

STRUCTURAL BARRIERS TO CLIMATE CHANGE ADAPTATION IN RURAL UZBEKISTAN: SOCIOLOGICAL SURVEY RESULTS (A CASE STUDY OF THE FERGANA VALLEY)**Yusupova Yulduz**

Master's Student, Central Asian University of Environmental and Climate

Change Studies (Green University)

e-mail: yulduz.yusupovarz@gmail.com<https://doi.org/10.5281/zenodo.20028426>

Abstract. This article aims to quantitatively analyze the environmental vulnerability and policy awareness of rural women in the Fergana Valley amidst climate change. The sociological survey results (N=51) revealed that 60.8% of rural women independently manage agricultural plots due to male out-migration; however, 100% of them lack full functional awareness of state "green" subsidies. The findings empirically prove a profound "policy evaporation" in climate finance implementation and highlight that women disproportionately suffer from discriminatory water distribution (52.9%) favoring large-scale commercial farms. Furthermore, the study confirms the prevalence of a "pooled household budget" model (47.1%) in financial decision-making, challenging the applicability of the Western "gender pay gap" metric.

Keywords: climate change, rural women, sociological survey, water scarcity, green finance, sustainable development, Mahalla institution, time poverty.

Annotatsiya. Ushbu maqola iqlim o'zgarishi sharoitida Farg'ona vodiysidagi qishloq ayollarining ekologik zaifligi va siyosatdan xabardorlik darajasini miqdoriy tahlil qilishga qaratilgan. Sotsiologik so'rovnoma (N=51) natijalari shuni ko'rsatdiki, qishloq ayollarining 60,8 foizi migratsiya sababli xo'jalikni to'liq mustaqil boshqarmoqda, biroq ularning 100 foizi davlatning "yashil" subsidiyalaridan to'liq foydalana olmaydi. Tadqiqot iqlim moliyasini joriy etishda chuqur "siyosiy uzilish" (policy evaporation) mavjudligini hamda ayollar asosan yirik fermerlarga nisbatan suv taqsimotidagi kamsitishlardan (52,9%) aziyat chekayotganini isbotlaydi. Shuningdek, qishloq xonadonlarida moliyaviy qarorlar qabul qilishda G'arbning "oyliklar tafovuti" o'lchoviga zid bo'lgan "birlashtirilgan oilaviy byudjet" (47,1%) modeli ustunligi tasdiqlandi.

Kalit so'zlar: iqlim o'zgarishi, qishloq ayollari, sotsiologik so'rov, suv taqchilligi, yashil moliya, barqaror rivojlanish, Mahalla instituti, vaqt byudjeti.

Аннотация. Данная статья направлена на количественный анализ экологической уязвимости и уровня осведомленности о климатической политике сельских женщин в Ферганской долине. Результаты социологического опроса (N=51) показали, что 60,8% сельских женщин полностью самостоятельно управляют хозяйством из-за миграции мужчин, однако 100% из них не имеют полного доступа к государственным «зеленым» субсидиям. Результаты доказывают наличие глубокого «политического разрыва» при внедрении климатического финансирования и то, что женщины в основном страдают от дискриминации в распределении воды (52,9%) по сравнению с крупными фермерами. Также подтверждено преобладание модели «объединенного семейного бюджета» (47,1%) при принятии финансовых решений, что противоречит западной метрике «гендерного разрыва в оплате труда».



Ключевые слова: изменение климата, сельские женщины, социологический опрос, нехватка воды, зеленое финансирование, устойчивое развитие, институт Махалли.

1. INTRODUCTION The acceleration of global temperature rise and climate anomalies has become a severe systemic test for the global economy, particularly for developing nations heavily reliant on agriculture. The Central Asian region, notably Uzbekistan, is recognized as one of the most vulnerable territories to the adverse consequences of climate change. According to long-term forecasts, water resource scarcity in the region is increasing annually, posing a direct and existential threat to food security and the socio-economic well-being of rural populations. In response to these challenges, the Government of Uzbekistan has adopted a comprehensive transition strategy toward a "Green" economy by 2030, implementing large-scale projects aimed at reducing greenhouse gas emissions and fostering climate-resilient agriculture. However, international best practices and scientific literature indicate that climate policies are unlikely to achieve their ultimate objectives if they fail to incorporate intersectional social strata, specifically gender dynamics. Policy documents and macroeconomic programs are frequently drafted in "gender-neutral" language. Consequently, the real socio-ecological conditions and specific needs of the local populations, especially rural women, are often overlooked or marginalized within broader policy frameworks. The primary objective of this article is to quantitatively analyze the actual environmental challenges, financial decision-making culture, and the level of climate policy awareness among rural women in the Fergana Valley. Utilizing a specialized sociological survey, this paper aims to provide empirical evidence illuminating the phenomenon of "policy evaporation"—the disconnect between state policy formulation and grassroots execution.

2. LITERATURE REVIEW. Research at the intersection of climate change and gender has expanded significantly on the international stage in recent years. Reports by UN Women emphasize that climate change disproportionately burdens women, primarily because they constitute the demographic most dependent on natural resources (such as water and fuel) in rural areas. Furthermore, the Food and Agriculture Organization (FAO) has actively promoted the concept of the "feminization of agriculture," highlighting that in developing nations, mass male out-migration has left agricultural responsibilities predominantly on the shoulders of women. However, in the context of Central Asia, particularly post-Soviet Uzbekistan, this process unfolds with unique socio-cultural characteristics. Murtazashvili et al. (2022) analyzed how rural women in post-Soviet territories are often marginalized during agricultural transformations; despite maintaining formal land ownership rights, they face profound structural barriers when accessing financial resources and modern technologies. The existing body of literature has predominantly relied on qualitative methodologies, leaving a significant gap in quantitative (statistical) research illustrating these phenomena in the region. This article seeks to fill this critical academic void.

3. RESEARCH METHODOLOGY AND SAMPLING This research is fundamentally grounded in a quantitative approach, with empirical data collected via a specialized online Structured Contextual Questionnaire developed within the framework of a large-scale international regional project. A purposive sampling strategy was employed. Rather than utilizing mass random sampling, the target demographic consisted directly of individuals operating at the grassroots level of agriculture who experience the daily impacts of climate change: rural women residing in the Fergana and Namangan regions. The questionnaire comprised 12 multiple-choice questions distributed across three core thematic blocks:

1. Perception of climate stressors and labor dynamics;



2. Access to financial resources and decision-making mechanisms;
3. Awareness of state policies and trust in traditional institutions.

A total of 51 rural women participated in the survey. The raw data was processed utilizing the analytical tools provided by the Google Forms platform and subsequently converted into percentage metrics for descriptive statistical analysis.

4. RESULTS AND ANALYSIS

The results of the sociological survey have exposed new, hidden dimensions of climate vulnerability and gender inequality in the rural territories of Uzbekistan. The findings are detailed below.

4.1. The "Feminization of Agriculture" and Severe Time Poverty

The phenomenon of the feminization of agriculture, widely discussed in global literature, was unequivocally substantiated in the Fergana Valley. According to Question 2 of the survey, the absolute majority of respondents—**60.8%**—reported that they currently manage all agricultural and livestock responsibilities completely independently due to the labor migration of male family members. An additional 21.6% share these responsibilities equally with remaining family members. Only a marginal 5.8% indicated that farming is still managed remotely by men.

This profound social transformation severely impacts women's "time budgets." Analyzing responses to Question 9, **76.5%** of participants emphasized that their daily unpaid labor hours have increased due to climate change and water scarcity (37.3% significantly by 3+ hours, and 39.2% slightly by 1-2 hours). Women are now burdened not only with child-rearing and domestic chores but have also assumed the full weight of heavy agricultural labor. This exacerbation of "time poverty" drastically limits their opportunities for socio-political engagement and personal development.

4.2. Environmental Marginalization Amidst Legal Parity

In Uzbekistan, there are no formal statutory barriers preventing women from engaging in entrepreneurship or owning land. The survey results confirmed this: when asked about their greatest concern regarding the future of their household plot (Question 10), only **3.9%** selected legal risks (fear of losing land).

However, this legal parity fails to protect women from systemic hardships, as they find themselves trapped in "environmental marginalization." The largest cohort of respondents—**64.7%**—identified **environmental risk** (severe water scarcity or soil degradation) as their paramount future concern. This is reinforced by Question 1: for **51.0%** of women, the primary climate stressor that increased their workload over the last 5 years was "acute water scarcity and the drying up of local canals." Consequently, while women hold the legal right to manage land, climate change is rendering that land increasingly un-farmable, fundamentally diminishing the value of their property rights.

4.3. Structural Discrimination in Water Distribution

In Central Asia, water is not solely an environmental resource but a critical socio-political asset. Question 5 investigated access to water supply during peak summer droughts. The results are highly alarming: **52.9%** of respondents critically noted that water distribution is "highly restricted, with priority primarily given to large-scale commercial farms." Only 15.7% of women



reported receiving fair water distribution for their household plots. The remaining 31.4% are forced to rely on informal negotiations with community elders. This empirically demonstrates that micro-level agricultural plots (tomorqa) are deemed economically secondary and are systematically sacrificed in favor of macro-objects (large cotton and grain clusters).

4.4. Rejecting Western Metrics: The "Pooled Household Budget" Model

International organizations (such as the World Bank) frequently evaluate women's empowerment through metrics like "individual financial autonomy" or the "gender pay gap." However, rural realities fundamentally contradict this framework. When asked how important financial decisions are made (Question 4), the largest segment of respondents—**47.1%**—stated that decisions are made consultatively, with funds combined into a "**pooled household budget**" (collective resource pooling). Decisions made solely by a senior male accounted for 17.6%, while decisions made independently by the earner accounted for 29.4%. This result proves that in Central Asian households, budgets are managed collectively rather than individually. Therefore, state climate microcredits should be directed toward the family enterprise holistically, provided that the formal signature and voice of the woman are mandated in the approval process. Furthermore, when asked about barriers to purchasing green technology, 37.3% cited a lack of personal savings and 21.6% cited a lack of formal collateral, highlighting an urgent need for collateral-free state credit lines.

4.5. "Policy Evaporation" and Trust in Traditional Institutions

The government has introduced numerous "green credit" lines (e.g., the Hamroh program) to support female entrepreneurship and green technologies. However, Question 6 exposed a profound "policy evaporation." Not a single respondent (**0%**) confirmed being fully aware of or having utilized these programs. Conversely, **56.9%** stated they had never heard of such programs, while 43.1% had heard of them vaguely but did not know how to access them. This exposes a critical execution gap: excellent policies drafted in central ministries are failing to reach the grassroots level.

Interestingly, an analysis of information sources (Question 11) revealed that women have largely lost hope in state extension workers (only 7.8%). Instead, they rely on the Internet/social media (43.1%) and TV/Radio (37.3%). The youth play an indispensable role here: according to Question 8, **35.3%** of youth in these households act as "digital facilitators," using the internet to find agricultural information or buyers. Thus, the youth are not abandoning agriculture; they are serving as intermediaries in its digitalization.

Regarding dispute resolution (Question 7), **66.7%** of respondents indicated they trust traditional local structures (Mahalla committees, Otinoyis) over formal legal authorities. This strongly suggests that international project Grievance Redress Mechanisms (GRMs) must be decentralized to the community level.

5. CONCLUSION AND RECOMMENDATIONS

The quantitative sociological analysis involving 51 respondents empirically confirms that climate change mitigation policies are encountering severe socio-ecological barriers and gender inequalities in practice. As women's time budgets shrink and environmental risks amplify, state support remains structurally inaccessible to the grassroots level. To break through these barriers and humanize climate policy, the following targeted measures are recommended:

1. **Redirecting Subsidy Vectors:** State expenditures and international climate finance must



shift away from exclusively funding large-scale commercial clusters. For the more than 60% of independently managed female plots—which form the backbone of local food security—specialized collateral-free microcredit lines for drip irrigation and solar panels must be introduced.

2. Developing Localized, Female-Specific Training Programs: Given that nearly half of the respondents (49.0%) preferred training conducted solely within their neighborhood and exclusively for women, state agencies and NGOs must relocate climate and financial literacy programs from remote district centers directly to the villages, accommodating the acute time poverty of rural women.

3. Leveraging Youth's Digital Potential for Information Delivery: Government bodies must modernize their promotional strategies for credit lines like "Hamroh." Instead of outdated physical posters, campaigns should utilize targeted social media content (Telegram bots and short videos) optimized for the smartphones of rural youth, who act as the primary digital facilitators for their mothers.

4. Integrating the Mahalla Institution into Environmental Standards: The ineffectiveness of standard project hotline numbers in rural areas (highlighted by the 66.7% preference for traditional structures) requires immediate revision. To resolve disputes in a culturally safe manner, formal environmental grievance mechanisms must officially incorporate the Mahalla system and local female activists as primary mediators.

These practical strategies will serve to make the climate change adaptation process in rural Uzbekistan not only environmentally resilient but also socially just and sustainable.

REFERENCES

1. Strategy for the Transition to a "Green" Economy in the Republic of Uzbekistan for the Period 2019-2030. (2019). Tashkent: National Database of Legislation of the Republic of Uzbekistan.
2. UN Women. (2020). Gender, Climate & Security: Sustaining Inclusive Peace on the Frontlines of Climate Change. New York: United Nations Entity for Gender Equality.
3. FAO. (2021). The Role of Women in Agriculture and Climate Resilience. Rome: Food and Agriculture Organization of the United Nations.
4. Murtazashvili, I., et al. (2022). Feminization, rural transformation, and wheat systems in post-soviet Uzbekistan. *Journal of Rural Studies*, 93, 1-10.
5. Djoudi, H., Brockhaus, M., & Locatelli, B. (2016). Beyond dichotomies: Gender and intersecting inequalities in climate change studies. *Ambio*, 45(3), 248-262.
6. Green Climate Fund (GCF). (2019). Updated Gender Policy and Gender Action Plan 2020–2023. Incheon: Green Climate Fund Secretariat.

