including NAWRA, MoAIL, MoEW, NEPA etc.
-

In providing a snapshot of the CO against the key aspects of full CRW implementation please refer to the following table.

Outcome				Status							
				Not Started	Concept Understood	Design / Developing	Early Implementation	Mid-Level Scaling	Fully Implemented	Mainstreamed and Sustainable	Comments
Intermediate Outcome	NATIONAL LEVEL & TRANSBOUNDARY	An enabling environment conducive to climate resilient WASH services and communities	Strengthen WASH Sector Enabling Environment								
			Knowledge of climate risks generated and shared				X				Multi-lateral projects are enhancing the capacity of the MET systems and downscaling of climate models are being performed to support climate rationale for these projects. UNICEF CO needs to review methods. NAP development is underway (FAO). Recognition that as standard part of service delivery that clean green resilient water supply will be incorporated.
			Climate risk informed and low carbon WASH policies, strategies and plans and programmes developed				X				Through the influence within the NDC and NAP development the importance of Climate Resilient WASH focus on policy development needs to be recognized. Installation of solar powered water systems is underway but long term climate informed sustainability needs to assured as part of process.
			WASH Features Prominently in National Adaptation and Mitigation Planning				X				Recognition of Climate Change is active within the government with NAP update to include WASH priorities will need advocacy by UNICEF and the ministry partners.
			Adequate Budget and Resources Allocated				X				Multi-lateral donors and development banks are funding WASH baseline development - Funding not scaled sufficiently yet to fully meet the need. Increased budget allocation related to WASH is recognized.

Outcome				Status							Comments
				Not Started	Concept Understood	Design / Developing	Early Implementation	Mid-Level Scaling	Fully Implemented	Mainstreamed and Sustainable	
			Plans Implemented and Monitored				X				Multi-lateral donors and development banks are funding WASH baseline development in alignment - Funding not scaled sufficiently yet to fully meet the need.
			Inter-Sectoral Coordination (including transboundary) strengthened with focus on health, food security and education sectors				X				Through the NAP process more emphasis is possible.
			Strengthened Early Warning Systems				X				MET systems and DRR response systems have improved; sustainable processes, budgets and resources are not comprehensive and early stages.
	SUB-NATIONAL LEVEL & WATERSHED LEVEL	Water resources are MONITORED and MANAGED considering climate risks to WASH services,	Build Water Resource Monitoring and Management Capacity								
			Water Resource Status (Quantity and Quality) Understood					X			Baseline development is underway with solar power systems for water boreholes. Ground water and hydrology studies included. Improved mapping of water resources underway with laser land leveling and water balance studies which are available online
			Risk Analysis conducted to inform water, sanitation and hygiene programming				X				Risk analysis and vulnerability studies do inform projects and programmes but need to better incorporate climate change. Water Safety plans must include a risk climate component and methodology. Consideration is underway to apply the GWP developed methodology at National Level.
			Long-term Monitoring systems implemented and maintained			X					Metrics still being developed to better incorporate climate

Outcome				Status							Comments
				Not Started	Concept Understood	Design / Developing	Early Implementation	Mid-Level Scaling	Fully Implemented	Mainstreamed and Sustainable	
			Guidelines/rules developed prioritizing WASH services and accounting for hydrological change				X				This is the very early stages, with multilateral donor projects this is a requirement but not yet incorporated at governmental level.
			Agreed rules implemented for resource development and adaptive management			X					Early stages of development
	LOCAL AND PROJECT LEVEL	Access to Climate Resilient WASH Infratruture and Services	Support Climate Smart Infrastructure and Technologies								
			Project Design and Implementation of water and sanitation standards strengthened			X					Climate rationale and risk yet to inform future requirements, WSP do recognize need to address climate risk.
			Water Storage enhanced and protected			X					Climate rationale and risk yet to inform future requirements
			Water Supplies diversified where possible			X					Rural regions diversify water resources and UNICEF is developing Climate informed Water Safety Plans but still reaching for baseline development
			Climate Smart Technologies (low and no regret options) for water, sanitation and hygiene investigated and implemented				X				Improved mapping/data collection (incl. remote sensing) of water resources (surface water systems and aquifers. Climate rationale and risk yet to inform future requirements. Climate resilient water approaches are easier to understand vs climate resilient sanitation interventions and WASH in institutions.
		Climate	Support institutional Reform and Behavior Change								

Outcome	Status							
	Not Started	Concept Understood	Design / Developing	Early Implementation	Mid-Level Scaling	Fully Implemented	Mainstreamed and Sustainable	Comments
Capacities and resources of local government and local private sector to implement and monitor WASH resilient programming strengthened					X			Multi-lateral agencies are funding improvements to the infrastructure, UNICEF focused on training operations and maintenance of Water and Sanitation utilities in rural communities. UNICEF CO is supporting climate resilience in WinS, WinH, MHM, waste management. Government restructuring of the water sector including establishment of the National Water Affairs Regulation Authority (NWARA), which will lead to improved gov't capacity and more integrated water resource planning & use, and will also change working modalities in RWS including with major IPs such as MRRD.
Awareness and capacity of communities to respond to shocks and stresses is enhanced				X				WASH Programmes are underway addressing needs of the communities - challenge due to climate risk hampering development advancement. Specific thematic areas where support has been requested is with the integration of climate resilience into WASH in HCFs programming, behavioral change, sanitation marketing, CR sanitation options (including FSM) and approaches, and O&M strategies.
Local markets and supply chains extended and deepened to increase availability of climate resilient WASH products and services			X					Building WASH private sector mechanical services and associations as part of future O&M sustainability.
Early warning and response systems strengthened				X				Multilateral projects are supporting MET improvements

Annex 1: GCF Project Methodologies and Steps Examples based on Best Practices Section

Simplified Examples of CRW Project: Flooding, Drought, SLR (Based on Best Practices)

With climate variability and change currently impacting surface and groundwater security and this situation expected due to climate change projections. To help facilitate consideration of climate-related impacts within the pilot water supply systems the path forward includes:

Key elements to consider while developing a proposal to access climate finance

Activities	Sri Lanka (Dry Zone - Center)	Bangladesh (Coastal Zone)	Sanitation Infrastructure (Possible) (Flooding)	Technical Resource
Identify the Region of Study	NDC and UNICEF to Determine focus and region of the project based in National and Regional Strategic Documents Priorities (NAP) and Vulnerability Studies			
	Determine region of study (Center Dry Zone)	Determine region of study (Coastal Zone)	Determine region of study	
Identify the Climate Problem	Drought (Rainfall and Monsoon Variability)	SLR and rainfall variability	Increase Flooding now impacting existing communities including Sanitation Infrastructure	
	Utilize Climate Modelling (regional level and Historical Climate data) - climate model must be relevant to the conditions faced in the Dry Zone Area (not at National Level)	Utilize Climate Modelling (regional level and Historical Climate data) - climate model must be relevant to the conditions faced in the Coastal Zone Area (not at national level)	Utilize Climate Modelling (regional level and Historical Climate data) - climate model must be relevant to the conditions faced in Flood Prone Region (not at national level)	MET Service or Climate Scientist
	Provide and analyze trends of historical climate data	Provide and analyze trends of historical climate data	Provide and analyze trends of historical climate data	MET Service or Climate Scientist
	Provide and Study trends of projected climate data	Provide and Study trends of projected climate data	Provide and Study trends of projected climate data	MET Service or Climate Scientist
	Compare and Highlight Contrast in Trends (Historical vs Projected)	Compare and Highlight Contrast in Trends (Historical vs Projected)	Compare and Highlight Contrast in Trends (Historical vs Projected)	Establish the climate rational basis for Project
Consultations	Development of a project proposal informed by stakeholder consultations and decision-making processes that include equitable opportunities for women and men to be involved and to lead activities.			

Understand the Baseline Services (What are the capacities of the impacted communities and government institutions)	Determine and describe potential Impact to communities and eco-systems within region of study			
	Identify the relevant policies and programmes (are they up to date) - institutional capacity assessment	Identify the relevant policies and stakeholders (are they up to date) - institutional capacity assessment	Identify the relevant policies and stakeholders (are they up to date) - institutional capacity assessment	
	Identify the relevant projects and programmes underway that were completed or are ongoing that may be related to the project	Identify the relevant projects and programmes underway that were completed or are ongoing that may be related to the project	Identify the relevant projects and programmes underway that were completed or are ongoing that may be related to the project	
	Understand the current capacities and vulnerabilities of the impacted communities, how and to what extent is the baseline infrastructure compromised?	Understand the current capacities and vulnerabilities of the impacted communities, how and to what extent is the baseline infrastructure compromised?	Understand the current capacities and vulnerabilities of the impacted communities, how and to what extent is the baseline infrastructure compromised?	
	Develop or review vulnerability studies, topographic maps, ground water and flood models.	Develop or review vulnerability studies, topographic maps, ground water and flood models.	Develop or review vulnerability studies, topographic maps, ground water and flood models.	
	Apply climate projection models to develop updated ground water and flood modelling.	Apply climate projection model changes to develop updated ground water and flood modelling.	Apply climate projection model changes to develop updated ground water and flood modelling.	
	Water resources - tanks and reservoirs (volume of water available for consumption, farming, industry etc.). Complete Hydro flow modelling to understand capacity of water resources in future (25Y project cycle)	Ground Water - boreholes and tanks - is there an increase in salinity and what is the trend. Will need to complete ground water and flood modelling understanding historical and future trends based on climate model projections in changing in rainfall, monsoon patterns and SLR over the next 25Y (Project period)	What is the Sanitation infrastructure that may be compromised?	
Determination of GAPS and Barriers	Identifying policy, institutional capacity, financial, infrastructure GAPS and Barriers that impede the country for being to adapt on their own			

Proposed Solutions	Climate Proofing using Eco-Systems Based Adaptation of existing water resource structures. Additional Options Considered but this was most cost effective and sustainable*	New community water RWH Tanks for drinking water and climate proofing (prevent Salt Water Intrusion) of existing inground water reservoirs. Additional Options Considered but this was most cost effective and sustainable*	Eco based system climate proof flood plain diversion infrastructure designed and scaled to impacted area.	Water Resource Expert (Groundwater), Sustainable Land Use Expert
	Institutional capacity building and increased number of weather stations	Enterprise and community based implementation of climate resilient livelihoods for women for enhanced adaptive agricultural communities	Climate proof sanitation facilities?	Coordination with MET Service
	Monitoring and EW systems last mile improvements	Strengthen climate-resilient value chains and market linkages for alternative livelihoods	Implement greater ground water monitoring and testing.	Coordination with Local Community Based Organizations, Farmers Groups etc.
	WSP and Behavioral change communication materials within SOPs developed	Community based monitoring and last mile dissemination of Early warning systems.	Technical Assistance to government to improve programmes relating to flooding impacts, development of SOPs and behavioral change communication materials	Coordination with Local Community Based Organizations, Farmers Groups etc.
Economic and Financial Analysis	The economic analysis is concerned with the positive and negative impacts of a project on the whole society; it also covers the costs and benefits of goods and services that are not sold in the market and therefore have no market price and is used to assess cost-effectiveness, incremental cost, non-market benefits and economic co-benefits			Economic and Financial Analysts
Environmental and Social Safeguards	Project is screened to assess and manage the potential environmental and social risks. Develop mitigation strategies to ensure risks derived from the project are adequately managed throughout its lifecycle and establish mechanisms to address grievances.			ESS Specialist
Gender Analysis and Action Plan (GAAP)	Ensure national policies and priorities on gender provide equitable opportunities for women in stakeholder consultations and decision-making processes throughout the entire project cycle. Rights of women and childrens' access to suitable water supply is included.			Gender Specialist
Sustainability	The project should demonstrate consideration of arrangements that provide for the long-term and financially sustainable continuation of relevant outcomes and activities derived from the project/programme beyond the completion of the intervention. This sustainability should be considered from multiple angles and at multiple layers, including the financial, institutional, social, gender equality and environmental aspects.			

	Tariff structure considered to ensure long term (lifecycle of project) is established to maintain the EBA climate proofed structures.	Tariff structure considered to ensure long term (lifecycle of project) is established to maintain the EBA climate proofed structures.	Tariff structure considered to ensure long term (lifecycle of project) is established to maintain the EBA climate proofed structures.	Financial Specialist and Economist
	Roles and Responsibilities established in community and government support.	Roles and Responsibilities established in community and government support.	Roles and Responsibilities established in community and government support.	
	Budgets updated to ensure monitoring and reporting of water quality.	Budgets updated to ensure monitoring and reporting of water quality.	Budgets updated to ensure monitoring and reporting of integrity of sanitation infrastructure.	

Annex 2 GCF Simplified Approval Process (SAP) Technical Guidelines: Water Security

Possible Interventions for Water Security and specific to WASH Solutions, GCF will fund based on climate rationale and completed proposal documents.

SECTOR	SAMPLE SAP-ABLE ACTIVITY	SAMPLE INDICATOR	NOTES
Climate resilient water supply, sanitation and hygiene (CR-WASH)	Construction or rehabilitation of rainwater harvesting and storage systems	Extent of improvement in existing rainwater harvesting system Number of additional (new) rainwater harvesting and storage systems for communities	Ponds, cisterns and tanks are often household or small community features built to capture rainwater or surface runoff
	Communal hand pumps	Number of hand pumps constructed Percentage increase in availability of water for vulnerable communities	These are ordinarily for domestic use. Thus, assessment of groundwater quality and quantity vs. demand is required.
	Retrofit of existing buildings: architectural or structural changes that enable the reduction of energy consumption	Amount of energy saved	
	Boreholes with solar pumps	Number of boreholes constructed and fitted with solar pumps	Include activities to prevent over-abstraction of water
	Water use efficiency in households, public and commercial buildings: no- or low-flush toilets, low-flow showerheads	Volume and value of water saved by reducing wastage	Could be combined with introduction or revision of water tariffs, to incentivize water users to avoid wastage
	Decentralised water treatment (non-traditional water purification options applied at household or community level)	Percentage of water abstracted that is treated in compliance with national or local standards	Climate change impacts on water quality would need to be demonstrated
	Climate-proofing water supply and sanitation infrastructure	Number of water supply and sanitation structures that include climate considerations in their (re)design Degree of improvement in quality of water abstracted or supplied Reduction in incidence of water-borne diseases	Depending on the specific activity and its scale, ESS* screening should be undertaken to determine the ESS risk category
	Aquifer recharge (groundwater banking or aquifer storage and recovery)	Percentage increase in groundwater yield	Risks depend on scale and location. It is recommended to undertake a water balance assessment to demonstrate sustainability of the water source and avoid maladaptation.

Application of Water Resource Management approaches for implementing CRW based on GCF Guidance:

SECTOR	SAMPLE SAP-ABLE ACTIVITY	SAMPLE INDICATOR	NOTES
Integrated water resources management (IWRM)	Water policy review, IWRM planning or incorporation of climate change adaptation into existing IWRM plans	Level of understanding of climate responsive water policies and plans, and the related stakeholder perceptions	This could be measured by survey of the beneficiaries.
	Water resources monitoring and information systems	Extent of application of water resources information in water infrastructure operation and disaster management	A rating scale could be established, against which to measure the extent of application.
	Hydrological zoning considering climate change impacts	Extent of alignment between land use and hydrological properties	Zoning ensures that agriculture, urban development and other land-use activities take place in the most suitable locations, based on local hydrology.
Integrated flood management (IFM)	Nature-based solutions for flood control (catchment restoration, rehabilitation of degraded lands around the water sources, reforestation)	Hectares of land rehabilitated or existing vegetation protected around water sources and water points	A feasibility study and more detailed information on the activities are required to determine SAP eligibility. ESS screening should be undertaken to determine the ESS risk category.
	Clearing of blocked waterways to prevent flooding (removal of invasive plant species and excess silt)	Length of waterways cleared to prevent flooding	Depending on the scale, these activities could have some social and environmental risks. ESS screening should be undertaken to determine the ESS risk category.
	Flood-proofing household water and sanitation structures (e.g. wells, latrines)	Number of wells with climate-proof designs/ number of sanitary latrines with climate-proof designs, meeting relevant standards	
	Earthen levees	Reduction in intensity or scale of flooding events	Scale of implementation and location are key, as levees can channel floodwaters to downstream communities if not well sited. ESS screening should be undertaken to confirm the ESS risk category.
	Flood hazard mapping, zoning and land development restrictions	Reduction of population, livelihood activities or infrastructure constructed in floodplains	This may fall under Category B if this requires relocation of communities or affects their livelihoods. ESS screening should be undertaken to determine the risk category.
Integrated drought management (IDM)	On-farm water harvesting and irrigation	Percentage increase in agricultural yield Extent of improvement in nutrition	Eligible activities facilitate adaptation of existing livelihoods to changing hydrological conditions
	Land use regulation, e.g. protection of aquifer recharge zones	Degree of improvement in aquifer yield over time	
	Greywater recycling at household level	Percentage reduction in demand for water from the water supply system	Evidence should be provided to confirm that greywater recycling will not pose any health risks

* ESS = environmental and social safeguards

Annex 3: Roles and Responsibilities

1. Roles and Responsibilities

MRRD is also responsible for ensuring the adherence of WASH partners to the National Rural WASH Policy principles, guidelines and standards and:

- Convenes the Water and Sanitation Sector Group
- Initiates further WASH policy formulation and standard development through the WSG
- Maintains the National Rural Water Supply Monitoring and Information System
- Maintains a data-base for hydrogeological mapping of drinking water sources
- Approves MoUs with NGOs for rural WASH interventions
- Is co-responsible with the Ministry of Public Health (MoPH) for the mitigation and control of drinking water quality, including the operationalization of community-based Water Safety Plans (WSPs)

MRRD/Ru-WatSIP in the overall coordination of the hygiene and sanitation interventions throughout the country.

- Responsible for water quality surveillance of rural water supplies
- Co-responsible with the MRRD for the mitigation and control of drinking water quality, including the operationalization of community-based Water Safety Plans (WSPs).
- Together with the MRRD co-coordinates the “ending open defecation” programme
- Responsible for the curriculum of hygiene behavioral change interventions at community level, including the quality assurance of the hygiene behavioral change component of the CLTS programme
- Implementing partner for the provision of hygiene promotion interventions, is responsible for overseeing the verification and certification of ODF status of villages
- Coordinates national participation in International WASH events (e.g. SWA, SACOSAN etc.)

MRRD together with the (MoPH) co-coordinates the “ending open defecation” programme, and is an implementing partner for the provision of community WASH services:

- Supports the WASH interventions of other government programs, such as the NSP and other Ministries such as MoPH (WASH in health facilities) and Ministry of Education (MoE - WASH in schools)
- Leads the Sanitation Working Group
- Is a co-leading partner together with the MoPH in the overall coordination of the hygiene and sanitation interventions throughout the country
- Is a leading member of the WASH Emergency Cluster
- Coordinates national participation in International WASH events (e.g. Sanitation and Water for All (SWA), SACOSAN, etc.)

Provincial Rural Rehabilitation Department
Prioritizes areas of intervention based on need and deprivation and based on requests received from CDC and assessments made by partners

- Coordinates the WASH interventions of WASH partners at the provincial and district level - Facilitates the implementation of WASH interventions with Community Development Councils (CDCs), contractors and Non-Government Organizations (NGO) partners
- The CDC/Health Shura will be responsible for the verification and ODF status of villages, while community health workers (CHWs) will be part of the process including the verification and certification of the ODF at villages under the leadership of the PRRD.

Ministry of Public Health (MoPH)
Is responsible for the normative aspects of water supply, sanitation and hygiene services at community and institutional level, including the approval of national drinking water standards - Is responsible for the content of the hygiene curriculum in schools and public information messages concerning water supply, sanitation and hygiene.

- Approves MoUs with NGOs for hygiene promotion and water quality surveillance
- Leads the Hygiene Working Group

Provincial Department of Health
Provides support to PRRD in sustaining Open Defecation Free (ODF) status including verification and certification of the ODF
Leads hygiene behavior at village level through its network of community health volunteers
Is responsible for the surveillance and provision of the WASH services in health centers

Additional Key WASH Providers/Stakeholders
Health Services - responsible for the provision and O&M of WASH services in health facilities
Ministry of Education - responsible for overseeing the provision and rehabilitation of school WASH services and for the hygiene curriculum used at schools and for formulating and enforcing the WASH in schools standards.
Department of Education

- Is responsible for the surveillance, provision and rehabilitation of school WASH services according to national standards
- Support schools' principals and school shuras with the O&M and rehabilitation of WASH facilities in schools
- Is responsible for the effective implementation of the hygiene curriculum at schools

COMMUNITY DEVELOPMENT COUNCILS (CDCs)

CDCs act as the first point of contact for rural WASH interventions at village level. CDCs are not always the implementing organization, but they facilitate the contact between government actors and NGOs and the most relevant group of community members (e.g. school shuras, community health committees etc.)

- CDCs submit requests for the provision of new, or rehabilitation of existing WASH services to the PRRDs

NON-GOVERNMENTAL ORGANIZATIONS
Are key partners in the WSG and support and complement government actions regarding the provision and rehabilitation of rural WASH services

- Shall adhere to the principles outlined in the National Rural WASH Policy

- Serve as implementing partners for the provision and rehabilitation of WASH services at village level and to institutions like schools and health centers
- Are key partners to government for providing an effective WASH response in humanitarian situations

WASH EMERGENCY CLUSTER

The WASH emergency cluster coordinates and ensures an effective WASH response by WASH Cluster partners in the event of a humanitarian emergency in close coordination and collaboration with Provincial Disaster Management Committees (PDMCs) and other emergency coordinating bodies

TECHNICAL SUPPORT AGENCIES AND DONORS

Are key partners in the WSG and support government actors regarding the provision and rehabilitation of rural WASH services both technically and financial.

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For Further information

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