In 1992 during the Earth Summit in Rio de Janeiro (Brazil), women were named the ‘core group’ in the field of sustainable development and environmental policy. Sustainable development has always been relevant in Kyrgyzstan, and became the main development agenda in 2013. A year earlier, in 2012, several development partners supported the initiative of the Government of the Kyrgyz Republic to shape a comprehensive development program, taking into account aspects of climate change. In the same year of 2012, the UN Development Programme (UNDP) in Kyrgyzstan decided to conduct research on gender aspects of climate change. This step was strategically important for both organizations, as sustainable development, and issues of gender policy implementation in Kyrgyzstan are major agendas of UNDP and UN Women, especially in the context of the ongoing democratic reforms.

Gender aspects in the context of climate change are issues of justice, security and human rights. There is good evidence that women are more vulnerable to climate change than men; in poor areas women are often the poorest. In addition, some studies show that the mortality rate of women, as a result of natural disasters, is often much higher than that of men.

In 2012, there was another significant global event - the second Earth Summit in Rio de Janeiro, where Kyrgyzstan presented the first findings of the study “Gender, Environment and Climate Change”, carried out by the experts of the “BIOM” Ecological Movement. The presentation aroused great interest, and presented findings confirmed that much like in the rest of world, women in Kyrgyzstan are key actors in achieving sustainable development and eradication of poverty, and gender equality issues should become a priority in the discussion of climate change and sustainable development programmes. In the process of drafting climate change policy, it is important to remain committed to gender mainstreaming, it is also necessary to adapt the mechanisms of implementation in such a way that they contribute to the reduction of gender inequality, or at least not contribute to its intensification. As the main managers of natural and environmental resources, women have the experience and knowledge to establish sustainability of their communities in regards to the growing natural threats, including climate change. Without the full participation and contribution of women in the decision-making process, real resilience of communities to climate change and disasters cannot be achieved.

Therefore, in order to ensure a successful and sustainable adaptation, it is necessary to focus on gender issues, and specifically on the role of women. This joint publication “Gender, Environment and Climate Change” is a significant important foundation for the development of adaptation measures with a gender component at the level of country strategies, and the level of local communities in Kyrgyzstan.

We are certain that current publication, its analysis, evaluation of gender dynamics in Kyrgyzstan, and recommendations of the improvement of the quality of life of men and women in adverse climate change, will be actively utilized for the development and implementation of policies related to sustainable development and gender equality.
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List of Abbreviations

WUA Water User Association
CDIA Community Development and Investment Agency
RES Renewable Energy Sources
WHO World Health Organization
SAEPF State Agency for Environmental Protection and Forestry of the Kyrgyz Republic
HPP Hydro Power Plant
GEF Global Environment Facility
HC Hexachloran, pesticide has expressed insecticidal properties
DDT DDT (dichloro-diphenyl-trichloroethane) - chemical for liquidating insects (insecticide).
DDWSS Development Department of Water Supply and Sanitation
Kyrgyz Hydromet Hydro-meteorological Agency under the Ministry of Emergency Situations of the KR
NGO Non-Governmental Organization
SPA Scientific and Production Association Used for “Preventive Medicine”
ARVI Acute respiratory viral infections
UN Women UN Women is the United Nations Entity for Gender Equality and the Empowerment of Women
MM Mass Media
UNDP United Nations Development Programme
GKR The Government of the Kyrgyz Republic
UNFCCC United Nations Framework Convention on Climate Change
UNFAD UN Food and Agriculture Organization
MOS Medical and Obstetrical Stations
ES Emergency Situation
CO2 Carbon Dioxide
UNICEF United Nations Children’s Fund
USAID U.S. Agency for International Development
WECF International Network: Women in Europe for a Common Future
Climate change imposes serious problems in many regions of the world today, including in Central Asia. Climate change not only threatens people’s lives, but also deprives them of means of subsistence; it deepens the gap between the rich and the poor and reinforces inequality between women and men. Women, especially those living in poor countries, are affected by climate change in a different way than men. Due to gender roles and inequality, climate change has a disproportionately negative impact on women, depriving them of means of sustenance, increasing workload, and reinforcing gender discrimination and the feminization of poverty. Women lead the household and are responsible for child care and family members; this often limits their mobility and participation in social work, and increases their vulnerability to unexpected natural disasters. Drought and erratic rainfall force women to work even more, in order to provide food, water and energy for their families.

Adaptation to a changing climate has a long tradition in Kyrgyzstan. Nomadism has long been a way of utilizing the nuances of the local climate throughout the seasons of the year. A nomad follows the trajectory in the country of his residence coinciding with relative favorable climate characteristics, avoiding extreme conditions of hot and dry summer in the foothills and severe winter cold in the highlands. A constant adaptation to various climates took place alongside division of functions and duties was combined with a mechanism of changeover. Pioneer researchers of the nomadic people noted that gender antagonisms were absent. According to a Kyrgyz scholar, professor Shukurov: “The essence of gender equality lies not in undistinguished specifics of gender groups, but rather in their full potential for cooperation in the process of achieving common goals. This primarily relates to the decision making process and joint activities. In the nomadic lifestyle, gender relations are part of rational organization of the society, which is capable to adapt to extreme conditions of the environment in the most suitable manner. This model is also applicable to non-nomadic life-styls, as it is efficient not only within the framework of interaction with the environment, but also within other areas of life activities.”

The importance of integrating a gender approach into the analysis and adoption of decisions regarding climate change is in the fact that women and men are differently affected by consequences of climate change. Their reaction to various impasses of climate change is different, as well as their response; men and women make different decisions and differently perceive the consequences of climate change. This difference was highlighted in the First National Communication of the Kyrgyz Republic (KR) under the UN Framework Convention on Climate Change. Research in pathologies of embryo development showed that with the effects of temperature changes, the embryo development significantly slows down; moreover, the embryo in case of unfavorable climate conditions shows obvious damages to major organs and systems of the embryo. Even a short-term influence of high temperatures during the critical periods of pregnancy negatively affects the fetus. These findings have been supported by research studies conducted in the territory of Bishkek, which demonstrate that this impact is primarily related to the decrease of fractional oxygen pressure during hot seasons, which may result in fetal hypoxia.

According to the research findings, perinatal mortality is at the highest levels, both among full-term, and pre-term children conceived during the period of July-August.2 The differences are based on the fact that men and women play different gender roles and bear different responsibilities in the maternity process, information and resources, these groups include: women, children, and disabled persons. Unfortunately, gender dimension as human dimension is not represented in the state priorities on climate change despite all our efforts. The major problem is lack of people in the country’s discourse on ecological issues: there are a number of actors, but no one in our country is responsible for human dimension within the context of climate change. Absence of statistical data and studies in this area is also one of the serious problems, as climate change has a multi-dimensional impact on men and women. What actions can be taken, not only by the State Agency for Environment Protection and Forestry, but also by other actors, such as the Ministry of Health, the Ministry of Education, and mass media? There are many actors, but no one in our country is responsible for human dimension within the context of climate change.

Nurgul Asylbekova, UNDP Gender Coordinator

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Nurgul Asylbekova, UNDP Gender Coordinator


5 Ibid., p. 56.
Gender, Environment and Climate Change in Kyrgyzstan

Introduction

The current analysis is also based on the concept of “risk society” (developed in the framework of the European socio-ecological theories of F. Beck and M. Crang). The current study carried out a gender analysis of the following set of questions:

- Identification of different roles and behaviors of men and women in the process of climate change and its effects;
- Identification of various influences of climate change impact on current development of a lower number of ideas; disregarding any given social group leads to scarcity of visions, scarcity of ideas, and potential solutions, without which development of a higher number of ideas is critical importance for prevention of inequality in creation and implementation of climate policy. Key elements of the current analysis are gender awareness, access to various types of resources, participation in the processes of planning and decision-making.

The proposed study “Gender, Environment and Climate Change” was carried out with the purpose of harmonizing gender relations in the Kyrgyz Republic (workload distribution, power, decision-making) in the changing environment, and providing recommendations to improve the quality of life of women and men with the need to adapt to the conditions of adverse change. The main objectives of the study were:

- To identify the level of awareness among people and state leaders on climate change and risks associated with it;
- To identify practices of equality and gender inequality, gender roles in the community and in families;
- To identify the level of access for women and men to clean water and irrigation, sanitation and health;
- To identify the level of access to natural resources, pastures, fields, etc.;
- To identify the level of awareness of women and men to information on sanitation, renewable energy, agricultural and other environmentally friendly technologies and equipment.

The current study was conducted in December of 2012, in 3 villages of the Kyrgyz Republic. The current study was conducted in the framework of pilot villages conducted within the framework of the Third International Congress of Women in Politics, emphasized the need to adapt to the conditions of adverse climate change. Along with other sectors, 12 key declarations define the DRR decision-making process at the community level, at the national, regional and international levels. The program calls for political commitment to ensure a gender-sensitive resilience to disasters at the local, national and other environmentally friendly technologies and equipment.

The Beijing agenda for global action on gender-sensitive disaster risk reduction (2009), which should be achieved by 2015, provides governments and international organizations with action guidance to ensure a gender-sensitive resilience to disasters at the local and national levels. The program calls for political commitment in gender mainstreaming in disaster risk reduction and calls on governments to implement a gender-sensitive vulnerability assessment, risk and capacity assessment and monitoring activities.

Targeted policy of climate change prevention and mitigation of consequences of warming of certain groups and encouragement of others. This also relates to the process of development of a higher number of ideas. Disregarding any given social group leads to scarcity of visions, scarcity of ideas, and potential solutions, without which development of a higher number of ideas is critical importance for prevention of inequality in creation and implementation of climate policy. Key elements of the current analysis are gender awareness, access to various types of resources, participation in the processes of planning and decision-making.

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1.1. Climate change: core trends in Kyrgyzstan

Global climate change is one of several unprecedented, large-scale environmental changes that are occurring globally. The Kyrgyz Republic recognizes the high importance of this issue and joined the UN Framework Convention on Climate Change1, ratified the Kyoto Protocol2 as well as joined the Annex B of the Kyoto Protocol.

Targeted efforts are being undertaken in the implementation of the commitments made by the country under these international documents. The first National Communication on Climate Change in the Kyrgyz Republic was prepared in 2004, as a reaction to commitment to the UN Convention on Climate Change. Technological requirements of the country for reduction of greenhouse gas emissions: the sectors of energy, forestry, waste and construction were identified; and barriers to the successful introduction of new technologies were researched.

The second National Communication of the Kyrgyz Republic in response to the commitment to the UNFCCC was prepared between 2005 and 2008. The following actions were taken: inventory of greenhouse gas emissions for the period of 2000-2004; assessment of the potential impact of climate change on the regions; analysis of potential actions for reduction of greenhouse gas emissions in the country, and climate change adaptation measures.

SAEPF, together with experts of ministries and agencies is working on the development of National Action Plan on the country’s adaptation to the conditions of a changing climate with support of UNDP. Alongside with this, sectoral programs, aimed at mitigation and adaptation to climate change, are in the process of development. Specifically, with the support of the BMU project (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety) “Protecting Health From Climate Change”, in cooperation with the European Regional Office of WHO, a strategy to adapt the healthcare sector of the country to climate change has been developed.

Alongside with this, sectorial programs, aimed at mitigation and adaptation to climate change, are in the progress of development. Specifically, with the support of the BMU project (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety) “Protecting Health From Climate Change”, in cooperation with the European Regional Office of WHO, a strategy to adapt the healthcare sector of the Kyrgyz Republic to climate change has been developed.

Among the international development agents today, there are two main approaches to the implementation of programs in the field of climate change - adaptation and mitigation. Many international organizations are working based on both approaches.

The adaptive approach is focused on the implementation of initiatives aimed at lowering the effects of climate change on society and nature. GEF, UNDP (GEF initiative on adaptation (CBA program), WHO, UNICEF, Act Central Asia, the Government of Japan (JICA), Switzerland, the AusAID program, FAO, the European Commission, WECF, GIZ, GERES and others are implementing their initiatives under this approach.

The mitigation approach is focused on the implementation of initiatives aimed at preventing and eliminating the causes of climate change (deforestation, degradation of natural ecosystems, CO2 emissions and other gases that cause the greenhouse effect). Under this approach, a number of initiatives have been implemented in the country by the Norwegian Society for the Conservation of Nature, the “Friends of the Earth” NGO with financial support of the Norwegian Ministry of Foreign Affairs and partners Act Central Asia, FAO, GIZ and others.

According to the Second National Communication on Climate Change, with small changes in the amounts of precipitation, there is projected substantial increase of air temperature in Kyrgyzstan (aver- age for the summer and average annual). The results of glacier modeling (glaciers are the main sources of drinking and irrigation water in the country) indicate significant reduction based on the probability for all considered variants of climate scenarios. For the country as a whole, the volume of glaciers is projected to decrease by 64% to 95% between the years of 2000 and 2100, depending on the adopted option of climate scenarios.

Significant changes in surface water flows for the most probable climate scenarios are expected. It is predicted that the increase of surface water will take place in the period up to 2020-2025, as a result of increase of glacier combers. After that, a decrease of the water flows is expected at about 42.4 – 20.4 km³, which equals to 43.6 – 88.4% of runoff volume in 2055. Eighty five percent of the country’s territory is in the conditions of positive water balance (along the river flows). The remaining fifteen percent is in the conditions of negative balance, where water is lost during irrigation, underground leakage and vaporization. This is observed in Chui valley, peripheral areas of the Ferghana valley, plains surrounding lakes and foothills, as well as in the overflow lands of other valleys10.

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This indicates the likely significant risks for the population due to drought. During the period of 1965–1990, compared to the previous period from 1930–1964, the frequency of droughts of various degrees has increased by twice.

According to SAEPF KR, climate change impact on the condition of glaciers raises significant concerns. There are 8,208 glaciers in the country. To this day, the area of glaciers has decreased by 20%. According to estimates, there is a real threat that by 2100 there will be no glaciers in the country, which may have drastic effects on agricultural productivity and energy security of the country. Due to the temporary increase in volume of precipitations, the role of underground water will significantly increase. On the one hand, it is a positive factor as it contributes to a smooth flow of rivers. On the other hand, an increase of water content of rocks will result in activation of exogenous geological processes, such as land and mud slides, landslides, avalanches, floods, etc.13

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<table>
<thead>
<tr>
<th>Provinces of the Kyrgyz Republic</th>
<th>Dynamic Indicators Related to Climate Change (As predicted for the year 2100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osh</td>
<td>Chui</td>
</tr>
<tr>
<td>Talas</td>
<td>Naryn</td>
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<tr>
<td>Jalal-Abat</td>
<td>Batken</td>
</tr>
<tr>
<td>Climate Scenario</td>
<td>Demographic Scenario</td>
</tr>
<tr>
<td>Average (model) changes in annual precipitation sum</td>
<td>Population</td>
</tr>
<tr>
<td>Glaciation area</td>
<td>Vulnerability assessment</td>
</tr>
<tr>
<td>Fuel and energy resource consumption</td>
<td>Water resources: glacier area</td>
</tr>
<tr>
<td>GDP</td>
<td>River discharge</td>
</tr>
<tr>
<td>Agriculture: aridization</td>
<td>Vegetabve and melon yields</td>
</tr>
<tr>
<td>Grain yield</td>
<td>Grapes and fruit yields</td>
</tr>
<tr>
<td>Population health: infectious diseases</td>
<td>Population health: infectious diseases</td>
</tr>
<tr>
<td>Disease of blood circulatory system</td>
<td>Increase of avalanche danger on the roads</td>
</tr>
<tr>
<td>Mortality linked to disasters caused by climate change</td>
<td>Intensification of emergency situations (landslides and mudflows)</td>
</tr>
<tr>
<td>Increase of avalanche danger on the roads</td>
<td>- Significant increase</td>
</tr>
<tr>
<td>Intensification of emergency situations (landslides and mudflows)</td>
<td>- Significant increase</td>
</tr>
</tbody>
</table>

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Consequences of such a significant forecasted effect of climate changes will surely influence the living conditions and economic activity of the population and will save consequences of various degrees for different social groups, men and women.

Climate-related problems that the local communities face, such as cold and severe winters, late frost, are currently observed. Wind may become more active and access to water resources may decrease. Adaptation practices proposed by specialists for local communities concerning heat and energy saving and efficiency are asymmetric in terms of gender, in particular, with respect to the distribution of work and access to resources. The measures below often require male labor, yet they do not relieve women’s workload:

- Use of renewable energy sources by local communities for heat, power and hot water supply;
- Heat insulation of houses by using locally accessible insulating materials and adapted technologies;
- Use of sunlight greenhouses;
- Energy efficient construction;
- Construction of energy efficient heating organs, stoves, and etc.

These measures are often expensive and a burden for the family budget. A decision to spend money for implementing such measures will typically be taken by men; consequently such measures are often not implemented.

It should be noted that gender equality issues are not included in the climate policy of the state at the moment; the country pays insufficient attention to this issue at the level of various actors of climate change. Moreover, a decision to spend money for implementing such measures is often economically motivated. No research studies have been conducted, and no indicators of climate change impact on men and women have been developed (on different social groups, men and women).

Gender specific challenges may include risks related to the quality of drinking water and health. According to statistical data, the highest mortality rates due to parasitic and other infectious diseases are registered among men. This can be primarily explained by the fact that men follow the stereotypical perceptions, such as: “men do not take care of their health, as it is an indicator of weakness”. Thus, men often turn for medical help when it is too late.

The correlation between indicators of access to clean drinking water and child mortality rate is also observed. The highest level of infant mortality (the number of children who died at the age of up to 1 year per 10,000 born) caused by infectious and parasitic diseases is observed in Batken Province (45.4 in 2006; 40.2 in 2007; 33.5 in 2008; 20.8 in 2009; 21.6 in 2010) and Osh Province (23.9 in 2006; 36.52 in 2007; 37.2 in 2008; 21.7 in 2009; 15.4 in 2010), those provinces that have less access to safe drinking water. For instance, in Bishkek, the mortality and infant mortality rates are much lower (6.7 in 2006; 6.9 in 2007; 7.2 in 2008; 4.3 in 2009; 1.4 in 2010)20.

The average national rate of overall incidence of intestinal infections19 is fixed at a consistently high level, in some years reaching levels from 532.4 (2005) to 612.3 (2012). The highest incidence was registered in Batken (4724/1061.6) and Jalalabad, 6724 (643.2) provinces, surpassing the national rates by 1.7 times. High incidence of acute intestinal infections in Batken region is associated with the low quality of drinking water20.

According to the forecasts, the most vulnerable sectors in Kyrgyzstan are the following:

1. Water resources (melting of glaciers, lake shallowing, increase of surface water flows);
2. Health (increase of morbidity and mortality rate due to diseases caused by climate change);
3. Agriculture (decrease of yield capacity of various types of agricultural crops and pastures);
4. Climate emergencies (increase of mudflows, landslides, lakes outbursts and avalanches).

With this in mind, there is an urgent need for development and implementation of the national plan on gender-sensitive adaptation to climate change.

1.2. Access to clean drinking water

Nearly one billion people on the planet live without access to clean water; over 2 billion people live in the absence of basic sanitary conditions16. Water resources deficit is aggravated by climate change, chemical production emissions, and biological pollution. Considering the importance of future generations’ health protection, and health of women who are more vulnerable to toxic chemical substances during pregnancy, there is a need to ensure access to clean water for women and their families.

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Drinking water of poor quality is the major reason for infant mortality, the rate of which will be increasing in case the water quality worsens and timely measures are not taken. Pursuant to the UN Resolution ‘Human Right to Water and Sanitation’ of 28.07.2010, access to clean water is deemed to be a basic human right and a common good. Therefore, distribution and administration of water must be subject to public control. Women must be included in the decision-making process and management of water resources.

1.3. Access to adequate sanitation

According to the joint study of WHO and UNICEF, 75% of urban and 51% of the rural population of Kyrgyzstan have access to adequate sanitation facilities. The extremely weak development of a sewage system is a significant risk. Only 6-17% of housing stock in the Republic has a system of disposal and treatment of sewage. 51% of the urban population, and only 3% of the rural population use flushing toilets; according to the household survey of 201224, 97% of rural dwellers use outhouses.

Sewage and sanitation components were not part of the strategic documents for the development of drinking water supply. Such flawed policy has led to the current trend in a declining share of population with access to sanitation: from 52.8% in 2000, to 24.3% in 2011.

Domestic waste water is treated at 20 wastewater treatment plants with the capacity of 719,800 m3 per day. Centralized sewage systems with treatment facilities are provided only to 28.4% of the population. More than half of small towns and regional centers of the country do not have centralized sewage systems and sewage quality of the water bodies is damaged.

The Kyrgyz Republic is an active member of international action. It has a system of disposal and treatment of sewage. 51% of the urban population, and only 3% of the rural population use flushing toilets; according to the household survey of 201224, 97% of rural dwellers use outhouses.

Sewage and sanitation components were not part of the strategic documents for the development of drinking water supply. Such flawed policy has led to the current trend in a declining share of population with access to sanitation: from 52.8% in 2000, to 24.3% in 2011.

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In the coming twenty years the country’s capacity to adapt to climate change will be determined largely by socio-economic factors and legacy issues - namely the dismal environmental situation and the poor state of infrastructure, rather than climate change itself. Water scarcity will be determined directly dependent on the quality of land and water resources. In 2012, 66% of the population lives in rural areas and is directly dependent on the quality of land and water resources. In 2012, ARIS conducted a study on the sources of drinking water for the residents of 1,889 villages. In the course of this study, data on water and sanitary conditions in each village, including the information on centralized water supply systems, the sources of water supply, frequency, the availability of social facilities and their water supply and CDWUU and so on. To date, 59.9% of the rural population reside on centralized water supply systems (38% via the outdoor standpipes, and 22% via the intra-house systems). The remainder (40%) finds water in ditches, rivers, canals, springs, and uses delivered water. For example, according to a survey of rural households in 2007,[26] the vast majority of Naryn residents do not have running water in their lots; they provide themselves with drinking water from the street water pump (91.7%), and 0.9% use water from ditches of ODZ and CDWUU and so on. To date, 59.9% of the rural population receives water directly dependent on the quality of land and water resources. In 2012, ARIS conducted a study on the sources of drinking water for the residents of 1,889 villages. 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CHAPTER 1. ANALYSIS OF THE DYNAMICS OF GENDER RELATIONS IN THE PROCESS OF CLIMATE CHANGE

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Chapter 1: Gender, Environment and Climate Change in Kyrgyzstan

Availability of Water Pumping Services

<table>
<thead>
<tr>
<th>Availability of Water Pumping Services</th>
<th>24 hours per day</th>
<th>Hourly shortages</th>
<th>Seasonal shortages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functioning CDWUs</td>
<td>35.5%</td>
<td>65.1%</td>
<td>35.5%</td>
</tr>
<tr>
<td>Non-functioning CDWUs</td>
<td>64.5%</td>
<td>34.9%</td>
<td>64.5%</td>
</tr>
</tbody>
</table>

Neatly 63% of the population has access to water for less than 12 hours per day, not every day. 37% does not have access to water, and only 5% of the rural population has access to water for 12 or more hours per day and is satisfied with the frequency of water supply27. Only a few households have the opportunity to fully enjoy the water pipe system28.

Under the World Bank’s Rural Water Supply and Sanitation Project (RWSSP-1), from 2002, rural Community Drinking Water Users Unions (CDWUU) have been established. These are the main organizations responsible for management of water systems at the village level. CDWUU is registered as a legal entity that administers funds, opens bank accounts and organizes the collection of income on the basis of the Agreement on the provision of water between CDWUU and “Ayil Okmottu” (village administration). CDWUU’s are responsible for planning, financing and management of water supply. It was expected that upon completion of the project CDWUUs would be the main entity ensuring sustainability of water and sanitation. CDWUUs will provide technical support to members of CDWUUs and will create conditions for the improvement of material and technical base of CDWUU. Currently, according to the DWMT, 633 CDWUUs have been established, of which 390 work and cooperate with the Department.

Due to the lack of institutional organization of rural drinking water (CDWUU), a number of aqueducts are in poor condition. Thus, aqueducts built by the donors are not functioning in 35 villages. There are CDWUU. Currently, according to the DWMT, 633 CDWUUs have been established of which 390 work and cooperate with the Department. Nearly 63% of the population has access to water for less than 12 hours per day, not every day. 37% does not have access to water, and only 5% of the rural population has access to water for 12 or more hours per day and is satisfied with the frequency of water supply. Only 37% of the rural population has access to water for 12 or more hours per day, not every day. 37% does not have access to water, and only 5% of the rural population has access to water for 12 or more hours per day and is satisfied with the frequency of water supply. 37% of the rural population has access to water for 12 or more hours per day and is satisfied with the frequency of water supply.27

As the study indicates, low representation of women at the executive level limits their access to natural resources. Consequently, men are the predominant consumers of natural resources. Inequalities and disproportionate access to natural resources have a significant influence on the progression of women’s poverty.

There is a lack of equal access for men and women to the decision-making systems for water at all levels in the Republic. In the water sector of the Kyrgyz Republic the total number of specialists is 5,063 people, of whom 956 are women, which equals to 19% of the total number. The number of managers, their deputies and heads of structural units is 10% of the same number, and not a single woman is represented in these higher positions.

Out of 633 CDWUUs, 390 are functioning today. 38 CDWUUs are headed by men29. Management of the sectors and departments in the Ministries of Water Resources is also entrusted predominantly to men. The vast majority of top specialties in the sector are women - about twice as many as men, and most of the workload is performed by key specialists. It should be noted that the water sector in Kyrgyzstan is facing issues of gender inequality due to predominantly male leadership30.

Within the framework of USAID “Water User Associations Support Program” (WUAESP) Water User Associations in the Republic have been established of 4,175 people working in the Water Users Associations31. In 2009, women made up only 18%. In 4,619 WUAs republic-wide, only 6% were in a director position, 2% worked as Accountants, 2% as Chairmen of WUA, and 9% as Vice-Chairmen of the WUA32. To date, the 4,619 registered WUA are headed by men in 98. Thus, women have very low representation at the WUA level and are the most vulnerable group in the water distribution system.

Women’s low access to irrigation water is also confirmed by the results of the “Gender aspects of access to natural resources” study33.

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29 According to the Water Supply and Treatment Agency
30 Tynalieva A.B., Chief Specialist at UEGMS, “Gender in the water sector of the Kyrgyz Republic” - Issue number 8, February 2012.
31 Water User Association (WUA) – a voluntary, non-governmental, non-profit organization that is created and managed by a group of water users along one or more water channels. Water Users, farmers or “dehkan” homestead land owners who combine their financial, material and technical resources to improve the productivity of irrigated agriculture in the territory of the Association through the equitable distribution of water, and efficient operation of irrigation and drainage systems. - http://www.wuasp-car.com
32 From the report of B. Koshmatov, Director General, Department of Water Resources MAWRPI of the Kyrgyz Republic at the World Water Forum, Istanbul, 2009.
33 Gender aspects of access to natural resources, Bashikhet, 2006-2007.
The data from a number of sociological studies34 has shown that in the course of determining the priority issues in the use of water, women expressed the utmost attention to the issues of water quality and protection of water sources (men ignored these problems), which suggests that indeed, sustainable management of water resources is impossible without the involvement of women in the decision-making processes. Men tend to illegally exploit natural resources more often than women. Gender stereotypes largely contribute to this notion, when the man, as the family breadwinner, is expected to find income for his family, regardless of circumstances. Women, who illegally use resources, are condemned by the society to a spark of social conflicts. According to the forecasts of the Second National Communication on Climate Change, rise of social tension is scheduled to take place between the years 2050 and 2100, when the peak reduction of water availability in the region is predicted to take place.

It should be noted that women have traditionally favored non-violent methods of conflict resolution and stabilization of relations. They show greater initiative in conflict prevention and re-habilitation activities, but rarely have access to the structures of emergency management and law enforcement agencies. Thus, it is necessary to consider women as important actors in the system of resource distribution and conflict reduction today, in order to alleviate severe consequences of climate change in Kyrgyzstan tomorrow.

As can be seen from data, resources are distributed unevenly; the gap between rich and poor is growing. Women tend to be excluded from the process of resource distribution and have less access to them. Therefore, the implementation of these trends will worsen the situation for women. With the current climatic trends, the decrease in the amount of essential resources (water, food) will lead to further exclusion of women from the decision-making system, will increase the number of conflicts among the population.

The current absence of comprehensive mechanisms for fair access to natural and social resources, in the context of global social challenges imposed by the process of climate change, may lead to a further exclusion of women from the decision-making processes. Therefore, it is crucial to get women involved in various bodies of water management, from water user associations (WUAs) to the bodies of water management at the national level.

Lack of access to land is also an underlying cause of women’s limitations to access to water. Thus, land reforms that distribute land ownership among the households or permanent agricultural workers (who are mostly men) lead to imbalance of women’s access to water and land, while the laws guarantee equal rights. Even if women have the legal right to land, traditions often hinder their effective control over land and water resources, which are a crucial economic capital for further development, determining access to opportunities to participate in the decision-making processes.

In 84.9% of cases the legal owners of farms are men—a pattern existing throughout the country. Only in cases when there is no husband and adult male child in the family, a woman is recognized as the owner of the farm.38

The territory of the Republic is largely exposed to dangerous processes and phenomena. The most common types of emergencies in Kyrgyzstan are emergencies related to water flow: mudflows, avalanches, and landslides.

Almost 95% of settlements in Kyrgyzstan are in close proximity to water sources, and are often located along the river banks.
The existing gender trends between men and women in disaster risk reduction are closely linked to the role and responsibilities of women and men in the home and in society. These roles define different identities, social, responsibility attitudes and expectations. Such differences are mostly unfavorable to women, and lead to gender inequality in the socio-economic development as a whole, including the different vulnerability to disasters, as well as the different ability to reduce the risk and respond to disasters. Beyond anything, limited access to information and knowledge inevitably increases the vulnerability to disasters among women and for their families.

Studies show that disasters increase, highlight, and escalate gender inequality, and further exacerbate the severe conditions of women. At the same time, the potential contribution that women could offer to reduce the risk of disasters globally is often not taken into account, much like the participation and leadership of women in improving the resilience of the population to disasters. Gender differences are present at all levels of disaster response: from exposure, perception, physical and psychological effects, and preparedness, to direct response, restoration and reconstruction processes. In other words, men and women differently suffer from the consequences of natural disasters, and respond to disasters. Beyond anything, limited access to information and knowledge inevitably increases the vulnerability to disasters, as well as the different ability to reduce the risk of disasters globally.

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Particularly vulnerable are women who have special needs (pregnant women, women with infants, women caring for the sick and elderly members of the family). They are more dependent on the environmental conditions, as they have specific needs and are more sensitive to the inability to meet these conditions. In the offices of the Ministry of Emergency Situations the decision-making levels and levels of local authorities hold a critically low representation of women. Thus, women are not represented at all at the highest positions of the MES, while women account for 12% in core positions, and 42% in senior ones.

Challenges faced by the local community in adapting to hazards were identified. The local community is out of reach of media, there are no good roads, i.e., they are in remote locations. Due to this remoteness, it is difficult for the people residing in these areas to get information about what natural disasters to expect. The second issue, we believe, is the widespread violation of the building code. In the Soviet times it was precisely regulated where you can build a house and where you cannot. Nowadays, people build-up wherever they please. Moreover, local councils grant the permits. Buildings are built on floodplains where mudflows and landslides can occur. The population is not very well aware that the landslides and avalanches may occur in these places, and that one should not collect firewood in the hills in the winter because there is a chance of distracting the formation of snow and triggering an avalanche. Furthermore, there is no infrastructure in rural areas (no power, dilapidated buildings, etc.), high levels of poverty and hopelessness.
According to statistics in 2012, the country experienced 449 emergencies, which killed 47 people. Of them 15 people were killed by avalanches, large fires and debris flows killed 8 people. One person died as a result of rock fall, and 4 people as a result of the collapse of public toilets. 3 people died from poisoning in the mine, another one was killed in a mine collapse. In 2011 the number of fatalities in emergencies was 82 people. Material damage at 2012 amounted to 924 million 921 thousand soms, while last year this number was at 935 million 912 thousand soms.

This leads to the fact that the interests of women and children are not considered in the process of developing plans and taking measures in emergency situations. With the increasing number of emergencies, vulnerable groups (women, children, and the elderly) will be exposed most to health and life risks.

At the international level, the issue of gender mainstreaming in preventing and responding to emergencies has been recognized. The Hyogo Framework, adopted by the World Conference on Disaster Reduction and responding to emergencies, which killed 47 people. Of them 15 people were killed by avalanches, large fires and debris flows killed 8 people. One person died as a result of rock fall, and 4 people as a result of the collapse of public toilets. 3 people died from poisoning in the mine, another one was killed in a mine collapse. In 2011 the number of fatalities in emergencies was 82 people. Material damage at 2012 amounted to 924 million 921 thousand soms, while last year this number was at 935 million 912 thousand soms.

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It is evident that diseases most sensitive to changes are those transmitted through water and food, illnesses (deaths, injuries, disabilities) during natural disaster; conditions and diseases related to malnutrition.

Among other possible health effects, scientists predict the following factors caused by climate change:
- Level of air pollution and aeroallergens;
- Possible emergence and changing modes of transmission of other infectious diseases;
- Violation of production technology, storage and transportation of food, due to the impact of climate change, intensification of pests and diseases of plants;
- Impact of drought on food security of the population, threat of famine;
- Significant migration of the population due to natural disasters, crop failures, water shortages;
- Destruction of healthcare infrastructure in natural disasters;
- The emergence of various conflicts as a result of increasing competition due to lower availability of natural resources;
- Direct impact of heat and cold on the human body, especially among the vulnerable groups.

In the Kyrgyz Republic, despite a series of measures taken by the government to reform the healthcare system in recent years, the incidence of morbidity among the population tends to increase, with one exception - there is a significant increase in the incidence of circulatory system diseases. Furthermore, the NGO “Preventive Medicine” has research on the comparison of the correlation between the incidence of all causes and climatic factors.

The Second National Communication of the Kyrgyz Republic on the UN Framework Convention on Climate Change gives the expected levels of monthly average morbidity incidence for 100 thousand people, in the period up to 2100, for the northern and southern regions of the country. The results obtained, show that - with one exception - there is an equal incidence of morbidity is expected in the northern and southern regions of the country. A less significant growth, and even a slight decrease in morbidity incidence in the Issyk-Kul region is explained by the significant difference between the climatic conditions of the region due to the smoothing effects of Lake Issyk-Kul to extreme temperatures.

Respiratory diseases traditionally take the leading place in the overall morbidity. In these gender-segregated statistics, only mortality data is available, and not morbidity, which makes it difficult to develop comprehensive adaptation strategies.

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- Possible emergence and changing modes of transmission of other infectious diseases;
- Violation of production technology, storage and transportation of food, due to the impact of climate change, intensification of pests and diseases of plants;
- Impact of drought on food security of the population, threat of famine;
- Significant migration of the population due to natural disasters, crop failures, water shortages;
- Destruction of healthcare infrastructure in natural disasters;
- The emergence of various conflicts as a result of increasing competition due to lower availability of natural resources;
- Direct impact of heat and cold on the human body, especially among the vulnerable groups.

In the Kyrgyz Republic, despite a series of measures taken by the government to reform the healthcare system in recent years, the incidence of morbidity among the population tends to increase, with one exception - there is a significant increase in the incidence of circulatory system diseases. Furthermore, the NGO “Preventive Medicine” has research on the comparison of the correlation between the incidence of all causes and climatic factors.

The Second National Communication of the Kyrgyz Republic on the UN Framework Convention on Climate Change gives the expected levels of monthly average morbidity incidence for 100 thousand people, in the period up to 2100, for the northern and southern regions of the country. The results obtained, show that - with one exception - there is an equal incidence of morbidity is expected in the northern and southern regions of the country. A less significant growth, and even a slight decrease in morbidity incidence in the Issyk-Kul region is explained by the significant difference between the climatic conditions of the region due to the smoothing effects of Lake Issyk-Kul to extreme temperatures.

Respiratory diseases traditionally take the leading place in the overall morbidity. In these gender-segregated statistics, only mortality data is available, and not morbidity, which makes it difficult to develop comprehensive adaptation strategies.

It is evident that diseases most sensitive to changes are those transmitted through water and food, illnesses (deaths, injuries, disabilities) during natural disaster; conditions and diseases related to malnutrition.

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Gender, Environment and Climate Change in Kyrgyzstan

CHAPTER 1. ANALYSIS OF THE DYNAMICS OF GENDER RELATIONS IN THE PROCESS OF CLIMATE CHANGE

ANALYSIS OF THE DYNAMICS OF GENDER RELATIONS IN THE PROCESS OF CLIMATE CHANGE

Mortality of men and women from all causes\(^53\)

Death as a result of the main causes in 2011 (number of people)

<table>
<thead>
<tr>
<th>Total deaths from all causes</th>
<th>Number of deaths for every 100,000 People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both sexes</td>
<td>Women</td>
</tr>
<tr>
<td>Total deaths from all causes</td>
<td>35 941</td>
</tr>
<tr>
<td>From disease of the blood circulatory system</td>
<td>17 992</td>
</tr>
<tr>
<td>From disease of respiratory system</td>
<td>2 602</td>
</tr>
<tr>
<td>From neoplasms</td>
<td>3 379</td>
</tr>
<tr>
<td>From infectious and parasitic diseases</td>
<td>1 028</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>638</td>
</tr>
<tr>
<td>Digestive diseases</td>
<td>2 426</td>
</tr>
<tr>
<td>Injuries, poisonings, some other effects of external causes</td>
<td>3 613</td>
</tr>
<tr>
<td>From:</td>
<td></td>
</tr>
<tr>
<td>Transport injuries</td>
<td>933</td>
</tr>
<tr>
<td>Accidental alcohol poisoning</td>
<td>500</td>
</tr>
<tr>
<td>Accidental drowning</td>
<td>500</td>
</tr>
<tr>
<td>Suicide</td>
<td>471</td>
</tr>
<tr>
<td>Murder</td>
<td>303</td>
</tr>
</tbody>
</table>


Mortality ratio of men and women from diseases of the circulatory system\(^54\)

Cardiovascular and bronchopulmonary diseases mostly affect people suffering from stress under the influence of excessive heat. There is a correlation of mortality from coronary heart disease (CHD) and the influence of elevated temperature in individuals older than 45 years. There is also a clear relationship between mortality and heat stress: during unusually hot weather, the number of deaths from all causes may exceed the average by more than 50%, with greater risk for the elderly\(^55\).


CHAPTER 1. ANALYSIS OF THE DYNAMICS OF GENDER RELATIONS IN THE PROCESS OF CLIMATE CHANGE

Il’yasov believes that in the future we should expect an increase in morbidity and mortality from cardiovascular diseases caused by heat stroke. Studies conducted in Shanghai indicate that air temperatures above 34°C significantly increase the death rate of people over 65. In Kyrgyzstan this negative factor is further enhanced as the Tien Shan mountain range goes through the Republic. The average altitude is 2,750m, and almost the entire population lives at an altitude of more than 800m, and at high altitudes, where the partial pressure of oxygen is reduced.

Statistics show that men are more likely than women to die from respiratory diseases, which is obviously connected with such risk factor as smoking and employment in manufacturing industries in hazardous conditions.

Cardiovascular diseases are the leading cause of death in Kyrgyzstan. The main contributors (90%) to mortality in this category are acute myocardial infarction and hypertension.

In the past two years, male mortality from the blood circulatory system diseases exceeded female rates, which is probably due not only to the climatic influences, but also caused by behavioral characteristics that determine the increase in risk factors. Climate change scenarios predict an increase in the incidence of respiratory and blood circulation disease among the population due to the changes in temperature, but research on the differential impact of these changes on men and women has not been conducted.

There is a need for comprehensive epidemiological studies. A link with urban policy is essential. The development of master plans is relegated to city councils, without regional planning projects that take into account gender and environmental aspect: how many kindergartens to build, how they should be equipped, how many schools are needed and what type of water supply is needed, etc.

During the planning of the so-called "sandwich schools" (schools built with concrete panels that are pressed together, thus resembling a sandwich) there had been no analysis in the context of climate change. In the hot season, children faint from overheating, and in the winter they used blankets to cover the desks, because it was very cold. Such temperature differences and ventilation systems are not reflected in the general plan today.

Higher temperatures could lead to changes in the geographical distribution of various types of disease transmitters, i.e. thermophilic habitats of animals and insects (e.g., encephalitic mites) will be distributed to the north and will increase the duration of seasonal pathogens transmission.

Infectious diseases. General temperature warming and increased precipitation will lead to an increase in the range of insects that transmit infections (mosquitoes, ticks, flies), which in certain circumstances poses a threat to health. The risk of intestinal growth and parasitic diseases is increasing. Without harsh quarantine measures, the increased mosquito range can lead to intensive growth of malaria. Global warming, in terms of active cross-border relations, increases the risk of transmitting the mosquito hemorrhagic fevers to the territory of Kyrgyzstan.


Nina Voichensk Chief Specialist of the State Sanitary and Epidemiologic Surveillance Department, under the Ministry of Health of the Kyrgyz Republic. SSESD Republic

The dynamics of respiratory diseases morbidity indices in Bishkek (J00-J99) (100 thousand people)

<table>
<thead>
<tr>
<th>Year</th>
<th>Men</th>
<th>Women</th>
<th>All ages</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>2,500</td>
<td>2,000</td>
<td>0.1</td>
</tr>
<tr>
<td>2007</td>
<td>2,550</td>
<td>2,050</td>
<td>0.1</td>
</tr>
<tr>
<td>2008</td>
<td>2,600</td>
<td>2,100</td>
<td>0.1</td>
</tr>
<tr>
<td>2009</td>
<td>2,650</td>
<td>2,150</td>
<td>0.1</td>
</tr>
<tr>
<td>2010</td>
<td>2,700</td>
<td>2,200</td>
<td>0.1</td>
</tr>
<tr>
<td>2011</td>
<td>2,750</td>
<td>2,250</td>
<td>0.1</td>
</tr>
</tbody>
</table>

The study impact of climatic factors on the health status of the population, Sharshenova, A.A., Scientific Production Association “Preventive Medicine” MOPH, 2011

The study impact of climatic factors on the health status of the population, Sharshenova, A.A., Scientific Production Association “Preventive Medicine” MOPH, 2011
Global warming leads to increased rates of intestinal infections, which occur most frequently during warm seasons. Organic pollution and temperature changes in aquacultures have an impact on the survival of bacteria that's present in intestinal infections. The lowest incidence of 1.8% was tracked in the reservoirs of the Central Tien Shan, which is characterized by a harsh climate. The number of positive samples starts to increase in March and reaches a maximum in July-August. Analysis of data on Lake Issyk-Kul reveals a direct correlation between the inoculation and water temperature: the lowest at 5°C (2.8%) and the highest at the temperature above 16°C.

The average national rate of the overall incidence of intestinal infections is at a consistently high level, in some years reaching the record of 552.4 (2001) to 490.2 (2010). The highest incidence was registered in Batken 4,161 (980.0) and Jalal-Abad 5,400 (552.8) regions, surpassing the national figures by 1.8 times, which is directly linked to low quality of drinking water.

Climate change, in particular the increase in temperature and precipitation, will lead to an increase in the number of infectious and parasitic diseases. Since 1996 an increase in cases of malaria has been tracked. For the most part it is common among children, as the usual hygienic needs of water use, such as drinking and cooking.

<table>
<thead>
<tr>
<th>Disease</th>
<th>Incidence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuberculosis</td>
<td>5%</td>
</tr>
<tr>
<td>Bacillosis</td>
<td>3%</td>
</tr>
<tr>
<td>Parasitosis</td>
<td>14%</td>
</tr>
<tr>
<td>Geohelminthiasis</td>
<td>27%</td>
</tr>
<tr>
<td>Other infections</td>
<td>7%</td>
</tr>
</tbody>
</table>

Incidence of intestinal infections will largely depend on temperature, as this will have an impact on the quality of water in water sources and in the water-supply network, and on the degree of food infection, which directly depends on climatic parameters.

Climate warming may lead to increased intestinal infections; their epidemic potential:• Bacterial diseases: cholera, typhoid, salmonella, bacillary dysentery;• Viral etiology: hepatitis A, polio, enterovirus infections, noroviruses;• Parasitic diseases: giardiasis, amoebiasis, ascariasis, enterobiasis.

New projected diseases: campylobacteriosis, cryptosporidiosis. Climate warming may lead to increased intestinal infections; their epidemic potential:

<table>
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</thead>
<tbody>
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<td>Bacterial infections</td>
<td>14%</td>
</tr>
<tr>
<td>Viral infections</td>
<td>7%</td>
</tr>
<tr>
<td>Parasitic infections</td>
<td>34%</td>
</tr>
</tbody>
</table>

Climate warming and related social changes can lead to threats to maternal and child health. Thus, it is noted that pathologies of embryo development are equally determined by a decrease or an increase of the ambient temperature. The number of disease complications of pregnancy, childbirth and the postpartum period, and congenital anomalies (malformations) remains high. The latter is directly related to the reproductive health status of women and men.
Mortality from diseases associated with pregnancy, childbirth and the postpartum period are significantly different in urban and rural areas. In rural areas, complications occur 3-4 times more frequently than in cities. Moreover, almost 80 percent of maternal deaths are also recorded in the countryside.

In solving the problems related to health, a crucial role is played by health and education systems: at the institutional level, these systems mainly involve women with low wages; they also have a lot of unpaid additional functions (e.g. cleaning the medical and obstetrical stations, classes, buying washing materials, napkins, etc.). These tasks, however, put on them the bulk solution of a strategically important task without providing them with adequate resources.

Ensuring equal access for men and women to sanitation is one of the biggest challenges for our region. Studies have shown that sanitation facilities, especially in rural areas, are present at a low level. The use of cesspools in the yard, instead of the proper conditions, adversely affect the reproductive health of the population, especially for women, and the spread of infections, since these kinds of toilets are easily accessible by flies.

Unsatisfactory provision of sanitation facilities in schools and medical institutions are alarming, as these organizations have a direct impact on the quality of people’s lives. According to the Ministry of Education and Science of the KR, in the framework of multivariate analysis of the investigated 330 of 438 educational institutions, the most difficult situation with water supply observed in schools of Talas, Jalal-Abad and Batken regions.

Practically all rural schools have toilets that are located on the school grounds or nearby, and only 14.3% of urban schools have toilets that are located inside the buildings. School toilets, in most cases are old, dirty, built of boards, bricks or cinder blocks contained in unsanitary conditions.49 Frequent diseases of children (intestinal, viral, and respiratory) have a direct impact on the quality of people’s lives. According to the statistical data and publications of international organizations, the damage to human health from the consumption of poor quality drinking water is enormous. The losses from natural disasters, adverse environmental situations, hunger and other global factors.

The situation is aggravated by the outflow of professionals, and men from the regions migration to Chui Province and Bishkek and external migration (CIS countries: Russia, Kazakhstan). This trend is observed in all occupational groups (builders, doctors, teachers, engineers) and, to a greater extent for men. This leads to a reduced quality of life of the population of regions (the degradation of infrastructure), increase the burden on women and reduce the adaptive capacity of the population to climate change.

Local governments do not allocate the necessary level of budgetary means for the repair and maintenance of school infrastructure (water, sewage). Women, despite their contribution to social development, are mostly represented 3:1 in all occupational, and only 1% is in the level of the highest political positions, and there are a few women heads of municipalities.48 Women, despite their contribution to social development, are mostly represented 3:1 in all occupational, and only 1% is in the level of the highest political positions, and there are a few women heads of municipalities.

Environmental risks give rise to new inequalities. It is important to track how climate change discussion reproduces inequalities and how they are ‘kept in the shade’. Sometimes, in an attempt to help the poor we fall into a situation when we stigmatize these social layers. For example, in Mali, Suiy’s settlements near the uranium tailings are mostly inhabited by women. Most men migrated for labor, and women take on the risks associated with the expectations in relation to make bare. Why women need water? To continue performing the traditional female roles and thereby further foment these roles? Maybe there is a need to help the traditional male and female roles? In a context of climate change, the issue of change of the discourse on femininity and masculinity must be raised.

Mortality and the incidence of newly diagnosed complications of pregnancy, childbirth and the postpartum period is significantly different in urban and rural areas. In rural areas, complications occur 3-4 times more frequently than in cities. Moreover, almost 80 percent of maternal deaths are also recorded in the countryside.

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Ibid.

Gender, Environment and Climate Change in Kyrgyzstan


1.6. The impact of climate change on agriculture and food security

The planning process for food security virtually ignores the contribution of women and their needs, due to the lack of gender-sensitive methodology. At the same time, women produce most of the food in the world. They need secure land, and have the rights to resources in order to ensure performance productivity. Women’s participation and contribution in non-agricultural business activity traditionally includes the following areas:

- Organization of catering services (restaurants, snack bars, cafes, etc.);
- Small-scale production: custom tailoring and objects of cultural significance (dowry for the bride, etc.);
- Tourism: ethno/folklore/eco, etc.;
- Trade, both wholesale and retail and “shuttle business” – (grey trade);
- At times, the Kyrgyz Republic does not possess a satisfactory level of self-sufficiency in the basic food products, which currently represent the following numbers for domestic production: bread products - 42.8%, vegetable oil - 31.7%, Sugar - 9.1%, meat - 54.6%, fruits and berries - 22.8 %. This fact imposes a threat to the country’s high dependence on the global food markets, as well as the foreign policy of states that export food into our country.\(^\text{75}\)

Women’s participation and contribution in rural women in the development of Kyrgyzstan’s rural economy can be illustrated in the context of land reform. In 2006 there were established 331,601 private farms.\(^\text{76}\) Of these farms, 75% of the lands have already been distributed as shares of agricultural land. 3% of state farms, 75% of the lands have already been distributed as shares of agricultural land. 2006, 96% of the households had the right to the land, and in 2006 there were established 331,601 private farms.\(^\text{76}\)

Women in Kyrgyzstan are actively involved in the agricultural sector, as employment in the agricultural sector is an important source of income. Among the leaders of the peasant communities (farms) women constitute 15.1%, according to the NSC, as of January 1, 2010.\(^\text{77}\)

Women are busy with feeding and breeding cattle, with crop production, with processing dairy products, fruits and vegetables, household and socio-cultural services for the rural population. At the same time, the greatest volume of unacknowledged (informal) economy is in the agriculture sector.\(^\text{78}\) Unfavorable conditions for business, small scale agribusiness and its instability, high taxes, lack of support and poor institutional capacity “pushes” a large section of business, small-scale agribusiness and its instability, high taxes, lack of support and poor institutional capacity “pushes” a large section of business, small-scale agriculture into shadow economy, where it is much more difficult for women to defend their rights than it is for men.

The involvement of women in non-agricultural business activity traditionally includes the following areas:

- Crafts – souvenirs and functional products made of felt, embroidery;
- Opening of hairdressers and beauty salons, the quality of which is usually very low;
- Trade, both wholesale and retail and “shuttle business” – (grey trade);
- At times, the Kyrgyz Republic does not possess a satisfactory level of self-sufficiency in the basic food products, which currently represent the following numbers for domestic production: bread products - 42.8%, vegetable oil - 31.7%, Sugar - 9.1%, meat - 54.6%, fruits and berries - 22.8 %. This fact imposes a threat to the country’s high dependence on the global food markets, as well as the foreign policy of states that export food into our country.\(^\text{75}\)

According to the obligations of the Kyrgyz Republic to ensure food security commitments under the Rome Declaration, the recommended secured level must not exceed 4.6% of imported goods. Based on the balance of food safety products, imports of this group in total consumption are currently at about 25%. The Kyrgyz Republic currently has no system of monitoring and early warning of negative global and domestic trends in the food market. In its current state, the control system of material and technical resources does not ensure the country’s food needs, not only country-wise, but also in the assortment and quality of stored food. Control of food safety and compliance with the specifications is extremely weak, which poses a threat to health and life of the population. The expansion of foreign economic relations of Kyrgyzstan caused an increase in the import of a variety of agricultural products and processed products. This fact increases the proportion of genetically modified and counterfeit goods, some of which cause direct harm to human health or does not possess the qualities for the appropriate labeling.

The impact and influence of climate change on agriculture and food security:

- Water shortage and increased climatic variability that cause damage to agriculture;
- Increase in frequency and severity of crop diseases and pests;
- Lower yields of crops and livestock products;
- Changes in the type of crops and livestock species;
- Increase in the cost of production and selling price of the products;
- Loss of land and property due to floods and desertification;
- Displacement of populations due to droughts and floods;
- Increase in the incidence of infectious diseases;
- Increase in the cost of food security services;
- Increase in the cost of food security services;\(^\text{79}\)


\(^\text{71}\) National Sustainable Development Strategy of the Kyrgyz Republic for 2013-2017, (draft)

\(^\text{72}\) Ibid.

\(^\text{73}\) Ibid.

\(^\text{74}\) Ibid.

\(^\text{75}\) Ibid.

\(^\text{76}\) UNDP ., 2006.

\(^\text{77}\) Ibid.

\(^\text{78}\) Ibid.

\(^\text{79}\) Ibid.

\(^\text{80}\) Ibid.

\(^\text{81}\) Ibid.
The level of representation of women and men - heads of households shows the inequality in terms of legal ownership of assets of the households. At least at the symbolic level, the model where the man is the head and owner of property is preferred by the population. It is important to note that the process of land reform was not gender-oriented, which resulted in the massive registration of family land on men (see chart below). This contributed to a stereotype that, the man is the head of the household, and the family.

Heidrun Strobel of the Kyrgyz Republic, professor Shalikbaev E. D., Asile NGO

There is an interesting opinion about how horses and sheep breeding has changed in our country. For instance, the breeds of horses that initially existed in the population had been grazing, grazing, having meant favorable conditions for development and preservation of pasture. The new breeds of horses that were brought from Russia (these horses ate grass, not mere dried grass), the type of load on pastures had become different and these new breeds of horses perhaps fully transformed the impact of agro biodiversity on the local territory that had been formed during many centuries. It is important to note that the process of land distribution, all household members, including family members, women have their own share in the property (as in the process of land distribution, all household members, including women, were accounted). There is also a problem of access to credit for businesses, since the spouse in whose name all property is registered, does not support her endeavors.80

Due to the projected decline of precipitation and irrigation water after the year 2025, a reduction of the area of sown fields may appear, which will consequently reduce crop yields. This will inevitably impact food security, particularly in the most vulnerable areas. Reduction of food can lead to malnutrition and hunger, which have a long-term impact on health, particularly among children. According to WHO, the middle of the 21st century crop yields in Central Asia may decrease by up to 50%, which can threaten food security.

Food security: the proportion of non-standarded amount of food 82 (in a percentage of the total number of samples)

Women play a crucial role in ensuring household food security, dietary diversity and health of children. While men are mainly occupied with field crops, women are usually responsible for cultivation and preparation of food consumed in the household. Reduction of personal consumption of food is a significant survival strategy for the family. The latter is reflected in two ways: in the increase of the proportion of people with a lack of sufficient weight, or in the increase of the proportion of people suffering from overweight and obesity as a result of unbalanced diet. For example, the energy value of food for poor households is 36% lower than for non-poor. Chronic energy deficiency is observed in 4% of men and 5% of women, and overweight to varying degrees affects 11.8% of men and 37% of women.83 Even today, access to nutritious food for children and pregnant women, especially in the regions of the Kyrgyz Republic, is complicated, resulting in a lack of vitamins and minerals (including iron and iodine) which causes a number of diseases (anaemia in pregnant women, retarded growth and development in children).

In the year of 2009, 4.6% of children aged 1-6 years were underweight in the country, and in 2011 this number already reached 6.9%. Among them, in 2009, 4.5% of the boys and 4.6% of the girls were identified as malnourished, and in 2011 - 6.7% and 7.2%, respectively.84

Due to the need of limiting food consumption, traditional stereotypical requirements for the ideal of femininity are revived, and these requirements include limited food consumption.

With increasing temperature, food safety is becoming a significant issue, as more favorable conditions for the growth of bacteria and fungi are directly related to higher temperatures. At an ambient temperature of more than 55°C, every increase in weekly temperature by one degree leads to an increased incidence of salmonellosis by 5-10%.85

Food safety: the proportion of non-standardized amount of food 82 (in a percentage of the total number of samples)

The growth of conflicts over natural resources is predicted in the context of climate change and the abrupt transformation of temperature amplitudes (for example, between pasture, local communities and mining companies). It is important to increase the participation of local communities, including women and youth, in the planning and control of natural resources.

2. Ibid., p.12.
3. Ibid., 2012.
4. Bacteriological
5. Sanitary-hygienic
6. 5-10%.
12. WHO, “Climate change and food security,” Ibraheem J.N.
CHAPTER 1. ANALYSIS OF THE DYNAMICS OF GENDER RELATIONS IN THE PROCESS OF CLIMATE CHANGE

Among the measures of agricultural adaptation to climate change the following practices are highlighted: planting trees as windbreaks, observation of crop and pasture rotation, composting organic waste instead of burning it, compliance with eco standards, use of new breeds of farm animals and plants, development of the seed sector of vegetable crops, construction of greenhouses, hothouses, growing potatoes, sweet potatoes, cereals, fruits, vegetables, nuts, etc. These activities are carried out under the influence of a combination of self-employment, commercial, and family farming. The effectiveness of these practices is mainly indicative of the level of income generation, which in turn determines the level of productivity in the agricultural sector[14].

In the predicted conditions, the following issues in the field of agricultural development, that will increase poverty and reinforce existing gender inequalities, are highlighted: the use of monocultures instead of burning it, compliance with eco standards, use of new breeds of farm animals and plants, development of the seed sector of vegetable crops, construction of greenhouses, hothouses, growing potatoes, sweet potatoes, cereals, fruits, vegetables, nuts, etc. These activities are carried out under the influence of a combination of self-employment, commercial, and family farming. The effectiveness of these practices is mainly indicative of the level of income generation, which in turn determines the level of productivity in the agricultural sector[14].

The level of energy security in the Kyrgyz Republic is under constant threat. The domestic production of energy is concentrated primarily in hydropower. The country imports more than 90% of all consumed energy. From the report “Challenges and risks of the KR in the transition to sustainable development” , Bishkek, May 2013, it follows that the dependence of hydropower on water resources is very high: 87% of the energy production is generated by hydropower. In the predicted conditions, the following issues in the field of agricultural development, that will increase poverty and reinforce existing gender inequalities, are highlighted: the use of monocultures instead of burning it, compliance with eco standards, use of new breeds of farm animals and plants, development of the seed sector of vegetable crops, construction of greenhouses, hothouses, growing potatoes, sweet potatoes, cereals, fruits, vegetables, nuts, etc. These activities are carried out under the influence of a combination of self-employment, commercial, and family farming. The effectiveness of these practices is mainly indicative of the level of income generation, which in turn determines the level of productivity in the agricultural sector[14].

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The level of energy security in the Kyrgyz Republic is under constant threat. The domestic production of energy is concentrated primarily in hydropower. The country imports more than 90% of all consumed energy. From the report “Challenges and risks of the KR in the transition to sustainable development” , Bishkek, May 2013, it follows that the dependence of hydropower on water resources is very high: 87% of the energy production is generated by hydropower. In the predicted conditions, the following issues in the field of agricultural development, that will increase poverty and reinforce existing gender inequalities, are highlighted: the use of monocultures instead of burning it, compliance with eco standards, use of new breeds of farm animals and plants, development of the seed sector of vegetable crops, construction of greenhouses, hothouses, growing potatoes, sweet potatoes, cereals, fruits, vegetables, nuts, etc. These activities are carried out under the influence of a combination of self-employment, commercial, and family farming. The effectiveness of these practices is mainly indicative of the level of income generation, which in turn determines the level of productivity in the agricultural sector[14].

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Due to the lack of optimal conditions in medical facilities in cold seasons, the intake of the population is reduced, especially among women, who are more likely than men to seek medical assistance;

Power shortages and blackouts, low voltage of the electric current disturbed electric power, due to worn-out equipment, lead to failure of refrigerators, and medical devices, which violates the conditions of storage of medicines, and reduces the quality of medical care;

Failure to comply with the required storage temperatures of vaccines, due to non-refrigeration, makes them unusable. Their further use does not lead to the formation of immunity, increases the risk of infection and vaccine-preventable diseases of children, and complicates the overall epidemiological situation in the country. In some cases, the vaccine stored without proper temperature conditions may cause an allergic reaction in a child, including anaphylactic shock, impending death of a child;

Construction of new and rehabilitation of old small-scale and micro hydropower plants, and the use of renewable energy will provide local communities with uninterrupted quality power, will contribute to solving social and economic problems, and thereby will help solve practical gender needs of both women and men. In addition to promoting gender equality, the uninterrupted power supply will also increase the sustainability of human development via preservation of the natural habitat. Unlike large hydropower plants, the construction of which is usually accompanied by disturbance and destruction of ecological systems by flooding large areas, small-scale and micro hydropower plants on mountain rivers with natural differential levels of turnover, do not take up farmland. In extreme cases, small ponds are formed to help improve the water balance and conservation of biological diversity in their locations.

Chapter I provides a nationwide analysis of gender risks due to climate change. This section of the study can be called an "office-type study," as the study was structured according to the National Report on Climate Change: water, agriculture, health, and energy. Risks associated with climate change threaten to increase gender inequality and may even undermine the progress made in promoting gender equality. It should be understood that these risks are not only systemic and dominate the state management mechanism, but are deeply ingrained, and thus, relate to each household and its inhabitants. This notion sets a new agenda for the researchers to analyze the issues of linkage between climate change and the risks of gender inequality at the levels of local communities and specific households, with particular emphasis on the situation of rural women and women heads of households, and to develop recommendations on local politics.

The study carried an applied character and had the following set of objectives: (I) To identify the level of awareness among the people and the leaders on climate change and risks associated with it; (II) To identify practices of equality and gender inequality, gender regimes in the community and in families (women's participation in decision-making on water, land, and pasture management; in energy and agriculture issues; in time-management); (III) To identify the level of access for women and men to clean water and irrigation, sanitation and health; (IV) To identify the level of access to natural resources, pastures, fields, etc.; (V) To identify the level of awareness and the level of access of women and men to information on sanitation, renewable energy, and other environmentally friendly technologies and equipment.
CHAPTER 2. SOCIAL ANALYSIS OF GENDER INFLUENCE OF CLIMATE CHANGE ON THE BASIS OF PILOT VILLAGES IN OSH AND CHUI PROVINCES

The selection of settlements was carried out according to the following criteria: (I) proximity to and dependence on open water sources (rivers, lakes, etc.) (II) subject to natural disasters (mudflows, droughts, avalanches, etc.) connected with climate change; and (III) the availability of farmland.

The study was conducted in the following villages:

- Dmitrievka village in the Issyk-Ata district of Chui Province was selected as a village located close to the open water source - Issyk-Ata river. There are also 4 ponds located in the village. Irrigation is directly dependent on the water level in the Issyk-Ata river;

- Internatsionalnoe village in the Issyk-Ata district of Chui Province was selected based on the fact that the village is constantly exposed to drought;

- Mady village in Osh Province was selected as the village that regularly suffers from floods.

The study based on three villages used methods of surveying, interviews, and focus group interviews.

The respondents were selected according to the following methodology:

- The number of respondents was calculated according to the number of households. On average, the sample contained 10-12% of the total respondents. Cluster sampling was used along with the definition of the respondents by age and sex. Random sampling method was used within the cluster. Error of the sampling design (DEFT-indicator) was 1.04%.

2.1. Public attitudes towards climate change

Climate change has been identified by the respondents as one of the priority issues along with economic instability and environmental pollution. Problem of dangerous goods in the markets, conflict and criminalization, chemical waste pollution, inequality between men and women is given the fourth, fifth, sixth, seventh and eighth priority respectively.

Female respondents voiced the issue of gender inequality more often than male respondents. Women also tend to be more worried about problem of hazardous goods on the markets and climate change.

Over 90% of the respondents claimed that climate has always been changing; however, at the moment there are processes that are evident of climate change.

Female respondents expressed more concern about climate change and described the process as a negative phenomenon. The majority of male respondents perceive climate change as a negative process, but at the same time, a number of male respondents indicated that there are no such problems, or that climate change is a positive phenomenon.

According to data obtained from the study, only 6% of the respondents noticed that they did not notice the changes in climate over the last 10 years. Male respondents, who felt that climate change is not happening, doubled the number of female respondents with the same point of view (12.2% of men and 6.4% for women).
99% of the respondents indicated that the climate is changing for the worse, and only 1% of the respondents believe that climate change is a positive phenomenon while the respondents who noted the positive nature of climate change were men.

The population showed no clear vision concerning the connection between climate change and human activity. Cause and effect correlation is weakly traced. Thus, among the causes of climate change, sharp seasonal changes in temperature and drought have been listed. I.e. some “natural” processes are taking place, albeit with a negative impact.

Air and water pollution were also named as relatively important causes of climate change. Among other contributing factors, the following ones were identified: technological progress, anthropogenic influence, “poor environmental education of young people”, deforestation/forest logging, damaged environment, reduced growing season. 3.5% of respondents had a hard time commenting on this issue. Men spoke more about the problem of forest logging and the deforestation/forest logging, damaged environment, reduced growing season. 3.5% of respondents had a hard time commenting on this issue. Men spoke more about the problem of forest logging and the deforestation/forest logging, damaged environment, reduced growing season.

Technological progress
Anthropogenic influence
Poor environmental education of young people
Deforestation/forest logging
Mud/flow and droughts
Air and water pollution
Reduced growing season
Forest logging
I do not know

34
29
23
21
17
13
10
6
2
1
0
0
0
0
Men
Women

2.2. Access to information, resource allocation and decision-making

Presence of gender roles was identified in the families of the students' households. Thus, in most cases (more than 70%) a husband was the head of the household.

In 84.3% of cases, legal owners of farms are men, and such a pattern exists throughout the country. If there is no husband and older male child in the family, only in this case a woman is recognized as the owner of the farm.

Furthermore, as studies have shown, rural women have less time for marketing activities, less access to agricultural knowledge, fewer skills in running their own businesses. Agricultural reforms, such as privatization of agricultural enterprises, and the establishment of farms take place without the adequate participation of women, due to their poor representation in local governments, lack of sufficient resources and skills in the business of agriculture.

Thus, under the current trends, reduction of vital resources (water, food, productive land and pastures), will lead to further exclusion of women from the decision-making system, increase the vulnerability of the poor and increase the number of conflicts among the population.

It is curious to note the difference in mentality between the respondents in Chui and Osh Provinces. In Osh Province, in rare cases when the head of a household is a woman, the respondents tend to clarify that the woman is the head of the family because her husband died and she had no other choice. Respondents in Chui Province did not specify the reasons why a woman is the head of the family.

Women from the decision-making system, increase the vulnerability of the poor and increase the number of conflicts among the population.

In this case there is a difference in the perception of the primacy of the family between men and women. Men more often than women, celebrated their supremacy in the family. Men hardly celebrated female supremacy and never mentioned parents as heads of the household.
In 47% of the cases, the man is the main provider of income in the family. In 21.3% of the cases, a woman is the main provider. In 19% of the cases both males and females carry an equal burden in ensuring family income.

Men tend to exaggerate their role in the family. According to male respondents, about 60% of the family budget is provided by the husband. According to the female respondents, this number constitutes only 38%. Women also tend to underestimate their own contribution, with this in mind, female respondents indicated that their contribution to the family budget was at 11%, while male respondents estimated this number to be 13%.

Among the respondents in Chui and Osh Provinces, gender attitudes related to the fact that men are the core providers for the family and not women were identified. The respondents in Mady village of Osh Province noted that women and men earn almost the same income; they have just different income opportunities. Women work more in the fields than men. Men have more freedom; they have the opportunity to earn outside of the village, as they are not responsible for taking care of the elderly and children.

In 45% of the cases, men and women make joint decisions on the use of family budget. In 26.7% of the cases, this role belongs only to men and in 20% of cases – only to a woman. The level of joint decision-making by all members of the family does not exceed 10%.

The opinion of non-working family members is considered only in 2.5% of the cases.
Women report a greater role of a wife in the distribution of the family budget than men. These data indicate a low-income of the rural population, much of which is spent on family meals.

In the surveyed villages, female member of the local councils made up 13.6%. Out of 11 council members in the Internatsionalnoe village, only 1 was a female.

Local council members

<table>
<thead>
<tr>
<th>Role</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>7</td>
</tr>
<tr>
<td>Wife</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>11</td>
</tr>
</tbody>
</table>

Women highlight more family members who are involved in the irrigation process, compared to men, but the overall picture remains the same. The main sources of income in villages are: livestock (48%), agriculture (40%), and service sector (12%).

Due to the projected decline in precipitation and irrigation water after 2025, the area of sown fields may reduce, which will cause a decrease in crop yields. This will inevitably have an impact on food security, particularly in the most vulnerable areas. Reduction of food can lead to malnutrition and hunger, which will have a long-term effect on health, particularly among children.

At the store and at the market

<table>
<thead>
<tr>
<th>Product</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>8%</td>
</tr>
<tr>
<td>Fruits</td>
<td>2%</td>
</tr>
</tbody>
</table>

The main sources of income in villages are: livestock (48%), agriculture (40%), and service sector (12%). In Internationalnoe village, more than 80% of land owners are men; in 9% of 495 households.

Access to irrigation water shifts along with the access to land. Over 60% of the respondents said that the responsibility for irrigation of land lies on the husband, and the second most common response was the responsibility of the son. Women constitute 50% more of the respondents who did not know the answer to this question, which indicates low awareness and participation of women in the decision-making process on the use of water. As a rule, the WUA, RPAWU, and Jayit Committees (executive body of farm land users) consist of landowners.
In each of the studied villages an established Water Users Association existed. Its main function is the distribution of irrigation water, as well as fundraising for water. In large towns such as Mady, WUA includes 10 people, smaller settlements (Dmitrievka and Internationalnnoe villages) - up to 5 people. In the study, we used data on the composition and abundance of AVP not only from Mady village, but the other three villages were included in the AD. Among the employees (38 people) of Water Users Associations (WUAs) in the studied communities, only one was a woman – an accountant in the Dmitrievka village WUA.

In assessing the involvement of different groups in the decision-making process regarding the distribution of irrigation water, 65% of respondents said that they were not involved in decisions about water and 1% did not know whether their household is involved in decision-making or not. Among the respondents who do not participate in decision-making about water and do not know the answer to this question, women were the majority. 34% responded positively, (positive responses among men prevailed).

During clarification of responses, almost all women said they do not participate in decisions about water, but know it from their husbands. 75% of the respondents indicated that they are experiencing problems with irrigation; problems with uneven distribution of water and noncompliance with taking turns in water use, poor condition of the irrigation system, and interruptions in the supply of water from the canal.

Women express greater discontent with water distribution, while men are more concerned about the condition of the irrigation system. The general issue of water scarcity is of equal concern for women and men. Women expressed lower awareness of these issues.

19.9% of the respondents do not have any problems with irrigation. 5.2% did not know if there are problems or not, as they are watering only the garden, and had sold the land share. Thus, in Dmitrievka village, only 52 % of the population has access to irrigation water. The majority of the respondents are not members of pasture committees.
In the context of climate change and the abrupt transformation of temperature amplitudes, the increase of conflicts over natural resources is predicted (for example, between pasture owners, local communities, and mining companies). It is important to increase the participation of local communities, including women and youth, in the process of managing and controlling natural resources.

2.4. Access to Energy and Technology

Energy and transport are two spheres dominated by men; decisions in these sectors tend to move in the direction of addressing the needs of men. However, it is necessary to focus on the basic needs of households and consumption patterns to ensure energy security. The majority of the respondents use charcoal and firewood. Fuels, such as biogas and wind energy are not used at all. Solar panels were used in one case out of all cases studied. The respondents did not name any types of alternative fuel that was not mentioned in the questionnaires. The type of fuel used is as follows:

- **Coal**
- **Biogas**
- **Wood**
- **Electricity**
- **Solar panels**
- **Other**
- **Wind energy**
- **Gas**
- **Dung**

The majority of the respondents use charcoal and firewood. Fuels, such as biogas and wind energy are not used at all. Solar panels were used in one case out of all cases studied. The respondents did not name any types of alternative fuel that was not mentioned in the questionnaires.

At the household level the load on the implementation of reproductive functions are also distributed unevenly. The most significant types of activities in terms of greenhouse gas emissions are house heating, cooking, and transportation. In over 80% of the cases the responsibility for purchasing and delivering fuel lies on the men. In 5-38% of the cases, both husband and wife have equal responsibility. In every 25th case, or in 4% of all cases, women are responsible for purchasing and delivering fuel.
The respondents said that in general, most of them lack electricity, and electricity shortages are most associated with seasonal consumption. In this case there is a difference in the responses of men and women - women are more unsatisfied with energy security than men. Women and children spend more time at home, and are more sensitive to temperature and microclimate inside of the house; they are under greater risk of inefficient heating appliances and furnaces.

33.3% of the respondents indicated that they cannot use any alternative forms of energy. 23.3% said that they did not know whether they can use alternative energy or not. 30.8% of the respondents consider electricity generators to be an alternative source of energy. 1.7% reported that biogas can be an alternative to electricity. 8.3% of the respondents favored the use of solar panels, and 2.5% mentioned natural gas.

Low access to effective domestic technologies - energy efficient furnaces, and safe cooking stoves, on the one hand result in the increased greenhouse gas emissions and inefficient waste of natural resources, and on the other lead to health problems and spread of poverty. For example, the use of inefficient stoves and furnaces in rural areas in Kyrgyzstan leads to excessive fuel consumption, logging of the nearby forests and shrubs, which reduces the capacity of the ecosystems to regulate climate and water retention.
The majority of the respondents assess the quality of water as normal. 22.5% of the respondents consider water to be of good quality and the same number defines it as bad quality. 11.7% of the respondents rated the quality of water as great. In all pilot communities men gave higher ranks to the overall water quality than women. This is explained by the fact that in almost 99% of the households, the function of water purification, food preparation, and laundry is the responsibility of a woman.

Male respondents more frequently ranked water quality as excellent, while women highlighted disadvantages and problems associated with the quality of drinking water.

The vast majority of the respondents do not purify their water. 26.5% of the respondents purify water from time to time, when the water is visually contaminated. 24.8% boil their water, 5.8% skim it, and 3.3% of the respondents purify their water through special filters. Women turned out to be better “experts” in this matter, as they could identify the methods of cleaning water, as well as when and how they do it.

In all the studied villages Countryside Drinking Water User Unions (CDWUU) have been established and are operating. Leadership positions in three villages are occupied by men. Accountants and controllers are mostly women, and in Mady village 100% of CDWUU members are male. Workers are also men.

Water scarcity, and, consequently, low access to clean water, especially in rural areas, is directly correlated with the increasing evidence of diarrhea. Statistics show an increase in household spending on fuel consumption (up from 14.7% in 2006, to 15.2% in 2010). In the meantime, spending on clothing has decreased (from 57.7% to 42.8%) and from personal care products (from 12.9% to 10.2%).

Due to shortage of water, a family often neglects hygienic measures for the sake of more “important” water needs, such as drinking and cooking. The negative impact of unsafe drinking water and reduction of sanitary levels will affect women and children.

Villagers often have water supply in their yards and also water from the fenced and unfenced springs not far from home. Rainwater collected in the tanks, and water from plastic canisters is equally used by village and town dwellers. Village dwellers mention the lack of water for permanent use nearly three times more often than town dwellers. Deterioration of water quality and increased incidence of diseases related to water will intensify the pressure on women, which will reduce the opportunities for women in the labor market and, consequently, decrease their income, leading to poverty.

2.5. The impact of climate change on health

Most common illnesses

| Disease of the circulatory system | 25.30 |
| Infectious diseases of the gastrointestinal tract | 22.70 |
| Infectious diseases of the respiratory tract | 17.30 |
| Neurologic diseases | 10.00 |
| Infectious diseases | 7.60 |
| Genitourinary system | 3.00 |
| Non-communicable diseases of the gastrointestinal tract | 1.70 |
| Cardiovascular disease | 1.50 |
| Diabetes mellitus | 0.90 |
| Mental disorders | 0.70 |
| Non-communicable diseases of the respiratory tract | 0.50 |

Access to clean drinking water is one of the most pressing problems in the country. As the result of the drought, deterioration of the pipes was at 60-65%. In 2006, within the ARIS project, sewers were laid, and, according to the residents, now roots of trees grow into and through these pipes, and water gets polluted, and does not pass through the pipes. Residents get their water from public drinking water sources, according to the respondents, an outbreak of intestinal infection took place in the village in the summer (according to the MOS, in 2012 19 people got sick with hepatitis, and 43 people with intestinal infection). The Dmitrievka village. By the time the CDWUU “Jeek-Suu” was created, the installation of new pipes was carried out, and, according to the residents, now sprout roots of trees grow into and through these pipes, and water gets polluted, and does not pass through the pipes. Residents get their water from public drinking water sources, according to the respondents, an outbreak of intestinal infection took place in the village in the summer (according to the MOS, in 2012 19 people got sick with hepatitis, and 43 people with intestinal infection). Access to clean drinking water is one of the most pressing problems in the country. As the result of the drought, deterioration of the pipes was at 60-65%. In 2006, within the ARIS project, sewers were laid, and, according to the residents, now roots of trees grow into and through these pipes, and water gets polluted, and does not pass through the pipes. Residents get their water from public drinking water sources, according to the respondents, an outbreak of intestinal infection took place in the village in the summer (according to the MOS, in 2012 19 people got sick with hepatitis, and 43 people with intestinal infection). Access to clean drinking water is one of the most pressing problems in the country. As the result of the drought, deterioration of the pipes was at 60-65%. In 2006, within the ARIS project, sewers were laid, and, according to the residents, now roots of trees grow into and through these pipes, and water gets polluted, and does not pass through the pipes. Residents get their water from public drinking water sources, according to the respondents, an outbreak of intestinal infection took place in the village in the summer (according to the MOS, in 2012 19 people got sick with hepatitis, and 43 people with intestinal infection). Access to clean drinking water is one of the most pressing problems in the country. As the result of the drought, deterioration of the pipes was at 60-65%. In 2006, within the ARIS project, sewers were laid, and, according to the residents, now roots of trees grow into and through these pipes, and water gets polluted, and does not pass through the pipes. Residents get their water from public drinking water sources, according to the respondents, an outbreak of intestinal infection took place in the village in the summer (according to the MOS, in 2012 19 people got sick with hepatitis, and 43 people with intestinal infection).

2.6. Maternal and Child Health

Most women in Kyrgyzstan bear children after formal education, and they often noted that MOS do not provide the entire spectrum of medical care, for example, there are no specialized doctors. Some respondents in Mady village indicated that in the event of health problems they turn for help to traditional healers. Most women seek traditional methods of treatment. Explaining the strategy of skilled care avoidance, more women than men complained about the expensive drugs and medical services, distance to the hospital, and the poor quality of service. With this in mind, men are twice as likely to appeal to urban and national health care, where more qualified help could be provided. This is due to higher male mobility and low mobility of women, especially pregnant women and young mothers, who are in the most need of skilled care.
The overall incidence of child morbidity is growing. Most common cases are infectious and parasitic diseases. One of the most pressing problems is the health of school children. None of the schools in the surveyed villages have sewer systems. While only 70.4% of the republic’s 2,191 schools have sewer systems, the number of health workers in schools is less than 40%. Studies have shown that parents do not know the symptoms of disease and are often late to seek medical assistance.

People in the village do not take leave to care for the sick, thus, there is an extra load of unpaid labor that falls on women’s shoulders. MOS operate in the surveyed villages, and have 4-6 paramedics. In all the villages 100% of the MOS staff are women.

In the majority of the cases, the toilet is located outside of the house; only in 6% of the cases is the toilet located inside the house. All the respondents who have indoor toilets also have one outdoors. Women noted that lack of a comfortable, warm toilet and water inside of the house causes inconveniences and health problems.

When purchasing goods for their children, the majority of the respondents look for quality (77.9%), low price is on the second place (19.8%), and 2.3% of the respondents do not have an idea what criteria is used by their wives when purchasing goods for their children.
CHAPTER 2. SOCIAL ANALYSIS OF GENDER INFLUENCE OF CLIMATE CHANGE ON THE BASIS OF PILOT VILLAGES IN OSH AND CHUI PROVINCES

reforms that take place without gender mainstreaming, make women more vulnerable to the economic and environmental challenges. Given the dynamics of the environment shown in the First and Second National Communication on Climate Change, it is necessary to take adaptation measures and reduce the risk for the population in the context of future changes. Strategies and adaptation measures will differ for regions, settlements, and for the social groups. In the given context, the gender component is most significant, as inadequate consideration and involvement of women in decision-making process is about the future, may lead to the reproduction of poverty, increased vulnerability to climate change risks and poor performance of adaptation strategies in general.

CONCLUSIONS

• The Kyrgyz Republic recognizes problems associated with climate change, which is confirmed by meteorological observations. There is major international interest on the issue. However, the policy of adaptation to climate change is in the formation stage and is reactive rather than proactive in nature, which results in the absence of long-term, socially-oriented measures aimed at adaptation to climate change;

• There is a substantial institutional gap between the climate and gender discourses, which is reflected in the virtual absence of gender mainstreaming in climate programs. Lack of gender analysis of climate change effects and other aspects of the ecological crisis leads to a lack of a clear picture of the distribution of risks for different social groups. As a result, programs developed without these data will not be effective. Performance indicators of public policies are gender and environmentally blind and ultimately lead to an asymmetry in the concentration of wealth (or material well-being) and increasing inequality, including gender inequality;

• Women and children are more vulnerable to the adverse effects of climate change due to poor access to resources, information, and decision-making process, etc.

• At the level of local government structures (local councils, village administration, Water Users Associations of Drinking Water Users (VADWU), “Jayit” committees, etc.) a significant gender misbalance is evident in favor of men. The exclusion of women from the decision-making system on access to natural resources such as water, land, etc. is observed;

• In the context of climate change and the abrupt transformation of temperature amplitudes, decline of vital resources can cause an increase in conflict situations, which will lead to further exclusion of women from the decision-making system, and increase the vulnerability of the poorest; According to the Second National Communication on Climate Change, the rise of social tensions will take place in the period from 2050 to 2100, when the predicted peak of water decline will take place in the region.

• Increasing trends of respiratory, cardiovascular and infectious diseases are highlighted as health issues with a direct correlation to climate change. The level of overall child morbidity is increasing with prevalence of infectious and parasitic diseases. A relevant issue is the health of school-age children. A large percentage of rural schools are not supplied with sewage systems and lack the appropriate conditions for promotion of personal hygiene habits;

• Deterioration of drinking water quality and an increase in the incidence of waterborne diseases increases the burden on women, and also reduces the opportunities for women in the labor market; consequently this leads to a decrease in revenues and further instills female poverty;

• Very few studies of the effect of climate change on the structure and dynamics of the disease in terms of the gender component are being conducted, which serves as barrier for adapting preventive measures for gender-sensitive adaptation of the population and health systems to climate change;

• The shortage of professional capacity of doctors has been on the rise since 2005, the number of pediatricians and obstetricians is in decline. The number of pediatricians for each 10,000 children aged 0 to 14 years has decreased from 6.2 to 4.3 in 2005, and the number of obstetrician-gynecologists fell from 4 to 3.7. Analysis of state expenditure on the social sector in the Kyrgyz Republic for 2007-2010.

91 Among the employees of Water Users Associations in the studied communities of 38 people there was only one woman.

92 Analysis of state expenditure on the social sector in the Kyrgyz Republic for 2007-2010.
This fact will inevitably have an effect on the condition of medi-
cal services for women and children, who according to climate
change predictions will be in greater need of these services.

• Health care institutions are facing new challenges arising from
climate change and environmental crisis, and an increase of the
waterborne food poisoning and infections, the launch of social
services for women and children, who according to climate
change predictions will be in greater need of these services.

CONCLUSIONS

1. The problem of inequality between men and women is more
pronounced, especially in rural areas. Employment rates of men
are higher than in rural areas. Men often noted that medical and ob-
ste trical stations do not provide the necessary medical care, for
example, there are no highly specialized doctors. Men are twice
more likely than women to turn to urban and national health
care institutions, hospitals, and medical centers (as a consequence
of a decrease in access to natural resources) and the higher mobility of
men and low mobility of women, especially pregnant women and young
mothers, who are in a dire need of pregnancy, childbirth, and postnatal
care; institutional mechanisms for knowledge spreading and security
provision in local communities (medical and obstetrical stations,
hospitals, schools) are funded on a residual basis and are not ready
for the challenges imposed by climate change. Systematic
power outages and poor quality of power supply cause uncom-
fortable living conditions, which result in decreased efficiency of
productive activities and heavy workloads all the way to birth giving.

2. In the next twenty years the country’s capacity to adapt to cli-
mate change will be determined by complex socio-economic fac-
tors and inherited issues, namely: the environmental degrada-
tion of the territories, the increase in access to natural resources
and the unsatisfactory state of life-supporting infrastructure.

At the community and household level

• The impact of climate change is perceived by the public as one of
the priority issues along with economic problems;

• The households are the main source of funding social services
and how they do it. Women are more aware of the problems re-
lated to water quality, while men tend to focus on infrastructure
issues. In the households where women are the “head”, access to
clean drinking water is higher than in the households with “male
control”;

• Due to climate change, the issue of access to safe drinking water
becomes much more important. Women, according to climate
change predictions, will be more likely to turn to urban and national
health care institutions for help, while men, due to the prevailing gender stereotypes, seek medical help extremely rarely, and only during the acute course of the
disease;

• As the interviews revealed, the respondents mainly turn for treat-
ment to medical and obstetrical stations, clinics, and in rare case
– to regional hospitals. Men often noted that medical and ob-
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care institutions, hospitals, and medical centers (as a consequence
of a decrease in access to natural resources) and the higher mobility of
men and low mobility of women, especially pregnant women and young
mothers, who are in a dire need of pregnancy, childbirth, and postnatal
care;

• In the next twenty years the country’s capacity to adapt to cli-
imate change will be determined by complex socio-economic fac-
tors and inherited issues, namely: the environmental degrada-
tion of the territories, the increase in access to natural resources
and the unsatisfactory state of life-supporting infrastructure.

At the community and household level

• The impact of climate change is perceived by the public as one of
the priority issues along with economic problems;

• The households are the main source of funding social services
and how they do it. Women are more aware of the problems re-
lated to water quality, while men tend to focus on infrastructure
issues. In the households where women are the “head”, access to
clean drinking water is higher than in the households with “male
control”;

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mothers, who are in a dire need of pregnancy, childbirth, and postnatal
care;
• Women and children are increasingly suffering from inadequate power supply, as this limits the use of household appliances, and requires more effort in housekeeping. The respondents showed low awareness of climate change. 36.7% of them indicated that they could not use alternative energy forms, 12.3% said that they did not know whether they can use alternative energy or not. 50.8% of the respondents consider electric generators to be an alternative form of energy. 1.7% reported that they use an alternative to electricity. 8.3% of the respondents favored the use of solar panels, and 2.5% indicated that they did not use this alternative energy source.

• Gender roles form a different response to climate change between men and women. In most of the cases, such decisions are made by a woman alone. In other cases, men and women participate in decision-making processes.

• The vast majority of land owners are male. 64.17% of the respondents stated that they have a large landplot. 34% of all men own a farm. At the same time, 65.83% of the respondents noted that the improvement of the quality of life, the reduction of energy costs, and the possibility of saving resources and livelihood due to land capturing. The government needs to provide more support to women in Osh Province, since they spend more time working on land than men.

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RECOMMENDATIONS
To state authorities:

• Ecology experts, and commissions on development and coor-
  dination of the national gender policy should be include in the
  National Council for Women, Family and Gender Development
  and other structures;
• Gender-sensitive indicators should be included in the depart-
  mental and local government programs on prevention of emergency
  situations and adaptation to climate change.
• State and local government institutions responsible for ad-
  aptation to the changing environmental conditions, climate
  change trends should be introduced and implemented;
• A system of ongoing monitoring and analysis of gender-dis-
  aggregated statistics on environment and climate change
  should be developed;
• State and local government institutions responsible for ad-
  aptation to climate change through the equal participation of all
  stakeholders, especially women, recipients of services and risks
  carries in the process of decision-making on matters of environ-
  mental significance; efforts to respond to emergency situations
  can create the possibility for participation of women in the decision-making process
  on community development. This is the best way to reduce the
  risk of climate change disasters;
• For the development of gender-based adaptation strategies to
  climate change, the following components are needed:
  • Scientific research (with its inclusion in the plans of the NAS
    of Kyrgyzstan) to respond to emergency situations can create
    the possibility for participation of women in the decision-making process
    on community development. This is the best way to reduce the
    risk of climate change disasters;
• Develop plans for emergency situation response (ESR) at the
  local and national levels, taking into account the specific
  needs of different target groups, providing primary place
  an effective warning system through various channels that are
  available for different population groups. Conduct separate
  trainings for young mothers, families in which there are per-
  sons with disabilities. Actively involve different target groups
  in the process of creating plans emergency response;
• There is a need to add an item on the standards to protect
  women and girls in emergency situations.
• Develop a methodology and carry out trainings for employees
  of local governments and local councils on socially-oriented
  planning of local budgets, and the creation of local develop-
  ment programs with long-term climate change and inequality
  in the distribution of risks for different social groups. When
  women receive support and become active participants in the
  process of preparedness and response, their role in the family
  and community is successfully utilized.
• Vulnerability to climate change can be reduced by increasing
  the area of green spaces and working with crops of small ag-
  ricultural producers. This approach also reduces greenhouse
  gas emissions through greening planting;
• Gender inequality has a negative impact on land management,
  pasture management, and agro-forestry.
• Increase the capacity and functional literacy of women and men
  given the necessity for adaptation to climate change through
  improved access to information and education technology and
  consulting resources, especially in rural areas;
• Increase women’s access to services and technologies re-
  quired for water supply, agriculture, care for the family, house-
  hold keeping and enterprises;
• Strengthening the capacity of women’s organizations, self-
  help groups, entrepreneurs and networks, so that they can ne-
  gotiate with the terms of their engagement in the issues of
  sustainable development and adaptation to climate change;
• Develop and implement a set of measures aimed at ensuring
  women’s participation of all stakeholders, especially women,
  recipients of services and risks carriers in the process of deci-
  sion-making on matters of environmental significance; efforts
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  given the necessity for adaptation to climate change through
  improved access to information and education technology and
  consulting resources, especially in rural areas;
• Include adaptation issues into the state educational
  standards, vocational and higher education;
• Distribution of information on climate change and adapta-
  tion measures among the population, health professionals,
  and decision makers. Environmental education can make
  environmental issues solving a part of everyday life and
  survival.
• Promotion of women’s entrepreneurship and support of
  women in taking responsibility for their initiatives to pro-
  mote alternative sources of income.
• To conduct national and regional information campaigns on
  sanitation, hygiene and sustainable use of water resourc-
  es, and ensure access of residents of towns and villages to
  information about the quality of drinking water; the condi-
  tions of decentralized sources of drinking water, and water
  recreational areas used for bathing.
• For local governments and civil society organizations
  • Develop plans for emergency situation response (ESR) at the
    local, regional and national levels, taking into account the spe-
    cific needs of different target groups, providing primary place
    an effective warning system through various channels that are
    available for different population groups. Conduct separate
    trainings for young mothers, families in which there are per-
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    in the process of creating plans emergency response;
    • There is a need to add an item on the standards to protect
      women and girls in emergency situations.
    • Develop a methodology and carry out trainings for employees
      of local governments and local councils on socially-oriented
To international development agencies:

• Incorporate gender experts into climate change projects to determine the impact of gender and make recommendations for achieving gender balance at all levels;

• In the implementation of gender projects include a dimension related to climate change and incorporate these forecasts in the activities.

• Combine environmental protection with income generation for women in ongoing projects, to provide them with sustainable livelihoods. Support civil participation of women in adaptations to climate change, which must be combined with targeted income generating activities (such as programs for saving public funds or paid labor with the gender factor) that may occur in the future.

• Support projects aimed at families, where women and men need to work together for the purpose of adaptation to climate change. As well as projects aimed at reducing the vulnerability of women by increasing their capacity, knowledge and skills related to climate change and incorporate these forecasts in the activities.

• Observe the practices of the ancestors and use them in the process of adapting to climate change. It is also noted that due to climate change, people's health has deteriorated, and allergic reactions are considered to be a direct consequence of climate change. It is also noted that due to climate change, people's productivity has decreased, and crop yields have reduced and mortality among animals has increased.

• Promote renewable energy sources, but they are not using them. Girls are more informed about alternative sources of energy than older women, since they have access to the Internet and are constantly using it. Residents view biogas and solar panels as alternative energy sources. Residents of the Internatsionalnoe village do not know whether they can get energy from renewable energy sources and how much it would cost.

• Incite heads of families to provide them with support. The respondents in Internatsionalnoe village did not come to an agreement on the issue whether the income of women and men is at the same level. Part of the respondents claimed that men have more opportunities to earn money because women have less knowledge and skills related to climate change and incorporate these forecasts in the activities. The respondents in Internatsionalnoe village did not come to an agreement on the issue whether the income of women and men is at the same level. Part of the respondents claimed that men have more opportunities to earn money because women have less knowledge and skills related to climate change and incorporate these forecasts in the activities.
Income opportunities. Women often pour all their income into the family, without even realizing it, people are constantly adapting to the changing conditions.

All the respondents noted the negative impact of climate change on health. When the temperature changes, people's health deteriorates and livestock deaths increase.

In order to avoid negative consequences, less harm to nature and improvement of the environment are a must. How and who will do it is unknown, as people are not ready to take the responsibility for these processes themselves.

The residents rarely use fertilizers, often only in small doses and it is not enough for them to pay. The residents believe that all modern appliances are made with various harmful substances and that in herds and flocks in order to avoid degeneration. The respondents found it difficult to answer the question whether they are quite heavily dependent on agricultural products. Residents indicated that they have enough fuel and energy sources. Residents believe that in order to solve the problems of energy supply, it is necessary to use resources responsibly, to insulate the house, as they (fertilizers) are expensive.

Residents of the village are mainly engaged in animal ranching, livestock care, planting, and gardening. They have access to piped water do not purify it. If the water is visually dirty, there is no interest in finding out how the Chinese were able to do it. If in the past it was not fashionable to use the built-in fireplace, nowadays they are renovated and used at full capacity. Residents agreed that they use technology for daily life and farming to be a necessary measure, since wages are low and there is not enough money, and that they must feed the family, not women.

Residents hoped that local authorities would offer them a tax break (social fund, land tax and water tax), but this did not happen. Crop yields have declined. After each mudslide they have to replant the seeds, it requires additional expenses. But this is not the most important issue. The main issue is lack of innovations in the Ali Okmotu. Baatyrbek (local leader) said that this year he bought an elite variety of corn, called "Pioneer", a kilo of this variety costs 420 soms. He planted the seeds, and then he was told that before the end of the season it is necessary to water it 7 times, and the cultivation 5 times. He believes that if you care for conventional varieties in the same way the yields will rise. But he did not expect such costs, especially in the village with a great shortage of irrigation water. Yield depends on the weather, there is little rain lately, but mudslides are constant. No matter what, if you take good care, yields will be high.

The environment deteriorates. First of all, crop yields have decreased, and secondly health of people living in hazardous areas is deteriorating. Our village is located on a steep hillside, the weather, there is little rain lately, but mudslides are constant. No matter what, if you take good care, yields will be high.

The respondents believe that all modern appliances are made with various harmful substances and that they are quite heavily dependent on ecosystem goods. In 2000, the village had a large apple orchard, which has been completely cut down for firewood within 2 years. Nobody planted new trees, and this place turned into pasture land. People cut down trees for firewood anywhere, nobody plants new trees. Attempts to restore the trees are undertaken only by students, but the plants die due to the lack of water.

Climate change affects migration processes. If corn heading was due to the weather, there is little rain lately, but mudslides are constant. No matter what, if you take good care, yields will be high.

The residents do not purify water, because the water is "good". Water supplies are equipped with appliances; in fact, almost every house has all that is available to the population of Kyrgyzstan. At work everybody has office equipment. The residents rarely use fertilizers, often only in small doses and it is not enough for them to pay. The residents believe that all modern appliances are made with various harmful substances and that they are quite heavily dependent on ecosystem goods. In 2000, the village had a large apple orchard, which has been completely cut down for firewood within 2 years. Nobody planted new trees, and this place turned into pasture land. People cut down trees for firewood anywhere, nobody plants new trees. Attempts to restore the trees are undertaken only by students, but the plants die due to the lack of water.

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anything strange during the day or at night, they run out of the house and run towards the hills. They have learned to protect themselves, but living in constant fear is not good either. We mainly use electricity, because wood is needed all the year round. The used to give us bleach to purify water pipes, but now no one gives it to us, we do not even know what machines that can produce energy exist, how much such a machine costs, how much time it will take to recoup, etc.

Lastly it gets very quick in the season, and cold as well. Such a climate has a significant influence on processing of fields, planting crops, and construction of additional sheds for cattle. To improve profitability they work in the field year-round, crops must be watered on time; there is a need for timely planning the sale of products, of course, at a high price. We do not use anything to ease the house chores. We want to have home appliances, but they are too expensive. Crop yields depend on irrigation water, and on the number of working days in the field. Village dwellers do not have anything about the installation of energy-saving stoves, or other energy-saving devices. Every resident in the village makes greenhouses for personal use, and grows tomatoes, cucumbers, peppers, cabbage and greens from seeds. They had no idea about the “dry toilets”.

Note: Girls are less knowledgeable on these issues than women. There is a philosophy in the village: “she will learn everything once she is married”.

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