



CLIMATE RISKS AND FOOD SECURITY IN TAJIKISTAN

A Review of Evidence and Priorities for Adaptation Strategies

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1. Executive Summary

This document reviews some of the main existing studies, national strategies and reports related to climate impacts on food security and livelihoods in Tajikistan. It highlights the socio-economic vulnerability context and main challenges for food security as a result of climate change and related disasters. By employing a broad approach to food security, it contributes to the overall understanding of how climate change will impact not only production and availability related concerns, but also economic access and poverty links to climate change, and stability and utilization challenges. The review highlights existing evidence carried out by partners and by WFP, with a particular focus on WFP's Integrated Context Analysis and its subsequent tools for community consultations, the Seasonal Livelihood Programming consultation and the Community Based Participatory Planning tool. It then presents the current measures undertaken by WFP Tajikistan in addressing climate-related risks to food security linked with national priorities. The last section of this report provides summarizing conclusions, highlighting key areas of concerns based on the presented information and gives topical suggestions on ways in which risk informed development and climate adaptation can be supported.

Tajikistan is highly vulnerable to climate change. According documentation compiled by the United Nations Framework Convention on Climate Change¹, temperatures in Tajikistan will rise from 1.8 °C to 2.9 °C by 2050. Should these projections be realized, climate change in the country will negatively impact water resources, the agricultural sector, transportation infrastructure and public health.

Food insecurity in Tajikistan is a serious concern and is likely to be further exacerbated by climate change. Trend analysis carried out and presented in this review estimates that more than 1,000,000 individuals are consistently food insecure and exposed to recurrent climatic shocks. More than 1,750,000 individuals are either currently food insecure, have experienced food insecurity at some point, or could be recovering from an event that caused them to be regarded as food insecure.

Even more individuals are at risk of becoming food insecure in the event of a shock.

Based on the reviewed studies and reports, the main challenges to food security from a climate perspective can be summarized as the following:

Climate change exacerbates structural challenges and increases vulnerability of the already vulnerable.

Tajikistan is the most climate-vulnerable country in the Europe and Central Asia (ECA) region due to its relatively weak social and economically productive structures and low adaptive capacity. High poverty rates among rural communities of Tajikistan increase people's vulnerability to climatic shocks and stresses, and is further compounded by food insecurity, high rates of labor migration and poor provision of services. The cumulative effects of repeated climate-related disasters impact on poverty-stricken and vulnerable populations, severely restricting their ability to improve their coping capacities. Tajikistan's relative economic exposure to natural hazard losses is particularly high and has been calculated at over 20 percent of GDP for a natural hazard event with a 200-year return period².

Around 75 percent of the country's population lives in rural areas with the majority being engaged in the agriculture sector. In addition to being materially poor and thus prone to financial risks, the agricultural sector is also vulnerable to climate variability and climate change³.

Tajikistan faces severe challenges in relation to soil degradation such as erosion, swamping, deforestation and salinization. These problems are both due to climate change and man-made factors. Desertification has become one of the burning issues of the country. Long dry periods together with high temperatures in spring and summer seasons lead to the intensification of desertification processes in Southern and Central Tajikistan. In view of climate warming and increased evaporation, water needs for irrigation of basic agricultural crops are likely to increase by 20-30 percent compared to present climate conditions⁴.

1 UNFCCC, 2008

2 Maplecroft, 2014

3 Poverty Reduction Strategy of the Republic of Tajikistan for 2010-2012

4 National Action Plan for Climate Change Mitigation, 2003

Climate change will increase the frequency of extreme climate events and disproportionately impact agricultural based rural livelihoods. Climate change threatens livelihoods in Tajikistan as a result of low adaptive capacity and high exposure to climatic events. Vulnerability to climate change stems from exposed and insufficiently robust infrastructure, a high degree of income vulnerability, and numerous institutional constraints, especially in the agricultural sector (World Bank, 2011 & 2014)

The primary impact of climate change on the livelihoods of people will be observed through reduced water quantity and quality, which will affect agriculture and health through the rise of water borne diseases as well as the increased frequency and severity of disasters (landslides floods and droughts). These physical impacts can potentially deepen poverty and increase the possibility of creating permanent poverty traps. Poor people already struggle with a number of stresses and have limited resources and the least capacity to adapt their livelihoods to changing conditions (Second National Communication of Tajikistan under UNFCCC, 2008).

The expected consequences of glacier melt are likely to result in a sharp increase in spring river flows and increase the prevalence of spring flooding, landslides and possible catastrophic glacial lake outbursts in the short term, followed by a serious and long term reduction in river flows from several major river systems fed by glacial melt. This will result in a greater likelihood of low run-off events in the dry season, and flooding in the wet season. Extreme reductions in flow during the summer months could have severe implications for agriculture and energy production. Rainfall patterns are also predicted to get more erratic, reducing water availability and increasing heat stress on crops and pastures (Third National Communication of Tajikistan under the UNFCCC, 2014).

All aspects of food security are affected by climate variability and change and more is needed to understand the future impact on access, utilization and stability dimensions.

Over the last two decades, Tajikistan has experienced a sharp increase in the intensity and frequency of extreme weather events. At the same time, the unpredictability of precipitation frequency and intensity directly impacts vulnerable sectors of the national economy and threatens food security⁵. For example, food insecurity levels in Gorno-Badakhshan Autonomous Oblast (GBAO) province consistently exceeded 20 percent of the population for the period for which data was available. Most districts of the Region of Republican Subordination (DRS) and Khatlon provinces also experienced similar levels of recurrence of food insecurity over the years examined. These chronic levels of high recurrence of food insecurity across a number of provinces points to several dimensions of food security being affected over a longer time scale. The impact of climate variability and change is likely to further exacerbate the chronicity of these levels, but also add significant increasing seasonal variations due to additional extreme events.

These impacts will have direct implications for agricultural production and negatively affect availability of food, however, they also imply serious economic and livelihoods changes with likely volatility and reduction of household incomes. As a result of increasing levels of coping and in the absence of sufficient efforts to adapt, the nutrition status of vulnerable groups such as pregnant and lactating women, and children, might deteriorate further.

Agriculture-oriented development has the potential to ensure a reliable, stable and balanced food supply for Tajikistan with higher incomes and employment levels among the rural population. Climate change poses direct threats to this development however, this is particularly worrisome given that 75.1 percent of women and 41.8 percent of men work in the agricultural

⁵ Tajikistan: Poverty in the Context of Climate Change, National Human Development Report, 2012

sector, which also highlights the evident gender gap.⁶ Two thirds of the agricultural production in Tajikistan is dependent on irrigation, however 55 percent of cereal crops is rain-fed, which often results in a high rate of losses in terms of agricultural output for these crops (annual losses attributable to climate events are estimated at one third of all losses).⁷ In addition to drought and lack of water, higher temperatures and evaporation rates will increase crop demands for water. As a result, by 2050 crop yields could decrease by between 5 and 30 percent; similarly, pastures on which livestock depend are also expected to reduce in quality and quantity due to pressures from high temperatures and increased evaporation rates. Increase in temperature is also likely to modify ecosystems and provide opportunities for pests and diseases to multiply, affecting food production in a range of agricultural sectors.⁸ As an example, in the Khatlon province, the main issue affecting food security in recent years has been related to the irrigation infrastructure which has largely fallen into disrepair, adversely affecting agricultural productivity and rural livelihoods. Other factors affecting food security in this area include seasonal natural shocks such as hail, flooding and crop pests and disease, all of which can lead to crop failure and reduced production.

Food access refers to both physical and economic access and is of particular importance in Tajikistan as food insecurity is largely poverty-driven, often exacerbated by adverse climatic shocks. In terms of economic access to food, livelihoods in Tajikistan, particularly in rural areas, is highly dependent on agricultural production; thus when agriculture is impacted by climatic shocks and harvests are lost, a significant impact on household income is observed. Given that many smallholder farmers are also net buyers of food, a decrease in household income means less income available to purchase nutritious food. Seasonally, physical access to food due to geographical and topographic characteristics are likely, particularly in mountainous areas where road access to markets can be limited during winter.

Nutrition and utilization challenges in Tajikistan are severe. Nutrition indicators for Tajikistan are the worst in Central Asia. The latest Tajikistan National Health Survey of 2012 estimated that 26 percent of children under 5 are stunted and 10 percent are wasted. One major contributing factor to malnutrition is poor infant and young child feeding practices, with only 20 percent of children receiving adequate food diversity and meal frequency. Micronutrient deficiencies remain a significant public health problem in Tajikistan. School-age children's micronutrient status is characterized by a high prevalence of iodine deficiency, at 53 percent of all school children, and anemia in children 6-59 months is estimated at 28 percent. The link between food security, poverty and nutrition is profound; a decrease in household income typically results in less financial resources to allocate for food, which prompts negative coping strategies by either buying cheaper and less nutritious food, or buying less food, resulting in malnutrition.

Remittances, high dependency on food imports to meet consumption demands, and a limited number of exports, are factors that affect the food system at national level. In 2014, 48 percent of the GDP was from remittances, which has since decreased due to economic crisis and policy changes in Russia – one of the main countries receiving migrant workers from Tajikistan. The high dependence on the external markets makes the national economy, and large parts of the population, vulnerable to economic shocks such as food price spikes.

Adaptation in the agriculture and food security requires a food systems approach and should include livelihood diversification to reduce sensitivity of rural incomes.

Ensuring effective management of water resources will require significant investments but is a pillar of climate adaptation in Tajikistan, this should also take into account the longer time frame of increasing glacial melt which may result in seasonal drought and increasing flash floods. Likewise, ensuring that less climate vulnerable livelihood options are available to farmers, ideally

⁶ Gender inequalities in labor markets in Central Asia, Tamar Khitarishvili, UNDP, 2016, p.9

⁷ Tajikistan: Poverty in the Context of Climate Change, National Human Development Report, 2012

⁸ IPCC, 2007

with a strong focus on market access facilitation, is a priority as these livelihood can support and bridge income gaps as a result of climatic shocks.

Evidence exist on the impact of climate risk on food security and national plans allows a coordinated response involving multiple stakeholders. WFP, through its Integrated Context Analysis and its consultative engagements with communities and other stakeholders can provide a platform for adaptation action for food security in partnership in Tajikistan. A range of actors are required to be successful in this endeavor, particularly vulnerable communities themselves, international organizations, academia, civil society and the private sector. Aligning with national priorities, strategies and action plans, should be the modus operandi for all efforts to ensure common objectives are met and national ownership is sustained.

Methodology of the review

This review utilizes a combination of qualitative and quantitative methods. The qualitative approach analyses historic climate trends and future climate change scenarios, extrapolated to the food security situation in the country using WFP Food Security Monitoring System (FSMS) data, livelihood zones undertaken by WFP jointly with FEWSNET, and the Integrated Context Analysis. The report also utilizes a standard literature review, drawing from a range of sources relevant to food security, nutrition, livelihoods, and climate related literature which help provide an overview of Tajikistan's challenges and opportunities in achieving food security under a changing climate.

2. Country profile

2.1. Overview of socio-economic context

Tajikistan is a land-locked country with a population of 8.2 million people and is ranked 129 out of 188 countries in the 2016 Human Development Index. Despite Tajikistan's Gross National Income (GNI) per capita reaching an estimated USD 1,110 in 2016 (just above the low middle- income cut-off of USD 1,006), the country remains the poorest in the Commonwealth of Independent States CIS region, with a significant food deficit. Poverty remains widespread despite a poverty rate decline from 81 percent in 1999 to 47 percent in 2009 and an estimated 36 percent in 2014 . Over half of the rural population belong to the two lowest wealth quintiles, with significant disparities between regions: this proportion rises to almost two-thirds in the Khatlon region (Agency on Statistics of Tajikistan, 2012) .

The country is vulnerable to external and internal economic shocks. It is the world's most remittance dependent country with a 48 percent contribution to GDP in 2014, mostly originating from migrants

working in the Russian Federation. The economic crisis currently affecting Russia resulted in an 8.3 percent drop in the value of remittances in 2014, and a 20.3% drop in 2015 .The resulting decline in Tajikistan's GDP growth rate, from 6.7 percent in 2014 to 4.2 percent in 2015, according to estimates (World Bank, 2014) , is a testimony to the fragility of Tajikistan's development and poverty reduction gains, combined with the annual population growth rate of 2 percent that adds further pressure on the economy.

The country's economy is highly dependent on exports of a few commodities, mainly aluminum and cotton, and on imported food, fuel and consumer goods. Tajikistan relies on food imports to cover over half of its population's needs. Half of the consumed wheat, that constitutes 70 percent of the average daily caloric intake, is imported (GAIN, 2014) which exposes the population to global food price and currency exchange rate fluctuations.

Figure 1. Economic Growth and Net Remittances (percentage change and percent of GDP)

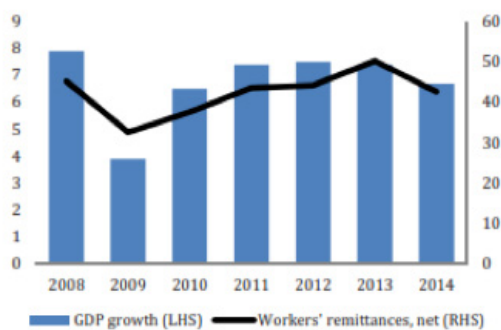
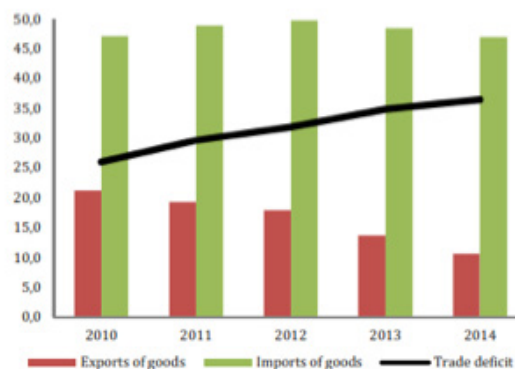


Figure 2. Exports, Imports and Trade Deficit (percent of GDP)



Source: World Bank, 2015

Agriculture contributes to 20 percent of GDP and employs over half of Tajikistan's labor force (DCC, 2015). Most of the agricultural production is grown on small family plots - with own production generating half of the rural household income while one quarter comes from remittances - a precarious source of income. Food production is limited by insufficient availability of arable land. Only seven percent of the total land surface is arable, of which 97 percent is subject to soil degradation. The available land also has its productivity constrained by a high recurrence of natural disasters, a dependence on rundown agriculture infrastructure and technology, and high taxation and inadequate land tenure structures.

Furthermore, Tajikistan agriculture is facing challenges to cope with its current climate let alone impending changes, as evident in low agricultural productivity, water stress, and high losses incurred due to disasters. Furthermore, agricultural policies exacerbate rather than reduce vulnerability to climate change. This in particular relates to excessive emphasis on cotton cultivation, poor water management systems that do not create incentives for efficient water use, and insecure land tenures that do not provide farmers adequate property rights and hence incentives to properly develop land (World Bank, 2010).

Tajikistan is ranked 69 out of 155 countries in the 2015 Gender Inequality Index (UNDP, 2015). Although 86 percent of women in rural areas are involved in farming, only 10 percent own land. Women have difficulties in accessing the labor market, and are disproportionately affected by poverty, as they are overrepresented in the lower paid informal agriculture sector. Women face additional challenges as they increasingly take up the traditional role of men who have migrated in search of work. Overall, women's workload limits their opportunities to participate in social, educational and economic activities. Therefore, the gender gap remains significant with regard to women's earnings and contribution to poverty reduction (World Bank, 2014)

Tajikistan's social protection system is fragmented, and the institutional organization often weak. The system is insufficiently focused on safety nets mechanisms, features severe challenges in targeting the poorest, and delivers limited and often insufficient support to recipients. Only 23 percent of the poorest quintile receives transfers and which cover less than three percent of their per capita consumption expenditures (World Bank, 2010). The reform of the system, including an improved targeting of the social assistance cash transfers, is underway and is reflected in the national Social Protection Strategy (SPS) for the period 2016-2020.

The latest WFP Food Security Monitoring System (FSMS, 2017) showed that, only 12 percent of Tajikistan's rural population is food secure, with the remaining 54 percent marginally food secure, 28 percent moderately insecure and 5 percent severely food insecure .

Nutrition indicators for Tajikistan are the worst in Central Asia. The latest Tajikistan National Health Survey of 2012 showed that 26 percent of children under 5 are stunted and 10 percent are wasted. One major contributing factor to malnutrition is poor infant and young child feeding practices, with only 20 percent of children receiving adequate food diversity and meal frequency. Micronutrient deficiencies remains a significant public health problem in Tajikistan. Stunted children are mostly

from poor households, and disparities between rural and urban areas are significant. The highest rates of both wasting and stunting are found in the Khatlon region (Agency on Statistics of Tajikistan, 2012) .

The health sector, a key player in fighting malnutrition, requires more funding and improved technical capacity. Despite limited results to date, the Government is committed to address the situation: Tajikistan joined the Scaling-Up Nutrition (SUN) movement in 2013, developed strategies to improve health, nutrition and food security, and established a dedicated Food Security and Nutrition Council.

2.2. Climate risks and impacts on agricultural-based livelihoods

Tajikistan is classified as the most vulnerable country in the Eastern Europe and Central Asia (ECA) region to climate change, and is prone to frequent natural disasters including floods, mudflows, landslides and increasingly, droughts and water scarcity. Extreme temperatures and erratic rainfall have a significant impact on agricultural production, health and incomes. Environmental shocks and stressors affect the rural poor in particular, as they have limited resources and capacities to adapt. It is estimated that a 20 percent decline in agricultural productivity caused by climate change may increase poverty by 13 percent (World Bank, 2011) .

2.2.1. Disaster risks

Food production and livelihoods in Tajikistan are exposed to a very high risk of natural disasters. Recurrent natural disasters interrupt food production, disrupt the livelihoods of already poor people, destroy productive assets, and cut physical access to markets. Recurrent extreme weather

events such as droughts, floods and mudflows lead to a deterioration in livelihoods, and undermine the capacity of communities to adapt to moderate shocks, as well as their capacity to purchase food.

Over the last twenty years, natural disasters have resulted in more than 2,000 deaths and an economic damage exceeding 160 million USD in Tajikistan. The mudflows and floods in 1998, 1999, 2005 and 2010 were the most devastating. During 1991-2000, annual losses of agricultural gross product from extreme weather events totaled one third of overall agricultural loss. Long dry periods together with high temperatures in spring and summer seasons have led to the intensification of desertification processes in Southern and Central Tajikistan. Uncontrolled deforestation, conditioned by lack of energy resources, lead to the scales of such desertification being particularly severe. Water needs for irrigation of basic agricultural crops will rise by 20-30 percent compared to present climate conditions (Third National Communication of Tajikistan under the UNFCCC, 2014)

Figure 4: Graph showing the frequency of natural disasters as reported to the CoES 1998-2011.

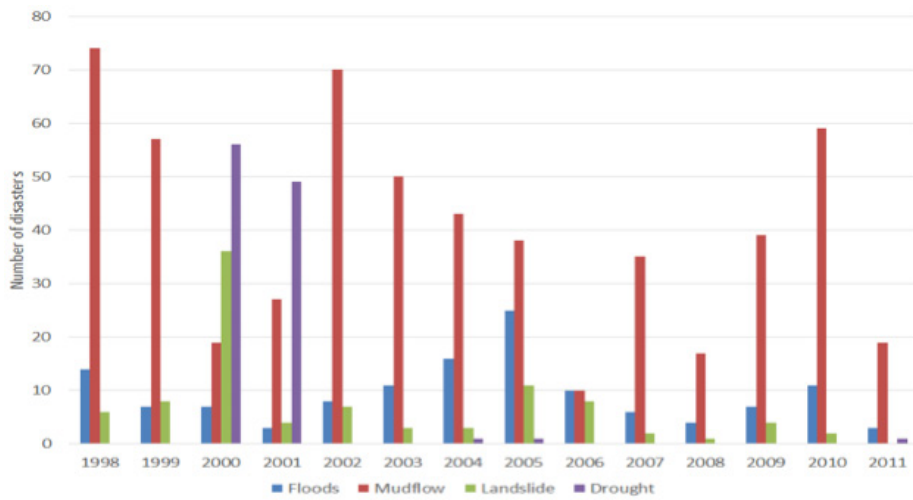


Figure 5: Combined Risk of Flood, Mudflow and Drought Disasters in Tajikistan

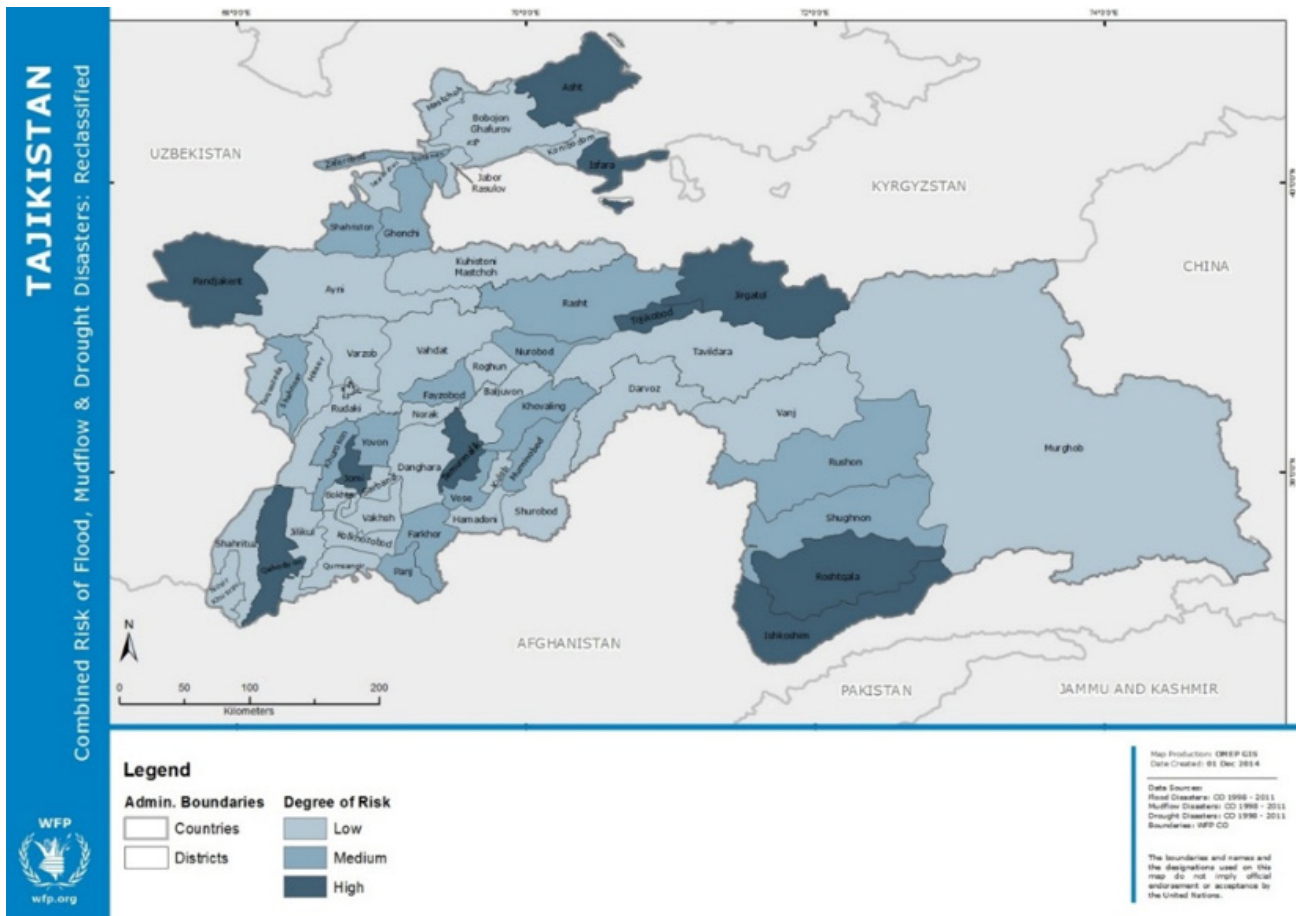
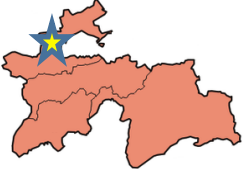
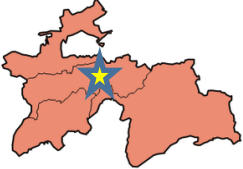
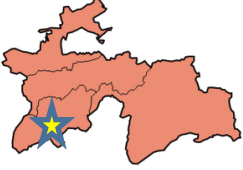
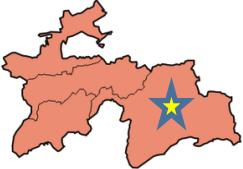


Table 1: Summary overview of natural shocks in Tajikistan by region ⁹

| Region | Natural shocks |
|--|--|
|  <p><u>Sughd Region</u></p> | <p>In Sughd Province, the districts of Pandjakent, Asht and Isfara are those that have experienced the highest number of natural shocks and associated casualties. Asht district has seen the highest frequency of mudflows. Data on casualties from the Committee of Emergency Situations and Civil Defence (CoES), reports the deaths of more than 30 people in two events in 1999 and 2007. In Panjakent and Isfara district floods and mudflows between 1998 and 2011 have killed 12 inhabitants and caused damage to more than 900 houses, 30 percent of which were destroyed.</p> |
|  <p><u>Districts of Republican Subordination (DRS)</u></p> | <p>In the DRS region, Jirgatal, Rasht and Tojikobod districts have experienced the highest frequency of floods and mudflows in comparison with other districts and have seen the highest number of casualties. In Rasht, 32 people were killed in natural disasters between 1998 and 2011, in Tojikobod 30 people have died, and in Jirgatal 18 people have died from natural disasters in this period. In Khatlon province, the Vakhsh region in the period of maximum precipitation in Tajikistan, as the risk of landslides, mudflows, floods and erosion increases significantly.</p> |
|  <p><u>Khatlon Region</u></p> | <p>The western part of Khatlon, the areas that are most vulnerable to flooding are settlements along the river Kafirnigan, and irrigated areas in the Shaartuz and Qabodiyon districts. Recently, due to the failure of the drainage network and intensive irrigation activities, the level of groundwater is rising in many areas of Khatlon, leading to serious salinization of cultivated land. A lack of, and poor quality flood protection works such as drainage diversion, small dams or riverbank reinforcement works, exacerbate the risk posed by floods in the Khuroson and Jomi, Temurmalik, Vose, Farkhor, Panj and Muminobod districts. The highest number of floods registered was in Farkhor and Kubodien districts, with the most damage registered in Temurmalik, Jomi, Vose and Kubodien districts.</p> |
|  <p><u>Gorno-Badakhshan Autonomous Region (GBAO)</u></p> | <p>In GBAO, Ishkoshim district has recorded the highest number of floods and mudflows between 1998 and 2011. The highest number of casualties from natural disasters between 1998 and 2011 was registered in Roshtqala district. Roshtqala and Ishkoshim districts also saw high levels of damage between 1998 and 2011 compared to other districts of the GBAO province.</p> |

⁹ Source: Second National Communication under UNFCCC, 2008

2.2.2. Climate trends, projections and possible impacts

The Third National Communication of Tajikistan under the UNFCCC (2014) highlights that between 1940 and 2012 the temperature of plain areas of Tajikistan rose at an average rate of 0.1-0.2°C per decade. The average minimum and maximum air temperatures in all highland areas of the country has also increased. The period of 2001-2010 turned out to be the warmest decade in the history of instrumental observations in Tajikistan. In zones up to 1,000m, the average temperature of the decade was 1°C above the average; at the altitudes of 1,000 – 2,500m the average was exceeded by 0.8°C and in highland zones by 0.2°C. The year 2001 was the hottest, with the average annual temperature exceeding the average by 1.0-1.6°C. Similar situations were observed in the plain and mountainous districts in 2004 and 2010.

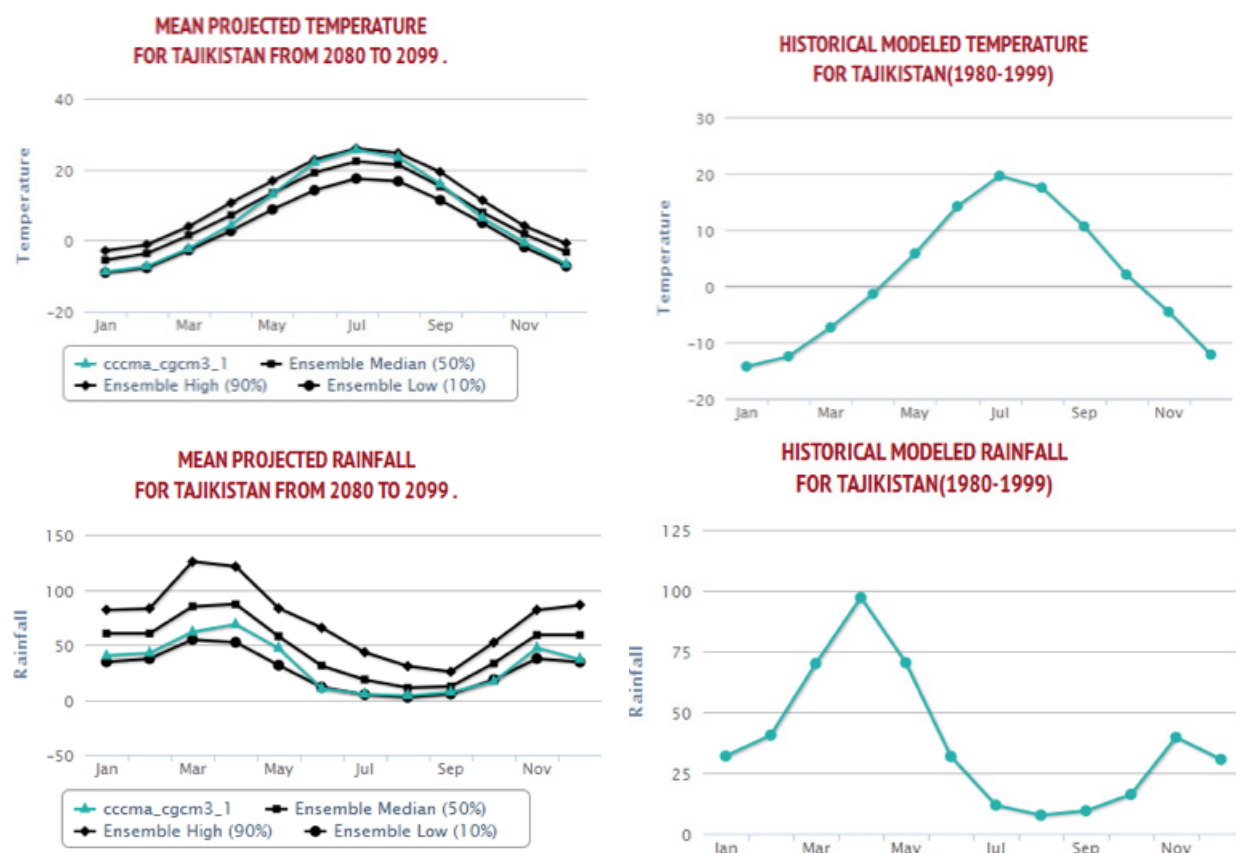
In parallel, between 1940 and 2012 annual precipitation increased by 5-10 percent. However, the diversity of geographic and climatic zones in Tajikistan creates a varied and complex pattern of change. The driest decade was 1940-1950 which was followed by both dry and humid periods. In some instances, an increase in average precipitation was largely caused by increased precipitation intensity and a reduction in the number of days with precipitation per year. The annual amount of precipitation during the last decade (2000-2010) also was above the annual average, with exception of certain years which resulted in a lower than average river discharge.

The negative impact of climate change over the last decade includes floods in Pyanj, Vakhsh, Zerafshan and Kafernigan river basins; desertification of fertile lands in southern districts of the country; land erosion resulting from inadequate irrigation and intensive precipitation; a shortage of water due to droughts; and loss of agricultural crops due to heat and frost. The greatest impact has been felt on dry land farms and in pasturelands.

In terms of projections, climatic models (CCSM3, ECHAM5 and CSIRO) used for the preparation of the Third National Communication under UNFCCC (2014), highlight:

- The amount of precipitation in Tajikistan is likely to increase during summer and winter and may reduce in spring and autumn. It is expected that the nature of precipitation will change with the amount of rainfall increasing and snowfall decreasing. There will be more intensive precipitation events of the type that usually occur only once in fifty years, especially in Pamir. Geographically, the annual amount of precipitation is likely to decrease in southern Tajikistan and neighboring areas and is likely to increase in mountainous parts of the country. The models do not show significant change in precipitation in Vakhsh and Pyanj river basins, however an increased variation in maximum and minimum precipitation will be observed.
- An increase in temperature will be observed in all districts of the country. Winter and summer temperatures in the Pamir and Gindukush mountains will possibly increase at a faster rate than in plain and arid districts. By the end of 21st century warming may have become especially significant, exceeding 5°C in southern districts of the country as well as in mountains of central Tajikistan and western Pamir. Diurnal temperature ranges will increase as will the number of heat waves, especially in the lowland districts of southern Tajikistan. The risk of drought will increase due to an increase in total evaporation and earlier snowmelt. Given the impact of climate warming, the glacier losses in 21st century will reach 2 km³ per year on average. An increase in air temperature and heat-waves will affect livelihoods. Insufficient winter precipitation (snow), especially in the mountainous glacier zone, may change river flow regimes. This, coupled with insufficient precipitation in spring will negatively affect water, energy and food security.

Figures 6-9: Projected mean temperature & rainfall compared with historical modeled data



Source: World Bank, 2015

2. Sensitivity and seasonality of food security

As a consequence of socioeconomic development and poverty, institutional strengths, exposure to climatic factors and elevation to mention a few, certain regions of Tajikistan are more vulnerable to food insecurity than others. The Districts of Republican Subordination' (DRS) oblast, particularly its eastern mountainous areas, is the most vulnerable. Some of Tajikistan's sparsely populated high altitude mountain zones are the least vulnerable, while the populated South Khatlon valley is among the four most vulnerable areas. This implies that relatively vulnerable geographic areas can overlap with centers of population and economic activity. Adaptation planners thus do not necessarily face a trade-off between protecting the most vulnerable or the most economically important areas from the effects of climate change.

The eastern Region of Republican Subordination (RRS) Mountains, Southern Sughd hills, and Khatlon hills and lowlands zones share a high degree of sensitivity to climate change due to high reliance on agriculture. They also have weak adaptive capacity as a result of low income and education levels, and although their exposure is only moderate, their high sensitivity and fairly modest adaptive capacity make them vulnerable. By contrast, urban areas as a composite group have the lowest vulnerability, mainly because they have the lowest sensitivity, higher adaptive capacity¹⁰, and lower average exposure (World Bank, 2014) .

¹⁰ Adaptive capacity is defined as "the ability of a system [human or natural] to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences' (Intergovernmental Panel on Climate Change (IPCC) Working Group 2, 2001.)

Table 2: Overview of climate trends, food insecurity and vulnerability to climate change by region

| Climate trends and consequences observed 1940-2000 ⁽¹⁾ | Food insecurity profile and trends 2008 to 2012 ⁽²⁾ | Vulnerability to climate change ⁽³⁾ |
|--|--|---|
|--|--|---|

| SUGHD REGION | | |
|---|---|---------------|
| Eastern and Central Zeravshan Valley Agro-Pastoral zone | | |
| <i>Details: In addition to income from agricultural activities, a significant proportion of income comes from migration from which remittances are sent from Russia or Kazakhstan.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased slightly from 0°C to +0.5°C ; • Rapid snowmelt and floods due to heavier rainfalls observed | HIGH Considered at risk of food insecurity in bad years | MEDIUM |
| Panjakent Rice, Fruit and vegetable zone | | |
| <i>Details: Poorer communities rely heavily on remittances to meet basic needs, while better-off households use remittances for improvements in livelihood activities.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased slightly from 0°C to +0.5°C ; • Annual precipitation insignificantly increased; • Rapid snowmelt and floods due to heavier rainfalls observed | MEDIUM Rarely considered at risk of food insecurity | HIGH |
| Ghonchi and Istaravshan Rain fed Cereal, Fruit, and Vegetable zone | | |
| <i>Details: Most communities cultivate rain-fed cereal crops such as wheat and barley, which are then sold to mills or breweries for cash. Cattle, sheep, goat, and poultry rearing also play an important role as both an income and food sources for better-off and poor HHs.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased slightly from 0°C to +0.5°C ; • Annual precipitation insignificantly increased | MEDIUM Rarely considered at risk of food insecurity | LOW |
| North Sughd Agro-Industrial zone | | |
| <i>Details: All wealth groups are heavily dependent on crop sales as a major source of income, as well on remittances. Cotton and food processing plants, silk production, and livestock rearing represent other important economic activities.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased slightly from 0°C to +0.5°C ; • Annual precipitation insignificantly increased; • Heavier rainfalls observed | MEDIUM Rarely considered at risk of food insecurity | LOW |

| DISTRICTS OF REPUBLICAN SUBORDINATION | | |
|--|---|----------------------|
| Rasht Valley Irrigated Potato zone | | |
| <i>Details: Income sources for the poor and better-off are highly dependent on employment opportunities. Compensation is mostly paid in cash however some is paid in-kind.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased slightly from 0°C to +0.5°C; • Annual precipitation increased by 5-10% in the Rash Valley and in Fedchenko glacier; • Rapid melting of glaciers as well as rapid snowmelt and floods due to heavier rainfalls observed. | HIGH Considered at risk of food insecurity in bad years | HIGH |
| Eastern and Central Tajikistan agro-Industrial zone | | |
| <i>Details: Income for all wealth groups is based in agriculture, though the better off earn theirs from crop sales, whilst the poor earn income by working on the farms of the better off. The second most important source of cash is remittances from migrating family members.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased by more than 1°C ; • Rapid snowmelt and floods due to heavier rainfalls observed | LOW Rarely considered at risk of food insecurity | LOW |
| KHATLON REGION | | |
| Khatlon Mountain Agro-Pastoral | | |
| <i>Details: Livestock sales represent the main income source for all households. The hydroelectric dam provides local work for many HHS as well.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased slightly from 0°C to +0.5°C; • Floods due to heavier rainfalls observed. | HIGH Rarely considered at risk of food insecurity | HIGH |
| Southern Khatlon Cotton, Vegetable and Wheat zone | | |
| <i>Details: Better off rely largely on sales of crop, livestock and livestock product. Poorest main income comes from remittances received from HHS members who migrate to Russia in search of employment. Also agricultural labor and casual labor activities.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased between +0.5°C to +1°C; • Annual precipitation reduced by 5-10% in Kurghan-Tyube and increase by 20% in Kulyab; • Floods due to heavier rainfalls observed. | HIGH Considered at risk of food insecurity in bad years | MEDIUM |
| Khatlon Rained Wheat and Livestock zone | | |
| <i>Details: Livestock, crop and vegetable sales are the main source of cash for the better-off HHS. The poorest are highly dependent on the market for a large proportion of their food needs. They consume livestock products from their own herds, and receive in-kind payment for local agricultural work, which helps meet minimum food needs.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased between +0.5°C to +1°C ; • Annual precipitation increased by 20% in Dangara; • Floods due to heavier rainfalls observed | MEDIUM Rarely considered at risk of food insecurity | LOW to MEDIUM |
| Khatlon Agro-industrial Peri-urbano zona | | |
| <i>Details: Poor and better-off households are all reliant on crop and livestock sales, and remittances for income though to differing degrees.</i> | | |
| <ul style="list-style-type: none"> • Temperatures increased by more than 1°C ; • Floods due to heavier rainfalls observed | LOW Rarely considered at risk of food insecurity | MEDIUM |

GORNO-BADAKHSHAN AUTONOMOUS REGION (GBAO)

Eastern Pamir Plateau Livestock zone

Details: The main source of income for most of the zone's population is sale of animals and animal products, as well as remittances.

| | | |
|---|--|---------------|
| <ul style="list-style-type: none"> • Temperatures increased slightly from 0°C to +0.5°C • Annual precipitations decreased on average by 5-10% (-44% in Murghab); • Rapid snowmelt observed | HIGH | MEDIUM |
| | Considered at risk of food insecurity in bad years | |

Western Pamir Valley Migratory Work zone

Details: Better-off households earn cash through government salaries, small businesses and informal trade, limited livestock sales and remittances. Remittances from family members working in Russia and seasonal labor in construction are among the most important sources of income for the poor. Some poor households receive pensions and government support. With limited resources, poorer households rely heavily on credit.

| | | |
|--|---|---------------|
| <ul style="list-style-type: none"> • Temperatures increased between +0.5°C to +1°C ; • Glacial melt observed | HIGH | MEDIUM |
| | Often at risk of food insecurity in bad years | |

Western Pamir irrigated agricultural zone

Details: Crop sales are the primary source of income for both the poor and better-off.

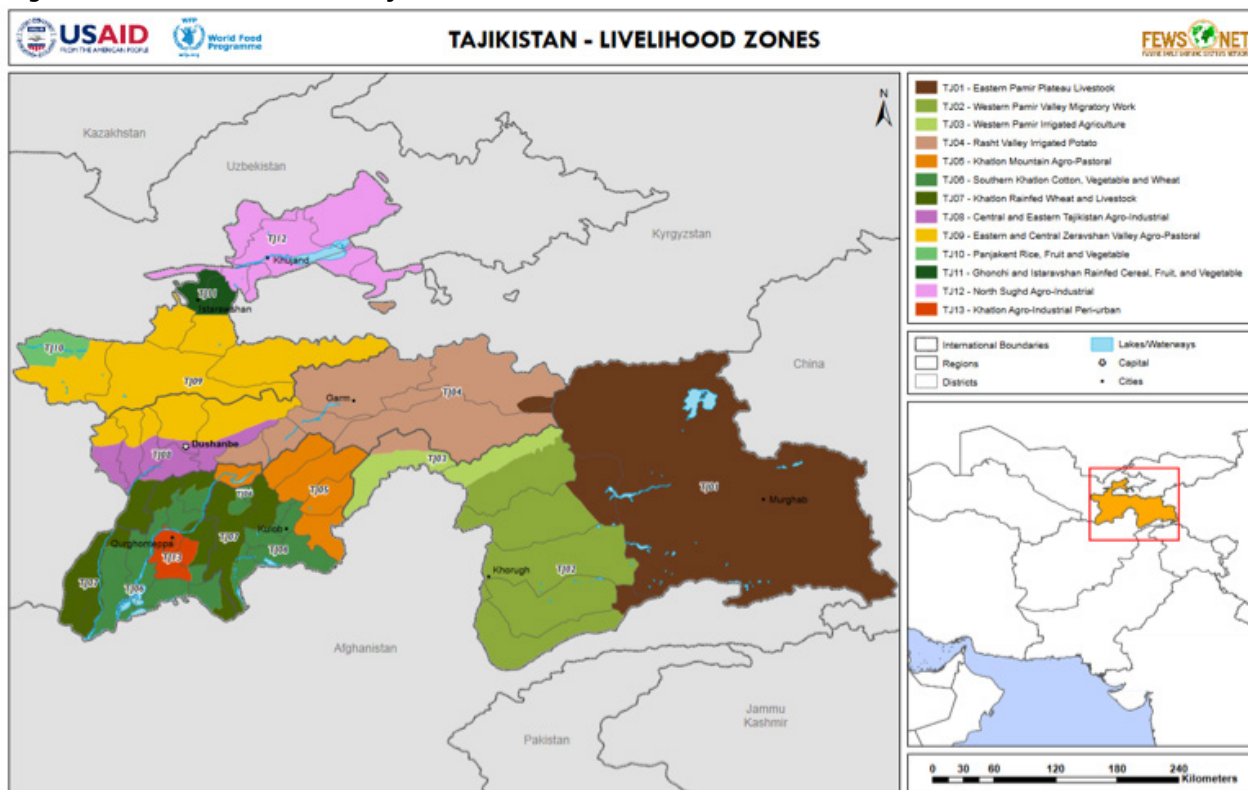
| | | |
|--|--|---------------|
| <p>Temperatures increased between +0.5°C to +1°C</p> | LOW | MEDIUM |
| | Rarely considered at risk of food insecurity | |

Livelihoods sensitivity

The primary impact of climate change on the livelihoods of people will be observed through: (i) reduced water quantity and quality, affecting agricultural production and health (through the rise of water borne diseases); and (ii) the increased frequency and severity of disasters (mudflows, floods and droughts). These physical impacts can potentially deepen poverty and increase the possibility of trapping already poor people in permanent poverty traps as they have limited resources and the least capacity to adapt their livelihoods to changing conditions (World Bank, 2010) .

Tajikistan is classified into thirteen livelihood zones, and which have been established through community consultations and grouped together with common livelihood activities, agro-ecology and access to markets (USAID-FEWSNET and WFP, 2011) .

Figure 10: Livelihood zones in Tajikistan



Among the livelihood zones, two main categories of source of incomes are observed:

- Agriculture and pastoralism

With about three in four people in Tajikistan living in the countryside and heavily dependent on farming, agriculture is one of the most important livelihoods. About 40 percent of households across the country derive more than half of their income from agriculture; one in five obtain more than seventy percent of their income from agriculture. The sector provides for about 25 percent of the country’s GDP. The priority areas of agriculture are cotton cultivation, gardening, potato and grain crop cultivation, as well as animal husbandry (meat, milk, butter, kurut, wool/leather sales). The total area of agricultural lands constitute 4,574 thousand ha, or 32 percent of the total area of the country, with 739 thousand ha of arable lands. The possession of livestock strongly and positively correlated with the overall food security status and WFP’s Food Consumption Score (FCS). This is possibly because livestock serves as an important buffer for lower incomes or harvest failures. In light of this, the decline of livestock between November 2012 and December 2014 is a negative development (WFP, 2015)

There are three main channels through which adverse climate conditions can affect people’s livelihoods from agriculture: (i) decline in agricultural productivity (yields); (ii) reduction in agricultural wages; and (iii) increase in relative food prices (World Bank, 2009) . Simulations based on household data show that a 20 percent decline in agricultural productivity could increase the national poverty rate by 13 percent and poverty gap by 24 percent respectively. A similar increase of relative food prices can lead to a rise in poverty rate by 16 percent and poverty gap by 25 percent. A drop of income from agricultural wages will have a much smaller impact on poverty (a 20 percent drop in agricultural wages increases poverty by 2 percent and poverty gap by 7 percent) as their share in the total income of most households is insignificant. All of these effects will have a stronger impact in rural than in urban areas. This is because rural areas have a much greater concentration of population around the poverty line, so that even a modest decline in income or purchasing power will have a significant impact on poverty (World Bank, 2010)

Table 3. Sensitivities of livelihood systems to different climate-related hazards

| Livelihood systems and sensitivities to climate-related shocks | Major climate-related hazards and impacts on livelihoods systems | |
|---|--|---|
| <p>Agriculture</p> <p>Rainfall determines crop output and availability of animal feed. Scarcity, variability, and excess rainfall all affect agriculture. Erratic rainfall patterns could reduce the length of the growing season as well as yields, with negative impacts on incomes and food security.</p> | <p>Rainfall</p> | <p>Changes in rainfall patterns affect the quantity and quality of water available for cultivation. Erratic rainfall patterns could reduce the length of the growing seasons as well as yields, with negative impacts on incomes and food security.</p> |
| | <p>Temperature</p> | <p>Extremely low temperatures in the highlands result in frost damage. Frost affects crops and reduces yields. Extremely high temperatures in the lowlands affects agricultural productivity.</p> |
| | <p>Flooding and water logging</p> | <p>Unseasonal heavy rainfall in some parts of the country damages crops. Flooding also results in animal losses, which can adversely affect livelihood assets.</p> |
| <p>Pastoralism</p> <p>Rainfall affects the availability of animal feed and water for livestock rearing. Changes in rainfall patterns will likely affect the quantity and quality of water and fodder available to livestock, while erratic weather could increase the susceptibility to disease. The potential impacts for pastoralists' livelihoods is concerning given observed use of livestock as a buffer during difficult times.</p> | <p>Rainfall</p> | <p>Changes in rainfall patterns will likely affect the quantity and quality of water available for livestock consumption. This would affect livestock health, with potential impacts on the quality of the meat and milk. Erratic weather patterns could also render livestock more vulnerable to diseases.</p> |
| | <p>High temperature</p> | <p>Extremely high temperature in pastoral parts of the country is a critical challenge to livestock productivity.</p> |
| | <p>Livestock diseases</p> | <p>Erratic weather conditions render livestock more vulnerable to diseases. Animal losses often have negative impacts on livelihoods.</p> |

- Migration and remittances

Labor migration and remittances have been central to Tajikistan's development since 2000. With a median population age of about 25 and annual population growth of over 2 percent per year, Tajikistan is one of the youngest and fastest-growing countries in the region. Because employment opportunities at home have been limited, 40 percent of the working-age population - the vast majority under 30 years old - have sought better jobs abroad. Migration to the Russian Federation – the major host country for Tajikistani workers - has grown rapidly since 2000, though from a relatively low base. By 2013, remittances had risen to nearly 50 percent of GDP, making Tajikistan the most remittance-dependent country in the world (World Bank, 2015) .

About 1 million Tajik citizens—a third of prime-aged men (ages 20–39)—who reside in the Russian Federation are at risk of job loss, lower paychecks, higher fees, and ultimately fewer resources to send back home. An estimated 60 percent of these are illegal immigrants, with little or no protections under the Russian Federation labor code. Declining remittances would significantly reduce disposable incomes in Tajikistan, forcing the poorest and the lower middle class to cut non-priority expenditures, including those on social services, such as education and health. Reintegration of returned migrants will be difficult given the limited jobs available, mismatched skills, and competition from youth entering the labor market. Returnees are likely to lack awareness of employment and business opportunities, and related legal employment information and services are inadequate (World Bank, 2015) . In response to worsening climatic conditions resulting in loss of land productivity and income, migration will likely increase as a major coping strategy. The volume of remittances is significantly higher than the volume of exports, and may offer opportunities at household level to support adaptation efforts.

Seasonality

Seasonal hunger compromises and slows down vulnerable people's abilities to invest and move out of food insecurity, as every year they draw on any accumulated assets and savings to cope with difficult times. For example, it is observed that lean seasons lead to depletion of harvest-period savings. When populations experience a shock, the most vulnerable need time to recover and restore livelihood, natural and environmental assets that were lost when they resorted to negative coping strategies to deal with the crisis. High exposure to shocks aggravates and heightens vulnerability for such populations.

The calendars below elaborated by FEWSNET in 2011 show that Tajikistan experiences a lean season from around January through mid-April or May, while the harvest season spans May through end of December. WFP's Food Security Monitoring System (FSMS) data for each livelihood zone was plotted, bearing these seasons in mind, so as to highlight when and where food security peaks aligned with the seasons and where they did not, the latter indicating that the causes for food insecurity may need to be sought elsewhere. It should be noted that the FSMS data collection rounds were not undertaken at the same time of year every year and therefore may not necessarily align with the beginning or end of the harvest or lean season. Thus, interpretation of findings must be flexible based on when the data collection occurred.

Table 4: Seasonal Calendar for Tajikistan

| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---------------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Seasons | | | | | | | | | | | | | |
| Rainy season | | | | | | | | | | | | | |
| Snow | | | | | | | | | | | | | |
| Agriculture Seasons | Winter crop | | | | | | | | | | | | |
| | Spring crop | | | | | | | | | | | | |
| | Summer crop | | | | | | | | | | | | |
| Lean season | | | | | | | | | | | | | |
| Key cycles | | | | | | | | | | | | | |
| Staple food price cycles | | | | | | | | | | | | | |
| Local agricultural labour | | | | | | | | | | | | | |
| Labour migration | | | | | | | | | | | | | |
| Fuel price peak | | | | | | | | | | | | | |
| Shocks and Hazards | | | | | | | | | | | | | |
| Avalanche | | | | | | | | | | | | | |
| Locust | | | | | | | | | | | | | |
| Floods | | | | | | | | | | | | | |
| Hail | | | | | | | | | | | | | |
| Market access | | | | | | | | | | | | | |

Source: USAID-FEWSNET and WFP, 2011

A number of livelihood zones display fairly evident seasonal food security trends well aligned with harvest and lean seasons, although the overall levels of food insecurity vary across the zones as does the level of recurrence above the 20 percent threshold.

Figure 10: Levels of recurrence of times food insecurity affected more than 20 percent of the population

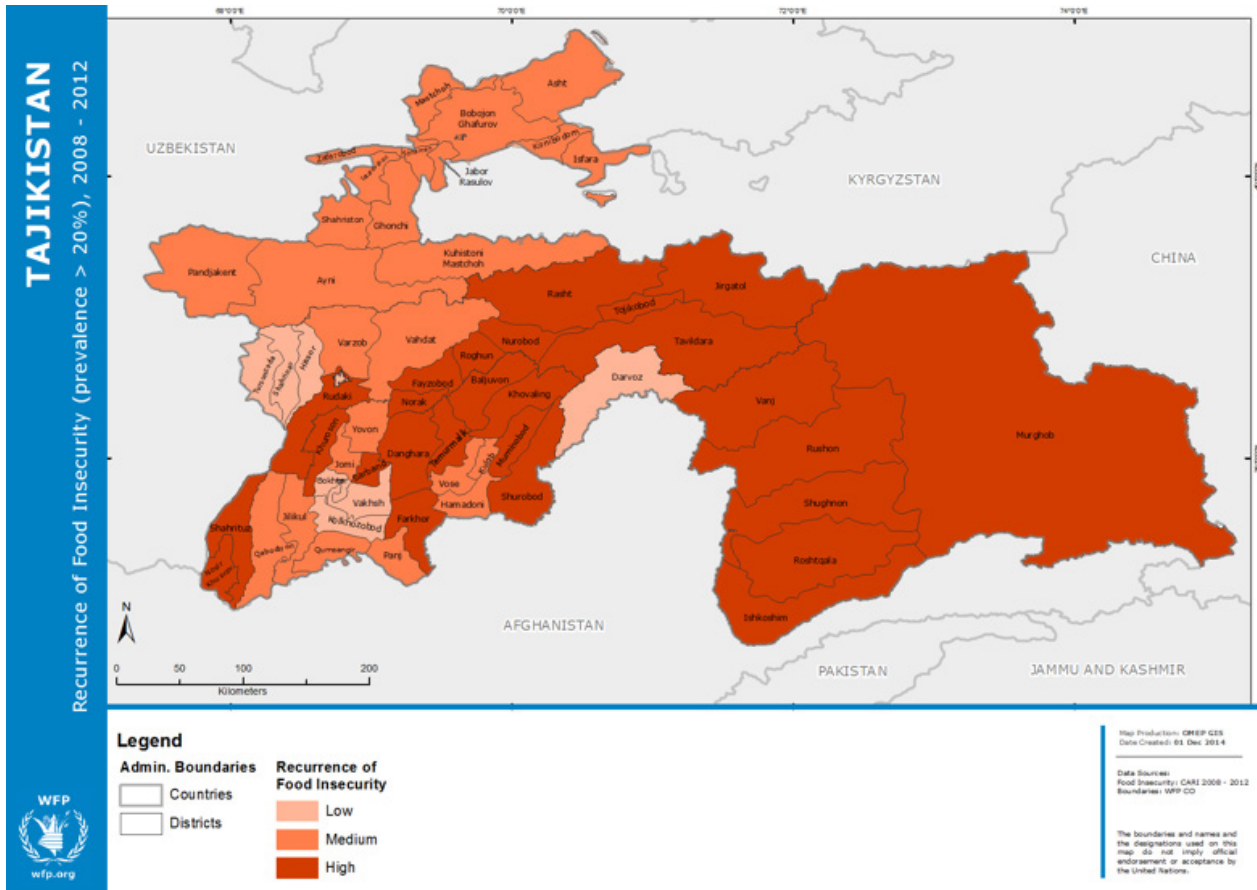
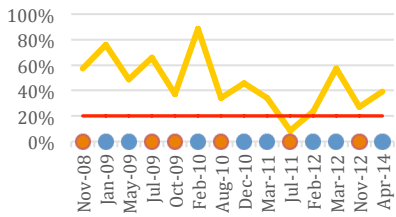


Table 5: Indicative seasonality of food insecurity levels 2008-2014

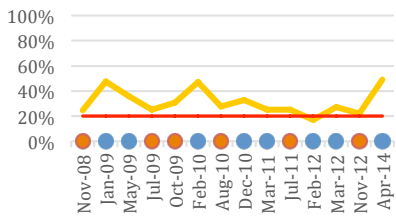
Blue dot: lean season Orange dot: harvest season Yellow line: Percentage of population food insecure
 Red line: threshold used in analysis to determine food insecurity

| REGION | Livelihood zones impacted by seasonal shocks (harvest data on yellow – lean on blue) |
|---|--|
| GORNO-BADAKHSHAN AUTONOMOUS REGION (GBO) | |
| | <p>Data for the Eastern Pamir Plateau Livestock Zone was scarce but may suggest that households were able to increasingly meet their food needs following the 2012 harvest (unlike in the Western Pamir Irrigated Agriculture Zone) although the general level of food insecurity remains high (above the threshold of 20 percent). Subsequent data collection will be essential to gain a better understanding of food security trends in this livelihood zone.</p> |
| | <p>Data collected between November 2008 and August 2010 for the Western Pamir Valley Migratory Work Zone show food insecurity levels were very much above the threshold and consistently increased over the period in question. This could indicate that the 2009 harvest was very weak and households were not able to recover from the previous lean season and kept falling deeper into food insecurity as they tried to recover, or possibly, in addition to the lean season, households in the area were impacted by other shocks that affected their food security.</p> |
| | <p>Data available as of February 2010 for the Western Pamir Irrigated Agriculture Zone show fluctuations that are indicative of (very low) seasonal food insecurity. Still, following the 2012 harvest, food insecurity rates rose sharply instead of declining which could instead be indicative of a different type of shock (or a very poor 2013 harvest; data is not available for that year) that pushed a number of households that normally are relatively food secure into food insecurity. It is unlikely that the 2012 harvest was poor as the data collected in November – well into the post-harvest period – show very low food insecurity values.</p> |
| DISTRICTS OF REPUBLICAN SUBORDINATION | |
| | <p>In the Rasht Valley Irrigated Potato Zone, food security values were consistently and considerably above the threshold. Food insecurity values are consistently high but also display seasonality. 2012 harvest data requires further investigation as it presents a zero value which is unlikely a true representation given previous rounds.</p> |
| | <p>Food security data for the Eastern and Central Tajikistan agro-Industrial Zone reflects fairly consistent seasonality and also reveals a gradual decline in the overall food insecurity levels (particularly during the seasonal peaks) over the full period in question (with the exception in all cases of the results gathered in the April 2014 round).</p> |

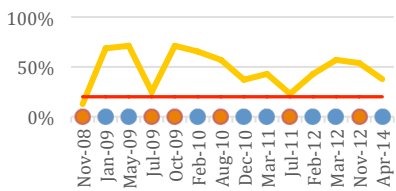
KHATLON REGION



The **Khatlon Mountain Agro-Pastoral Zone** has seen fairly high food insecurity levels and therefore has been consistently above the threshold value of 20 percent. However, since 2008 and notwithstanding seasonal fluctuations, food insecurity values have been gradually declining and have taken on a typical seasonal pattern (see in particular as of August 2010).

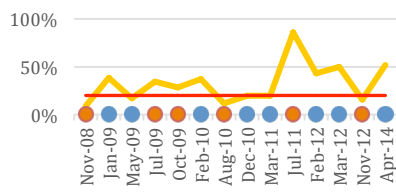


The **Southern Khatlon Cotton, Vegetable and Wheat Zone** reveals much lower overall food insecurity values, although they too are almost always above the 20 percent threshold. Seasonality of food insecurity in this zone is fairly evident.



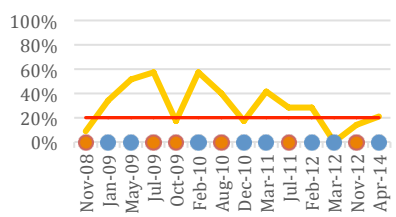
The **Khatlon Rainfed Wheat and Livestock Zone** displays seasonal fluctuations, and the data suggests the harvest of 2009 may have been poor and inadequate. In general the levels of food insecurity are consistently and considerably above the threshold of 20 percent.

SUGHD REGION



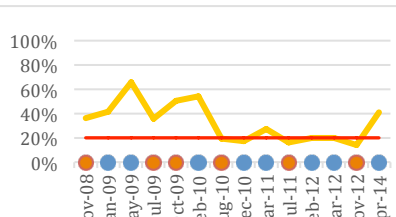
Food security data for the **Panjakent Rice, Fruit and vegetable Zone** reflects loose alignment with the harvest and lean seasons. However, it appears that households may have been affected by either a very poor 2010 harvest or a non-seasonal or production-related shock between the 2010 harvest and early 2011, which pushed a fairly large percentage of households that were normally food secure into food insecurity. Some extent of recovery appears to have taken place following the harvest period of 2011 though pre-shock levels were only reached during post-harvest 2012 (recovery therefore took between one and two years). The peak reported in April 2014 highlighted that households may have been considerably weakened by the shock and that the zone should be monitored closely through subsequent data collection rounds.

1



Food security data for the **Ghonchi and Istaravshan Rainfed Cereal, Fruit, and Vegetable (1) & North Sughd Agro-Industrial (2) zones** appears to reflect fairly consistent seasonality. They also reveal a gradual decline in the overall food insecurity levels (particularly during the seasonal peaks) over the full period in question (with the exception in all cases of the results gathered in the April 2014 round).

2



3. National priorities strategies and action plans

The Government of Tajikistan is paying great attention to sustainable social and economic development. For this reason, Tajikistan has joined a range of international conventions such as the United Nations Convention on Climate Change (1998), the Kyoto Protocol (2008) the Biodiversity Convention (BCD) and a number of other international conventions and agreements. In addition, the Government has established the Centre for Study of Climate Change and Ozone within the Committee for Environment Protection, bringing together scholars and experts to support policy and decision making processes. It has so far submitted three national communications, has ratified the Paris Agreement and is in the process of finalizing its new National Climate Change Adaptation Strategy (NCCAS) in 2017.

Highlighted strategies and plans relevant to climate change in Tajikistan:

- **The Third National Communication under the UNFCCC (2014)** provides an overview of climate change in Tajikistan and its consequences for the natural resource economic sub-sectors as well as the health of the population. It also describes response measures aimed at addressing climate change issues. The document is based on the previous National Communications (2002 and 2008) and has been developed to conform to the requirements and guiding principles of UNFCCC.
- **Intended Nationally Determined Contribution (INDC) towards the achievement of the global goal of the UN Framework Convention on Climate Change (UNFCCC) by the Republic of Tajikistan (2015)** outlines intended reductions in greenhouse gas emissions as well as how to address the adverse impacts of the dangerous weather events and climate change. From an adaptation perspective, the main objective is to integrate climate resilience into key areas and sectors highlighted by the INDC, including:
 - agriculture, irrigation and water systems;
 - power engineering and industrial facilities, transport and housing infrastructures;
 - resilience to the hydro meteorological hazards and climate changes;
 - disaster risk reduction;
 - promotion of adaptation of globally significant biological species and natural ecosystems to climate change;

- monitoring and preservation of the glaciers and water resources in the runoff formation zones under the conditions of climate warming;
- improvement of occupational safety, life-sustaining activity and health of the population, maternity and childhood protection in the context of climate warming.

- **The Tajikistan National Action Plan on Climate Resilience (2003)** addresses different periods and methods to assess the impacts of climate risk. The conclusions contained in the Plan on Climate Resilience makes vitally important points to be included into disaster risk management activities of the Republic of Tajikistan. The Strategy outlines climate change adaptation measures over the next 40 years, when the severity and impact of disasters are climate-dependent, differing from those that have occurred in the recent past.
- **The National Action Plan for Climate Change Mitigation (2003)** identifies problems, indicates priorities and measures to tackle causes of climate change. It also includes a section entitled 'Strategy of Adaptation to Climate Change, Prevention and Minimization of Its Adverse Effects'.
- **The Initial National Communication (2002)** reviews expected climate change trends and scenarios, the country's greenhouse gas emissions profile, key vulnerabilities to climate change and discusses response measures including enhanced public awareness and education.

These strategies and plans underpin and are supported by a number critical sectoral and multi-sectoral national efforts such as the Medium-Term Development Programme of the Republic of Tajikistan for the period 2016-2020; Agriculture Reform Programme of the Republic of Tajikistan for 2012-2020; State Programme for Study and Preservation of Glaciers of the Republic of Tajikistan for 2010-2030; State Development Programme of Geology Industry of the Republic of Tajikistan for 2012-2020; National Strategy for Disaster Risk Management of the Republic of Tajikistan for 2009-2015, and the National Plan for Emergency Preparedness and Response of the Republic of Tajikistan.

4. WFP's approach to climate change in Tajikistan

WFP's focus on climate change in Tajikistan is part of a broader approach to building people's resilience and supporting food security objectives. WFP's engagement in climate change is based on its analysis of food insecurity and malnutrition, its causes, and how climate change will interact with food insecurity. This analysis also includes broad partner and community consultations which capture potential complementary activities carried out by other stakeholders and provides evidence and rationale for WFP's interventions. In Tajikistan, the results of these analysis and consultations are captured in its country programme of work, the Country Strategic Plan, and guided by WFP's corporate Strategic Plan (2017-2021).

WFP's interventions in Tajikistan reflect priorities identified during the national post-2015 consultations organized by the Government, where education, health, employment, social protection and food security featured as high priorities. It is aligned with the Government's primary objectives under the National Development Strategy (NDS, 2016-2030) and the Mid-term Development Strategy (2016-2020), aiming at a structural consolidation and pursuit of development gains, combined with a robust augmentation of social protection measures, including safety nets, and a strong focus on food security, education and healthcare.

In a fragile economic and environmental context where sustainable development outcomes are undermined by food insecurity and malnutrition, WFP supports the Government of Tajikistan's efforts to increase people's access to food and to improve nutrition by focusing on building and consolidating a national safety net system with a food security and nutrition focus, targeting the poorest and most food insecure households, and enhancing the resilience of food insecure and vulnerable rural communities exposed to recurrent natural and economic shocks.

In 2017, WFP supported the Tajikistan Government to formulate and submit the project "Building climate resilience of vulnerable and food insecure communities through capacity strengthening and livelihood diversification in

mountainous regions of Tajikistan" to the Green Climate Fund (GCF) which seeks to increase the adaptive capacities of the most vulnerable and food insecure communities residing in the mountainous regions of Tajikistan. The project includes two main components:

- Capacity strengthening and awareness raising of food insecure climate vulnerable communities and national actors for enhanced rural resilience and food security and;
- Resilience building at household and community level through diversification of livelihoods and establishment of value chains for improved market access.

A key element of the project approach will be to build institutional capacity at both national and sub-national levels to better understand needs and support vulnerable communities develop effective responses to prepare for and manage climate risks. Interventions of the project will reach 70,000 direct beneficiaries among the estimated 270,000 most vulnerable individuals residing in the climate vulnerable area in terms of food insecurity and natural shocks, and up to 50,000 indirect beneficiaries, who live in proposed project locations.

WFP's use of analysis and community consultations for longer-term activities

In order to better understand, plan, and implement programmes that can help address climatic shocks WFP undertakes a series of analysis and consultations related to food security and natural shocks. These include a national level Integrated Context Analysis (ICA), a sub-national livelihood zone based Seasonal Livelihood Planning (SLP) and Community Based Participatory Planning (CBPP) exercise at community level. These tools build on each other, where the ICA can help identify areas where SLPs should be carried out, and where CBPPs can support identification of specific activities based on local requirements.

In Tajikistan, an Integrated Context Analysis (ICA) was conducted by WFP in 2015.¹¹ The ICA combines findings from trend analyses and complementary data and information on a range of indicators and data sets, such as: food security and nutrition trends; people’s historical exposure and risk to shocks including household economy; climate risks including floods, droughts, mudflows and other aggravating factors that can increase the severity or impacts of shocks (including slow onset land degradation and vulnerability to climate change); livelihood types; and population density. By analyzing and overlaying the findings of historical trend analyses of these different data sets into maps, combinations of recurring food insecurity and undernutrition, shocks, and aggravating factors can be identified – both geographically and by livelihood groups.

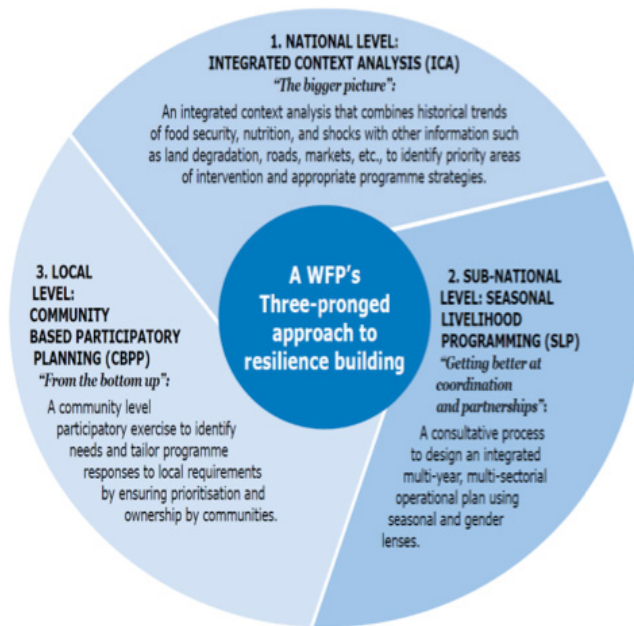
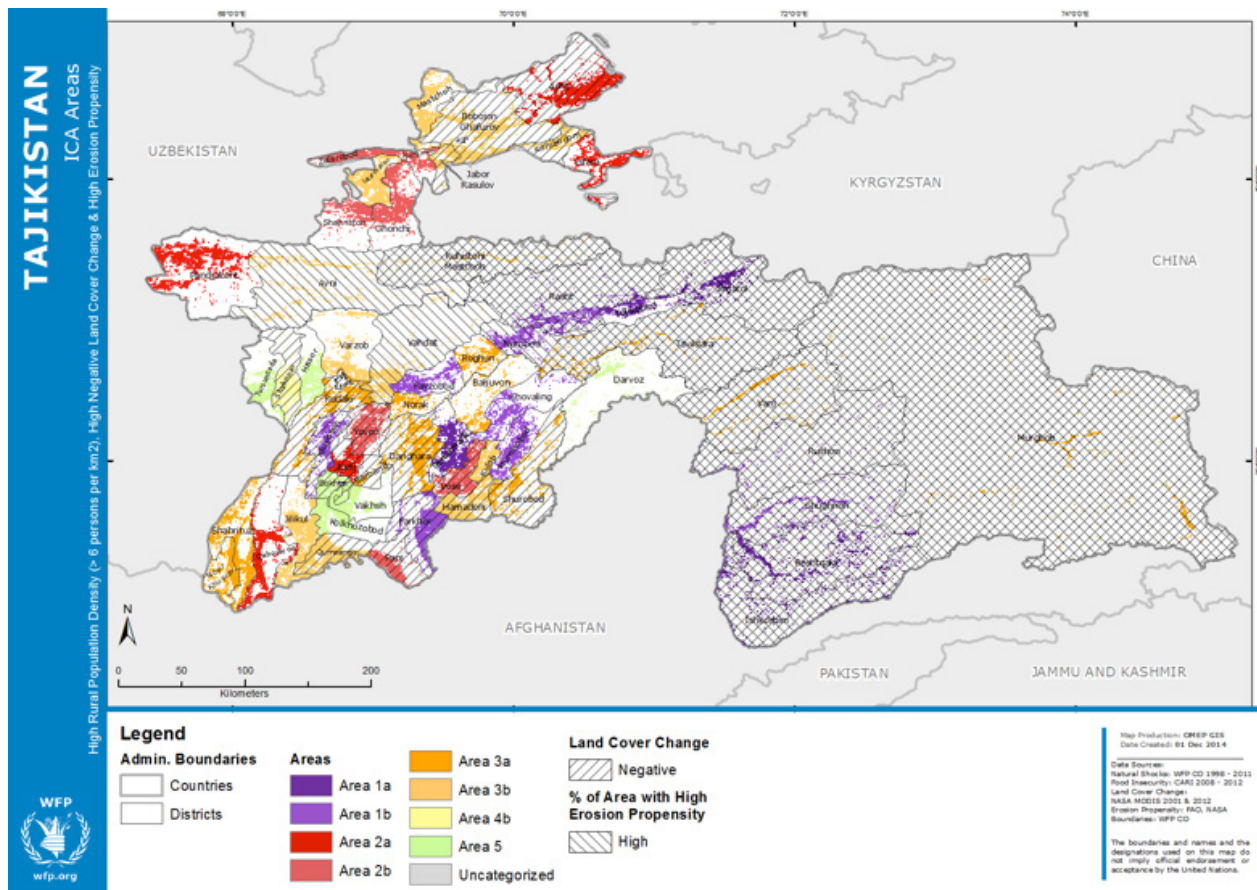


Figure 12. WFP Integrated Context Analysis (2015) – Combined food insecurity with shocks, land degradation and population density



11 Integrated Context Analysis in Tajikistan (2015), WFP

| Risk of Exposure to Natural Shocks | Recurrence of Food Insecurity | | |
|--|--------------------------------------|-----------------|-----------------|
| | LOW | MEDIUM | HIGH |
| LOW | Area 5 | Area 3B | Area 3A |
| MEDIUM | Area 4 B | Area 2 B | Area 1 B |
| HIGH | Area 4 A | Area 2 A | Area 1 A |

Through this analysis, the ICA facilitates the identification of broad geographic targeting for resilience building by identifying where high recurrence of food insecurity intersects with high recurrence of natural shocks (Area 1a, dark purple areas). In these areas, broad programme strategy should be informed by the fact the shocks are recurring and that food insecurity has been chronic based on the analysis and trend identified, which for example implies that any programme would need to be longer term and integrate elements of reducing the impact of shocks.

In Tajikistan, WFP, based on the ICA, carried out Seasonal Livelihood Planning (SLP) exercises in eastern Khatlon and in Rasht Valley (2016). The SLP is a planning tool applied over several districts or areas with similar livelihood and environmental contexts. The SLP consultation engages community representatives, governments and partners, to bring together knowledge and skills of as many stakeholders as possible, to identify short- and long-term interventions suited to particular contexts and livelihood patterns. The aim is to find out where programmes and priorities of different stakeholders could come together in existing or new partnerships (with WFP or with each other) to deliver multi-sectorial projects that combine comparative advantages of different stakeholders in a coordinated and strategic effort.

As an outcome from the SLP, common features of each season (spring, summer, autumn and winter) are described including key aspects of weather, livelihoods, income, expenditures, health, food pricing and food security trends. Based on this analysis, broad 'programming rationales' are then suggested. These rationales can then form the basis for timing and planning different types of food security activities that would be most effective and relevant during certain periods of the year.

Table 6: Example of characterization of the seasons: spring, summer, autumn and winter from eastern Khatlon

Table x: WFP Programming rationale based on seasonality

| March | April | May | June | July | August | September | October | November | December | January | February |
|--|---|---|--|--------|--------|-----------|---------|----------|----------|---------|----------|
| | | Spring | Summer | Autumn | Winter | | | | | | |
| <ul style="list-style-type: none"> Food gap due to depleted food stocks and early symptoms of malnutrition Rain and little snow early in the season Flooding, Hails, Landslide and High winds are the frequent disaster risk at this season. Some fruit harvest (Mulberry and Autumn Onion) Physical access in some areas is difficult Busiest season for agriculture Nowroz (the new year) festival Milk production is good Expenses are related to agriculture inputs and food and education. Plant disease and pest outbreaks Difficult period | <ul style="list-style-type: none"> Harvest season for wheat, vegetables and fruits, food is available Food prices are at its lowest Dry and hot period, Sever irrigation water shortage. Diarrhea and malnutrition increases. Both men and women are busy with agriculture activities. High labour work opportunity in agriculture Livestock grazing in pastures Income - Sale of agriculture products and livestock as well as remittances Expenses - mainly on food, health and agriculture and education Good period for women – due to income | <ul style="list-style-type: none"> Rainfall begins (with variations across the area) Food prices are low therefore families store food, animal feed, and fuel for heating (coal, wood, dung) The prices for other commodities (construction material and housing as well as agriculture inputs) are high Harvest especially cotton, and other vegetable and fruits. More weddings (and associated costs) during this period Income – Agriculture products, remittances and livestock sale. Expenses-winter preparation, agriculture inputs and education Good period for men – due to income | <ul style="list-style-type: none"> Snow and very cold weather and difficulties in physical access Drinking water shortages- due to poor power supply Outbreak of respiratory diseases in addition to TB. Fodder stock gets lesser and families rely on market for fodder. Little work and people especially young male migrate to bigger cities. Difficult period – Due depletion of food stocks, snow & cold and limited income earning opportunities | | | | | | | | |
| Broad Programming Rationale | | | | | | | | | | | |
| <p>Overall Goal: Protect lives and livelihoods</p> <p>Key focus areas: Provision of food and nutritional assistance, linked with health services, to the most vulnerable. Less labour intensive asset creation and rehabilitation especially related to irrigation and investment in agriculture production (spring crops with seeds and other inputs including trainings)</p> <p>Consideration: physical access to some areas are difficult, busy time for agriculture farming, ensure proper nutritional and health considerations in advance of summer.</p> <p>Transfer modalities: food (time of food shortage)</p> | <p>Overall Goal: Invest in longer term assets</p> <p>Key focus areas : Productive assets, investment on maximizing agriculture productivity (incl. post-harvest and storage, and marketing), support to food and animal food stocks, support to small enterprises for food processing and preservation for coming seasons, infrastructure investments (low workload) and provision of basic health services and education for nutrition.</p> <p>Consideration: Harvest time is busy and some men are migrant labors in Russia, women are still able to work; labour market is good due to agriculture employment, less labour intensive assets creation is possible.</p> <p>Transfer modalities: food for most vulnerable, cash for others.</p> | <p>Overall Goal: Invest in longer asset creation and protection of assets for the coming seasons, as well as investment on maximizing agriculture productivity</p> <p>Key focus areas: DRR programmes, support to food and animal food stocks and cash saving including small enterprises for food processing and preservation for coming seasons, investment in agriculture production (seed, inputs and trainings) to prepare winter cultivation.</p> <p>Consideration: own production for food is available and there is cash income due to agriculture products being sold and return of migrant workers.</p> <p>Transfer modalities: Cash/food</p> | <p>Overall Goal: Safeguard life and productive assets, build local capacity and invest in infrastructure</p> <p>Key focus areas: provision of basic health services (especially for respiratory diseases), support health/nutrition education through awareness raising on sanitation practices to increase capacity (trainings, social setup & group learning) during winter months, irrigation infrastructure and system maintenances.</p> <p>Consideration: People have more time to attend trainings and similar, despite the cold weather and snow, infrastructure development is possible.</p> <p>Transfer modalities: Cash/food</p> | | | | | | | | |

Community Based Participatory Planning (CBPP) consultations follow SLPs, and are consultation and participatory project planning exercises conducted on local level (in one particular watershed for example), to develop multi-sectorial action plans tailored to community needs.

WFP has also ensured specific focus on the different needs of men and women, girls and boys. A focus on women's priority interests, skills, and availability will enable the adjustment of activities to their needs. Using the CBPP approach, women will be actively involved in designing development plans for resilience-building in order to ensure that selected activities and assets foster their empowerment, bring significant improvements to their livelihoods, and ultimately promote and ensure gender equality. Protection issues will be given due consideration, and the special needs of labor-constrained households, the elderly and the disabled will be taken into account in programme design through the provision of unconditional food assistance or other appropriate alternatives.

Supporting a partnership approach

As a member of Tajikistan's Development Coordination Council (DCC) and Chair of its Food Security and Nutrition Cluster, WFP contributes to the formulation of relevant government policies and strategies supported by Tajikistan's development partners and donor community. WFP, together with other members of the United Nations Country Team (UNCT), will follow standard operating procedures defined in the Delivering-as-One approach, and will continue to participate in the United Nations Development Assistance Framework (UNDAF) Joint Steering

Committee and Inter-agency Results Groups. WFP's programme and its strategic approach is fully aligned with Tajikistan's UNDAF for the period 2016-2020 and will contribute to UNDAF priorities on health, education and social protection (UNDAF Outcome 3), food security and nutrition (UNDAF Outcome 4) and resilience and environmental sustainability (UNDAF Outcome 6). Working with Government and partners through a systematic capacity-development approach, WFP will aim at further reinforcing the linkages, complementarities and synergies between economic and agricultural development, health, social protection and disaster risk reduction, as main contributors to sustainable food and nutrition security.

Activities which focus on building resilience, including the enhancement of human capital through training and creation of community assets, are aligned with the National Development Strategy and fully integrated with local government initiatives embodied in District Development Plans. WFP will also aim at integrating WFP's interventions into national social safety nets and ensure greater sustainability of resilience building of target populations. This will be achieved by, together with partners, strengthen the capacity in support of national and local towards establishing a productive safety net, which includes asset creation at community level, as a key part of the national social protection system.

Conclusions

i. Climate change affects all dimensions of food security in Tajikistan. Rural, agricultural-based and rainfed-dependent livelihoods are particularly sensitive to any unpredictability of precipitation which is set to become more volatile. With increased unpredictability, harvest failure and reduced crop production is likely to be more common which will have direct impacts on availability of food. Ensuring that there is sufficient management of water related risks, including access to weather related information and climate services, will therefore be fundamental. Over slightly longer timeframes, adapting to melting glaciers and managing erosion and land degradation will be critical as these would likely result in less water availability and more frequent drought conditions.

ii. There is a further need to understand how climate impacts on availability and food production translates into risk for people's income and thereby adversely affecting poor people's ability to economically access food. In Tajikistan, the agricultural sector employs a large majority of the workforce, the majority of which are poor people, and agriculture is therefore a critical source of income. Any reduction of income from this sector will have a disproportionate impact on the poorest people in rural areas. Diversifying livelihoods to make rural incomes less sensitive to climate change is therefore a necessary adaptation pathway for many of the most vulnerable communities. Due to the geographical and topographical nature of Tajikistan's environment, physical access to food also requires attention and investments to make infrastructure such as roads more robust will be required. During winter times for example, road access to markets is limited which is particularly devastating for mountainous populations.

iii. At national level, Tajikistan is dependent on import and on remittances to ensure sufficient consumption levels of food. The high dependence on external import, in combination with access to external labor markets for remittances renders the country vulnerable to sudden policy and political changes in neighboring countries and any result-

ing economic shocks. Currently, there is limited expertise internationally to understand how these conditions might interact with climatic shocks and in particular what more frequent harvest failures globally will mean for food import dependent countries. However, a basic assumption would be that further instability in trade should be expected and a higher potential for climate-induced food price spikes affecting countries like Tajikistan disproportionately.

iv. The link between poverty, food security and climate change is evident in Tajikistan. In particular, there is a very strong link between poverty and the affordability of nutritious food by food insecure households. A decrease in household income typically results in less financial resources available to purchase food, which prompts negative coping strategies such as buying cheaper and less nutritious food, or buying less food, resulting in malnutrition. With stunting levels already at significant levels in Tajikistan, the interplay of climate change further impoverishing already poor people – and based on typical coping strategies – there is a real risk of increased levels of stunting over the longer term.

v. Evidence and analysis exists today that can help all relevant stakeholders in Tajikistan take concerted action. WFP, through its Integrated Context Analysis, this climate review, and a wealth of information from sub-national and local consultation exercises can support the food security sector in planning and implementing food security and climate adaptation programmes.

vi. To be effective, climate change considerations should be integrated into relevant sectors with multiple stakeholders engaged, starting from affected communities and including international organizations, academia, civil society and the private sector. National priorities, strategies and action plans, should provide the overall umbrella and facilitate coordination amongst stakeholders to better act in partnership and to contribute to common objectives while ensuring sustainable national ownership.

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C-ADAPT Climate Resilience
for Food Security:
ANALYSES, INNOVATIONS
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The Climate Adaptation Management and Innovation Initiative (C-ADAPT) is an initiative funded by the Government of Sweden's fast-track climate finance that allows WFP and partners to explore innovative climate-induced food insecurity analyses, programmes and best practices, with the goal to help individuals, communities and governments meet their food and nutrition needs under a changing climate.



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