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Kyrgyz Republic

Report on Technology Plans Actions

Part I Technology Action Plans for Climate Change Adaptation (agriculture and water sectors)

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Technology Needs Assessment (TNA) for Adaptation Report on Technology Action Plans for the Agriculture and Water Resources sectors

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Note

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Contents

Executive Summary	6
1 Technology action plan for the agriculture sector	8
1.1 TAP for the Livestock subsector	8
1.1.1 Sector overview	8
1.1.1.1 Agricultural production.....	8
1.1.1.2 Legal and policy framework for livestock development	11
1.1.2 Action plan for technology “Sustainable pasture management”	15
1.1.2.1 Introduction.....	15
1.1.2.1 Ambitions for TAP on SPM	16
1.1.2.2 Actions and activities selected for inclusion in the TAP	16
1.1.2.3 Stakeholders and timing of TAP implementation.....	22
1.1.2.4 Assessment of resources required for activities.....	25
1.1.2.5 Management planning.....	27
1.1.2.5.1 Risks and contingency planning	27
1.1.2.5.2 Next steps.....	28
1.1.2.6 General table of TAP for SPM technology.....	29
1.2 TAP for the subsector “Crop production”	35
1.2.1 Action Plan for Organic Agriculture Technology	37
1.2.1.1 Introduction.....	37
1.2.1.2 Ambitions for TAP	38
1.2.1.3 Activities and activities selected for inclusion in the TAP	38
1.2.1.4 Stakeholders and timing of TAP implementation.....	43
1.2.1.5 Assessing the resources needed for actions and activities.....	45
1.2.1.6 Management planning.....	47
1.2.1.6.1 Risks and contingency planning	48
1.2.1.6.2 Next steps.....	48
1.2.1.7 Summary table of TAP for OA.....	49
1.2.2 Action plan for Drip Irrigation technology	54
1.2.2.1 Introduction.....	55
1.2.2.2 Ambitions for TAP	56
1.2.2.3 Activities and activities selected for inclusion in the TAP	56
1.2.2.4 Stakeholders and timing of TAP implementation.....	60
1.2.2.5 Assessing the resources needed for actions and activities.....	62
1.2.2.6 Management planning.....	63
1.2.2.6.1 Risks and contingency planning	63
1.2.2.6.2 Next steps.....	63
1.2.2.7 General table of TAP for DI	64
1.3 Cross-cutting issues in the Agriculture sector	67
Bibliography	69
Appendix I. List of stakeholders involved and their contacts.....	70
2 Technology Action Plan and Project Ideas for the Water Resources Sector.....	72
2.1 TAP for the Water Resources sector	72
2.1.1 Sector overview	72
2.1.2 Action plan for the technology “Energy- and resource-saving drinking water supply systems from surface sources using local materials”	84
1.1.2.2 Introduction.....	84
2.1.2.1 Ambitions for TAP	85
2.1.2.2 Activities and activities selected for inclusion in the TAP	85

2.1.2.3	Stakeholders and timing of TAP implementation.....	86
2.1.2.4	Assessing the resources needed for actions and activities	87
2.1.2.5	Management planning.....	87
2.1.2.5.1	Risks and contingency planning	87
2.1.2.5.2	Next steps.....	88
2.1.3	Action plan for the technology “Energy efficient pumps for pumping stations in the Kyrgyz Republic”	96
2.1.3.1	Introduction.....	96
2.1.3.2	Ambitions for TAP	96
2.1.3.3	Activities and activities selected for inclusion in the TAP	97
2.1.3.4	Stakeholders and timing of TAP implementation.....	97
2.1.3.5	Assessing the resources needed for actions and activities	97
2.1.3.6	Management planning.....	98
2.1.3.6.1	Risks and contingency planning	98
2.1.3.6.2	Next steps.....	98
2.1.3.7	General TAP table.....	100
2.1.4	Action plan for technology A3 “Subsoil irrigation against the background of closed drainage using the subsoil irrigation method.”	103
2.1.4.1	Introduction.....	103
2.1.4.2	Ambitions for TAP	103
2.1.4.3	Summary of barriers and measures to overcome barriers.....	103
2.1.4.4	Stakeholders and timing of TAP implementation.....	104
2.1.4.5	Assessing the resources needed for actions and activities	104
2.1.4.6	Management planning.....	104
2.1.4.6.1	Risks and contingency planning	104
2.1.4.6.2	Next steps.....	105
	Possible further steps should be aimed at finding sources of funding, i.e. the negotiation process must be intensified, both with potential investors and interested parties.	105
	The next step should be the preparation of legal acts in order to create favorable conditions: provide	105
	various benefits, especially for local producers. And, of course, this is an increase in potential: awareness, training, etc.	105
2.1.4.7	General TAP table.....	106
2.2	Project ideas for sector A	109
2.2.1	Summary of project ideas for sector A	109
2.2.2	Specific project ideas	109
1.3.	Cross-cutting issues.....	111
	Bibliography	111

List of tables

Table0.1..	Summary table on TAP of all priority agricultural technologies	Error! Bookmark not defined.
Table1.1.	Production of livestock products, thousand tons	8
Table1.2.	Dynamics of livestock numbers in the period 2018-2022.....	8
Table1.3.	Farm animal productivity	9
Table1.4.	Pasture area by region and grazing season, hectares.....	10
Table1.5.	Policy and legal documents on livestock production	11
Table1.6.	Identified barriers and measures for the implementation of SPM.....	18
Table1.7.	Specific types of actions for TAP on identified barriers	20
Table1.8.	Activities by type of TAP action	21
Table1.9.	Stakeholders by actions and activities	22

Table1.10. Assessment of financial needs for TAP implementation and sources of financing.....	25
Table1.eleven. Risks that may hinder the implementation of TAP and measures to mitigate them	27
Table1.12. Policy and legal documents on crop production and environmental management	35
Table1.13. A set of barriers and measures to promote environmental protection by category.	39
Table1.14. Barriers and TPO actions to overcome them.....	40
Table1.15. Activities for TAP by type of action for OCX technology.....	42
Table1.16. Stakeholders by actions and activities.....	43
Table1.17. Estimation of the cost of TAP activities by type of action.....	45
Table1.18. Risks that may hinder the implementation of TAP and measures to mitigate them.....	48
Table1.19. Policy and legal documents on crop production and CR.....	54
Table1.20. Set of barriers and measures for the development of “Drip irrigation” technology	57
Table1.21. Barriers and actions for TNAs.....	58
Table1.22. Activities for TAP by type of action for CO technology	60
Table1.23. Stakeholders and timing of implementation of TAP activities on CR	60
Table1.24. Necessary resources and sources of financing for TAP activities.....	62
Table1.25. Risks that may hinder the implementation of TAP and measures to mitigate them.....	63

Executive Summary

This report marks the third instalment in the Technology Needs Assessment (TNA) project for mitigating climate change in the Kyrgyz Republic. It aims to delineate technological activities, identify responsible authorities, and present an action plan for prioritized technologies in the Kyrgyz Republic, resulting from the TNA project implementation.

The TAP is a concise plan outlining the adoption, dissemination, and transfer of priority technologies contributing to the country's social, environmental, economic development, and climate change adaptation. It encompasses specific actions derived from the analysis of barriers and enabling conditions.

Developed following the UNEP CCC guidance¹ this report focuses on adaptation sectors: agriculture and water. Selection was based on climate risk assessments overseen by relevant Kyrgyz Republic government departments, aligned with the country's development priorities.

Following the TNA methodology, national experts compiled a long list of technologies and technical fact sheets (TFS) for each sector. Prioritization criteria spanned economic, social, environmental, climate, and institutional-political groups. Three technologies were identified as priorities for adaptation sectors based on a Multi Criteria Analysis (MCA) approach².

Building on the second edition of the UNEP CCC guide, "Overcoming Barriers to the Transfer and Dissemination of Climate Technologies," the report aimed to identify and remove barriers to technology transfer³. An industry technology working group, representing stakeholders, facilitated the barrier analysis process. Logical problem analysis (LPA) and problem trees were employed to understand cause-and-effect relationships among barriers⁴.

Market mapping techniques, including stakeholder consultations, informed the categorization of barriers and identification of cross-technology relationships. The subsequent phase involved working groups identifying measures to support technology transfer. In collaboration with the barrier analysis, logical problem analysis (LPA) was employed to determine and describe measures for overcoming barriers. The proposed measures were evaluated based on their financial and economic profiles and the incentive measures.

The National Supervisory Council oversees project implementation, consisting of deputy ministers from relevant ministries, fostering efficient multi-stakeholder decision-making and promoting awareness of technology needs assessment. The TNA project, funded by Green Climate Fund Readiness allocation, is coordinated by the Ministry of Natural Resources, Ecology and Technical Supervision, the project is executed by UNEP through the CTCN and the Copenhagen Climate Center.

Sectoral technology working groups, representing stakeholders, were formed to organize the TAP process. National consultants adopted a collaborative approach, engaging stakeholders in two working groups focused on the agriculture and water sectors.

The TAP process began with a national needs-focused analysis, followed by a desk study of policies and technical documents. Consultations involved direct meetings, interviews, and surveys with

¹ <https://tech-action.unepccc.org/tna-methodology/>

² <https://tech-action.unepccc.org/wp-content/uploads/sites/2/2019/05/final-mca-guidance-mitigation-september2015-1.pdf>

³ <https://tech-action.unepccc.org/publications/identifying-and-prioritising-technologies-for-mitigation/>

⁴ <http://www.tech-action.org>

stakeholders. Draft Technology Action Plans (TAPs) were presented, discussed, and refined through stakeholder meetings.

The action plans were developed to overcome barriers for each technology, discussed in group working sessions with stakeholders. The plans underwent revisions based on meeting recommendations and were approved by the National Supervisory Council, ensuring alignment with UNFCCC requirements.

Each action plan details the sector, goals, list of actions, funding sources, responsible bodies, timelines, risks, success criteria, monitoring indicators, and budgets. Priority technologies are elaborated in the First Technology Needs Assessment Report, with the second report focusing on Barrier Analysis and Incentive Framework.

Emphasizing that all analysed technologies within the project have real opportunities for financing and implementation, the reports provide comprehensive insights into the supporting framework and market mapping for these technologies. The TAPs were used to inform the elaboration of project-specific Concept Notes for the GCF, which is the final stage deliverables of the TNA project.

1 Technology action plan for the agriculture sector

1.1 TAP for the Livestock subsector

1.1.1 Sector overview

1.1.1.1 Agricultural production

Livestock farming has always been and continues to be of exceptional importance in the economy of Kyrgyzstan, in agriculture and in the life of the country's population. The role and importance of livestock farming in Kyrgyzstan is determined by the following objective factors:

- the historical tradition of the Kyrgyz people;
- the presence on the territory of the country of large tracts of natural high-mountain pastures and hayfields (which occupy 45% of the entire territory of the country and 87% of the territory of all agricultural land) and allow the production of economically cheap and environmentally clean food products and high-quality raw materials for the processing industry);
- stable demand (with a tendency to constant growth) for livestock products in the republic, in the region, as well as in world markets;
- the lack of other areas of employment, especially in the high mountain regions of the country, where extensive livestock farming remains the only source of income for residents of local communities;
- weak development of other sectors of the economy, especially industry and construction.

According to NSC data for the last 5 years - 2018-2022. – the share of livestock in agricultural production averaged 48.1%.

Gross livestock production in recent years is presented in table. 1.1.

Table 1.1. Production of livestock products, thousand tons⁵

Products	2018	2019	2020	2021	2022
Meat (slaughter weight)	221.3	226.2	230.4	230.5	248.3
Raw milk	1,589.7	1,627.8	1,668.0	1,698.9	1,734.1
Wool (physical weight)	12.8	12.9	13.1	13.1	12.9
Eggs, million pieces	533.2	561.3	562.0	564.2	607.9

The number of farm animals tends to systematically increase. The dynamics of the number of farm animals in recent years is presented in Table. 1.2

Table 1.2. Dynamics of livestock numbers in the period 2018-2022.⁶

Years	Cattle	including cows	Horses	Sheep and goats	Pigs	Domestic bird
2018	1,627.30	812.6	498.7	6,167.90	51.3	6,009.70
2019	1,680.70	835.3	522.6	6,266.7	34.7	6,211.2
2020	1,715.80	855	539.6	6,278.70	29.5	6,070.40

⁵NSC. Yearbook. Kyrgyzstan in numbers. 2023 <http://www.stat.kg/ru/publications/sbornik-kyrgyzstan-v-cifrah/>

⁶Right there.

2021	1,750.50	868.8	547.2	6,278.10	29.5	5,924.70
2022	1,783.50	885.7	534	6,201.00	25.6	6,368.70
Height, %	9.6	9.0	7.1	0.5	-50.1	6.0

As can be seen from the table, over the past 5 years the number of livestock has been constantly growing, with the exception of pigs, which is associated with the religious tradition of the majority of the country's population. The main factors for the growth of livestock numbers are low animal productivity, an undiversified economy, low financial literacy and traditional stereotypes of rural residents who view livestock as a source of cash income and a means of accumulating savings.

The level of productivity of farm animals in Kyrgyzstan is low. (see Table 1.3) It has fallen very much compared to the period of the Soviet economy.

Table 1.3. Farm animal productivity⁷

Index	2018	2019	2020	2021	2022
Average milk yield per cow, kg	1,987	2,002	2,006	2,009	2014
Average wool shearing per sheep (in physical weight), kg	2.4	2.4	2.4	2.4	2.3
Average egg production of one laying hen, pcs.	120	119	117	119	132

It should be noted that the livestock and grassland ecosystems of Kyrgyzstan are trapped in a vicious circle of declining productivity: overgrazing of animals and degradation of pastures lead to lower levels of feed availability, which reduces the vital activity and productivity of animals, forcing households to increase the number of animals to compensate for the decrease in productivity, which, in turn, increases the load on pastures and leads to even greater degradation.

The government of the Kyrgyz Republic is taking measures to increase livestock productivity and, accordingly, reduce the total number of public herds and the load on natural pastures, which will help stop the process of their degradation. In 2019, according to the Ministry of Agriculture, there were 263 fire farms, including 7 State breeding plants, 20 Farm breeding plants and 236 Farm breeding farms.⁸

In 2021, 82,269 cows and heifers were artificially inseminated across the country. Compared to 2020, 3,138 more animals were inseminated. In pilot villages, increasing livestock productivity through targeted selection using artificial insemination and increasing production volumes brings economic benefits to farmers.⁹

452 points of artificial insemination of cattle were opened throughout the republic, of which 233 points are currently successfully operating. Artificial insemination points are provided with liquid

⁷NSC. Kyrgyzstan in numbers. 2023 <http://www.stat.kg/ru/publications/sbornik-kyrgyzstan-v-cifrah/>

⁸Ministry of Agriculture website. Live-

stock. <https://agro.gov.kg/ru/%D0%BF%D0%BB%D0%B5%D0%BC%D0%B5%D0%BD%D0%BD%D0%BE%D0%B5-%D0%B6%D0%B8%D0%B2%D0%BE%D1%82%D0%BD%D0%BE%D0%B2%D0%BE%D0%B4%D1%81%D1%82%D0%B2%D0%BE/>

⁹Ministry of Agriculture website. Information on the introduction of biotechnologies in livestock farming. <https://agro.gov.kg/download/%d0%b8%d0%bd%d1%84%d0%be%d1%80%d0%bc%d0%b0%d1%86%d0%b8%d1%8f-%d0%be-%d0%b2%d0%bd%d0%b5%d0%b4%d1%80%d0%b5%d0%bd%d0%b8%d0%b8-%d0%b1%d0%b8%d0%be%d1%82%d0%b5%d1%85%d0%bd%d0%be%d0%bb%d0%be%d0%b3%d0%b8/>

nitrogen by the Republican Breeding Station “Elite”, and the provision of high-quality semen of breeding bulls is carried out by the Biotechnological Laboratory of the Kyrgyz Research Institute of Livestock and Pastures and distribution companies.¹⁰

The livestock industry can both be sensitive to climate Risks and manage climate Risks, both of which require further study. Poorly managed rangelands, where soil and ecosystems are allowed to degrade, can exacerbate climate Risks such as floods, droughts and biodiversity loss. At the same time, climate change can affect both the net primary productivity of land on which livestock feeds and, in some cases, the physical health of the animals themselves, especially through hazards such as drought, but also through second-order impacts such as an increase in the prevalence of diseases.

The impact of climate change on livestock production is varied. Unfortunately, reliable local data are not available for all aspects of climate change impacts. Thus, when analyzing the already observed vulnerability, only the output yield of natural pastures, which form the basis of livestock production in Kyrgyzstan and are located at different altitudes from 206 to 4000 m above sea level, is assessed.

According to the Department of Pastures and Livestock Breeding of the Ministry of Agriculture of the Kyrgyz Republic, in 2016, all pastures in the country were distributed according to livestock grazing seasons, depending on the natural and climatic conditions of the regions and the established practice of pasture use (see Table 1.4).

Table 1.4. Pasture area by region and grazing season, hectares.¹¹

No.	Areas	Total pasture area	Spring-autumn	Summer	Winter
1	Batken	590 430	251 997	127 576	210 857
2	Jalal-Abad	1 638 220	1 012 330	418 957	206 933
3	Naryn	2 591 286	707 355	1,157,368	761 563
4	Osh	1,397,651	55 581	975 536	366 534
5	Thalassskaya	366 534	373 009	106 603	176,598
6	Issyk-Kul	1 413 301	248 258	839 942	325 101
7	Chuyskaya	762 783	268 309	315 489	178,985
By republic		9 030 890	2 916 839	3 941 471	2 168 690

At the same time, in 2016, pasture productivity was 4.2 c/ha on spring-autumn pastures, 5.5 c/ha on summer pastures, 2.7 c/ha on winter pastures, and 15.3 c/ha on hayfields.¹² According to information from the State Design Institute for Land Management, Kyrgyzgiprozem, in 2016, in terms of the degree of degradation of 70%, winter pastures (villages) located near settlements, which account for 27% of the total pasture area of the country, were in the lead. Spring-autumn (or intensive) pastures, which occupy 30% of all pastures in the country, were degraded by 50%, and summer (distant pastures, constituting 43% of the area of all pastures in the country, were degraded by 36%.¹³ However, as was generally acknowledged by participants in discussions at the AWG meetings, many statistics on pasture conditions at the country level are outdated.

¹⁰Right there.

¹¹Website of the Department of Pastures and Livestock Breeding of the Ministry of Agriculture of the Kyrgyz Republic and the Agency for Hydrometeorology under the Ministry of Emergency Situations of the Kyrgyz Republic - <https://sropasture.kg/info>

¹²Website of the Department of Pastures and Livestock Breeding of the Ministry of Agriculture of the Kyrgyz Republic and the Agency for Hydrometeorology under the Ministry of Emergency Situations of the Kyrgyz Republic - <https://sropasture.kg/info>

¹³Website of the Department of Pastures and Livestock Breeding of the Ministry of Agriculture of the Kyrgyz Republic and the Agency for Hydrometeorology under the Ministry of Emergency Situations of the Kyrgyz Republic - <https://sropasture.kg/info>

Conducted studies of pasture productivity in the Kyrgyz Republic¹⁴ show that climate change has a negative impact on pasture productivity in most (96%) of the country. This is primarily due to changes in rainfall patterns, resulting in different trends in all parts of the country and significant uncertainty remains about future changes. In contrast, the impact of livestock grazing practices has decreased over the past decade as a result of improved compliance with environmental policies across much of the country.¹⁵

Recent studies of pasture conditions using spectral indices based on Landsat satellite images and a digital elevation model carried out by IFAD (IFAD), taking into account pasture types, grazing periods and altitude, as well as the results of field studies, showed a high level of degradation processes in all pastures. The study results show that large areas of grassland were moderately to severely degraded during the periods 2000-2004. and 2016-2020 This study estimates that 94% of grasslands (a total of 69,971 CM2) have been degraded for at least one season.

1.1.1.2 Legal and policy framework for livestock development

A detailed analysis of the legal framework for the development of the agricultural sector and the policy challenges facing the sector that determine the introduction and expansion of modern technologies in agricultural production is presented in the second report of the project “Analysis of Barriers and Facilitative Frameworks” for the introduction and diffusion of prioritized technologies. In this report, we will highlight the main political and legal acts that define the framework for the current development of livestock farming in the Kyrgyz Republic.

Table 1.5. Policy and legal documents on livestock production

Title of documents	Acceptance date	Content
Land Code of the Kyrgyz Republic	June 2, 1999 N 45	This Code regulates land relations in the Kyrgyz Republic, the grounds for their occurrence, the procedure for the exercise and termination of rights to land and their registration, and is also aimed at creating land market relations in the conditions of state, municipal and private ownership of land and the rational use of land and its protection. Classifies pastures as particularly valuable lands. Pastures cannot be transferred to lease or private ownership.
Law of the Kyrgyz Republic “On food security of the Kyrgyz Republic”	August 4, 2008 N 183	This Law establishes the main directions in the field of ensuring food security of the Kyrgyz Republic, which is an integral and important part of the national security of the state. The main areas of government support are: - guarantees for payment for food products sold by agricultural producers at pre-announced prices; - subsidies for the production of basic food products; - development of leasing activities aimed at strengthening the material and technical base of rural commodity producers; - financing of research programs for the development of seed production and selection of agricultural plants and animals, breeding, improvement of technologies for production, processing, storage and rational use of food products.

¹⁴Wang, Y., Yue, H., Peng, Q., He, Q., Hong, S., and Bryan, B.A. (2020). Recent response of net primary productivity of pastures to climatic and anthropogenic factors in Kyrgyzstan. *Land Degradation and Development*, 31(16), 2490–2506. URL: <https://onlinelibrary.wiley.com/doi/abs/10.1002/ldr.3623>

¹⁵Climate Risk Profile: Kyrgyz Republic (2021): World Bank Group and Asian Development Bank.

Title of documents	Acceptance date	Content
Law of the Kyrgyz Republic “On the development of agriculture of the Kyrgyz Republic”	May 26, 2009 N 166	This Law regulates the relationship between rural commodity producers and state authorities and local self-government, establishes the legal basis for the implementation of state socio-economic policy in the field of development of agriculture and production of agricultural products in order to provide the population with food, industry with raw materials and, accordingly, the sustainable development of the regions of the republic . 1. The objectives of this Law are: 1) ensuring food security of the state; 2) ensuring sustainable economic and social development of the agri-food sector of the economy of the Kyrgyz Republic; 3) creating conditions for economic and scientific support for the production of competitive agricultural products and their processed products; 4) development of social and other infrastructure in rural areas and creation of favorable living conditions for the rural population.
Law of the Kyrgyz Republic “On the management of agricultural lands”	January 11, 2001 N 4	This Law regulates the legal relations of agricultural land management and is aimed at ensuring the effective and safe use of land in the interests of the people of the Kyrgyz Republic. Establishes that the right of ownership to agricultural land plots in the Kyrgyz Republic belongs to the state, citizens of the Kyrgyz Republic, cAPUeratives and legal entities of the Kyrgyz Republic engaged in the cultivation and (or) processing of agricultural products.
Law of the Kyrgyz Republic “On the protection of soil fertility of agricultural lands”	August 10, 2012 N 165	This Law regulates relations in the field of soil protection, fertility, quality preservation and protection from degradation and other negative phenomena associated with the ownership, use, and disposal of agricultural lands. Establishes the principles of state policy in the field of soil protection in the conditions of risky mountain farming and livestock farming.
Law of the Kyrgyz Republic “On Pastures”	January 26, 2009 N 30	According to the Law, pastures are the exclusive property of the Kyrgyz Republic. ¹⁶ Pasture lands are one of the main national resources of the country, therefore ensuring their rational and sustainable use is the most important state task. responsibility and control over the management of state pasturelands, in addition to the right of disposal, has been transferred to local government bodies, which have the right to delegate powers for the management and use of pastures to associations of pasture users of local communities. administrative-territorial unit in relation to the use of pastures. PPPs are established as bodies of territorial public self-government and are subject to state registration as a legal entity with the justice authorities. The executive unit of the PPP is the Jaiyt Committee (Pasture Committee). The Pasture Committee (PC) consists of representatives of pasture users, deputies of the local kenesh (Council), a representative of the authorized body on environmental and forestry issues, heads of the executive body of local self-government. The PC

¹⁶Right there. Art. 3.

Title of documents	Acceptance date	Content
		manages the current activities of the pasture users association.
Law of the Kyrgyz Republic “On the identification of animals and products of animal origin”	June 6, 2013 N 91	This Law regulates relations related to the identification, registration, traceability of animals, as well as products of animal origin, defines the organizational, legal and financial basis for the identification of animals, establishes the basic principles of organizing and conducting this work on the territory of the Kyrgyz Republic and is aimed at creating conditions that ensure obtaining reliable information about identified animals and products of animal origin. The objectives of the Law are: 1) implementation of a unified animal identification system on the territory of the Kyrgyz Republic; 2) obtaining prompt and reliable information about animals to improve their productive performance, manage and forecast markets for livestock products; 3) planning and carrying out anti-epizootic measures, therapeutic, preventive and veterinary-sanitary measures using reliable information about the number of animals; 4) ensuring biological safety, providing consumers with products and raw materials of animal origin with complete and reliable information about the origin, quality and safety of products sold.
Law of the Kyrgyz Republic “On breeding in livestock farming of the Kyrgyz Republic”.	April 27, 2009 N 133.	This Law establishes the legal, economic, organizational basis for the breeding of breeding animals, the production and use of breeding products (material) and is aimed at preserving and enhancing the gene pool of breeding animals, reproducing and improving their productive qualities. At the same time, it is quite obvious that the law is also intended to reduce the load on natural pastures and stop degradation processes. The law defines the following goals of breeding: - creating conditions for subjects of breeding in resolving issues of reproduction; - breeding highly productive farm animals; - preservation of the gene pool of breeding animals and - introduction of modern breeding technologies.
Law of the Kyrgyz Republic “On Veterinary Medicine”	December 30, 2014 No. 175	This Law defines the legal, social, organizational, financial and economic framework in the field of veterinary medicine and is aimed at protecting the population from diseases common to humans and animals, ensuring epizootic welfare and veterinary and sanitary safety on the territory of the Kyrgyz Republic. The main objectives of veterinary medicine are: 1) protecting public health from diseases common to animals and humans; 2) protecting animal health from diseases and ensuring epizootic well-being; 3) protection of the territory of the Kyrgyz Republic from the introduction and spread of infectious and exotic animal diseases; 4) control over the safety of products, raw materials of animal and plant origin, veterinary medicines, feed and feed additives, as well as taking measures to protect the environment; 5) development and use of modern, scientifically based methods for diagnosing and combating animal diseases; 6) carrying out timely anti-epizootic measures; 7) development of veterinary science, basic and continuous veterinary education.

Title of documents	Acceptance date	Content
Law of the Kyrgyz Republic “On Peasant (Farm) Economy”	June 3, 1999 N 47	This Law establishes the legal basis, the procedure for the creation and activities of peasant (farm) enterprises (peasant farms), their rights and obligations and is aimed at creating conditions for their equal development with other forms of management. Defines the peasant farm and its members, the procedure for registration
National development strategy of the Kyrgyz Republic for 2018-2040.	October 31, 2018 UP No. 221	Notes that the development of breeding is determined to be a strategic issue for the development of the country's agro-industrial complex.
National Development Program of the Kyrgyz Republic until 2026	October 12, 2021 No. 435	Emphasizes the need to organize the provision of high-yielding and the most “clean” varieties of agricultural crops and stimulate breeding improvement. In addition, it was emphasized that the activities of seed and breeding farms should be reviewed and their modernization should be carried out on the basis of public-private partnership. This policy framework for the development of livestock breeding demonstrates the country's efforts to increase livestock productivity while reducing pasture degradation.
Concept of agricultural development until 2025	Submitted for public discussion	The main goal of the livestock development policy is to promote growth in production by increasing animal productivity, improving animal husbandry and feeding, increasing the availability of quality veterinary care and quality breeding products using sustainable technologies. Regarding pastures, he notes the need: expand the participation of pasture users in the preparation of decisions, expand the powers and responsibility of pasture committees for fulfilling legal requirements and for violations of the established regime of pasture use. Economic mechanisms for the formation of financial resources by pasture users for the development of pasture infrastructure must be improved; reduce contradictions and increase consistency in the use of pastures by increasing awareness of pasture users regarding the regime of pasture use and responsibility for violations, strengthening cooperation between pasture committees and local governments; improve the quality of monitoring and assessment of the condition and capacity (optimal load) of pastures, develop technical means of active monitoring,

As noted above, the dynamics of the livestock population has been constantly growing in the last decade, there have been certain achievements in improving the breed composition of the public herd, for which legal conditions have been created, and the management potential of government bodies at the community level is improving. At the same time, socio-economic and environmental challenges are emerging, such as the continued high level of rural poverty, the growing vulnerability of livestock production to the impacts of climate change and natural disasters, the insufficient development of local processing capacities, and the increasing degradation of rangelands. Therefore, without appropriate adaptation technologies in the livestock sector, rural communities will experience even greater impacts from negative climate impacts.

As part of the project implementation process, TNA, JWG experts and stakeholders analyzed a range of adaptation technologies for the livestock sector and, using the AMC tool, technology for Sustainable Pasture Management under Climate Change was prioritized.

In the process of conducting an analysis of barriers to the implementation and dissemination of SCP, the following preliminary goal was identified to expand it to all rangelands of the country in 453 rural districts (Aimaks) to increase the resilience of rural households' livelihoods to the impacts of climate change. The spread of SCP will enable pasture users to better manage pastures and reduce pasture degradation. If favorable conditions exist, the implementation and dissemination of this technology is planned to be completed within 5-15 years.

1.1.2 Action plan for technology “Sustainable pasture management”

1.1.1.1 Introduction

CFM is a climate change adaptation technology for the livestock sector. SLM helps maintain healthy soils and restore degraded grasslands, which has many benefits including sustainable livestock production, reducing rural poverty and increasing resilience to major environmental challenges. Grassland degradation is already occurring to varying degrees, and the goal of SLM should be to halt and restore degraded lands, prevent further degradation, and ensure the continued health and functioning of pastoral ecosystems.

The livestock production system of the Kyrgyz Republic relies on livestock mobility as a key strategy to reduce Risks and systematically manage pastures and water resources. Mobility allows livestock producers to exploit the entire landscape, from valleys to high-altitude summer pastures, adding value to resources that would otherwise go unused. Their mobility also allows them to respond to climate shocks and extreme weather events such as drought, heavy snowfall or rain, and strong winds. Measures that strengthen the pastoral system also strengthen its ability to respond to climate shocks.

Thus, the system of transhumance livestock raising to pastures that has developed in the Kyrgyz Republic allows for the combination of natural and economic systems, various seasonal pastures, and is the most important adaptation measure developed by the centuries-old experience of nomads. The natural and climatic conditions and pastures of Kyrgyzstan make it possible to keep livestock on pastures for almost six months. This is the cheapest way to keep livestock. SPM is the most important technology of this system.

The technical description of this technology, developed at the first stage of the project, presents the following social and economic benefits of SPM, including the following:

- Strengthening food security of the country, communities, households;
- Increasing the income of pasture users;
- Improving rural livelihoods;
- Expanding employment of the rural population;
- Reducing poverty in rural areas;
- Preservation of cultural traditions of the peoples of Kyrgyzstan;
- Strengthening social sustainability, unity and cooperation among various stakeholders in rural communities.

In addition, the spread of this technology will bring a number of environmental benefits, among which we note the following:

- Ensuring environmental sustainability and ecosystem services of pasture ecosystems;
- Restoration of biological diversity, including plant species;
- Preservation and improvement of soil fertility;
- Increase in biomass and vegetation;
- Increasing the sustainability of water sources (open and groundwater);

- Disaster Risk Reduction;
- Reducing greenhouse gas emissions.
- Absorption and storage of carbon reserves in soils.

Among the disadvantages of implementing and disseminating SPM technology, discussions highlighted the following:

- The technology will require social cohesion and agreement within the community to make agreed decisions that are respected by all pasture users.
- Quite large capital costs for modern equipment and agricultural inputs and construction work.
- Low awareness of stakeholders about modern SPM techniques.
- Insufficient potential of most APUs and PCs for SPMs.
- Lack of training materials on many aspects of pasture management and use and advisory services.

From an adaptation perspective, climate-resilient grassland management is a combination of Ecosystem-Based Adaptation (EbA)¹⁷, in turn, is an integral part of nature-based solutions. Thus, in addition to improving the management of these critical natural resources, SPM also encompasses nature-based solutions (NbS) - defined as actions to protect, sustainably manage and restore natural or modified ecosystems to address societal challenges while ensuring well-being people and biodiversity conservation are critical to sustainable development.¹⁸The sustainability, cost-effectiveness and scalability of NbS make them one of the best tools available to drive the necessary transformational change to address climate change.

The efforts of all stakeholders in Kyrgyzstan, including with international support, are clearly insufficient, because pasture degradation remains a critical obstacle to the sustainable development of livestock farming while preserving pasture ecosystem services. Continued degradation of pastures indicates the existence of barriers to effective technology transfer and dissemination mechanisms for SPM. Therefore, appropriate measures need to be taken to address the problems associated with technology transfer and diffusion. These barriers are often complex, and their solution requires a systematic and careful approach.

1.1.2.1 Ambitions for TAP on SPM

The use of this technology is consistent with the economic, social and environmental development priorities of the country. They are aimed at ensuring food security, increasing labor productivity and implementing the strategy of economic diversification, increasing the weight of the agricultural sector in the economic system. And since the relevant Pasture User Associations and Pasture Committees are represented in all 454 rural communities of Kyrgyzstan, which are home to 66% of the country's population, PMU is undoubtedly the most important technology for maintaining their livelihoods and employment.

Therefore, the introduction and dissemination of this technology is expected throughout the country.

1.1.2.2 Actions and activities selected for inclusion in the TAP

¹⁷As defined by the UN Biodiversity Convention, EbA is “the use of biodiversity and ecosystem services as part of an overall strategy to help people adapt to the adverse impacts of climate change.” UNEP-WCMC and UNEP, 2019 Ecosystem-based Adaptation Briefing Note Series 1

¹⁸IUCN (2020). Global Standard for Nature-based Solutions. A user-friendly framework for the verification, design and scaling up of NbS. First edition.

Report 2 on the analysis of barriers and enabling frameworks for the implementation and diffusion of this technology in the sector identified 17 barriers and 44 measures to eliminate them (see Table 1.6.).

Table 1.6. Identified barriers and measures for the implementation of SPM.

Categories		Barriers	No.	Measures
Economic and financial				
1	Lack of investment in the sustainability of rangeland ecosystems	1	Development of a state program for preserving the fertility of natural pasture systems	
		2	Mobilization of international resources for the implementation of projects for the restoration of natural pasture systems	
2	Limited access to credit and necessary agricultural resources for PMU	3	Continuation and expansion of the state agricultural financing program for pasture users	
		4	Reduced interest rates on loans for pasture users	
3	Declining pasture and livestock productivity	5	Regulation of livestock on grazing	
		6	Reducing the number of unproductive animals and switching to breeding more productive livestock breeds	
		7	Creating cultural pastures in every community	
Non-financial				
Political, legal and regulatory				
4	Lack of state policy for pasture development	8	Development and adoption of the State Program for the development and conservation of pasture lands	
5	Gaps in regulations governing the management and use of pastures	9	Adoption of regulations on sowing degraded pastures	
Institutional				
6	Uncertainty in the institutional organization of community pasture management	10	Strengthening the role and institutional status of PSUs and pasture committees at the legislative level	
		eleven	Special support for pastoral communities during migration to distant pastures for integration into the early warning system for natural disasters.	
		12	Creation of the State Pasture Service for watering and reclamation construction in pastures, including pasture infrastructure	
Market				
7	Lack of high-quality and affordable seed material for productive breeds of animals and pasture grasses	13	Revision and strengthening of the legal framework for seed production (regulations on seed and breeding farms) strengthening the connection between science and production	
		14	Strengthening the network of farms for the production and propagation of pasture grass seeds and breeding farms to increase the pedigree herd	
Human Management Skills				
8	Lack of practice to improve the condition of pastures (rotation of pastures, reseeding, irrigation, afforestation, etc.)	15	Creation of seed banks for growing seeds of natural pasture grasses and sowing seeds of natural pasture grasses	
		16	Creation of artificial glaciers to solve water supply issues	
		17	The use of electric fences for pasture rotation	
		18	Irrigation of pastures	
		19	Creation of forest plantations on pastures	
		20	Improving pasture infrastructure	

Categories	Barriers	No.	Measures
9	Low PC capacity for SUP and limited knowledge of modern SUP tools	21	Increasing the technical capacity of pasture committees on modern tools for climate-resilient PMU
		22	Development of improved long-term pasture management plans and an annual pasture use plan (including a pasture rotation mechanism)
		23	Development of an electronic application for livestock farmers with databases on the condition of pastures
10	Lack of a unified system of continuous monitoring of pasture conditions and data	24	Annual assessment of pasture productivity, maintaining databases by year (PC)
		25	Development of a unified monitoring system and databases at all levels of management
		26	Carrying out land management of pastures with data transfer from PPP and PC
Social			
eleven	Lack of integration of gender equality aspects in pasture management systems	27	Developing specialized programs and exceeding the capacity of national and local stakeholders on gender equality in rural development, livestock and SFM
		28	Integrating gender issues into local development planning and long-term rangeland management plans
		29	Conducting information events for women and youth of local communities about modern agricultural and agricultural technologies
Networking barriers			
12	Weak collaboration and coordination among local stakeholders	thirty	Strengthen the relationship between aiyl oCMotu (village government), forestry enterprises, WUAs and pasture committees on the management and use of pasture resources through the implementation of joint projects and coordination meetings.
		31	Monitoring the activities of the PPP and PC to identify PPP and PC requiring state support and developing relevant projects/applications.
Barriers to information and awareness			
13	Lack of seasonal agro-meteorological forecasts for pasture users and communities	32	Increase the technical capacity of Kyrgyzhydromet to develop seasonal agrometeorological forecasts and disseminate them through channels accessible to local self-government bodies, public utility organizations and farmers
14	Lack of research and data on climate impacts on rangelands and animals	33	Strengthening scientific potential through exchanges and conferences, including international ones, as well as strengthening the regulatory framework of scientific institutions
15	Lack of climate awareness and adaptive knowledge of government officials, local self-government bodies and users on sustainable pasture management	34	Publish popular materials about the impact of climate change on pastures and adaptive pasture management that is resilient to climate impacts
		35	Develop training programs and increase the capacity of local government bodies on climate-resilient pasture management
		36	Develop training programs for the territories and increase the capacity of farmers on climate-resilient pasture management
		37	Develop training programs on SLM in the context of climate change for universities
16	Lack of information about modern technologies for SUP	38	Develop and publish popular information collections on climate-resilient SPM practices
Others: Environment			

Categories	Barriers	No.	Measures
17	Continued degradation of pastures	39	Development and maintenance of a cadastre for monitoring degraded lands and ensuring access for public utility organizations
		40	Development, publication and dissemination of materials on combating land degradation
		41	Development of Guidelines for Combating Land Degradation and conducting regular capacity building courses for PSUs and pasture users
		42	Development/revision and approval in the PPP of sections on grazing rotation by area in the Pasture Management Plans.
18	Increasing vulnerability of livestock and rangeland ecosystems to the negative impacts of climate hazards	43	Strengthening the work of veterinary services and the range of veterinary drugs.
		44	Development of mechanisms and implementation of climate risk insurance

The next step in the TNA process was to identify the different types of activities to include in the TAP. Again, based on the above barriers and measures, during discussions with the JWG, it was decided to include the following six types of actions for TAP. The six types of actions thus defined for TAP are presented in Table. 1.7.

Table 1.7. Specific types of actions for TAP on identified barriers

Categories	Barriers	Actions
Economic and financial	Lack of investment in the sustainability of rangeland ecosystems	1. Expanding access to finance
	Limited access to credit and necessary agricultural resources for PMU	
	Declining productivity of pastures and livestock	
Market	Lack of high-quality and affordable seed material for productive breeds of animals and pasture grasses	2. Improving pasture and livestock productivity
	Lack of state policy for pasture development	
Political, legal and regulatory	Gaps in regulations governing the management and use of pastures	3. Improving public policy and regulatory frameworks
	Uncertainty in the institutional organization of community pasture management	
Institutional organizational	Lack of practice to improve the condition of pastures (rotation of pastures, reseeding, irrigation, afforestation, etc.)	4. Increasing the institutional and human resources potential of local PLOs and PCs
	Low PC capacity for SUP and limited knowledge of modern SUP tools	
	Lack of a unified system of continuous monitoring of pasture conditions and data	
	Lack of integration of gender equality aspects in pasture management systems	
Social	Weak collaboration and coordination among local stakeholders	5. Increase awareness and data on SPM
Networking barriers	Lack of seasonal agro-meteorological forecasts for pasture users and communities	
	Lack of research and data on climate impacts on rangelands and animals	
	Lack of climate awareness and adaptive knowledge of government officials, local self-government bodies and users on sustainable pasture management	
	Lack of information about modern technologies for SUP	
Others: Environment	Increasing vulnerability of animals to the negative impacts of climate hazards	6. Expansion of climate service products

Specific activities were then identified for the selected types of actions. The activities identified for the implementation of the Action Plan include broad conceptual actions and more specific activities that will be refined during the finalization of planning and implementation of the TAP, presented in Table. 1.8.

Table 1.8. Activities by type of TAP action

No.	Activities by type of action
Action 1: Expand access to finance	
1.1	Development of a state program for preserving the fertility of natural pasture systems
1.2	Mobilization of international resources for the implementation of projects for the restoration of natural pasture systems
1.3	Continuation and expansion of the state agricultural financing program for pasture users
1.4	Reduced interest rates on loans for pasture users
Action 2: Improve government policies and regulatory frameworks	
2.1	Development and adoption of the State Program for the development and conservation of pasture lands
2.2	Adoption of regulations on sowing degraded pastures
2.3	Revision and strengthening of the legal framework for seed production (regulations on seed and breeding farms) strengthening the connection between science and production
2.4	Strengthening the role and institutional status of APUs and pasture committees at the legislative level
Action 3. Increasing the institutional and human capacity of local APUs and PCs	
3.1	Increasing the technical capacity of pasture committees on modern tools for climate-resilient SPM
3.2	Development of improved long-term pasture management plans and an annual pasture use plan (including a pasture rotation mechanism)
3.3	Conducting an inventory of pastures in the most degraded areas
3.4	Developing specialized programs and exceeding the capacity of national and local stakeholders on gender equality in rural development, livestock and SPM
3.5	Integrating gender issues into local development planning and long-term rangeland management plans
3.6	Monitoring the activities of the APU and PC to identify APU and PC requiring state support and developing relevant projects/applications.
3.7	Strengthening scientific potential through exchanges and conferences, including international ones, as well as strengthening the regulatory framework of scientific institutions
3.8	Development and maintenance of a cadastre for monitoring degraded lands and ensuring access for public utility organizations
3.9	Development/revision and approval in the APU of sections on grazing rotation by area in the Pasture Management Plans.
Action 4. Improve pasture productivity	
4.1	Regulation of livestock on grazing
4.2	Reducing the number of unproductive animals and switching to breeding more productive livestock breeds
4.3	Creating cultural pastures in every community
4.4	Strengthening the network of farms for the production and propagation of pasture grass seeds and breeding farms to increase the pedigree herd
4.5	Creation of seed banks for growing seeds of natural pasture grasses and sowing of seeds of natural pasture grasses
4.6	Creation of artificial glaciers to solve water supply issues
4.7	The use of electric fences for pasture rotation
4.8	Irrigation of pastures

No.	Activities by type of action
4.9	Creation of protective forest plantations on pastures
4.10	Improving pasture infrastructure
4.11	Annual assessment of pasture productivity, maintaining databases by year (PC)
4.12	Development of a unified monitoring system and databases at all levels of management
4.13	Carrying out land management of pastures with data transfer from APU and PC
Action 5: Increase awareness and data on SPM	
5.1	Publish popular materials about the impact of climate change on pastures and adaptive pasture management that is resilient to climate impacts
5.2	Develop training programs and increase the capacity of local government bodies on climate-resilient pasture management
5.3	Develop training programs for the territories and increase the capacity of farmers on climate-resilient pasture management
5.4	Develop training programs on SPM in the context of climate change for universities
5.5	Develop and publish popular information collections on climate-resilient SPM practices
5.6	Development, publication and dissemination of materials on combating land degradation
5.7	Development of Guidelines for Combating Land Degradation and conducting regular capacity building courses for APUs and pasture users
Action 6. Expand climate service products	
6.1	Strengthening the work of veterinary services and the range of veterinary drugs.
6.2	Development of mechanisms and implementation of climate risk insurance
6.3	Expanding the coverage of the early warning system on climate hazards for APUs, PCs and pasture users

1.1.2.3 Stakeholders and timing of TAP implementation

Based on the analysis of sector stakeholders carried out at the previous stages of the project, parties interested in implementing TAP activities were identified by type of actions and activities, which are presented in Table. 1.9.

Table 1.9. Stakeholders by actions and activities

No.	Activities by Action	Parties concerned	Implementation deadlines
Action 1: Expand access to finance			
1.1	Development of a state program for preserving the fertility of natural pasture systems	Ministry of Agriculture, CM, KNAU, SDILM, NGOs	2024-2027
1.2	Mobilization of international resources for the implementation of projects for the restoration of natural pasture systems	Ministry of Agriculture, MNRETS, NGOs	2024-2027
1.3	Continuation and expansion of the state agricultural financing program for pasture users	Ministry of Agriculture, MoF, CM	2024-2027
1.4	Reduced interest rates on loans for pasture users	Ministry of Agriculture, CFI	2024-2027
Action 2: Improve government policies and regulatory frameworks			
2.1	Development and adoption of the State Program for the development and conservation of pasture lands	Ministry of Agriculture, Cabinet of Ministers, NGOs	2024-2025

No.	Activities by Action	Parties concerned	Implementation deadlines
2.2	Adoption of regulations on sowing degraded pastures	Ministry of Agriculture, Cabinet of Ministers, NGOs	2024-2025
2.3	Revision and strengthening of the legal framework for seed production (regulations on seed and breeding farms) strengthening the connection between science and production	Ministry of Agriculture, KRICF, KNAU, NGO	2024-2025
2.4	Strengthening the role and institutional status of APUs and pasture committees at the legislative level	Ministry of Agriculture, Public Promotional Enterprise, PC, Local Self-Government Administration, Cabinet of Ministers, NGOs	2024-2025
Action 3. Increasing the institutional and human capacity of local PLOs and PCs			
3.1	Increasing the technical capacity of pasture committees on modern tools for climate-resilient SPM	Ministry of Agriculture, KNAU, RAS, NGOs	2024-2035
3.2	Development of improved long-term pasture management plans and an annual pasture use plan (including a pasture rotation mechanism)	APU, PC, RAS, peasant farms, NGOs	2024-2035
3.3	Conducting an inventory of pastures in the most degraded areas	SDILM, APU, PC, local self-government,	2024-2035
3.4	Developing specialized programs and exceeding the capacity of national and local stakeholders on gender equality in rural development, livestock and SPM	Ministry of Agriculture, MTSRM, APU, PC, NGOs	2025-2030
3.5	Integrating gender issues into local development planning and long-term rangeland management plans	Ministry of Agriculture, MTSRM, APU, PC, NGOs	2025-2030
3.6	Monitoring the activities of the APU and PC to identify APU and PC requiring state support and developing relevant projects/applications.	Ministry of Agriculture, KNAU, NGO, RAS	2025-2030
3.7	Strengthening scientific potential through exchanges and conferences, including international ones, as well as strengthening the regulatory framework of scientific institutions	KNAU, KRICF, RAS, KRIHP, MOA, MNRETS	2025-2035
3.8	Development and maintenance of a cadastre for monitoring degraded lands and ensuring access for public utility organizations	MSKH, SDILM, KRICF, KRIHP, APU, PC	2025-2035
3.9	Development/revision and approval in the APU of sections on grazing rotation by area in the Pasture Management Plans.	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA, APU, PC	2025-2026
Action 4. Improve pasture productivity			
4.1	Regulation of livestock on grazing	APU, PC, local self-government	2024-2035
4.2	Reducing the number of unproductive animals and switching to breeding more productive livestock breeds	Peasant farms, private household plots	2024-2035
4.3	Creating cultural pastures in every community	APU, PC, local self-government	2024-2035

No.	Activities by Action	Parties concerned	Implementation deadlines
4.4	Strengthening the network of farms for the production and propagation of pasture grass seeds and breeding farms to increase the pedigree herd	MSKH, KFH, KNAU, RAS, KRICF, KRIHP	2024-2035
4.5	Creation of seed banks for growing seeds of natural pasture grasses and sowing of seeds of natural pasture grasses	APU, PC, peasant farms, private household plots, RAS	2024-2035
4.6	Creation of artificial glaciers to solve water supply issues	APU, PC, peasant farm, private household plot	2024-2035
4.7	The use of electric fences for pasture rotation	APU, PC, NGO	2024-2035
4.8	Irrigation of pastures	APU, PC, WUA, peasant farm, private household plot	2024-2035
4.9	Creation of protective forest plantations on pastures	APU, PC, LSG, FMU	2024-2035
4.10	Improving pasture infrastructure	APU, PC, peasant farmers	2024-2035
4.11	Annual assessment of pasture productivity, maintaining databases by year (PC)	Ministry of Agriculture, SDILM, RSAS, PC, APU, LSG	2024-2035
4.12	Development of a unified monitoring system and databases at all levels of management	Ministry of Agriculture, SDILM, RSAS, PC, APU, LSG	2025-2030
4.13	Carrying out land management of pastures with data transfer from PPP and PC	Ministry of Agriculture, SDILM, APU, PC	2024-2035
Action 5: Increase awareness and data on SPM			
5.1	Publish popular materials about the impact of climate change on pastures and adaptive pasture management that is resilient to climate impacts	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035
5.2	Develop training programs and increase the capacity of local government bodies on climate-resilient pasture management	KNAU, KRICF, RAS, KRIHP, MOA	2025-2035
5.3	Develop training programs for the territories and increase the capacity of farmers on climate-resilient pasture management	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035
5.4	Develop training programs on SPM in the context of climate change for universities	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035
5.5	Develop and publish popular information collections on climate-resilient SPM practices	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035
5.6	Development, publication and dissemination of materials on combating land degradation	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA, APU, PC	2025-2035
5.7	Development of Guidelines for Combating Land Degradation and conducting regular capacity building courses for PSUs and pasture users	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA, APU, PC	2025-2026
Action 6. Expand climate service products			

No.	Activities by Action	Parties concerned	Implementation deadlines
6.1	Strengthening the work of veterinary services and the range of veterinary drugs.	KNAU, media, KRICF, RAS, KRIHP, MOA, private veterinary service	2025-2035
6.2	Development of mechanisms and implementation of climate risk insurance	Ministry of Agriculture, Ministry of Emergency Situations, insurance companies	2025-2030
6.3	Expanding Climate Hazards Early Warning System Services for APUs and PCs	Ministry of Agriculture, Ministry of Emergency Situations, APU, PC, local self-government, NGOs	2024-2025

1.1.2.4 Assessment of resources required for activities

Assessing capacity building needs for implementation of activities and events was carried out by expert analysis followed by discussion with members of the JWG and was fully included in the actions and activities of the TAP. An assessment of the financial needs for the implementation of the TAP is presented in Table. 1.10

Table 1.10. Assessment of financial needs for TAP implementation and sources of financing

No.	Events	Cost, million US dollars	Sources of financing
Action 1: Expand access to finance			
1.1	Development of a state program for preserving the fertility of natural pasture systems	0.025	RB, MPR
1.2	Mobilization of international resources for the implementation of projects for the restoration of natural pasture systems		MPR
1.3	Continuation and expansion of the state agricultural financing program for pasture users	5.84	RB
1.4	Reduced interest rates on loans for pasture users	0.015	MPR, CFI
Action 2: Improve government policies and regulatory frameworks			
2.1	Development and adoption of the State Program for the development and conservation of pasture lands	0.025	RB, MPR
2.2	Adoption of regulations on sowing degraded pastures	0.025	RB, MPR
2.3	Revision and strengthening of the legal framework for seed production (regulations on seed and breeding farms) strengthening the connection between science and production	0.025	RB, MPR
2.4	Strengthening the role and institutional status of PSUs and pasture committees at the legislative level	0.025	RB, MPR
Action 3. Increasing the institutional and human resources capacity of local APUs and PCs			

No.	Events	Cost, million US dollars	Sources of financing
3.1	Strengthening the technical capacity of pasture committees on best practices and modern tools for climate-resilient PMU	0.5	RB, MPR
3.2	Development of improved long-term pasture management plans and an annual pasture use plan (including a pasture rotation mechanism)	0.5	RB, MPR
3.3	Conducting an inventory of pastures in the most degraded areas	4	RB, MPR
3.4	Development of an electronic application with databases on the condition of pastures and distribution for livestock farmers	0.025	RB, MPR
3.5	Integrating gender issues into local development planning and long-term rangeland management plans	0.025	RB, MPR
3.6	Monitoring the activities of the APU and PC to identify APU and PC requiring state support and developing relevant projects/applications.	0.3	RB, MPR
3.7	Strengthening scientific potential through exchanges and conferences, including international ones, as well as strengthening the regulatory framework of scientific institutions	0.5	RB, MPR
3.8	Development and maintenance of a cadastre for monitoring degraded lands and ensuring access for public utility organizations	0.3	RB, MPR
3.9	Development/revision and approval in the APU of sections on grazing rotation by area in the Pasture Management Plans.	0.015	RB, MPR
Action 4. Improve pasture productivity			
4.1	Collection of best practices for grazing livestock management and dissemination through capacity building	0.3	RB, MPR
4.2	Collection of best practices for reducing the number of unproductive animals and transition to breeding more productive breeds of livestock and disseminating experience	0.2	RB, MPR
4.3	Creating cultural pastures in every community	1.359	RB, MPR, APU
4.4	Strengthening the network of farms for the production and propagation of pasture grass seeds and breeding farms to increase the pedigree herd	2	RB, MPR
4.5	Creation of seed banks for growing seeds of natural pasture grasses and sowing of seeds of natural pasture grasses	1.5	RB, MPR, APU
4.6	Creation of artificial glaciers to solve water supply issues	0.4	RB, MPR, peasant farm
4.7	The use of electric fences for pasture rotation	0.4	RB, MPR, APU
4.8	Feasibility study and piloting of pasture irrigation	8	RB, MPR
4.9	Creation of protective forest plantations on pastures	9	RB, MPR, LH
4.10	Improving pasture infrastructure	45.3	RB, MPR, APU
4.11	Annual assessment of pasture productivity, maintaining databases by year (PC)	0.5	RB, MPR
4.12	Development of a unified monitoring system and databases at all levels of management	0.5	RB, MPR

No.	Events	Cost, million US dollars	Sources of financing
4.13	Carrying out land management of pastures with data transfer to APU and PC	75	RB, MPR
Action 5: Increase awareness and data on SPM			
5.1	Publish popular materials about the impact of climate change on pastures and adaptive pasture management that is resilient to climate impacts	0.01	RB, MPR
5.2	Develop training programs and increase the capacity of local government bodies on climate-resilient pasture management	0.3	RB, MPR
5.3	Develop training programs for the territories and increase the capacity of farmers on climate-resilient pasture management	0.01	RB, MPR
5.4	Develop training programs on SPM in the context of climate change for universities	0.01	RB, MPR
5.5.	Develop and publish popular information collections on climate-resilient SPM practices	0.01	RB, MPR
5.6	Development, publication and dissemination of materials on combating land degradation	0.01	RB, MPR
5.7	Development of Guidelines for Combating Land Degradation and conducting regular capacity building courses for APUs and pasture users	0.4	RB, MPR
Action 6. Expand climate service products			
6.1	Strengthening the work of veterinary services and the range of veterinary drugs.	2	RB, MPR, PPP
6.2	Development of mechanisms and implementation of climate risk insurance	0.5	RB, MPR, PPP
6.3	Expansion of early warning system services for climate hazards APU and PC	0.015	RB, MPR
Total		159,869	

1.1.2.5 Management planning

1.1.2.5.1 Risks and contingency planning

During the preparation of the TAP, an overview of the identified Risks and contingency plans for the actions of the TAP was identified and is being presented (see Table 1.11).

Table 1.11. Risks that may hinder the implementation of TAP and measures to mitigate them

TAP actions	Risks	Mitigation measures
1. Expanding access to finance	Lack of financial resources in the Republic of Belarus	Active engagement of private sector capital and donors
	Difficult procedures hindering the adoption of recommendations	Simplification of procedures, lobbying at the highest level
2. Improving pasture and livestock productivity	Lack of available goods and services in the market	Actively engaging private sector capital for imports
	Poor stakeholder collaboration	Building public-private partnerships locally
3. Improving public policy and regulatory frameworks	Weak involvement in the development of legal acts of local communities	Conducting relevant information campaigns

TAP actions	Risks	Mitigation measures
4. Increasing the institutional and human resources potential of local	Lack of funding	Active involvement of the Ministry of Natural Resources
	Low interest from local participants	Conducting relevant information campaigns
5. Increase awareness and data on SPM	Lack of interest from the media	Conducting information events for the media
	Weak cooperation between government agencies and the media	Conducting relevant information campaigns
6. Expansion of climate service products	High price	Active involvement of the Ministry of Natural Resources
	Lack of interest from private insurers	Conducting relevant information campaigns

1.1.2.5.2 Next steps

To continue work to promote the implementation of TPL, the following steps are expected to be taken:

- Complete discussion of TAP with JWG members
- Present it at a national seminar
- Approve the TAP at the meeting of the NSC of the project
- Prepare information materials about TAP and distribute in the media and social networks
- Develop a project proposal based on the TAP as a demonstration of the specific use of the provisions of the TAP.
- Prepare TAP for approval by the leadership of the Ministry of Agriculture.
- Post the TAP on the website of the Focal Poita Convention and the Ministry of Agriculture

1.1.2.6 General table of TAP for SPM technology

TAP overview table								
Sector	Agriculture							
Subsector	Livestock							
Technologies	Sustainable pasture management							
Ambition	National coverage							
Advantages	<ul style="list-style-type: none"> Increasing the income of pasture users; Improving rural livelihoods; Expanding employment of the rural population; Reducing poverty in rural areas; Preservation of cultural traditions of the peoples of Kyrgyzstan; Strengthening social sustainability, unity and cooperation of stakeholders in rural communities. Ensuring environmental sustainability and ecosystem services of pasture ecosystems; Restoration of biological diversity, including plant species; Preservation and improvement of soil fertility; Increase in biomass and vegetation; Increasing the sustainability of water sources (open and groundwater); Disaster Risk Reduction; Reducing greenhouse gas emissions. Absorption and storage of carbon reserves in soils. 							
Action	Activities to be implemented	Sources of financing	Responsible authority and focal point	Time frame	Risks	Success criterion	Indicators for monitoring implementation	Event budget, million US dollars
Action 1: Expand access to finance	1.1. Development of a state program for preserving the fertility of natural pasture systems	RB, MPR	Ministry of Agriculture, CM, KNAU, SDILM, NGOs	2024-2027	1. Lack of financial resources in the Republic of Belarus. 2. Difficult procedures hindering the acceptance of recommendations.	Allocation of state Funding	State program budget	0.025
	1.2. Mobilization of international resources for the implementation of projects for the restoration of natural pasture systems	MPR	Ministry of Agriculture, MNRETS, NGOs	2024-2035		Number of new projects	At least 5	8
	1.3. Continuation and expansion of the state program “Financing of Agriculture” for pasture users	RB	Ministry of Agriculture, MoF, CM	2024-2027		Pasture users have access to the resources of the State Program	Funds from the State Program of the Federal Farm for Agriculture allocated to pasture users	5.84
	1.4. Reduced interest rates on loans for pasture users	MPR, CFI	Ministry of Agriculture, CFI	2024-2027		Reduced rates	2%	0.015

Action 2: Improve government policies and regulatory frameworks	2.1. Development and adoption of the State Program for the development and conservation of pasture lands	RB, MPR	Ministry of Agriculture, Cabinet of Ministers, NGOs	2024-2025	1. Lack of available goods and services in the market. 2. Poor stakeholder collaboration.	<ul style="list-style-type: none"> • Prompt decision making • Stakeholder engagement. 	Approved document	0.025
	2.2. Adoption of regulations on sowing degraded pastures	RB, MPR	Ministry of Agriculture, Cabinet of Ministers, NGOs	2024-2025		<ul style="list-style-type: none"> • Prompt decision making • Stakeholder engagement. 	Approved document	0.025
	2.3. Revision and strengthening of the legal framework for seed production (regulations on seed and breeding farms) strengthening the connection between science and production	RB, MPR	Ministry of Agriculture, KRICF, KNAU, NGO	2024-2025		<ul style="list-style-type: none"> • Prompt decision making • Stakeholder engagement. 	Approved document	0.025
	2.4. Strengthening the role and institutional status of PSUs and pasture committees at the legislative level	RB, MPR	Ministry of Agriculture, Public Promotional Enterprise, PC, Local Self-Government Administration, Cabinet of Ministers, NGOs	2024-2025		<ul style="list-style-type: none"> • Prompt decision making • Stakeholder engagement. 	Approved document	0.025
Action 3. Increasing the institutional and human capacity of local PLOs and PCs	3.1. Increasing the technical capacity of pasture committees on modern tools for climate-resilient PMU	RB, MPR	Ministry of Agriculture, KNAU, RAS, NGOs	2024-2035	1. Weak involvement in the development of legal acts of local communities	<ul style="list-style-type: none"> • Increased technical potential of the PC 	<ul style="list-style-type: none"> • At least 800 trainings • At least 8000 trained 	0.5
	3.2. Development of improved long-term pasture management plans and annual livestock grazing plan (including pasture rotation mechanism)	RB, MPR	APU, PC, RAS, peasant farms, NGOs	2024-2035		<ul style="list-style-type: none"> • Updated PUP and PVS • Participation of all stakeholders 	<ul style="list-style-type: none"> • 453 PUP • 453 PVS 	0.5
	3.3 Conducting an inventory of pastures in the most degraded areas	RB, MPR	MSKH, KNAU, RAS, APU, PC, local government self-government, ICT companies	2024-2035		<ul style="list-style-type: none"> • Availability of the application on every PC 	<ul style="list-style-type: none"> • 453 pcs 	4

	3.4. Developing specialized programs and exceeding the capacity of national and local stakeholders on gender equality in rural development, livestock and SFM	RB, MPR	Ministry of Agriculture, MTSRM, APU, PC, NGOs	2025-2030		<ul style="list-style-type: none"> • Availability of the Program • Increased capacity on gender issues 	<ul style="list-style-type: none"> • At least 400 trainings • At least 4000 trained 	0.025
	3.5. Integrating gender issues into local development planning and long-term rangeland management plans	RB, MPR	Ministry of Agriculture, MTSRM, APU, PC, NGOs	2025-2030		<ul style="list-style-type: none"> • Gender-sensitive local development plans and PUPs 	<ul style="list-style-type: none"> • Not less than 400 	0.025
	3.6. Monitoring the activities of the PPP and PC to identify PPP and PC requiring state support and developing relevant projects/applications.	RB, MPR	Ministry of Agriculture, KNAU, NGO, RAS	2025-2030		<ul style="list-style-type: none"> • Mild AKI and PC were detected 	<ul style="list-style-type: none"> • Report with recommendations 	0.3
	3.7. Strengthening scientific potential through exchanges and conferences, including international ones, as well as strengthening the regulatory framework of scientific institutions	RB, MPR	KNAU, KRICF, RAS, KRIHP, MOA, MNRETS	2025-2035		<ul style="list-style-type: none"> • Knowledge sharing and strengthened regulatory framework of scientific institutions 	<ul style="list-style-type: none"> • At least 5 international conferences • At least 15 national conferences 	0.5
	3.8. Development and maintenance of a cadastre for monitoring degraded lands and ensuring access to it for public utility organizations	RB, MPR	MSKH, SDILM, KRICF, KRIHP, APU, PC	2025-2035		<ul style="list-style-type: none"> • The database on graded lands is available to the APU 	<ul style="list-style-type: none"> • Open access database 	0.3
	3.9. Development/revision and approval in the PPP of sections on rotation of grazing by area in the Pasture Management Plans and preparation of the Guidelines	RB, MPR	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA, APU, PC	2025-2026		<ul style="list-style-type: none"> • Updated PUP 	<ul style="list-style-type: none"> • Management 	0.015
Action 4. Improve pasture productivity	4.1 Collection of best practices: reduction of the number of unproductive animals and the transition to breeding more productive breeds of livestock and dissemination of experience	RB, MPR	APU, PC, local self-government	2024-2035	<ol style="list-style-type: none"> 1. Lack of funding. 2. Low interest from 	<ul style="list-style-type: none"> • Best Practices Database 	<ul style="list-style-type: none"> • Open access database 	0.3

4.2 Creation of cultural pastures in each community	RB, MPR	Peasant farms, private household plots	2024-2035	local participants.	• Availability of cultivated pasture areas	• 450	0.2
4.3 Strengthening the network of farms for the production and propagation of pasture grass seeds and breeding farms to increase the pedigree herd	RB, MPR, APU	APU, PC, local self-government	2024-2035		• Availability of farms	• 40	1.359
4.4 Creation of seed banks for growing seeds of natural pasture grasses and sowing seeds of natural pasture grasses	RB, MPR	MSKH, KFH, KNAU, RAS, KRICF, KRIHP	2024-2035		• Availability of community seed funds	• 250	2
4.5 Creation of artificial glaciers to solve water supply issues	RB, MPR, APU	APU, PC, peasant farms, private household plots, RAS	2024-2035		• Improved water supply for farmers	• 450	1.5
4.6 Use of electric fences for pasture rotation	RB, MPR, peasant farm	APU, PC, peasant farm, private household plot	2024-2035		• Using electric fences	• 450	0.4
4.7 Feasibility study and piloting of pasture irrigation	RB, MPR, APU	APU, PC, NGO	2024-2035		• Piloting pasture watering	• 50	0.4
4.8 Creation of protective forest plantations on pastures	RB, MPR	APU, PC, WUA, peasant farm	2024-2035		• Creation of forest belts on pastures	• 450	8
4.9 Improvement of pasture infrastructure	RB, MPR, LH	APU, PC, local self-government, self-government, LH	2024-2035		• Improved pasture infrastructure	• 450	9
4.10 Annual assessment of pasture productivity, maintaining databases by year (PC)	RB, MPR, APU	APU, PC, peasant farm	2024-2035		• Pasture productivity assessed	• 450	45.3
4.11 Development of a unified monitoring system and databases at all levels of management	RB, MPR	Ministry of Agriculture, SDILM, RSAS, PC, APU, Local Self-Government Administration	2024-2035		• A unified monitoring system has been created	• Database	0.5

	4.12 Carrying out land management of pastures with data transfer from PPP and PC	RB, MPR	Ministry of Agriculture, SDILM, RSAS, PC, APU, Local Self-Government Administration	2025-2030		<ul style="list-style-type: none"> Land management was carried out in the PPP 	<ul style="list-style-type: none"> 450 	75
	4.13 Collecting best practices for reducing the number of unproductive animals and transitioning to breeding more productive breeds of livestock and disseminating experience	RB, MPR	Ministry of Agriculture, SDILM, APU, PC	2024-2035		<ul style="list-style-type: none"> Collection of best practices 	<ul style="list-style-type: none"> Publishing online and in hard copy 	0.025
Action 5: Increase awareness and data on SPM	5.1 Publish popular materials about the impact of climate change on pastures and adaptive pasture management that is resilient to climate impacts	RB, MPR	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035	<ol style="list-style-type: none"> Lack of interest from the media. Insufficient cooperation between government agencies and the media. 	<ul style="list-style-type: none"> There is a resource on adaptive pasture management 	<ul style="list-style-type: none"> Publication 	0.01
	5.2 Develop training programs and increase the capacity of local government bodies on climate-resilient pasture management	RB, MPR	KNAU, KRICF, RAS, KRIHP, MOA	2025-2035		<ul style="list-style-type: none"> Educational materials 	<ul style="list-style-type: none"> Publications 	0.3
	5.3 Develop training programs for the territories and increase the capacity of farmers on climate-resilient pasture management	RB, MPR	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035		<ul style="list-style-type: none"> Educational materials 	<ul style="list-style-type: none"> Publications 	0.01
	5.4 Develop training programs on SPM in the context of climate change for universities	RB, MPR	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035		<ul style="list-style-type: none"> Educational materials 	<ul style="list-style-type: none"> Publications 	0.01
	5.5 Develop and publish popular information collections on climate-resilient SPM practices	RB, MPR	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA	2025-2035		<ul style="list-style-type: none"> Educational materials 	<ul style="list-style-type: none"> Publications 	0.01
	5.6 Development, publication and dissemination of materials to combat land degradation	RB, MPR	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA, APU, PC	2025-2035		<ul style="list-style-type: none"> Information materials 	<ul style="list-style-type: none"> Publications 	0.01
	5.7 Development of Guidelines for combating land degradation and conducting regular capacity-building courses for PSUs and pasture users	RB, MPR	KNAU, MEDIA, KRICF, RAS, KRIHP, MOA, APU, PC	2025-2026		<ul style="list-style-type: none"> Educational materials 	<ul style="list-style-type: none"> Publications 	0.04

Action 6. Expand climate service products	Strengthening the work of veterinary services and the range of veterinary drugs.	RB, MPR, PPP	KNAU, media, KRICF, RAS, KRIHP, MOA, private veterinary service	2025-2035	<ol style="list-style-type: none"> High cost of services. Lack of interest from private insurers. 	<ul style="list-style-type: none"> Improved animal health 	<ul style="list-style-type: none"> Report and list of veterinary drugs 	2
	Development of mechanisms and implementation of climate risk insurance	RB, MPR, PPP	Ministry of Agriculture, Ministry of Emergency Situations, insurance companies	2025-2030		<ul style="list-style-type: none"> Insurance products for farmers 	<ul style="list-style-type: none"> Report 	0.5
	Expanding Climate Hazards Early Warning System Services for EPPs and PCs	RB, MPR	Ministry of Agriculture, Ministry of Emergency Situations, APU, PC, local self-government, NGOs	2024-2025		<ul style="list-style-type: none"> Farmers are informed about the dangers 	<ul style="list-style-type: none"> Early warning system 	0.015
Result:								167,869

1.2 TAP for the subsector “Crop production”

A detailed analysis of the legal framework for the development of the agricultural sector and the policy challenges facing the sector that determine the introduction and expansion of modern technologies in agricultural production is presented in the second report of the project “Analysis of Barriers and Facilitative Frameworks” for the introduction and diffusion of prioritized technologies. In this report, we will highlight the main political and legal acts that define the framework for the current development of crop production and environmental agriculture in the Kyrgyz Republic.

Table 1.12. Policy and legal documents on crop production and environmental management

Title of documents	Acceptance date	Content
Law of the Kyrgyz Republic “On food security of the Kyrgyz Republic”	August 4, 2008 N 183	This Law establishes the main directions in the field of ensuring food security of the Kyrgyz Republic, which is an integral and important part of the national security of the state. The main areas of government support are: <ul style="list-style-type: none"> - guarantees for payment for food products sold by agricultural producers at pre-announced prices; - subsidies for the production of basic food products; - development of leasing activities aimed at strengthening the material and technical base of rural commodity producers; - financing of research programs for the development of seed production and selection of agricultural plants and animals, breeding, improvement of technologies for production, processing, storage and rational use of food products.
Law of the Kyrgyz Republic “On the development of agriculture of the Kyrgyz Republic”	May 26, 2009 N 166	This Law regulates the relationship between rural commodity producers and state authorities and local self-government, establishes the legal basis for the implementation of state socio-economic policy in the field of development of agriculture and production of agricultural products in order to provide the population with food, industry with raw materials and, accordingly, the sustainable development of the regions of the republic . 1. The objectives of this Law are: 1) ensuring food security of the state; 2) ensuring sustainable economic and social development of the agri-food sector of the economy of the Kyrgyz Republic; 3) creating conditions for economic and scientific support for the production of competitive agricultural products and their processed products; 4) development of social and other infrastructure in rural areas and creation of favorable living conditions for the rural population.
Law of the Kyrgyz Republic “On the management of agricultural lands”	January 11, 2001 N 4	This Law regulates the legal relations of agricultural land management and is aimed at ensuring the effective and safe use of land in the interests of the people of the Kyrgyz Republic. Establishes that the right of ownership to agricultural land plots in the Kyrgyz Republic belongs to the state, citizens of the Kyrgyz Republic, cAPUeratives and legal entities of the Kyrgyz Republic engaged in the cultivation and (or) processing of agricultural products.
Law of the Kyrgyz Republic “On the protection of soil fertility of agricultural lands”	August 10, 2012 N 165	This Law regulates relations in the field of soil protection, fertility, quality preservation and protection from degradation and other negative phenomena associated with the ownership, use, and disposal of agricultural lands.

Title of documents	Acceptance date	Content
		Establishes the principles of state policy in the field of soil protection in the conditions of risky mountain farming and livestock farming.
Law of the Kyrgyz Republic "On organic agricultural production in the Kyrgyz Republic".	May 18, 2019 No. 65	According to the law, the state must provide support to producers of organic agricultural products in the following main areas: 1) information, consulting and methodological support for business entities engaged in organic agricultural production; 2) promoting the promotion of organic products to the world agricultural market; 3) support in conducting research work in the field of production of organic agricultural products; 4) ensuring access to state preferential lending programs for agricultural production; 5) organizing training of rural producers in the skills of conducting organic agricultural production; 6) scientific and methodological development of technologies for organic agricultural production, adaptation of international methods and technologies in relation to the conditions of the Kyrgyz Republic; 7) creating conditions for the reproduction of soil fertility and rational use of land resources; 8) ensuring sustainable development of agricultural production and rural areas; 9) organization of obtaining an international certificate for the export of products from manufacturers of organic agricultural products to the international market.
Law of the Kyrgyz Republic "On Peasant (Farm) Economy"	June 3, 1999 N 47	This Law establishes the legal basis, the procedure for the creation and activities of peasant (farm) enterprises (peasant farms), their rights and obligations and is aimed at creating conditions for their equal development with other forms of management. Defines the peasant farm and its members, the procedure for registration
National development strategy of the Kyrgyz Republic for 2018-2040.	October 31, 2018 UP No. 221	Determines that in the field of agriculture the main policy is to provide the population of the Kyrgyz Republic with quality food and transform the industry into a supplier of high-quality environmentally friendly, organic products to global and regional markets
National Development Program of the Kyrgyz Republic until 2026	October 12, 2021 No. 435	He says that the strategic priority for agricultural development should be maintaining environmental friendliness and focusing on organic production. In order to accelerate the development of the market for organic products in the Kyrgyz Republic, appropriate legislative regulation will be developed and adopted, international certification standards for organic products will be introduced, strict control over the import of chemical fertilizers will be ensured, and appropriate marketing activities will be carried out. The Organic Products program will be launched.
Concept for the development of industrial agricultural production	August 2, 2017 No. 459	She defined the goal of the development of the agricultural sector in the Kyrgyz Republic, aimed at creating favorable conditions for the development of the agricultural sector by

Title of documents	Acceptance date	Content
in the Kyrgyz Republic for 2017-2022.		<p>improving regulations and taking other measures that contribute to the sustainable development of the agricultural sector of the economy and increasing the competitiveness of organic products. At the same time, the following priority areas of organic agricultural production are declared:</p> <ul style="list-style-type: none"> • creating favourable conditions for the development of organic agriculture in the republic by improving regulatory legal acts; • empowerment, awareness and access of the population to knowledge about organic agricultural production; • creating favourable economic conditions for organic agricultural production and developing the value chain; • building confidence and a system of guarantees for the development of organic agricultural production.
Concept of agricultural development until 2025	Submitted for public discussion	<p>In relation to OA it sets the following taRAS:</p> <ul style="list-style-type: none"> - achieve traceability of agricultural products, both livestock and crops. - develop a national standard for organic products, harmonize it with international standards, and achieve its international recognition. Develop a certification system for organic agricultural products and harmonize it with international certification systems. Attract internationally recognized certification bodies to the country and open their branches; - adopt a national program to support farms planning or switching to organic agriculture. - develop business - direction, production of vermicompost by vermiculture. - provide support to entrepreneurs who install biogas plants. - annually increase the amount of land used for organic agriculture.

1.2.1 Action Plan for Organic Agriculture Technology

1.2.1.1 Introduction

From a market perspective, Organic Agriculture technology can be categorized as a “market good” according to the criteria of the Barrier Assessment Guidelines,¹⁹ developed by UNEP and the Technical University of Denmark.

OA is carried out on the basis of the standards of the International Federation of Organic Agriculture Movement (IFOAM), monitoring and land use, as well as control of maximum permissible concentrations of harmful substances in products. Compliance with regulations and strict control occurs at all stages of the production process.

Organic agricultural products are grown without the use of agrochemicals, pesticides, mineral fertilizers, genetically modified organisms, antibiotics, or growth stimulants. Because these substances pose a danger to human health and threaten the environment. Organic food products are processed using biological, mechanical and physical methods in a manner that maintains the quality of each component. Organic products are protected from pests and diseases through good production practices that include proper cleaning and hygiene without the use of chemical treatments or irradiation.

¹⁹Nygaard, I. and Hansen, U. (2015). Overcoming Barriers to the Transfer and Diffusion of Climate Technologies: Second edition. UNEP DTU Partnership, Copenhagen. This guide is available at www.tech-action.org.

In addition, such products are processed without the use of gases, synthetic waxes, or chemical additives to improve taste or extend shelf life. Ecological packaging has minimal negative impact on the environment.

Thus, OA is a method of farming in which there is a conscious minimization of the use of synthetic fertilizers, pesticides, plant growth regulators, and feed additives. At the same time, all the technology/production chain should be environmentally friendly and, whenever possible, a closed production cycle should be used. In OA providing cultivated plants with organic nutrition elements, pest and weed control is coming to the fore; biological methods of plant protection using crop rotation, organic fertilizers (manure, composts, crop residues, green manure, etc.) and various soil cultivation methods are being more actively used.

When conducting environmental agriculture, own resources are used, established national traditions of agricultural production are applied, soil fertility is increased, biodiversity is preserved, and most importantly, the environment is not polluted.

In recent years, the world's demand for organic food has been constantly growing. The Kyrgyz Republic is a country in which the natural biodiversity and ecological state have not yet been disturbed and are preserved almost in their original form, and therefore the republic has all the conditions for the production of environmentally friendly organic food products.

The government of the country has set the task of entering the market of near and far abroad with organic agricultural products that have special taste qualities, which have no analogues on the world market.

The first experience has appeared in the republic and organic agricultural production is gaining momentum. However, the number of farmers involved in the transition to organic farming is constantly changing, due to the lack of effective government support and weak marketing of organic products.

Organic farms are represented by three large agricultural cooperatives, 12 organic aimags, uniting 23 villages. PAs of the end of 2021, there are 1 thousand 56 farmers who have a local organic quality certificate in their hands. These farms grow organic products on 7,000 hectares of organic land.²⁰ According to the Ministry of Agriculture in the Kyrgyz Republic, there are now 32 thousand hectares for growing organic products.²¹

The main organic products in the republic are cotton, chickpeas, beans, apricots, medicinal herbs, prunes, walnuts, and potatoes. In the Kyrgyz Republic, projects for the development of environmental protection are being implemented with the support of international development partners.

1.2.1.2 Ambitions for TAP

Currently, the Ministry of Agriculture has a clear strategy for increasing the area of land used for public agriculture to 150 thousand hectares. In the future, OA is planned to be extended to more than 300 thousand ha of arable land in all regions of the country.

1.2.1.3 Activities and activities selected for inclusion in the TAP

Report 2 on the analysis of barriers and enabling frameworks for the implementation and diffusion of this technology in the sector identified 17 barriers and 21 measures to eliminate them (see Table 1.13.).

²⁰<https://www.akchabar.kg/ru/news/v-kyrgyzstane-ni-u-odnogo-fermera-net-mezhdunarodnogo-organicheskogo-sertif-ikata/>

²¹ <https://www.akchabar.kg/ru/news/v-kyrgyzstane-ploshad-vyrashivaniya-organicheskoi-produkcii-dostigla-32-tysyach-ga/>

Table 1.13. A set of barriers and measures to promote environmental protection by category.

Categories No.	Barriers	No.	Measures
Economic and financial			
1	Lack of investment in expansion of public agricultural sector	1	Investments for the development of OA through a new state program for OA aimed at creating a favourable environment for OA and subsidizing OA producers.
		2	Using state reserve lands, it was proposed to support the initiatives of private owners using the mechanism of “public-private partnership” to create large land masses of public agricultural land and new “organic aimags”
		3	Mobilization of international financial resources for the implementation of CA capacity development projects and financial support for farmers practicing CA.
2	Lack of equity capital starting the production of auxiliary agricultural products	4	Continuation and expansion of the state program “Financing of Agriculture” for lending at preferential interest rates to agricultural producers, highlighting them as a separate category of beneficiaries
3	Limited access of agricultural producers to loans on acceptable terms	5	Access to credit resources will be improved through the land market development strategy, which involves changing the legislation on land collateral for obtaining bank loans.
Non-financial			
Political legal and regulatory			
4	Lack and absence of a strategic political document on the development of OA	6	Development and adoption of the State Program for the development of public agricultural agriculture with clearly formulated political goals and objectives for creating a favorable environment, allocating new areas for public agricultural agriculture, as well as subsidizing the public agricultural sector producers.
5	Gaps in technical regulatory documents	7	Adoption/introduction of changes to regulatory documents on requirements for the production process of OA, criteria and procedure for certification of organic products by OA and support of OA in general.
Institutional			
6	Lack of a certification system and uncertainty with voluntary certification of OA products	8	Improving the transparency of the voluntary certification system for organic products and finalizing the national standard regarding implementation procedures using scientific developments and research results.
		9	Harmonize national and international standards for the production of OA.
		10	Equip laboratories and accredit the national organization with IFOAM.
Market			
7	Lack of organic seed and planting material	eleven	As part of the process of development of seed and burning farms, launched by the state, to create seed farms oriented to the agricultural market for the production of high-quality organic seeds and planting material to expand the area of agricultural farming;
8	Lack of quality control of imported seed material	12	Strengthen control over the import of GMO seeds containing GMOs into the territory of the republic, the use of which contradicts organic methods of agricultural production is constantly growing. Introduce customs duties on such materials.
9	Difficulties with selling OA products	13	Expand marketing services and promotion of healthy eating based on organic products, make regular advertising campaigns and fairs of organic products already voluntarily certified in the Kyrgyz Republic. develop a catalogue of OA products and manufacturers and post it on Internet resources and social networks. Expand the local trade network for organic products.
Human Management Skills			
10	Lack of knowledge and practical skills among agricultural entities in the production of organic products	14	As measures to overcome this barrier, the process of increasing institutional and individual capacity, carried out by the FOU “BIO.KG” and the PF “Bio Service” will be expanded within the framework of the mobilized resources of international projects, taking into account the development of farmers’ skills in marketing and financial management still remain in number of main barriers. In addition, educational and methodological

Categories No.	Barriers	No.	Measures
			materials on environmental management will be developed to join the process of increasing the capacity of SCS. Training modules on environmental protection will be integrated into the KNAU curriculum.
eleven	Insufficient use of biological plant protection products and organic fertilizers by OA business entities,	15	To overcome this barrier, the production of organic fertilizers and biological plant protection products will be expanded in all regions of the country and information and training campaigns will be conducted on the rules and regulations for their use.
Networking barriers			
12	Weak coordination and support of stakeholders at the state level for the development of environmental protection.	16	To strengthen, coordinate and involve local state administrations, local governments, as well as research institutes and business communities in the process of development of organic agricultural production, meetings will be held regularly sessions of the Coordination Council for the Development of Organic Agricultural Production under the Government of the Kyrgyz Republic. OAD will become the working secretariat of the council and will prepare materials to accelerate the expansion of OA as a competitive advantage of the Kyrgyz Republic in the region and monitor the implementation of decisions made by the council.
Barriers to information and awareness			
13	Insufficient scientific capacity for advisory support on environmental protection.	17	The subject of OA will be included in the Scientific Work Plans of relevant institutions to develop appropriate recommendations on the best practices of OA, as well as allowing the formation of a scientific basis for the harmonization of national and international OA standards. The process of developing teaching aids for educational institutions and practical guides, training materials and visual materials on agricultural technology and agroecology for training extension services and farmers will be intensified. The “Organic Aimak” initiative will be continued.
14	Low awareness and knowledge about OA, its benefits and the importance of development in the Kyrgyz Republic	18	To resolve these issues, a number of communication products will be developed and a number of information and promotional events will be carried out to promote OA products using the media, Internet resources and social networks. An online Community of Practice will be created on the basis of the Fund “BIO.KG”, where farmers and entrepreneurs themselves will discuss the problems of implementing agricultural practices.
15	Lack of information about modern technologies for environmental protection	19	The complex nature of the OA technology, which integrates a whole set of techniques and approaches to agricultural production based on agroecology, will also receive broad information support from both scientific and educational institutions and NGOs, as well as from business - manufacturers, importers and dealers of relevant equipment for OA.
Others: Small scale of current production			
16	Small-scale production of agricultural production on farms	20	_Currently, the Ministry of Agriculture is developing a Concept for the development of the land market, where consolidation of agricultural land has already been declared one of the directions. It is expected that as a result of its implementation, a number of farms with large plots of land will appear, where it will be possible to carry out no-till soil treatment and organize crop rotation.
Others: Environmental			
17	Decrease in soil fertility	21	This barrier will be overcome by developing schemes for fertilizing soils with organic-mineral fertilizers on the basis of individual fields; for this, the Republican Soil-Agrochemical Station will be involved, which will conduct surveys of all agricultural lands proposed for OA.

The first step of the work on compiling the TAP for the OA was to identify, based on the above barriers, actions for inclusion in the TAP. Through the analytical process and in consultation with the PWG members, the following five actions for the TAP were identified (see Table 1.14).

Table 1.14. Barriers and TAP actions to overcome them

Categories		Barriers	Actions for TAP
Economic and financial			1. Expanding access to financial resources
1	Lack of investment in expansion of public agricultural sector		
2	Lack of equity capital starting the production of auxiliary agricultural products		
3	Limited access of agricultural producers to loans on acceptable terms		
Political legal and regulatory			2. Improving policies and legislation for the development of public agriculture
4	Lack and absence of a strategic political document on the development of OA		
5	Gaps in technical regulatory documents		
Institutional			3. Increasing institutional and individual capacity
6	Lack of a certification system and uncertainty with voluntary certification of OA products		
Human Management Skills			
7	Lack of knowledge and practical skills among agricultural entities in the production of organic products		
8	Insufficient use of biological plant protection products and organic fertilizers by OA business entities,		
Networking barriers			
9	Weak coordination and support of stakeholders at the state level for the development of environmental protection.		
Others: Environmental			
10	Decrease in soil fertility		
Market			4. Improving access to quality materials for environmental management and marketing of agricultural products and
eleven	Lack of organic seed and planting material		
12	Lack of quality control of imported seed material		
13	Difficulties with selling OA products		
Barriers to information and awareness			5. Raising public awareness about OA
14	Insufficient scientific capacity for advisory support on environmental protection.		
15	Low awareness and knowledge about OA, its benefits and the importance of development in the Kyrgyz Republic		
16	Lack of information about modern technologies for environmental protection		

Specific activities were then identified for the selected types of actions. The activities identified for the implementation of the Action Plan include broad conceptual actions and more specific activities that will be refined during the finalization of planning and implementation of the TAP, presented in Table. 1.15.

Table 1.15. Activities for TAP by type of action for OA technology

No.	Activities by type of action
1. Expanding access to financial resources	
1.1.	Preparation of a new state program for environmental agriculture aimed at creating a favourable environment for agricultural agriculture and subsidizing agricultural producers.
1.2	Supporting private initiatives using the “public-private partnership” mechanism to create large land tracts of public agricultural land and new “organic aimags”
1.3	Mobilization of international financial resources for the implementation of CA capacity development projects and financial support for farmers practicing CA.
1.4	Continuation and expansion of the state program “Financing of Agriculture” for lending at preferential interest rates to agricultural producers
1.5	Access to credit resources will be improved through the land market development strategy, which involves changing the legislation on land collateral for obtaining bank loans.
2. Improving policies and legislation for the development of public agriculture	
2.1	Development and adoption of the State Program for the development of public agricultural agriculture with clearly formulated political goals and objectives for creating a favourable environment, allocating new areas for public agricultural agriculture, as well as subsidizing the public agricultural sector producers.
2.2	Adoption/introduction of changes to regulatory documents on requirements for the production process of OA, criteria and procedure for certification of organic products by OA and support of OA in general.
3. Increasing institutional and individual capacity	
3.1	Improving the transparency of the voluntary certification system for organic products and finalizing the national standard regarding implementation procedures using scientific developments and research results.
3.2	Harmonization of national and international standards for the production of OA.
3.3	Laboratory equipment and accreditation of the national organization in IFOAM.
3.4	Expanding the process of increasing institutional and individual potential, carried out by the FOM “BIO.KG” and the PF “Bio Service” within the framework of the mobilized resources of international projects (marketing and financial management and the development of educational and methodological materials on environmental management for connecting to the process of increasing the capacity of SCS, as well as training modules on environmental protection in the KNAU curriculum.
3.5	Expanding the production of organic fertilizers and biological plant protection products in all regions of the country and conducting information and training campaigns on the rules and regulations of their use
3.6	Regular meetings of Coordination Council for the Development of Organic Agricultural Production under the Government of the Kyrgyz Republic, where OAD working secretariat of the council.
3.7	Development of schemes for fertilizing soils with organic-mineral fertilizers based on individual fields with the help of the Republican Soil-Agrochemical Station and training of farmers.
4. Improving access to quality materials for environmental management and marketing of agricultural products	
4.1	Creation of seed farms oriented to the agricultural market for the production of high-quality organic seeds
4.2	Strengthening control over the import of GMO seeds containing GMOs into the territory of the republic and introducing customs duties on such materials.
4.3	Expand marketing services and promotion of healthy nutrition based on organic products (regular advertising campaigns, fairs of organic products voluntarily certified in the Kyrgyz Republic, a

	catalogue of products and manufacturers of the OA with posting on Internet resources and social networks, a network of trade in organic products locally).
5. Raising public awareness about OA	
5.1	The topic is included in the Scientific Work Plans of relevant institutions to develop appropriate recommendations on the best practices of environmental agriculture with the development of educational and methodological aids for educational institutions and practical guides, training materials on agricultural technology and agroecology for training extension services and farmers. The “Organic Aimak” initiative will be continued.
5.2	Development of a number of communication products and a number of information and promotional events were carried out to promote OA products using the media, Internet resources and social networks. An online Community of Practice will be created on the basis of the FOM “BIO.KG”, where farmers and entrepreneurs themselves will discuss the problems of implementing agricultural practices.
5.3	Promotion of the comprehensive nature of AW technology, integrating a whole range of techniques and approaches to agricultural production based on agroecology, both by scientific and educational institutions, NGOs, and business manufacturers, importers and dealers of relevant equipment for AW.

1.2.1.4 Stakeholders and timing of TAP implementation

Based on the analysis of sector stakeholders carried out at the previous stages of the project, parties interested in implementing TAP activities were identified by type of actions and activities, which are presented in Table. 1.16.

Table 1.16. Stakeholders by actions and activities

No.	Activities by type of action	Parties concerned	Implementation deadlines
1. Expanding access to financial resources			
1.1.	Preparation of a new state program for environmental agriculture aimed at creating a favourable environment for agricultural agriculture and subsidizing agricultural producers.	Ministry of Agriculture, MoF, CM	2024-2025
1.2	Supporting private initiatives using the “public-private partnership” mechanism to create large land tracts of public agricultural land and new “organic aimags”	Ministry of Agriculture, PPP	2024-2035
1.3	Mobilization of international financial resources for the implementation of CA capacity development projects and financial support for farmers practicing CA.	Ministry of Agriculture, MNRETS, MPR	2024-2035
1.4	Continuation and expansion of the state program “Financing of Agriculture” for lending at preferential interest rates to agricultural producers	Ministry of Agriculture, MoF, CM	2024-2030
1.5	Access to credit resources will be improved through the land market development strategy, which involves changing the legislation on land collateral for obtaining bank loans.	Ministry of Agriculture, CM, CFI	2024-2030
2. Improving policies and legislation for the development of public agriculture			
2.1	Development and adoption of the State Program for the development of public agricultural agriculture with clearly formulated political goals and objectives for creating a favourable environment, allocating new areas for public agricultural agriculture, as well as subsidizing the public agricultural sector producers.	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs	2024-2025

No.	Activities by type of action	Parties concerned	Implementation deadlines
2.2	Adoption/introduction of changes to regulatory documents on requirements for the production process of OA, criteria and procedure for certification of organic products by OA and support of OA in general.	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs, Ministry of Natural Resources	2024-2025
3. Increasing institutional and individual capacity			
3.1	Improving the transparency of the voluntary certification system for organic products and finalizing the national standard regarding implementation procedures using scientific developments and research results.	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs, Ministry of Natural Resources	2024-2025
3.2	Harmonization of national and international standards for the production of OA.	Ministry of Agriculture, PPP, NGOs, Ministry of Natural Resources	2024-2027
3.3	Laboratory equipment and accreditation of the national organization in IFOAM.	Ministry of Agriculture, PPP NGOs	2024-2035
3.4	Expanding the process of increasing institutional and individual potential, carried out by the FOU "BIO.KG" and the PF "Bio Service" within the framework of the mobilized resources of international projects (marketing and financial management and the development of educational and methodological materials on environmental management for connecting to the process of increasing the capacity of SCS, as well as training modules on environmental protection in the KNAU curriculum.	Ministry of Agriculture, KNAU, KRICF, KRIHP, PPP, RAS, NGOs	2024-2035
3.5	Expanding the production of organic fertilizers and biological plant protection products in all regions of the country and conducting information and training campaigns on the rules and regulations of their use	Ministry of Agriculture, PPP, NGOs	2024-2035
3.6	Regular meetings of Coordination Council for the Development of Organic Agricultural Production under the Government of the Kyrgyz Republic, where OAD working secretariat of the council.	Ministry of Agriculture, Cabinet of Ministers, NGOs, PPP	2024-2040
3.7	Development of schemes for fertilizing soils with organic-mineral fertilizers based on individual fields with the help of the Republican Soil-Agrochemical Station and training of farmers.	Ministry of Agriculture, KNAU, KRICF, KRIHP, PPP, NGOs	2024-2028

No.	Activities by type of action	Parties concerned	Implementation deadlines
4. Improving access to quality materials for environmental management and marketing of agricultural products			
4.1	Creation of seed farms oriented to the agricultural market for the production of high-quality organic seeds	Ministry of Agriculture, PPP, local self-government, NGOs	2024-2030
4.2	Strengthening control over the import of GMO-containing seeds into the territory of the republic and introducing customs duties on such materials.	Ministry of Agriculture, Customs Union, Cabinet of Ministers, NGOs, PPP	2024-2025
4.3	Expand marketing services and promotion of healthy nutrition based on organic products (regular advertising campaigns, fairs of organic products voluntarily certified in the Kyrgyz Republic, a catalogue of products and manufacturers of the OA with posting on Internet resources and social networks, a network of trade in organic products locally).	Ministry of Agriculture, PPP, KNAU CM, NGOs, media	2024-2040
5. Raising public awareness about OA			
5.1	The topic is included in the Scientific Work Plans of relevant institutions to develop appropriate recommendations on the best practices of environmental agriculture with the development of educational and methodological aids for educational institutions and practical guides, training materials on agricultural technology and agroecology for training extension services and farmers. The “Organic Aimak” initiative will be continued.	Ministry of Agriculture, KNAU, KRICF, KRIHP, NGO	2024-2025
5.2	Development of a number of communication products and a number of information and promotional events were carried out to promote OA products using the media, Internet resources and social networks. An online Community of Practice will be created on the basis of the FFO “BIO.KG”, where farmers and entrepreneurs themselves will discuss the problems of implementing agricultural practices.	Ministry of Agriculture, SCS NGOs, media	2024-2025
5.3	Promotion of the comprehensive nature of AW technology, integrating a whole range of techniques and approaches to agricultural production based on agroecology, both by scientific and educational institutions, NGOs, and business manufacturers, importers and dealers of relevant equipment for AW.	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs	2024-2025

1.2.1.5 Assessing the resources needed for actions and activities

In the process of preparing the TAP, based on the market analysis carried out in the second report on the analysis of barriers and the market using the Logical Analysis of Problems methodology, the cost of TAP activities was calculated (see Table 1.17).

Table 1.17. Estimation of the cost of TAP activities by type of action.

No.	Activities by type of action	Cost of events, million US dollars	Sources of financing
1. Expanding access to financial resources			
1.1.	Preparation of a new state program for environmental agriculture aimed at creating a favourable environment for agricultural agriculture and subsidizing agricultural producers.	0.025	RB, MPR
1.2	Supporting private initiatives using the “public-private partnership” mechanism to create large land tracts of public agricultural land and new “organic aimags”	3	RB, MPR, PPP
1.3.	Mobilization of international financial resources for the implementation of CA capacity development projects and financial support for farmers practicing CA.		RB, MPR
1.4	Continuation and expansion of the state program “Financing of Agriculture” for lending at preferential interest rates to agricultural producers	5.84	RB
1.5	Access to credit resources will be improved through the land market development strategy, which involves changing the legislation on land collateral for obtaining bank loans.	0.4	RB, MPR, CFI
2. Improving policies and legislation for the development of public agriculture			
2.1	Development and adoption of the State Program for the development of public agricultural agriculture with clearly formulated political goals and objectives for creating a favourable environment, allocating new areas for public agricultural agriculture, as well as subsidizing the public agricultural sector producers.	0.025	RB, MPR
2.2	Adoption/introduction of changes to regulatory documents on requirements for the production process of OA, criteria and procedure for certification of organic products by OA and support of OA in general.	0.1	RB, MPR
3. Increasing institutional and individual capacity			
3.1	Improving the transparency of the voluntary certification system for organic products and finalizing the national standard regarding implementation procedures using scientific developments and research results.	0.03	RB, MPR
3.2	Harmonization of national and international standards for the production of OA.	0.025	RB, MPR
3.3	Laboratory equipment and accreditation of the national organization in IFOAM.	0.6	RB, MPR
3.4	Expanding the process of increasing institutional and individual potential, carried out by the FOM “BIO.KG” and the PF “Bio Service” within the framework of the mobilized resources of international projects (marketing and financial management and the development of educational and methodological materials on environmental management for connecting to the process of increasing the capacity of RAS, as well as training modules on environmental protection in the KNAU curriculum.	2.5	RB, MPR

No.	Activities by type of action	Cost of events, million US dollars	Sources of financing
3.5	Expanding the production of organic fertilizers and biological plant protection products in all regions of the country and conducting information and training campaigns on the rules and regulations of their use	2.2	RB, MPR
3.6	Regular meetings of the Coordination Council for the Development of Organic Agricultural Production under the Government of the Kyrgyz Republic, where OAD is the working secretariat of the council.	0.07	RB, MPR
3.7	Development of schemes for fertilizing soils with organic-mineral fertilizers based on individual fields with the help of the Republican Soil-Agrochemical Station and training of farmers.	0.02	RB, MPR
4. Improving access to quality materials for environmental management and marketing of agricultural products			
4.1	Creation of seed farms oriented to the agricultural market for the production of high-quality organic seeds	1.1	RB, MPR
4.2	Strengthening control over the import of GMO-containing seeds into the territory of the republic and introducing customs duties on such materials.	0.015	RB, MPR
4.3	Expand marketing services and promotion of healthy nutrition based on organic products (regular advertising campaigns, fairs of organic products voluntarily certified in the Kyrgyz Republic, a catalog of products and manufacturers of the OA with posting on Internet resources and social networks, a network of trade in organic products locally).	0.75	RB, MPR
5. Raising public awareness about OA			
5.1	The topic is included in the Scientific Work Plans of relevant institutions to develop appropriate recommendations on the best practices of environmental agriculture with the development of educational and methodological aids for educational institutions and practical guides, training materials on agricultural technology and agroecology for training extension services and farmers. The “Organic Aimak” initiative will be continued.	0.4	RB, MPR
5.2	Development of a number of communication products and a number of information and promotional events were carried out to promote OA products using the media, Internet resources and social networks. An online Community of Practice will be created on the basis of the FFO “BIO.KG”, where farmers and entrepreneurs themselves will discuss the problems of implementing agricultural practices.	0.5	RB, MPR
5.3	Promotion of the comprehensive nature of AW technology, integrating a whole range of techniques and approaches to agricultural production based on agroecology, both by scientific and educational institutions, NGOs, and business manufacturers, importers and dealers of relevant equipment for AW.	0.7	RB, MPR
	Result:	18.3	

1.2.1.6 Management planning

1.2.1.6.1 Risks and contingency planning

During the preparation of the TAP, an overview of the identified Risks and contingency plans for the actions of the TAP was identified and is being presented (see Table 1.18).

Table 1.18. Risks that may hinder the implementation of TAP and measures to mitigate them

TAP actions	Risks	Mitigation measures
1. Expanding access to financial resources	Lack of financial resources in the Republic of Belarus	Active engagement of private sector capital and donors
	Difficult procedures hindering the adoption of recommendations	Simplification of procedures, lobbying at the highest level
	Lack of funding	Active involvement of the Ministry of Natural Resources
2. Improving policies and legislation for the development of public agriculture	Insufficient involvement in the development of legal acts of local communities	Conducting relevant information campaigns
	Poor stakeholder collaboration	Building public-private partnerships locally
3. Increasing institutional and individual capacity	Low interest from local participants	Conducting relevant information campaigns
	Low interest of universities, research institutes, SCS in conducting trainings	Active involvement of the Ministry of Natural Resources
4. Improving access to quality materials for environmental management and marketing of agricultural products and	Lack of private sector involvement	Conducting relevant information campaigns, direct contacts with business associations
5. Raising public awareness about OA	Lack of interest from the media	Conducting information events for the media
	Weak cooperation between government agencies and the media	Development of communication products

1.2.1.6.2 Next steps

To continue work to promote the implementation of TAP using OA technology, the following steps are expected to be taken:

- Complete discussion of TAP with SWG members
- Present it at a national seminar
- Approve the TAP at the meeting of the NSC of the project
- Prepare information materials about TAP and distribute in the media and social networks
- Develop a project proposal based on the TAP as a demonstration of the specific use of the provisions of the TAP.
- Prepare TAP for approval by the leadership of the Ministry of Agriculture.
- Post the TAP on the website of the UNFCCC Focal Point and the Ministry of Agriculture

1.2.1.7 Summary table of TAP for OA

TAP overview table								
Sector	Agriculture							
Subsector	crop production							
Technologies	Organic farming							
Ambition	National coverage							
Advantages	<ul style="list-style-type: none"> • saving money on expensive synthetic fertilizers and fuel for deep mechanical tillage; • more intensive use of land resources; • improving the quality of nutrition, taste and nutritional value of products; • guaranteed quality and product certification; • recycling and composting of organic livestock waste to fertilize fields; • avoidance of health-threatening chemicals; • employment opportunities for rural women; • improving soil quality; • reducing pollution of soils and surface and ground waters; • biodiversity conservation; • maintaining the stock and increasing the absorption of carbon by soils; • reduction of direct and indirect nitrous oxide (N₂O) emissions from managed soils. 							
Action	Activities to be implemented	Sources of financing	Responsible authority and focal point	Time frame	Risks	Success criterion	Indicators for monitoring implementation	Event budget, million US dollars
1. Expanding access to financial resources	1.1 Preparation of a new state program for environmental agriculture aimed at creating a favorable environment for environmental agriculture and subsidizing agricultural producers.	RB, MPR	Ministry of Agriculture, MoF, CM	2024-2025	1. Lack of financial resources in the Republic of Belarus 2. Difficult procedures hindering the	A new OA development program has been approved	Document	0.025
	1.2 Supporting private initiatives using the “public-private partnership” mechanism to create large land masses of public agricultural land and new “organic aimags”	RB, MPR, PPP	Ministry of Agriculture, PPP	2024-2035		Number of initiatives supported	Not less than 20	3
	1.3 Mobilization of international financial resources for the implementation of CA capacity development projects and financial support for farmers practicing CA.	RB, MPR	Ministry of Agriculture, MNRETS, MPR	2024-2035		Number of new projects	Not less than 10	4

	1.4. Continuation and expansion of the state program “Financing of Agriculture” for lending at preferential interest rates to agricultural producers	RB	Ministry of Agriculture, MoF, CM	2024-2030		adoption of recommendations	New phases of the FSH program	At least 2	5.84
	1.5 Access to credit resources will be improved through the land market development strategy, which involves changing the legislation on land pledges for obtaining bank loans.	RB, MPR, CFI	Ministry of Agriculture, CM, CFI	2024-2030	3.	Lack of funding	Improved access to credit	At least 20	0.4
2. Improving policies and legislation for the development of public agriculture	2.1 Development and adoption of the State Program for the development of public agricultural holdings with clearly formulated political goals and objectives for creating a favorable environment, allocating new areas for public agricultural farming, as well as subsidizing the public agricultural sector producers.	RB, MPR	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs	2024-2025	1.	Insufficient involvement in the development of legal acts of local communities	Adopted State Program for the Development of OA	Document	0.025
	2.2 Adoption/introduction of changes to regulatory documents on the requirements for the production process of the OA, the criteria and procedure for certification of organic products by the OA and the support of OA in general.	RB, MPR	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs, Ministry of Natural Resources	2024-2025	2.	Poor stakeholder collaboration	Number of updated accepted legal acts	At least 3	0.1
3. Increasing institutional and individual capacity	3.1 Improving the transparency of the voluntary certification system for organic products and finalizing the national standard regarding implementation procedures using scientific developments and research results.	RB, MPR	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs, Ministry of Natural Resources	2024-2028	1.	Low interest from local participants	Updated organic certification procedures	Document	0.03
	3.2 Harmonization of national and international standards for the production of OCX.	RB, MPR	Ministry of Agriculture, PPP, NGOs, Ministry of Natural Resources	2024-2027	2.	Low interest of universities, research	Harmonized organic certification systems	Analytical report	0.025

3.3 Laboratory equipment and accreditation of the national organization in IFOAM.	RB, MPR	Ministry of Agriculture, PPP NGOs	2024-2035	institutes, SCS in conducting trainings	Equipped laboratory	Working licensing laboratory	0.6
3.4 Expansion of the process of increasing institutional and individual potential, carried out by the FOU "BIO.KG" and the PF "Bio Service" within the framework of the mobilized resources of international projects (marketing and financial management and development of educational and methodological materials on OSH for joining the process of increasing the capacity of SCS, and also training modules on environmental protection in the KNAU curriculum.	RB, MPR	Ministry of Agriculture, KNAU, KRICF, KRIHP, PPP, RAS, NGOs	2024-2035		- Number of training events conducted - Number of trained	- At least 50 - At least 2000	2.5
3.5 Expanding the production of organic fertilizers and biological plant protection products in all regions of the country and conducting information and training campaigns on the rules and regulations of their use	RB, MPR	Ministry of Agriculture, PPP, NGOs	2024-2035		- Number of production facilities in the regions - number of information campaigns	- at least 21 - at least 70	2.2
3.6 Regular meetings of the Coordination Council for the Development of Organic Agricultural Production under the Government of the Kyrgyz Republic, where DOSH is the working secretariat of the council.	RB, MPR	Ministry of Agriculture, Cabinet of Ministers, NGOs, PPP	2024-2040		- number of Coordination Council meetings	- at least 20	0.07
3.7 Development of schemes for fertilizing soils with organic-mineral fertilizers based on individual fields with the help of the Republican Soil-Agrochemical Station and training of farmers.	RB, MPR	Ministry of Agriculture, KNAU, KRICF, KRIHP, PPP, NGOs	2024-2028		- Developed feeding schemes in the Guide - number of trainings	- Document - at least 7	0.02

4. Improving access to quality materials for environmental management and marketing of agricultural products	4.1 Creation of seed farms oriented to the OSH market for the production of high-quality organic seeds	RB, MPR	Ministry of Agriculture, PPP, local self-government, NGOs	2024-2030	1. Lack of private sector involvement	- Seed farms	- at least 14	1.1
	4.2 Strengthening control over the import of GMO seeds containing GMOs into the territory of the republic and the introduction of customs duties on such materials.	RB, MPR	Ministry of Agriculture, Customs Union, Cabinet of Ministers, NGOs, PPP	2024-2025		- Justification for strengthening control procedures and import bans	- Analytical report with recommendations	0.015
	4.3 Expand marketing services and promotion of healthy nutrition based on organic products (regular advertising campaigns, fairs of organic products voluntarily certified in the Kyrgyz Republic, a catalog of products and manufacturers of the OA with posting on Internet resources and social networks, a network of trade in organic products locally).	RB, MPR	Ministry of Agriculture, PPP, KNAU CM, NGOs, media	2024-2040		- National discussion	- Protocol of the decision of the national conference	
						- Number of advertising campaigns	- At least 16	0.75
						- Number of OA fairs	- At least 20	
						- Catalogue of products and manufacturers of OA	- The catalogue was published and posted online	
						- OA retail outlets in the regions	- At least 20	
5. Raising public awareness about OA	5.1 The topic is included in the Scientific Work Plans of relevant institutions to develop appropriate recommendations on the best practices of environmental agriculture with the development of teaching aids for educational institutions and practical guides, training materials on agricultural technology and agroecology for training extension services and farmers. The “Organic Aimak” initiative will be continued.	RB, MPR	Ministry of Agriculture, KNAU, KRICF, KRIHP, NGO	2024-2025	1. Lack of interest from the media	- OA is included in the research plans of various institutes	- KNAU, KRICF, KRIHP	0.4
						2. Weak cooperation between government agencies	- Number of teaching aids and manuals developed	- At least 25

				and the media	SCS materials	At least 5	
5.2 Development of a number of communication products and a number of information and promotional events were carried out to promote OA products using the media, Internet resources and social networks. An online Community of Practice will be created on the basis of the FFO “BIO.KG”, where farmers and entrepreneurs themselves will discuss the problems of implementing agricultural practices.	RB, MPR	Ministry of Agriculture, SCS NGOs, media	2024-2025		- Number of communication products - Number of promotional campaigns - Internet portal “Community of Practice”	- at least 20 - at least 7 - Internet portal is accessible to everyone	0.5
5.3 Promoting the integrated nature of AW technology, which integrates a whole set of techniques and approaches to agricultural production based on agroecology, both by scientific and educational institutions, NGOs, and business manufacturers, importers and dealers of relevant equipment for AW.	RB, MPR	Ministry of Agriculture, Ministry of Finance, Cabinet of Ministers, NGOs	2024-2025		- Promotions for public sector agricultural sector - Analytical document of all OC techniques - Range of equipment for environmental protection	- at least 14 - Document - Advertising brochures for new equipment for OCX	0.7
Result:							22.3

1.2.2 Action plan for Drip Irrigation technology

A detailed analysis of the legal framework for the development of the agricultural sector and the policy challenges facing the sector that determine the introduction and expansion of modern technologies in agricultural production is presented in the second report of the project “Analysis of Barriers and Facilitative Frameworks” for the introduction and diffusion of prioritized technologies. In this report, we will highlight the main political and legal acts that define the framework for the current development of crop production and drip irrigation technology (DI).

Table 1.19. Policy and legal documents on crop production and CR

Title of documents	Acceptance date	Content
Water Code of the Kyrgyz Republic	January 12, 2005 No. 8	Lays down the legal foundations for the use of water resources of the Kyrgyz Republic, which regulates water relations in the field of use, protection and development of water resources for a guaranteed, sufficient and safe supply of water to the population of the Kyrgyz Republic, environmental protection and ensuring the rational development of the water fund of the republic. The Code defines water resources management, presents the principles of their management, defines the competencies of state bodies for water management, monitoring, planning and priorities for the use of resources.
National Water Strategy of the Kyrgyz Republic	February 10, 2023 UP No. 23.	Defines its goal as creating a sustainable water resource management system in the Kyrgyz Republic for the benefit of current and future generations. At the same time, the following priority areas have been identified: 1) protection of water resources from depletion and pollution; 2) rational use of water resources; 3) reforming the water resources management system.
Law of the Kyrgyz Republic “On the management of agricultural lands”	January 11, 2001 N 4	This Law regulates the legal relations of agricultural land management and is aimed at ensuring the effective and safe use of land in the interests of the people of the Kyrgyz Republic. Establishes that the right of ownership to agricultural land plots in the Kyrgyz Republic belongs to the state, citizens of the Kyrgyz Republic, cAPUeratives and legal entities of the Kyrgyz Republic engaged in the cultivation and (or) processing of agricultural products.
Law of the Kyrgyz Republic “On Peasant (Farm) Economy”	June 3, 1999 N 47	This Law establishes the legal basis, the procedure for the creation and activities of peasant (farm) enterprises (peasant farms), their rights and obligations and is aimed at creating conditions for their equal development with other forms of management. Defines the peasant farm and its members, the procedure for registration
National development strategy of the Kyrgyz Republic for 2018-2040.	October 31, 2018 UP No. 221	In the section “Creating an environment for development” Task 7.19.RNational water resources management makes it clear thatatTechnologies for the efficient use of water resources have been introduced, significantly increasing the water use coefficient.
National Development Program of the Kyrgyz Republic until 2026	October 12, 2021 No. 435	In section 6.2. Agriculture and processing noted that, pTaking into account the need to adapt to the consequences of

Title of documents	Acceptance date	Content
		climate change, one of the important areas is the economical, rational and efficient use of available water resources.
Action plan of the Cabinet of Ministers of the Kyrgyz Republic for the implementation of the National Development Program of the Kyrgyz Republic until 2026	December 25, 2021 No. 352	He talks about creating favourable conditions for the supply of agricultural machinery and mechanized means of production to processing industry enterprises, equipment for drip irrigation systems and greenhouses. At the same time, an indicator of the implementation of this measure will be the supply of agricultural machinery and equipment for processing industry systems, drip irrigation and greenhouses in the amount of 426.0 million soms and the renewal of the agricultural technical park. In addition, in the “Horticulture” section, the task of developing irrigation in this subsector is determined through the planned installation of 109 wells and drip irrigation systems on lands of perennial plantings on an area of 300.0 hectares. ²²
Concept of agricultural development until 2025	Submitted for public discussion	With regard to drip irrigation, he notes the need to ensure the sustainable operation of water facilities intended for irrigation, increasing the efficiency of their use by the state and water user associations to meet the needs of farms for water resources in terms of volume and time of use, supporting the expansion of the use of water-saving technologies (drip irrigation, sprinkling, etc. .)

1.2.2.1 Introduction

Drip irrigation is a method of moistening the soil in the root layer of plants by continuous portioned (drip) supply of water with a special dropper. The system (SKO) consists of a reservoir (tank), a filter, taps, a main, distribution and irrigation pipeline and a dripper. Irrigation water is supplied to each plant using special droppers without loss.

In the 1980s, a number of projects were implemented in the Republic to introduce drip irrigation technologies on experimental plots with an area of more than 10 hectares in the Batken region (vineyards), Issyk-Kul region (apple and apricot orchards), Chui region (vegetables), etc. In the 1990s, about 800 hectares of perennial fruit plantations were watered using drip irrigation. However, soon the further promotion of drip irrigation systems in the Kyrgyz Republic stopped. And only after 2008, various international projects began to finance activities for the introduction and dissemination of water-saving technologies and drip irrigation technology in the Kyrgyz Republic. Against the backdrop of the difficult economic situation in Kyrgyzstan, causing a lack of investment, the use of DI is primarily advisable in conditions where this technology has undeniable advantages,

- in areas of irrigation water shortage;
- on sloping, uneven and foothill lands;
- on highly permeable soils (rocky, sandy, gravelly, etc.);
- those lands where other methods of irrigation (irrigation in furrows and strips, sprinkling, etc.) are not acceptable and ineffective
- in greenhouses throughout the country.²³

The significant cost of equipment and operation of drip irrigation systems determines the feasibility of their use, primarily for watering high-yield agricultural crops that are in steady demand in domestic and foreign markets at a level of wholesale and retail prices that ensure the profitability of their production. The most attractive from this point of view may be fruit, berry and melon crops.

²²Approved by a resolution of the Cabinet of Ministers of the Kyrgyz Republic dated

²³UNECE. 2015. Modern irrigation technologies. Recommendations for implementation in Kyrgyzstan

Therefore, today CR systems in the Kyrgyz Republic can be used for apricot, apple, peach, cherry, vineyard, tomato, pepper, cucumber, strawberry, watermelon, melon and other highly profitable crops, as well as in greenhouses for vegetables.

As of January 1, 2021, 2 thousand 574 greenhouses of various types were operating in the republic, according to the Ministry of Agriculture; they are located on approximately 182 hectares of land. They mainly grow vegetables (cucumbers, tomatoes, peppers), as well as lemons and flowers.

The boom in greenhouse construction in Kyrgyzstan began after 2010. Those who have mastered technology well are expanding. Some closed due to problems. Since 2017, greenhouse farms have been issued preferential loans, and proposals have been made to increase the loan repayment period to five years.²⁴

According to the Ministry of Agriculture, today the demand for drip irrigation in the Kyrgyz Republic is increasing. Therefore, it is planned to build a plant for the production of drip irrigation equipment in Kyrgyzstan, and work is currently underway to attract investors. This plant may operate within the framework of a public-private partnership. Aiyl Bank provides leasing to farmers for repairing wells and purchasing equipment. In 2021, only 2.5 thousand hectares of farmland were covered by drip irrigation.²⁵

1.2.2.2 Ambitions for TAP

Since the country already has experience in implementing DI systems, the scale of coverage of this technology during discussions with the SWG was defined as “national”, i.e. covering all regions of Kyrgyzstan.

1.2.2.3 Activities and activities selected for inclusion in the TAP

The previous project report presented 13 barriers analyzed using the UNEP-DTU methodology using Logical Problem Analysis (LPA), and also identified 16 possible measures to overcome them (see Table 1.20).

²⁴Anastasia Bengard. April 14, 2021. Agency 24.kg,

²⁵Yu. Kopytin In Kyrgyzstan, they will begin to produce equipment for drip irrigation of land. Agency 24.kg, 12/29/2021

Table 1.20. Set of barriers and measures for the development of “Drip irrigation” technology

Categories, no.		Barriers	No.	Measures
Economic and financial				
1	High cost of equipment		1	The construction of our own plant for the production of DI systems is expected to reduce the cost of DI systems.
			2	Development of the development of the land market, which involves changing the legislation on land collateral for obtaining bank loans by farmers.
			3	Additionally, it was proposed to mobilize international financial resources to implement projects for developing the potential of WUAs and financial support for farmers.
2	Lack of preferential financing for farmers who need DI systems		4	It is proposed to attract investments for the development of DI and improve access to cheap loans through the development of an addition to the state program “Financing of Agriculture”, aimed at supporting farmers planning to install DI systems.
3	The energy dependence of some water treatment systems on the availability of electricity to supply water, which increases operating costs.		5	Where possible, the need for electricity for pumps should be removed by inclined water treatment systems using the terrain of the sites or solved by increasing investments in the creation of water treatment plants.
Non-financial				
Political legal and regulatory				
4	Lack of policy for the development of DI		6	Development of a strategy for increasing water efficiency and water conservation in irrigation
5	Gaps in technical regulatory documents on DI		7	Development of technical regulatory documents to promote water-efficient technologies including water treatment systems. Such technical documents defining the procedure for use, requirements for the quality of irrigation water, norms of use and losses would help the wider development of irrigation waters.
Institutional				
6	Lack of advisory and repair service		8	Integration into the list of today's RAS of the entire range of services for advisory assistance to farmers on field surveys - calculation of technical specifications of equipment - places of purchase - training in use.
			9	As well as the development of DI service centres for the supply of spare parts and consumables and equipment repair based on existing private local campaigns.
Market				
7	Lack of production base for the manufacture of high-quality DI systems and spare parts		10	Construction of a plant for the production of DI systems, i.e. corresponding production base of the Kyrgyz Republic, therefore, this is a real measure that will reduce the dependence of the Kyrgyz Republic on the import of components and spare parts.
8	Lack of a supply chain for quality spare parts in all regions		eleven	The creation of service centres for DIs and a spare parts sales network covering all regions will overcome this barrier.
Human Management Skills				

Categories, no.	Barriers	No.	Measures
9	Lack of knowledge and practical skills among agricultural business entities for the proper operation of DI systems	12	Increasing the capacity of users of RAS and service centres of DI to improve the culture of operation and knowledge of the rules and regularity of maintenance, it is also proposed to conduct regular information campaigns on the best practices of DI.
10	Lack of technical expertise to install and maintain a drip irrigation system	13	Special trainings and programs to enhance technical expertise and professional development of professionals will be developed and conducted regularly.
Barriers to information and awareness			
eleven	Low awareness and awareness of the benefits and importance of developing water treatment as a water-efficient technology.	14	Developing communication products and conducting information campaigns on water-efficient technologies in the media and social networks, especially at the local level, presenting quantitative data on the benefits of using water-efficient technologies, especially for new perennial plantings.
12	Lack of information about modern high-tech DI systems	15	Creation of trading and information platforms, preparation of information products, and holding promotions on high-tech DI systems.
Others: Environmental			
13	Lack of clean water sources	16	There are a significant number of mothballed wells in Kyrgyzstan, which are now being restored by the communities themselves. In addition, as a cheap measure, it is possible to envisage the creation of sedimentation tanks for turbid water.

The first step in compiling the TAP on DI was to determine, based on the above-mentioned barriers, actions for inclusion in the TAP. Through the analytical process and in consultation with the SWG members, the following five actions for the TAP were identified (see Table 1.21).

Table 1.21. Barriers and actions for identified for TAP

Categories, no.	Barriers	Actions
Economic and financial		
1	High cost of equipment	1. Expanding access to financial resources
2	Lack of preferential financing for farmers who need DI systems	
3	The energy dependence of some water treatment systems on the availability of electricity to supply water, which increases operating costs.	
Political legal and regulatory		
4	Lack of policy for the development of DI	2. Improving policies and legislation
5	Gaps in technical regulatory documents on DI	
Institutional		
6	Lack of advisory and repair service	3. Increasing institutional and human capacity
7	Lack of knowledge and practical skills among agricultural business entities for the proper operation of DI systems	
8	Lack of technical expertise to install and maintain a drip irrigation system	
Market		
		4. Improving access to quality materials for DI

Categories, no.	Barriers	Actions
7	Lack of production base for the manufacture of high-quality DI systems and spare parts	
8	Lack of a supply chain for quality spare parts in all regions	
Barriers to information and awareness		
9	Low awareness and awareness of the benefits and importance of developing water treatment as a water-efficient technology.	5. Raising public awareness about DI
10	Lack of information about modern high-tech DI systems	

Specific activities were then identified for the selected types of actions. The activities identified for the implementation of the Action Plan include broad conceptual actions and more specific activities that will be refined during the finalization of planning and implementation of the TAP, presented in Table. 1.22.

Table 1.22. Activities for TAP by type of action for DI technology

No.	Activities by type of action
1. Expanding access to financial resources	
1.1	Development of the land market, which involves changing the legislation on land pledges for farmers to obtain bank loans.
1.2	Mobilization of international financial resources for the implementation of capacity development projects for DI and financial support for farmers.
1.3	Development of an addition to the state program “Financing of Agriculture”, aimed at supporting farmers planning to install DI systems.
2. Improving policies and legislation	
2.1	Development of a strategy for increasing water efficiency and water conservation in irrigation
2.2	Development of technical regulatory documents for the promotion of water-efficient technologies including water treatment systems (procedure for use, requirements for the quality of irrigation water, norms of use and losses)
3. Increasing institutional and human capacity	
3.1	Integration into the list of services of today's RAS of the entire range of services for advisory assistance to farmers on field survey - calculation of technical specifications of equipment - places of purchase - training in use.
3.2	Development of DI service centres for the supply of spare parts and consumables and repair of equipment based on existing private local campaigns.
3.3	Increasing the potential of users of RAS and service centres of the DI to improve the culture of operation and knowledge of the rules and regularity of maintenance
3.4	Special trainings and programs to enhance technical expertise and professional development of professionals will be developed and conducted regularly.
4. Improving access to quality materials for DI	
4.1.	Construction of a plant for the production of Di systems, i.e. corresponding production base of the DI.
4.2	The creation of service centres for DI and a spare parts sales network covering all regions will overcome this barrier.
5. Raising public awareness about DI	
5.1.	Developing communication products and conducting information campaigns on water-efficient technologies in the media and social networks, especially at the local level, presenting quantitative data on the benefits of using water-efficient technologies, especially for new perennial plantings.
5.2	Creation of trading and information platforms, preparation of information products, and holding promotions on high-tech DI systems.
5.3	Regular information campaigns on best DI practices.

1.2.2.4 Stakeholders and timing of TAP implementation

After identifying the actions and activities for the TAP, the stakeholders and possible time frames for the implementation of activities for the deployment and dissemination of drip irrigation technology were identified. The results of the work are presented in table. 1.23.

Table 1.23. Stakeholders and timing of implementation of TAP activities on DI

No.	Activities by type of action	Parties concerned	Implementation deadlines
1. Expanding access to financial resources			

No.	Activities by type of action	Parties concerned	Implementation deadlines
1.1	Development of the land market, which involves changing the legislation on land pledges for farmers to obtain bank loans.	Ministry of Agriculture, Cabinet of Ministers, CFI, NGOs, private sector	2024-2028
1.2	Mobilization of international financial resources for the implementation of capacity development projects for FBOs and financial support for farmers.	Ministry of Agriculture MPR	2024-2040
1.3	Development of an addition to the state program “Financing of Agriculture”, aimed at supporting farmers planning to install DI systems.	Ministry of Agriculture, Ministry of Finance, CFI	2024-2040
2. Improving policies and legislation			
2.1	Development of a strategy for increasing water efficiency and water conservation in irrigation	Ministry of Agriculture, SVR, MPR, MNRETS	2024-2027
2.2	Development of technical regulatory documents for the promotion of water-efficient technologies including water treatment systems (procedure for use, requirements for the quality of irrigation water, norms of use and losses)	Ministry of Agriculture, SVR, KRIIR, NKAU, NGO	2024-2035
3. Increasing institutional and human capacity			
3.1	Integration into the list of services of today's RAS of the entire range of services for advisory assistance to farmers on field survey - calculation of technical specifications of equipment - places of purchase - training in use.	Ministry of Agriculture, RAS, WRS, NGOs, WUAs	2024-2035
3.2	Development of DI service centres for the supply of spare parts and consumables and repair of equipment based on existing private local campaigns.	SVR, private sector, WUAs, NGOs	2024-2035
3.3	Increasing the potential of users of RAS and service centres of the DI to improve the culture of operation and knowledge of the rules and regularity of maintenance	SVR, KNAU, KRIIR, NGO	2024-2035
3.4	Special trainings and programs to expand technical expertise and improve the skills of professionals have been developed and regularly conducted.	SVR, KNAU, KRIIR, NGO, WUA	2024-2035
4. Improving access to quality materials for DI			
4.1.	Construction of a plant for the production of DI systems, i.e. appropriate production base of the DI to reduce the dependence of the Kyrgyz Republic on the import of components and spare parts.	Ministry of Agriculture, Private sector, MF	2024-2026
4.2	The creation of service centres for DI and a spare parts sales network covering all regions will overcome this barrier.	Ministry of Agriculture, RAS, private sector, NGOs	2024-2035
5. Raising public awareness about DI			
5.1.	Developing communication products and conducting information campaigns on water-efficient technologies in the media and social networks, especially at the local level, presenting quantitative data on the benefits of using water-efficient technologies, especially for new perennial plantings.	MOA, RAS, NGOs, private sector, WUA	2024-2030
5.2	Creation of trading and information platforms, preparation of information products, and holding promotions on high-tech DI systems.	Ministry of Agriculture, WRS, private sector, WUA	2024-2030
5.3	Regular information campaigns on best DI practices.	Ministry of Agriculture, RAS, KRIIR, KNAU, NGOs, private sector	2024-2028

1.2.2.5 Assessing the resources needed for actions and activities

The next step was to calculate the resources necessary for the implementation of TAP activities and thus determine their cost (see Table 1.24).

Table 1.24. Necessary resources and sources of financing for TAP activities

No.	Activities by type of action	Source of financing	Cost of events, million US dollars
1. Expanding access to financial resources			
1.1	Development of the land market, which involves changing the legislation on land pledges for farmers to obtain bank loans.	RB, CFI	0.3
1.2	Mobilization of international financial resources for the implementation of capacity development projects for DI and financial support for farmers.	RB, MPR	4
1.3	Development of an addition to the state program “Financing of Agriculture”, aimed at supporting farmers planning to install DI systems.	RB	5.84
2. Improving policies and legislation			
2.1	Development of a strategy for increasing water efficiency and water conservation in irrigation	RB, MPR	0.15
2.2	Development of technical regulatory documents for the promotion of water-efficient technologies including water treatment systems (procedure for use, requirements for the quality of irrigation water, norms of use and losses)	RB, MPR	0.4
3. Increasing institutional and human capacity			
3.1	Integration into the list of services of today's RAS of the entire range of services for advisory assistance to farmers on field survey - calculation of technical specifications of equipment - places of purchase - training in use.	RB, MPR	0.15
3.2	Development of DI service centres for the supply of spare parts and consumables and repair of equipment based on existing private local campaigns.	PPP, MPR	0.8
3.3	Increasing the potential of users of RAS and service centres of the KO to improve the culture of operation and knowledge of the rules and regularity of maintenance	RB, MPR	0.8
3.4	Special trainings and programs to enhance technical expertise and professional development of professionals will be developed and conducted regularly.	RB, MPR	0.5
4. Improving access to quality materials for DI			
4.1.	Construction of a plant for the production of DI systems, i.e. corresponding production base of the Kyrgyz Republic, therefore, this is a real measure that will reduce the dependence of the Kyrgyz Republic on the import of components and spare parts.	PPP	0.5
4.2	The creation of service centres for DI and a spare parts sales network covering all regions will overcome this barrier.	RB, PPP, MPR	0.75
5. Raising public awareness about DI			

No.	Activities by type of action	Source of financing	Cost of events, million US dollars
5.1.	Developing communication products and conducting information campaigns on water-efficient technologies in the media and social networks, especially at the local level, presenting quantitative data on the benefits of using water-efficient technologies, especially for new perennial plantings.	RB, MPR	0.3
5.2.	Creation of trading and information platforms, preparation of information products, and holding promotions on high-tech DI systems.	RB, PPP, MPR	0.3
5.3.	Regular information campaigns on best DI practices.	RB, PPP, MPR	0.2
Total:			13.79

1.2.2.6 Management planning

1.2.2.6.1 Risks and contingency planning

During the preparation of the TAP, a number of risks were identified that may hinder the implementation of TAP activities on DI (see Table 1.25).

Table 1.25. Risks that may hinder the implementation of TAP and measures to mitigate them

Actions	Risks	Mitigation measures
1. Expanding access to financial resources	Slow decision-making on government funding	Lobbying for preferential financing for DI
	Lack of funds in the Republic of Belarus	Active work with IDP
2. Improving policies and legislation	Lack of private sector involvement	Conducting information campaigns
	Lack of funds to improve policies and legislation	Involvement of IDP
3. Increasing institutional and human capacity	Lack of developed training materials	Use of Internet resources and MPR
	Low farmer interest	Conducting local information campaigns
4. Improving access to quality materials for DI	Low purchasing power of farmers	Subsidizing, preferential loans for the purchase of DI systems
5. Raising public awareness about Di	Low media motivation	Involvement of IDP

1.2.2.6.2 Next steps

To continue work to promote the implementation of TAP using DI technology, the following steps are expected to be taken:

- Complete discussion of TAP with SWG members
- Present it at a national seminar
- Approve the TAP at the meeting of the NSC of the project
- Prepare information materials about TAP and distribute in the media and social networks
- Develop a project proposal based on the TAP as a demonstration of the specific use of the provisions of the TAP.
- Prepare TAP for approval by the leadership of the Ministry of Agriculture.
- Post the TAP on the website of the UNFCCC Focal Point and the Ministry of Agriculture

1.2.2.7 General table of TAP for DI

TAP overview table								
Sector	Agriculture							
Subsector	Plant growing, Horticulture							
Technologies	Drip irrigation							
Ambition	National coverage							
Advantages	<ul style="list-style-type: none"> • Saving irrigation water by 3-10 times; • Increasing crop yields by 20-30%; • Good development of annual shoots, acceleration of crop ripening by 10-20 days; • The fertile soil layer must not be washed away; • Possibility of applying fertilizer along with irrigation water; • Fewer weeds between rows; • Semi/full automation of irrigation and reduction of manual labor of the waterer; • Energy savings (if an electric pump is used). • Development of a repair service base and new jobs. • Expanding the services of consulting service providers. 							
Action	Activities to be implemented	Sources of financing	Responsible authority and focal point	Time frame	Risks	Success criterion	Indicators for monitoring implementation	Event budget, million US dollars
1. Expanding access to financial resources	1.1 Development of the land market, which involves changing the legislation on land pledges for farmers to obtain bank loans.	RB, CFI	Ministry of Agriculture, Cabinet of Ministers, CFI, NGOs, private sector	2024-2028	1. Slow decision-making on government funding 2. Lack of funds from the Republic of Belarus	- Favourable land legislation on the land market	- NPA	0.3
	1.2 Mobilization of international financial resources for the implementation of projects for developing the potential of DI and financial support for farmers.	RB, MPR	Ministry of Agriculture MPR	2024-2040		- Number of new projects	- Minimum 8	4
	1.3 Development of an addition to the state program “Financing of Agriculture”, aimed at supporting farmers planning to install DI systems.	RB	Ministry of Agriculture, Ministry of Finance, CFI	2024-2040		Addition to the FSH program	Document	5.84
2. Improving policies and legislation	2.1. Development of a strategy for increasing water efficiency and water conservation in irrigation	RB, MPR	Ministry of Agriculture, SVR, MPR, MNRETS	2024-2027	1. Lack of private sector involvement	- Adopted water conservation strategy	Document	0.15
	2.2 Development of technical regulatory documents for the promotion	RB, MPR	Ministry of Agriculture, SVR,	2024-2035		- Number of legal acts	Minimum 4	0.4

	of water-efficient technologies including water treatment systems (procedure for use, requirements for the quality of irrigation water, norms of use and losses)		KRIIR, NKAU, NGO		2. Lack of funds to improve policies and legislation			
3. Increasing institutional and human capacity	3.1 Integration into the list of services of today's RAS of the entire range of services for advisory assistance to farmers on field survey - calculation of technical specifications of equipment - places of purchase - training in use.	RB, MPR	Ministry of Agriculture, SCS, SVR, NGOs, WUAs	2024-2035	1. Lack of developed training materials 2. Low interest of farmers	- Thematic training documentation on QR in RAS	- Minimum 1 set	0.15
	3.2 Development of DI service centres for the supply of spare parts and consumables and repair of equipment based on existing private local campaigns.	PPP, MPR	SVR, private sector, NGOs, WUAs	2024-2035		- Number of service centres	- Minimum 5	0.8
	3.3 Increasing the potential of users of RAS and service centres of the DI to improve the culture of operation and knowledge of the rules and regularity of maintenance	RB, MPR	SVR, KNAU, KRIIR, NGO	2024-2035		Number of trainings	Minimum 10	0.8
	3.4 Special trainings and programs to enhance technical expertise and improve the skills of professionals will be developed and regularly conducted.	RB, MPR	SVR, KRIIR, KNAU, NGO, WUA	2024-2035		Number of trained	Minimum 100	0.5
						Educational materials	Kit of materials	
				Number of courses	Minimum 5			
				Number of trained	Minimum 50			
4. Improving access to quality materials for DI	4.1 Construction of a plant for the production of DI systems, i.e. appropriate production base of the DI, which will reduce the dependence of the Kyrgyz Republic on the import of components and spare parts.	PPP	Ministry of Agriculture, Private sector, Foreign Intelligence Service	2024-2026	Low purchasing power of farmers	KO production plant is operating	1 Enterprise	0.5
	4.2 The creation of service centres for DI and a spare parts sales network covering all regions will overcome this barrier.	RB, PPP, MPR	Ministry of Agriculture, SCS, private sector, NGOs	2024-2035		Number of service centres	Minimum 5	0.75

5. Raising public awareness about DI	5.1 Develop communication products and conduct information campaigns on water-efficient technologies in the media and social networks, especially at the local level, presenting quantitative data on the benefits of using water-efficient technologies, especially for new perennial plantings.	RB, MPR	MOA, SCS, NGOs, private sector, WUA	2024-2030	1. Low media motivation	Number of communication products	Minimum 7	0.3
						Number of publications in the media	Minimum 10	
						Number of information campaigns	Minimum 3	
	5.2 Creation of trading and information platforms, preparation of information products, and holding promotions on high-tech DI systems.	RB, PPP, MPR	Ministry of Agriculture, SVR, private sector, WUA	2024-2030		Number of trading platforms	At least 4	0.3
	5.3 Regular information campaigns on best DI practices.	RB, PPP, MPR	Ministry of Agriculture, SCS, KRIIR, KNAU, NGOs, private sector	2024-2028		Number of information campaigns	Minimum 7	0.2
Total:								13.79

1.3 Cross-cutting issues in the Agriculture sector

There are several cross-cutting issues that represent common barriers to priority technologies in the agricultural sector. These problems lead to the underdevelopment of climate change adaptation technologies in the country and create general barriers to their implementation.

First of all, this is a low level of knowledge and weak capacity in the field of current and projected consequences of climate change and weak national capacity to take them into account in planning and developing development programs.

For the successful implementation and dissemination of priority technologies, increasing the capacity of research institutes to conduct research and development is of great importance. However, this seems to be a very distant future.

Common barriers and necessary measures have been described in this report for agriculture, which is one of the most important sectors of the national economy. The adoption and diffusion of all three technologies faces four common barriers:

1. Lack of funding and investment
2. Gaps in policy and legislation and
3. Low organizational and personnel potential
4. Low awareness of climate technologies

The government lacks budgetary funds to invest in technology, and the private sector has financial and technical limitations to organize the production of equipment and materials within the country, so it prefers to import goods from other countries. Farmers and small entrepreneurs face difficulties in obtaining loans due to high interest rates and the need for collateral and a short loan repayment period. Lack of funding for research institutes is also a barrier to technology transfer and dissemination in general. The high cost of technology is also a significant barrier to the implementation of all three technologies

Policy and regulatory frameworks influence the implementation of activities across all three technologies. Gaps in legislation and policy, ineffective law enforcement, frequent changes in the legislative framework, business regulation were identified as one of the main obstacles to the implementation of all three technologies.

The current level of knowledge and skills of many agricultural producers does not allow them to introduce new practices, methods and modern technologies. Local community organizations are unstable both economically and financially, and there is a lack of business development planning skills. The curricula of colleges and universities, both public and private, do not pay sufficient attention to climate change and adaptation technologies. Systematic training of specialists through the education system is important for R&D in the promotion of all three technologies.

Lack of information and low awareness of best practices and technology, lack of information about the markets for equipment, seed fertilizers also hinders the introduction and dissemination of technologies. The lack of information about existing successful practices also prevents farmers from adopting best practices. The media does not often pay attention to the topic of introducing climate-resilient technologies in agriculture.

Among the measures common to all three technologies proposed during the work of the AWG, we note the following:

Providing access to the state program “Agricultural Financing”, which provides cheap loans to farmers. At the same time, it is proposed, without changing the general focus of support for livestock and crop production, to allocate loans with a “climate” focus into a separate category. In addition, to reduce prices for climate-critical imports, it is proposed to reduce customs duties.

Systematic upskilling and training of “climate-ready” specialists is essential for the implementation and dissemination of all three technologies. Supporting research institutes and conducting research on the impact of climate change on agricultural production and developing

adaptation recommendations is also a relevant measure for all three technologies. Conducting various types of education, trainings, conferences, fairs and other communication events is a common thread in all three priority technologies.

Strengthening international cooperation to exchange experience and transfer technologies and attract climate investments is a common measure for all technologies.

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Appendix I. List of stakeholders involved and their contacts

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2 Technology Action Plan and Project Ideas for the Water Resources Sector

2.1 TAP for the Water Resources sector

2.1.1 Sector overview

The location of the Kyrgyz Republic far from the oceans and the mountainous terrain determine the arid climate, uneven distribution of precipitation over the territory, and a developed river network.

Kyrgyzstan is one of the countries most endowed with water resources; it is a zone of formation of the flow of the rivers Tarim (partially), Amu Darya (3%), Syrdarya (about 80%), Chu (78%), Talas (90%). The long-term average volume of renewable water resources (river flow) is about 50.0 km³ per year, the availability of water resources is 8.20 thousand m³ per person per year, which will obviously decrease in the future due to the projected increase in population and a decrease in river flow due to influence of Global climate change.

The total area of glaciers is about 8.17 thousand km² or 4.2% of the country's territory, the fresh water reserves of which are estimated at 417.5 km³.²⁶ As a result of Global climate change in the period from 1977 to 2000, the number of glaciers in the republic decreased from 8208 to 6445, or by 22%.

On the territory of the Republic there are 1923 lakes of various origins - the largest are Issyk-Kul (1738 * 103 million m³), Son-Kul (2,640 million m³), Chatyr-Kul (610 million m³) and Sarychelek (483 million m³). m³)²⁷.

The area of wetlands is no more than 0.5% of the country's territory, and the water resources concentrated in them are insignificant.

Water resources are characterized by significant spatial and temporal unevenness; in dry periods of the year and some years, Kyrgyzstan faces a shortage of water for the agricultural and energy sectors, drinking water supply; there is a water shortage in areas of intensive agriculture, in the basins of the Chu, Talas, Issyk-Kul and Syr Darya rivers .

Due to the irrational use and pollution of water resources, there is degradation of river ecosystems, a decrease in the hydrobiological diversity of water bodies, a rise in groundwater levels, leading to swamping, deterioration of the reclamation condition of irrigated lands, and other negative consequences.

According to studies conducted by the World Bank (2009), Kyrgyzstan was assigned one of the highest degrees of vulnerability to the consequences of Climate Change out of 28 countries in Europe, the Caucasus and Central Asia.

The consequences of global climate change affect glaciers for the period 1977-2000. the number of glaciers has decreased by 20-25%. A further reduction in glaciation is projected by 64% to 95% by 2100 and a decline in runoff beyond 2025: 44–88% of 2000 runoff.²⁸

A change in the genesis of river feeding is also expected: the glacial-snow type of river feeding will change to a snow-glacial one, which will lead to a change in the intra-annual regime of rivers: the passage of a flood wave at an earlier date, an earlier onset and a long period of low water.

²⁶Second National Communication of the Kyrgyz Republic on the Framework Convention on Climate Change, Bishkek 2009

²⁷Ibid.

²⁸The third national communication of the Kyrgyz Republic under the UN Framework Convention on Climate Change, approved by the PPKR dated October 13, 2016 No. 546.

An increase in the number of mudflows, the formation of small alpine periglacial lakes and their outburst are predicted.

It is also predicted that the area of Lake Issyk-Kul will decrease by 232 - 1049 km², and the level - by 5.1 - 27.5 m compared to 2000, depending on the accepted climate scenarios, and Lake Chatyr-Kul will turn into an annually drying small pond.²⁹

Thus, in the future, water resources such as hydropower, irrigation, drinking water supply, fisheries and industries such as health tourism will be affected by the effects of Climate Change, mainly due to the projected decrease in river flows.

The total volume of water intake in the republic over the past thirty years has varied within the range of 11.1 - 7.5 km³, while the total volume of use over the same years is equal to 9.00-4.48 km³ or up to 60% of the volume of water intake. The ratio of the volumes of water withdrawn and used in the agricultural sector indicates a large volume of losses, reaching 3.50 km³ per year in volumetric terms, which indicates the ineffective and irrational use of water resources.

Domestic drinking water supply in the republic is provided mainly by water intake from groundwater. In the overall structure of consumption, domestic and drinking water supply accounts for 3% of the total volume of water intake.

The main volume of water resources, up to 93%, is used for irrigation of agricultural crops, since farming in an arid climate is impossible without irrigation.

Water consumption for production purposes does not exceed 4%, the highest level is observed in Bishkek.

Infrastructure - economic facilities of drinking water supply, water disposal, sanitation, wastewater treatment plants, irrigation, qualitative and quantitative monitoring of surface and groundwater are characterized by: unsatisfactory condition, insufficient quantity, poor equipment of the material and technical base: vehicles, modern laboratory and computer equipment, reagents, etc.

Since all the objects were built before the 80s of the last century and have a high degree of wear and tear. In particular, water supply systems have physical wear of more than 70%; up to 40% of rural water supply systems are in critical condition. Currently, 226 drinking water supply systems (21%) do not meet sanitary standards; 14 - do not have cleaning and water treatment complexes; 178 of them do not disinfect drinking water supplied to the population; More than 4 thousand (13.3%) water taps are faulty.

Previously, in order to meet drinking needs, more than 15 thousand wells were drilled on the territory of the republic, thousands of springs and under-channel drains were captured. Currently, about 4.0 thousand wells are in use, the technical wear of which is high and their rehabilitation and re-drilling are required.

The current state of centralized water disposal (sewage) facilities remains extremely unsatisfactory and only 21% of the country's population is provided with central sewerage systems. The issue of the efficiency of wastewater treatment plants is very acute, since today municipal wastewater treatment plants in cities need rehabilitation and reconstruction. Due to the fact that in small towns and regional centers of the republic there are no treatment facilities at all, there is a need for their construction. This situation is exacerbated by the effects of climate change-

²⁹Second national communication of the Kyrgyz Republic on the UNFCCC. SAEPF, UNDP, 2009, PPKR dated May 6, 2009 No. 274

induced natural disasters that damage local water supplies and increase sediment in drinking water reservoirs, changes in rainfall patterns and low flow rates in rivers and aquifers affect freshwater replenishment in rural drinking water supplies, and higher temperatures make it easier to water supply. bacterial growth.

The existing State Irrigation Fund of the Republic is aimed at providing irrigation water to irrigated lands, about 1.02 million hectares. In order to grow agricultural crops on the irrigated lands of the republic and supply irrigation water, more than half a century ago irrigation systems, reservoirs, irrigation canals, pumping stations, collector and drainage networks with the appropriate infrastructure were built. Therefore, there is an urgent need to carry out work to improve the condition of irrigation facilities, aimed at reducing water losses, improving irrigation water supply services, and with population growth, the country faces the task of ensuring food security. For this purpose, the country's program documents provide for rehabilitation, construction of new water management facilities, and introduction of new irrigated lands.

The Kyrgyz Republic has adopted a number of legal acts that define the legal framework for the development, adoption and implementation of adaptation measures and policies to the consequences of Global Climate Change, Table 1.1.1.1.

Table 1.1.1.1

National legislation, regulation and programs driving the climate change adaptation policy on Water sector

type	Title	number	Enacted/ revised	Main contents
Code	Water Code of the Kyrgyz Republic	#8	01/12/2005 / in subsequent editions dated 10/10/2012, 10/26. 2013 05/7/2016, 06/14/2016, 04/6/2017, 11/23. 2017, 04/05/2019, 06/30/2019, 12/10. 2021	Regulates water relations in the field of use, protection and development of water resources for guaranteed, sufficient and safe water supply to the population of the Kyrgyz Republic, environmental protection and ensuring the rational development of the republic's water fund. The basic principles of water resource management are established, one of the eight is: "the principle of taking into account the impact of global climate change on water resources"; the fundamentals of state water policy were determined; the competence of state bodies and local governments for the management of water resources and water bodies has been established; a system of measures has been created for the development of the National Water Strategy and plans for the use of water resources; the use of surface and groundwater and payment for their

				use are regulated; measures to protect water resources from pollution and depletion have been identified; provisions are introduced for emergency situations related to water resources and dam safety; the water and irrigation sectors are regulated; provisions have been established for the use and ownership of water fund lands, the creation of a state water inspectorate is ensured and the powers and responsibilities of state water inspectors are established; offenses in the use of water resources are determined, etc.
Resolution of the Jogorku Kenesh	Green economy concept	.№ 2532-VI	06/28/2018	“Kyrgyzstan is a country of green economy”, the main goals of this document are: achieving sustainable socio-economic growth: leaving clean Kyrgyzstan, clean nature, clean mountains and valleys, clean rivers and lakes for posterity. At the same time, it was envisaged that the provisions of the Concept should become an integral part of the country’s strategic documents being developed.
Resolution of the Jogorku Kenesh	Development program of the Kyrgyz Republic for the period 2018-2022 “Unity. Confidence. Creation”	No. 2377-VI	04/20/2018	The goal has been set to ensure dynamic economic development (at least 4%) and stable growth in incomes of the population and, as a result, reduce the poverty level to 20%. In particular, by solving one of the following tasks: 4.1.8. The government will continue to work to improve the operation of existing irrigation and drainage systems, as well as commission new systems. Particular attention in matters of water use will be paid to border areas and transboundary issues and 4.1.9. Technologies for the efficient use of water resources will be introduced, significantly increasing the coefficient of water use, including the active use of the

				capabilities of reservoirs, daily and monthly regulation basins.
UP KR	National strategy for sustainable development for the period until 2040.	No. 221	31.10. 2018	<p>Also, NSSD - 2040 formulated a Vision regarding the environment, adaptation to climate change and disaster risk reduction, which is as follows: “Kyrgyzstan is a country with an environment favorable for human life, developing in harmony with nature, preserving unique natural ecosystems and wisely using natural resources for climate-sustainable development... It is determined that economic activity that ensures poverty reduction and social progress, on the one hand, and does not exceed the limits of environmental sustainability of natural ecosystems, on the other hand, requires more effective planning and management of the country’s transition to sustainable development through various elements of green development and implementation of climate change adaptation measures. In this regard, Kyrgyzstan will build close cooperation with the Global Climate Fund.</p> <p>The following tasks were set:</p> <p>7.16. Full provision of clean drinking water, construction and rehabilitation of wastewater systems</p> <p>Problem 7.17. Expanding the area of green spaces.</p> <p>6.7. Land management. The land market will contribute to business development and attracting foreign investors to the economy of the Kyrgyz Republic. One of the ways to solve issues of food security and fight poverty in the Kyrgyz Republic is the development of irrigation.</p> <p>Target 6.8 is to update the irrigation structure and introduce new irrigated lands, as well as rational management of water resources.</p>

				<p>Problem 7.19. Sustainable water management. Integrated water resources management will be introduced at all levels, if necessary, based on transboundary cooperation and the development of a basin water management system in the country. Technologies for the efficient use of water resources will be introduced, significantly increasing the coefficient of water use, including the active use of the capabilities of reservoirs, daily and ten-day regulation basins. The implementation of the program to save glaciers and mountain lakes in Kyrgyzstan is our investment and responsibility to future generations.</p> <p>Problem 6.6. Stimulating technological modernization. An innovative economy is the only possible path of development. Kyrgyzstan needs a new type of industry - high-tech, compact, environmentally friendly. As part of the practical first-priority solutions, there will be a technological upgrade of all municipal enterprises responsible for maintaining basic infrastructure - lighting, garbage, water supply, sewerage in key cities.</p>
UP KR	National Development Program of the Kyrgyz Republic until 2026.	No. 435	10/12/2021	<p>Developed within the framework of NSDS-2040, maintaining the principle of continuity based on the country's long-term strategic development goals with a people-oriented focus and an emphasis on the fundamental commitment to "leave no one behind" of the Sustainable Development Goals, taking into account new realities.</p> <p>The program provides for the implementation of projects in the following areas:</p> <p>Agriculture and processing: reconstruction of the Sarymsak irrigation system, development of irrigated agriculture in the Issyk-Kul</p>

				<p>and Naryn regions, development of irrigated agriculture in the Chui region (Bypass Chui Canal-2). Clean drinking water - World Bank projects in Issyk-Kul, Osh and Chui regions (\$71.2 million); Jalal-Abad region (\$23 million); Islamic Development Bank and Saudi Development Fund for Baken and Talas regions (\$60 million); that of the Asian Development Bank for Naryn region (\$32.9 million); Government of the People's Republic of China for the Jalal-Abad region (\$100 million); 6) Government of the Republic of Korea for Osh, Chui and Jalal-Abad regions (\$100 million) and the World Bank "Water Security" for Issyk-Kul, Osh and Baken regions (\$100 million).</p>
UP KR	About the National Water Strategy of the Kyrgyz Republic until 2040	No. 23	02/10/2023	<p>The National Water Strategy of the Kyrgyz Republic until 2040 was developed as part of the environmental system in order to create a sustainable water resources management system for the benefit of present and future generations. To achieve this goal, measures will be implemented in the following priority areas:</p> <ol style="list-style-type: none"> 1) protection of water resources from depletion and pollution; 2) rational use of water resources; 3) reforming the water resources management system. <p>It is determined that the measures of influence will be aimed at:</p> <ul style="list-style-type: none"> - humans as a source of anthropogenic pressure on the ecosystem; - water as a life-sustaining potential and an indicator of anthropogenic impact. <p>The measures will be implemented through:</p> <ul style="list-style-type: none"> - managing the demand for water use as a potential for the development of the Kyrgyz Republic;

PP KR	Priority areas for adaptation to climate change in the Kyrgyz Republic for the period until 2017	No. 549	October 2, 2013	<p>- management of risks associated with water, i.e. making decisions in conditions of lack of information.</p> <p>Sectors vulnerable to the effects of climate change identified This decision was aimed at preventing expected damage associated with climate change risks when implementing medium- and long-term development programs at the national level and at the level of individual sectors where the risks of damage are especially high: water resources, agriculture, energy, emergency situations, healthcare, and forest and biodiversity. This document has expired, but remains relevant.</p>
PP KR	Concept of regional policy of the Kyrgyz Republic for the period 2018-2022	No. 194	03/31/2017	<p>Defined Growth points of 20 cities, including Bishkek, Osh, etc. And in Batken, Jalal-Abad, Issyk-Kul, Talas and Chui regions, the task is to solve the water problem, reconstruct and modernize the irrigation system, restore irrigation and drainage systems, improvement of irrigation systems. The need for transboundary structural schemes of interaction with neighboring states is determined to form unified and integrated approaches to transboundary protection and careful use of natural resources, especially water, pastures, and forests. In addition, the task was set to develop a Medium-term program for the development of irrigation systems in each region that is part of the Points/Stages of regional development. It has been determined that external water supply systems - water supply sources, hydraulic structures, water and sewer treatment stations, collectors, pumping stations, outdoor lighting and gas supply systems must be supported by funds from local governments. At the same time, it is stipulated that targeted comprehensive programs should be aimed at targeted</p>

				investment of financial resources and should be implemented in strategic sectors of the economy - in agriculture: solving the problem of shortage of irrigation water, construction and rehabilitation of irrigation systems, etc.
PP KR	Third National Communication of the Kyrgyz Republic under the UN Framework Convention on Climate Change	No. 546	October 13, 2016	Is the country's report on climate change action following the issuance of the first and second National Communications. Which determines that the adaptation process consists of four stages: Assessment of impacts, vulnerability and risks, taking into account the interconnectedness of objects, Adaptation planning, Implementation of adaptation measures, Monitoring and evaluation of adaptation actions. The highest priority sectors have been identified in which adaptation is necessary, taking into account already observed and expected climate changes. For each priority sector, a quantitative assessment of vulnerability was obtained, expressed by the amount of damage for the sectors: Water Resources, Agriculture, Energy, Emergencies, Health, Forests and Biodiversity.
PP KR	"Nationally Determined Contributions to the Paris Agreement (NDCs)"		September 24, 2021	Kyrgyzstan has adopted: Adaptation measures are developed and presented in accordance with the three global adaptation goals of the Paris Agreement: (1) strengthening adaptive capacity, (2) increasing resilience to the negative impacts of climate change and (3) re-

				ducing the vulnerability of populations and systems to the impacts of these influences
PP KR	Irrigation development program for the period until 2026	No. 440	21.07. 2017	The state program provides for the construction of irrigation infrastructure to provide new irrigated lands to rural residents. New irrigated lands introduced for the cultivation of agricultural products will improve the socio-economic situation and ensure the development of regions, and will also help resolve issues of food security and poverty alleviation. It is noted that, according to experts, climate warming causes a reduction in the surface of glaciers, the area of which may decrease by 30-40 percent by 2025.
PP KR	Development program for drinking water supply and sanitation for the period until 2026	No. 330	06/12/2020	This Program) was developed to achieve the Sustainable Development Goals (SDG 6), etc., as well as to fulfill the international obligations of the Kyrgyz Republic on adaptation to climate change in the drinking water supply and sanitation sector.
Order of the Minister of Ministry of Agriculture of the Kyrgyz Republic	Action plan for the implementation of the Program for Adaptation of Agriculture and Water Resources to Climate Change for 2016-2020		2014	The following areas of activity have been adopted for the Water Resources sector: <ul style="list-style-type: none"> •rational use of water resources, •improving water resources management, •improving water infrastructure •ensuring guaranteed water use in conditions of water scarcity.
Projects:	On introducing amendments and additions to the Water Code, Land Code and some legislative acts: Laws of the Kyrgyz Republic “On Water”, “On Renewable Energy			Aimed at introducing changes and additions in connection with the creation of the National Council for Water and Land Resources, etc.

	Sources”, “On Electric Power Industry”)”.			
	Fourth National Communication of the Kyrgyz Republic on the UNFCCC			A draft Country Report on climate change action has been prepared following the release of the Third National Communication
	UNUW			A draft Updated NDC has been prepared in which Adaptation Measures are prepared in accordance with the three global adaptation goals of the Paris Agreement: (1) strengthening adaptive capacity, (2) increasing resilience to the negative impacts of climate change and (3) reducing the vulnerability of populations and systems to the consequences of these impacts for the period until 2025

Analysis of changes in atmospheric precipitation and air temperature shows the significance of the already observed climate changes on the territory of the Kyrgyz Republic.³⁰

The assessment of the vulnerability of water resources carried out in the framework of the preparation of the second, third and fourth National Communications shows the following.³¹

Modeling was carried out in the Third National Communication:

- 11 hydrological basins of the Kyrgyz Republic, four climate scenarios (RCP 2.6, RCP 4.5, RCP 6.0 and RCP 8.5) were used as initial data;
- glacier water yield separately for each of the 6,771 glaciers of the Kyrgyz Republic (with an area of 0.1 km² or more), with the summation of the results for given hydrological basins.
- evolution of the intra-annual distribution of surface runoff in 4 typical hydrological regions.

The results showed that in the long term, by 2100, a significant reduction in river surface runoff should be expected under any possible scenarios and options for changes in precipitation, and for all 11 basins considered, Table 1.

Table 1.1.1.2

Modeled average runoff values in Kyrgyzstan (km³) for given scenarios of projected climate change (1970 - 48.873 km³; 2000 - 48.144 km³)³²

Year	$\Delta=+1.5^{\circ}\text{C}$	$\Delta=+4.0^{\circ}\text{C}$	$\Delta=+6.4^{\circ}\text{C}$
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³⁰Third National Communication of the Kyrgyz Republic under the UN Framework Convention on Climate Change, 2016, Bishkek

³¹Third National Communication of the Kyrgyz Republic under the UN Framework Convention on Climate Change, Bishkek 2016.

³²Ibid.

	m=0.9	m=1.0	m=1.1	m=0.9	m=1.0	m=1.1	m=0.9	m=1.0	m=1.1
2010	48,669	48,493	48,315	49,289	49,118	48,945	49,869	49,705	49,537
2020	48,758	48,607	48,435	49,610	49,508	49,386	50,326	50,263	50,182
2030	48,382	48,475	48,511	49,012	49,250	49,435	49,281	49,625	49,933
2040	47,551	48,112	48,538	47,481	48,337	49,060	46,807	47,815	48,782
2050	46,277	47,515	48,516	45,156	46,787	48,314	43,348	45,126	46,918
2060	44,589	46,689	48,442	42,190	44,759	47,213	39,504	41,977	44,536
2070	42,504	45,646	48,312	38,876	42,341	45,835	35,498	38,712	42,088
2080	40,057	44,378	48,124	35,408	39,727	44,225	31,810	35,573	39,515
2090	37,300	42,899	47,875	31,829	36,985	42,470	28,375	32,639	37,221
2100	34,241	41,208	47,563	28,328	34,178	40,692	24,989	29,876	35,134
% reduction	thirty	15	2	43	thirty	17	50	40	29

The results of modeling the evolution of the intra-annual distribution of surface runoff for high-mountain regions showed a slight increase in maximum flows in the initial warming period, followed by a decrease and a shift in the maximum runoff to an earlier date, by about 50 days (currently occurring around the end of July). For mid-mountain regions, during the initial period of warming, there is practically no increase in costs. After stabilization of the level, a consistent decrease in maximum flow rates is observed, naturally less pronounced compared to the highlands.³³

Recent studies show that, in connection with an increase in air temperature, further disintegration of glaciation, mainly minor, should be expected, which also affects the conditions for the formation of river flow and especially glacial-snow and snow-glacial feeding. Thus, in the 70s, on the territory of the Republic there were 8,164 glaciers with a total area of 7,944.2 km², including: 6,719 glaciers larger than 0.1 km², with a total area of 7,866.6 km² and 1,445 glaciers with dimensions less than 0.1 km², with a total area of 77.6 km². According to the latest data, the number of glaciers is 9,959 with a total area of 6,683.9 km², including: 6,227 glaciers with a size of more than 0.1 km², with a total area of 6,494.0 km² and 3,732 glaciers with a size of less than 0.1 km², with a total area of 189.9 km². Those. over a 70-year period, the total area of glaciation decreased by 16%,³⁴

Studies of the current changes in the flow of 44 rivers in the basins of the main rivers of the country showed that: changes in river flow for two periods: long-term, from the beginning of the last century to 2018, and 1990-2018. revealed, basically, an increase in the average annual water flow of all the rivers studied, and the process of increasing flow in river basins has intensified over the last thirty years compared to previous years from 1 to 17 times. Which allows us to draw conclusions about:

- a continuing increase in air temperature, leading to a shift of the zero isotherm to high mountain areas

³³Ibid.

³⁴Catalog of glaciers in Kyrgyzstan. Central Asian Institute of Applied Earth Research (CAIAG) Editor: B.D. Moldobekov. Author: A.G. Shabunin. Scientific consultants: R.A. Usubaliev, A.N. Mandychev 2018, Bishkek

- intensification of the ongoing process of glaciation disintegration, which will obviously continue in the event of a further increase in air temperature;
- at the same time, the duration of the process of glaciation collapse will be determined by the intensity of the increase in air temperature and such characteristics of the basins as the volume of glaciation: glaciers, buried ice and permafrost
- changes in the intra-annual hydrological regime of rivers, with the collapse of glaciation, glacial-snow rivers will increasingly acquire features of the regime of rivers with snow-glacial feeding, increased variability of flow over time, displacement of flood waves to earlier dates, and earlier onset of low water.

It should be emphasized that the increase in the flow of rivers, the drainage basins of which are located in the high-mountain zone, revealed over the past thirty years does not contradict long-term forecasts obtained on the basis of previously conducted modeling in the framework of the preparation of the Second National Communication. According to which, an increase in annual river flow was predicted for the period until 2020. This, apparently, is explained by the underestimation during early modeling of the volumes of melt runoff from buried ice and permafrost, and as shown above, this process is currently ongoing.

The studies also showed a decrease in the flow of 11 rivers out of 44 studied, observed in the last thirty years.

An important conclusion/prediction was obtained about the increase in the number of rivers with a negative trend, i.e. those whose flow will decrease by 2028, the flow of these rivers will decrease by 2-20% of the average long-term flow³⁵.

Due to a further increase in air temperature, an increase in the number of mudflows, the formation of small alpine periglacial lakes and their outburst are predicted. It is also predicted that the area of Lake Issyk-Kul will decrease by 232 - 1049 km², and the level - by 5.1 - 27.5 m compared to 2000, depending on the accepted climate scenarios, and Lake Chatyr-Kul will turn into an annually drying small pond.³⁶

Therefore, water utilities such as hydropower, irrigation, drinking water supply, fisheries and industries such as health tourism are expected to be impacted by the impacts of Climate Change in the future, mainly due to projected declines in river flows and lake levels.

2.1.2 Action plan for the technology “Energy- and resource-saving drinking water supply systems from surface sources using local materials”

1.1.1.2 Introduction

Currently, in the Kyrgyz Republic there is an acute problem of providing the population of small towns and cities of regional significance, as well as rural settlements with high-quality drinking water. In many villages and small towns there is a shortage of drinking water of standardized quality due to imperfect water purification. And this is the main reason for the spread of intestinal infections, hepatitis and diseases of the gastrointestinal tract, the occurrence of pathologies and the increased impact of carcinogenic and mutagenic factors on the human body.

³⁵RESEARCH REPORT on the topic: PREPARATION OF RECOMMENDATIONS FOR SUSTAINABLE AGRICULTURAL PRODUCTION ON IRRIGATED LAND, TAKEN INTO ACCOUNT OF FORECASTS OF REDUCTION OF RIVERS FLOW IN THE KYRGYZ REPUBLIC UNDER GLOBAL CLIMATE CHANGE (2020-2030) (CHU-TALAS, ISSYK-KUL-TARIM AND NARYN- SYRDARYA WATER POOLS) 2022

³⁶Second national communication of the Kyrgyz Republic on the UNFCCC. SAEPF, UNDP, 2009, PPKR dated May 6, 2009 No. 274

The current crisis situation in the field of drinking water supply is due to the lack of measures to protect sources of drinking water supply and the unsatisfactory technical condition of water supply systems.

To purify drinking water, all materials are imported from abroad, for example, quartz sand, sodium hypochlorite. While local deposits in the Issyk-Kul and Jalal-Abad regions can fully meet the needs of the republic.

Sodium hypochlorite can also be produced on the basis of local deposits of natural salt (Tuz village, Kochkor district, Nouruz, etc.).

This technology involves the use of local materials: quartz sand, natural salt, construction of micro-hydroelectric power stations/solar batteries. By using local materials, it is possible to reduce the cost of 1 m³ for drinking water consumers.

This technology will create jobs in construction and engineering, the supply of inert materials, the production of sodium hypochlorite, and the operation and maintenance of drinking water treatment systems.

2.1.2.1 Ambitions for TAP

As a result of the work carried out on the TNA Report in the Water Resources sector under consideration, three Technologies were selected, of which No. 1: “Energy- and resource-saving drinking water supply systems from surface sources using local materials.”

The main goal of the Technology “Energy- and resource-saving drinking water supply systems from surface sources using local materials” is: expanding the population’s access to high-quality drinking water through the construction of new water supply systems using local materials. The introduction of this Technology will solve the problem of providing high-quality drinking water to the population of cities and other populated areas. In many villages and small towns there is a shortage of drinking water of standard quality due to imperfect water treatment. As of January 1, 2018, 715 priority villages were identified in which the construction and rehabilitation of water supply systems are a priority.

2.1.2.2 Activities and activities selected for inclusion in the TAP

The successful implementation of Technology No. 1 to overcome the identified economic and financial Barriers involves the implementation of such Measures as:

- improvement of investment policy
- increasing the potential of Gosstroy, DRPVIVO to prepare project applications to various funds
- adoption of tariffs for the supply of drinking water that are adequate to the costs of operating the systems and taking into account inflation and development opportunities, as well as the solvency of the population
- explanatory work with local self-government bodies and the population
- increasing the potential of Local Keneshes
- carrying out phased write-offs of financial debts of water service providers accumulated from previous state-owned enterprises
- increasing the financial literacy of accountants and economists through local training in working with the 1C Program.

The following measures are identified among non-financial ones:

- formation of policies that promote the development of local manufacturers of electrolysis plants, the development of local manufacturers of solar panels
- implementation of sustainable business models through the implementation of the Public-Private Partnership model (outsourcing)
- finalization and adoption of industry regulations on tariff regulation

- study of the results of the implementation of a pilot project in a/a Naryn region PKM No. 713 dated December 26, 2022
- introducing an amendment to the Law “On Subsoil” in Article 35. Clause 3.
- development of regulations on the allocation of water fund lands for micro hydroelectric power stations for the water supply and water sector
- analysis of existing SNIPs for updating
- analysis and assessment of regulations in the field of water supply and water supply
- informing about good practices and examples
- studying and communicating about positive PPP practices
- carrying out a unified comprehensive policy and increasing the coordination of actions of government bodies and local self-government bodies
- studying the feasibility of creating the Kyrgyztazasuu RSE
- implementation of the VET Program and the Roadmap for its implementation.
- increasing the potential of colleges and universities in the field of air and military education
- lowering the ORT threshold for admission to a university in the field of water supply and military education
- introduction of training on a budgetary basis according to quotas for DPPViVO
- increasing interdepartmental interaction on the possibilities of developing local deposits for drinking water purification: Gosstroy, MPRETN, etc.
- increasing interdepartmental interaction on the use of solar energy in the water supply and water system: Gosstroy, ME, MPRETN etc.e/e
- studying and informing about positive practices in obtaining solar energy and application in the water and wastewater sector
- increasing the role of DVSiVO in providing consultations to expand and ensure regular training of personnel and organize the exchange of best practices in design and surveys
- creation of a state-owned enterprise for the maintenance of water supply and defense systems at the district level.
- organization of three production and one mobile laboratories of DV&VO for production control of PV in rural settlements
- studying foreign examples and informing
- development and implementation of an interdepartmental mechanism for selective research of the state of sanitary protection zones of centralized PV sources
- application of articles of the Code of the Kyrgyz Republic on Offenses dated October 28, 2021 No. 128.

In order to prepare the TAP, Actions and necessary Activities were identified, for which all Measures identified by Report II were analyzed in order to strengthen their focus and realistic implementation, table 1.1.2.6.1

2.1.2.3 Stakeholders and timing of TAP implementation

The interested parties to the implementation of this priority Technology may be:

- The Government of the Kyrgyz Republic, as an executive body of power in the Republic, is tasked with providing the population with drinking water, as shown above
- State bodies: DRPVViVO Gosstroy KR, the responsible body for the implementation, in particular, of the Development Program for drinking water supply and sanitation for the period until 2026
- Local government bodies whose tasks are to resolve issues of providing the population with drinking water

- Rural public associations of drinking water consumers (RPCU), which were created for the purpose of operating and maintaining water supply systems and distributing water among members of the association; carrying out rehabilitation work and improving water supply systems within the service area and carrying out construction work, acquisition, replacement, operation and maintenance of hydraulic equipment, etc.
- Private supply companies, depending on demand, equipment, mechanisms, etc.

The deadlines for the implementation of Actions and Activities are determined, mainly, focusing on the deadlines for the implementation of State programs: the National Development Program of the Kyrgyz Republic until 2026, the Drinking Water Supply and Sanitation Development Program for the period until 2026, as well as the NDC adopted in 2021.

2.1.2.4 Assessing the resources needed for actions and activities

Capacity building activities are as follows:

- increasing the potential of the State Construction Department for the preparation of project applications to various funds: ZKF, etc.
- organization of regular training of personnel and organization of the exchange of best practices in design, conducting surveys on the basis of DRPViVO
- financial literacy training for accountants and economists through local training in working with the IC Program
- information campaign to explain the need to increase tariffs for the supply of PV with the composition of Local Keneshes, local self-government bodies, and the population
- increasing the potential of colleges and universities in the field of air and military education
- studying and communicating about positive practices:
 - solar energy production and application in the sector
 - PPP, etc.

The amount of funding for each Action prepared by the TAP was determined based on a similar assessment carried out within the framework of the NDC, the UNDC project (2023), based on consultations with members of the JWG, based on relevant country documents.

It should be noted that the given financial cost of the Activities is quite approximate, since it depends on inflation, knowledge, experience of the expert and can sometimes be subjective.

2.1.2.5 Management planning

2.1.2.5.1 Risks and contingency planning

It is obvious that among the risks of implementing Actions and Activities the following are considered:

- political instability in the country
- frequent, unforeseen reorganization of the government structure
- lack of support from donor organizations
- lack of financial resources of the Republic of Belarus
- absence or lack of political will
- lack/lack of qualified personnel to carry out certain Activities
- incorrect decisions regarding technical, design, procurement, etc.
- lack of support or opposition from the population due to insufficient awareness of the population on various issues of drinking water supply: economics, tariffs, rational water use, etc.

2.1.2.5.2 Next steps

Possible further steps should be aimed at finding sources of funding, i.e. the negotiation process must be intensified, both with potential investors and interested parties.

The next step should be the preparation of legal acts in order to create favorable conditions: provide various benefits, especially for local producers.

And, of course, this is an increase in potential: awareness, training, etc.

TAP overview table								
Sector	Water resources							
Subsector								
Technologies	Energy- and resource-saving drinking water systems from surface sources using local materials							
Ambition	Solving the problem of providing high-quality drinking water to the population of cities and other populated areas. As of January 1, 2018, 715 priority villages were identified in which the construction and rehabilitation of water supply systems are a priority. In addition, it is necessary to rehabilitate water supply systems in 448 villages.							
Advantages	Use of local materials: quartz sand, natural salt, construction of micro-hydroelectric power stations/solar batteries.							
Action	Activities to be implemented	Sources of financing	Responsible authority and focal point	Time frame	Risks	Success criterion	Indicators for monitoring implementation	Budget by action, \$
Action 1 Improve investment policy	Activity 1.1 Increasing the capacity of the State Construction Department for the preparation of project applications to various funds: ZKF, etc.	Donor organizations	Gosstroy, DRPViVO, MPRETN KR	2024-26	1. Frequent re-organization of government agencies 2. Lack of support from donor organizations	Event held	Quantity	1070
	Activity 1.2 Adoption of tariffs for the supply of PV adequate to	RB	Gosstroy, DRPViVO	2024-26	1.Lack of support from: • local councils • population	Accepted tariff	Corresponding legal acts	22605.32

	the costs incurred for the operation of systems and taking into account inflation and the possibility of development, as well as the solvency of the population				2. Insufficient solvency of the population			
	Activity 1.3 Financial literacy training for accountants and economists through local training in working with the 1C Program	Donor organizations	Gosstroy, DRPVIVO with the involvement of Consulting companies	2024-26	1. Frequent re-organization of government agencies 2. Lack of support from donor organizations	Training provided	Number of accountants and economists who have completed training	165265.36 ³⁷³⁸
Action 2 Increase the sustainability of PV supply enterprises	Activity 2.1 Conducting analysis and assessment of regulations in	Donor organizations	Gosstroy, DRPVIVO with the involvement	2024-26	1. Frequent re-organization of government agencies	Conducted analysis of legal acts of the sector	Acceptance for further work	45210.648

³⁷Number of CDWPV 742 742*2=1484 *5000+1484*500=1484*5*3000=

³⁸87,590\$=1 som

	the field of water supply and water supply		of Consulting companies		2. Lack of support from donor organizations			
	Activity 2.2 Studying the feasibility of creating the Kyrgyzzasuu RSE	RB, donor organizations	Gosstroy, DRPViVO with the involvement of Consulting companies	2024-26	1. Frequent reorganization of government agencies 2. Lack of support from donor organizations	Studied issue	Acceptance for further work	45210.648
	Activity 2.3 Creation of state-owned enterprises for the maintenance of water supply and water systems at the district level	RB	Gosstroy, DRPViVO with the involvement of Consulting companies	2024-26	1. Frequent reorganization of government agencies 2. Lack of funds 3. Lack of political will	Established State Enterprises	Number of State Enterprises	19180.3
Action 3 Increase the potential of Gosstroy, DRPViVO	Activity 3.1 Organization of three production and one mobile DRV&VO laboratories for production control	Donor organizations	Gosstroy, DRPViVO	2024-26	1. Lack of donor support 2. High cost of laboratories 3. Lack of qualified personnel to operate laboratories	Organization of production facilities and one mobile laboratory in populated areas	Number of laboratories	152591.6

	of PV in rural settlements				4. The need for training in laboratories			
	Activity 3.2 Organization of regular training of personnel and organization of the exchange of best practices in design, conducting surveys on the basis of DRPViVO	RB, donor organizations	Gosstroy, DRPViVO with the involvement of Consulting companies	2024-26	1. Frequent re-organization of government agencies 2. Insufficient qualifications of consulting companies	Training is provided on a regular basis	Number of trainings conducted	1412.8
	Activity 3.3 Implement the VET Program and Roadmap	RB, donor organizations	MES KR, State Technical University named after. Razzakova	2024-26	1. Frequent re-organization of government agencies 2.Lack of financial resources	Implementation of the VET Program and Road Map	% of sales	1000000
	Activity 3.4 Increasing the potential of colleges and universities in the field of air	RB, donor organizations	MES KR	2024-26	1. Lack of financial resources	1.Purchase of equipment 2.Purchase of computer equipment 3.Purchase of software	Quantity N1, N2, N3	50000

	and defense services							
	Action 3.5 Reduce the ORT threshold for admission to a university in the field of water supply and education	RB	MES KR	2024-25	1. Lack of financial resources 2.Lack of political will	Threshold reduced	Number of applicants	33907.98
Action 4 Improve regulations	Activity 4.1 Conducting analysis and assessment of regulations in the field of water supply and water supply	RB, donor organizations	Gosstroy, DRPViVO with the involvement of Consulting companies	2024-25	1. Frequent reorganization of government agencies 2. Lack of support from donor organizations	Conducted analysis of legal acts of the sector	Acceptance for further work	22605.32
	Activity 4.2 Finalization and adoption of industry regulations on tariff regulation	RB	Gosstroy, DRPViVO with the involvement of Consulting companies	2024-25	1. Lack of financial resources 2.Lack of political will	Work carried out to finalize the industry normative legal acts	The document is legally secured	22605.32

	<p>Activity 4.3 Develop new regulations</p> <p>a) to introduce an amendment to the Law “On Subsoil” in Article 35. Clause 3</p> <p>b) development of regulations on the allocation of water fund lands for micro hydroelectric power stations for the water supply and water sector</p> <p>c) to provide benefits for the import of equipment for mini hydroelectric power stations for PV</p>	RB, donor organizations	Gosstroy, DRPViVO, MPRETN KR	2024-26	<p>1. Lack of financial resources</p> <p>2.Lack of political will</p>	Prepared draft legal acts	Accepted for further promotion	45210.648
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Action 5 Raise awareness	Activity 5.1 Studying and communicating about positive practices: <ul style="list-style-type: none"> • solar energy production and application in the sector • PPP, etc. 	RB, donor organizations	Gosstroy, DRPViVO with the involvement of Consulting companies	2024-26	1. Lack of financial resources	Positive Practices Products	Quantity N1, N2	78547.78
	Activity 5.2 Information campaign to explain the need to increase tariffs for the supply of PV with the composition of Local Keneshes, local self-government bodies, and the population	RB, donor organizations	Gosstroy, DRPViVO with the involvement of Consulting companies	2024-26	1. Lack of financial resources 2.Lack of political will	Conducted information campaigns	Number of people with whom information campaigns were conducted	134241223.3
	Total:							135945577

2.1.3 Action plan for the technology “Energy efficient pumps for pumping stations in the Kyrgyz Republic”

2.1.3.1 Introduction

The main consumer of water in the country is irrigated agriculture; more than 90% of the available water resources are spent on irrigation needs. To grow crops in dry lands, pumping stations were built more than half a century ago; 115 units (365 units), providing irrigation water to 57.0 thousand hectares (6% of the total irrigation area). Re-equipment of pumping stations, especially in recent years, has become a necessary task, since the service life of the equipment has already expired almost 4-5 times, it is morally and physically outdated. Despite the fact that technical re-equipment has begun in recent years, it is far from sufficient and covers only 20-30% of what is needed. In addition, the re-equipment is carried out within the framework of existing equipment, for example, pumps are 3.5 kW, but 1.5 kW units are needed.

The introduction of this Technology No. 2 will reduce the shortage of water resources resulting from interruptions in the operation of outdated energy-intensive equipment of pumping stations. And in connection with forecasts for a reduction in river flow, this technology will help reduce water shortages indirectly, since electricity consumption and the load on water resources will be reduced, since the main electricity generation is carried out by hydroelectric power plants.

Timely supply of irrigation water will improve the sustainability of agricultural production, as well as support farmers' livelihoods and food supplies to local and national markets. Electricity consumption by pumping stations will be reduced by approximately half, which will reduce greenhouse gas emissions.

2.1.3.2 Ambitions for TAP

Technology No. 2 “Energy efficient pumps for pumping stations of the Kyrgyz Republic” is aimed at reducing the shortage of water resources resulting from interruptions in the operation of outdated energy-intensive equipment of pumping stations. In connection with forecasts for a reduction in river flow, this technology will indirectly help reduce water shortages, since electricity consumption and the load on water resources will be reduced, since the main electricity generation is carried out by hydroelectric power.

It is required to replace all 365 pumping units at 115 pumping stations, as well as purchase additional ones for each pumping station. Thus, this technology has quite good market potential. Improving irrigation water supply services, as well as fees for irrigation services and reducing the burden on the republican budget, increasing wages for pumping station workers. It is significant that reducing electricity consumption by approximately half (at the rate of 1.08 soms per 1 kWh) will lead to savings of about 244.0 million soms per year.

The introduction of this Technology will reduce heavy manual labor and the number of workers at pumping stations, which will increase wages for the remaining workers. If implemented, this technology could improve irrigation services for approximately 89,700 people across the country. Re-equipment of pumping stations, especially in recent years, has become a necessary task, since the service life of the equipment has exceeded the standard by 4-5 times, it is morally and physically outdated.

Despite the fact that technical re-equipment has begun in recent years, it is far from sufficient and covers only 20-30% of what is needed. In addition, the re-equipment is carried out within the framework of existing equipment, for example, pumps are 3.5 kW, but 1.5 kW units are needed.

2.1.3.3 Activities and activities selected for inclusion in the TAP

The successful implementation of Technology No. 2 to overcome the identified economic and financial Barriers involves the implementation of such Measures as:

- implementation of a policy that promotes the attraction of financial resources for energy-saving electricity generating units
- capacity building: training of service personnel
- studying the market for energy-efficient pumps in order to purchase the most reliable pumps
- provision of benefits for the installation of energy-efficient electric pumps
- studying the feasibility of creating a Marketing Service under the Foreign Intelligence Service of the Ministry of Agriculture
- informing managers about the capabilities of e. efficient units
- organization of ongoing courses to improve the potential of mechanics and electric motorists at the regional level
- training in best practices for managers and operators
- organization of ongoing training for non-sector personnel:
 1. Technical Operation Rules
 2. Development of organizational and technical measures

- studying international experience in using this technology in order to prepare a pilot project.
- consideration of the issue of construction of a mini-hydroelectric power station for the work of research assistants

Based on the prepared List of Measures, Actions were formulated, as well as Activities necessary for their implementation, table 1.1.4.6.1.

2.1.3.4 Stakeholders and timing of TAP implementation

Stakeholders of the implementation of the considered Technology No. 2 may consider:

- The Government of the Kyrgyz Republic, as an executive body of power in the Republic, which is tasked with providing the population irrigation water
- State bodies: SVR Ministry of Agriculture of the Kyrgyz Republic, the responsible body for the implementation, in particular, of the Irrigation Development Program for the period until 2026
- Local government bodies, whose tasks are to resolve issues of providing the population with live water
- WUAs, farmers that are created for the purpose of operating and maintaining on-farm irrigation systems
- Private supply companies, depending on demand, equipment, mechanisms, etc.

The deadlines for the implementation of Actions and Activities are determined mainly based on the deadlines for the implementation of State programs: the National Development Program of the Kyrgyz Republic until 2026, the Irrigation Development Program for the period until 2026.

2.1.3.5 Assessing the resources needed for actions and activities

The following are highlighted among the Capacity Building Activities:

- Organization of ongoing training for research staff:
 - rules of technical operation
 - development of organizational and technical measures, etc.
- Informing managers about the capabilities of e. efficient units
- Consideration of the issue of constructing a mini-hydroelectric power station for the work of research assistants. (pilot)

The amount of funding for each Action prepared by the TAP was determined based on a similar assessment carried out within the framework of the NDC, the UNDC project (2023), based on consultations with members of the JWG, based on relevant country documents.

It should be noted that the given financial cost of the Activities is quite approximate, since it depends on inflation, knowledge, experience of the expert and can sometimes be subjective.

2.1.3.6 Management planning

2.1.3.6.1 Risks and contingency planning

Among the risks it should be noted:

- Lack of financial resources
- Lack of political will
- Lack of qualified trainers/specialists

2.1.3.6.2 Next steps

Possible further steps should be aimed at finding sources of funding, i.e. The negotiation process must be intensified, both with potential investors and interested parties.

The next step should be the preparation of legal acts in order to create favorable conditions: provide various benefits, especially for local producers.

And, of course, this is an increase in potential: awareness, training, etc.

2.1.3.7 General TAP table

Table 1.1.4.6.1

TAP overview table								
Sector	Water resources							
Subsector	Irrigation							
Technologies	Energy efficient pumps for pumping stations of the Kyrgyz Republic							
Ambition	It is required to replace all 365 pumping units at 115 pumping stations, as well as purchase additional ones for each pumping station.							
Advantages	Energy efficiency, reducing scarcity and stress on water resources							
Action	Activities to be implemented	Sources of financing	Responsible authority and focal point	Time frame	Risks	Success criterion	Indicators for monitoring implementation	Budget for action, \$
Action 1 Increase potential	Activity 1.1 Organization of ongoing training for research staff: 1. rules of technical operation 2. development of organizational and technical measures, etc.	RB	SVR Ministry of Agriculture	2024-26	Lack of financial resources Lack of qualified trainers/specialists	Rules for Technical Operation and Organizational and Technical Measures have been developed, personnel have been trained	Conducted training for research staff once a year	24852537.3
	Activity 1.2 Informing managers about the capabilities of e. efficient units	RB	SVR Ministry of Agriculture	2024-26	Lack of financial resources	Awareness of the capabilities	Information was communicated to the management staff	3767.5

					Lack of qualified trainers	of e.ffi- cient units		
	Activity 1.3 Consideration of the issue of constructing a mini-hydroelectric power station for the work of research assistants. (pilot)	Donor funds		2024-26	Lack of donors Lack of political will	Proposed pilot option for the construction of n.s.	Decision	22605.3
Action 2 Regulatory support	Activity 2.1 Preparation of legal regulations providing benefits for the installation of energy efficient pumps	RB	SVR Ministry of Agriculture	2024-26	Lack of funds Lack of political will	Prepared draft legal acts	Accepted legal acts	22605.3
Action 3 Support for the work of N.S.	Activity 3.1 Studying the market for energy-efficient pumps in order to purchase the most reliable ones	RB, Donor funds	SVR Ministry of Agriculture	2024-26	Lack of financial resources Lack of political will	Based on market research, the most reliable brands, manufacturers, etc. are proposed.	Decision	11302.6
	Activity 3.2 Study of the feasibility of creating a Marketing Service under the Foreign Intelligence Service of the Ministry of Agriculture	RB, Donor funds	SVR Ministry of Agriculture	2024-26	Lack of financial resources. Lack of political will	The issue has been studied and suggestions have been made.	Decision	11302.6

	Total:							24924120.6
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2.1.4 Action plan for technology A3 “Subsoil irrigation against the background of closed drainage using the subsoil irrigation method.”

2.1.4.1 Introduction

The Technology No. 3 under consideration contributes to the rational use and reduction of water resource shortages in connection with forecasts of reduced runoff as a result of Global Climate Change. In addition, this technology, when irrigation is carried out through underground molehills, prevents water evaporation and the formation of water vapor.

It is economically more effective than surface and most fully satisfies the needs of agricultural production. crops, because optimal conditions are created for the growth and development of plants, a higher coefficient of water consumption, simplicity of design during construction and operation, the productivity of the sprinkler increases by 30-50%, high yields are ensured regardless of weather conditions, nutrients and microelements are retained in the soil.

The introduction of this technology will improve the quality of irrigation water supply services, increase the amount of income from fees for irrigation services for rural water user associations, and will increase agricultural yields, which will help increase the income of the population.

It will reduce the heavy manual labor of lifting water intake gates, will help preserve the health of service personnel, farmers and, obviously, will help maintain the health of service personnel, including women farmers. New jobs will be required to maintain collector-drainage and subsurface irrigation systems. This will free up time for other activities: alternative ways of earning money: housekeeping, gardening, vegetable growing, women's leisure.

It will prevent erosion of canals formed by the unregulated supply of irrigation water to the distribution network, reduce the shortage of water resources, irrigation water will be supplied in accordance with irrigation regimes, which will preserve the fertile soil layer. This will also reduce the processes of gully formation and erosion on irrigated lands, prevent the washout of the humus layer of soil, the formation and flow of solid runoff into rivers, reservoirs, and drains.

2.1.4.2 Ambitions for TAP

The purpose of introducing this Technology No. 3 is to reduce the shortage and loss of water resources, increase the sustainability of agricultural production by 30-50%, and improve the quality of services for the delivery of irrigation water.

2.1.4.3 Summary of barriers and measures to overcome barriers

The successful implementation of Technology No. 2 to overcome the identified economic and financial Barriers involves the implementation of such Measures as:

- Attracting investments, increasing the volume of allocation of financial resources from the Republic of Belarus
- Formation of policies that promote the development of local producers for the development of drip irrigation: providing incentives for the supply of imported equipment
- Implementation of sustainable public-private partnership business models (outsourcing)
- Development and adoption of the State Program for the economical and rational use of water resources in connection with Climate Change
- Make changes and additions to the regulatory legal acts regarding the provision of benefits when using effective irrigation technologies

- Training in best irrigation practices aimed at reducing the use of water resources for managers and operators
- Conducting research on the possibilities of using this Technology in the Republic with the development of recommendations
- Increasing the capacity of universities in the field of irrigation and GME SVR Ministry of Agriculture
- Studying the practice of using this Technology and raising awareness of farmers in the republic
- Increasing the potential of the irrigation and drainage expedition of the SVR Ministry of Agriculture of the Kyrgyz Republic
- Organization of a monitoring system for solid sediments at sources

2.1.4.4 Stakeholders and timing of TAP implementation

Stakeholders of the implementation of the considered Technology No. 3 may consider:

- The Government of the Kyrgyz Republic, as the executive body of power in the Republic, which is tasked with providing the population with irrigation water
- State bodies: SVR Ministry of Agriculture of the Kyrgyz Republic, the responsible body for the implementation, in particular, of the Irrigation Development Program for the period until 2026
- Local government bodies whose tasks are to resolve issues of providing the population with irrigation water
- WUAs, farmers that are created for the purpose of operating and maintaining on-farm irrigation systems
- Private supply companies, depending on demand, equipment, mechanisms, etc.

2.1.4.5 Assessing the resources needed for actions and activities

Among the Capacity Building Activities proposed:

- Preparation of legal acts to provide benefits for the development of drip irrigation
- Preparation/participation in the development of the State Program on the economical and rational use of water resources in connection with Climate Change
- Study of the possibility of organizing PPP
- Preparation of a Solid Sediment Monitoring Program at Sources

The amount of funding for each Action prepared by the TAP was determined based on a similar assessment carried out within the framework of the NDC, the UNDC project (2023), based on consultations with members of the JWG, based on relevant country documents.

It should be noted that the given financial cost of the Activities is quite approximate, since it depends on inflation, knowledge, experience of the expert and can sometimes be subjective.

2.1.4.6 Management planning

2.1.4.6.1 Risks and contingency planning

Among the risks it should be noted:

- Lack of financial resources
- Lack of political will
- Lack of qualified trainers/specialists

2.1.4.6.2 Next steps

Possible further steps should be aimed at finding sources of funding, i.e. the negotiation process must be intensified, both with potential investors and interested parties.

The next step should be the preparation of legal acts in order to create favorable conditions: provide various benefits, especially for local producers. And, of course, this is an increase in potential: awareness, training, etc.

2.1.4.7 General TAP table

TAP overview table								
Sector	Water resources							
Subsector	Irrigation							
Technologies	Subsoil irrigation against the background of closed drainage using the subsoil irrigation method.							
Ambition	Reducing shortages and losses of water resources, increasing the sustainability of agricultural production by 30-50%, improving the quality of services for the delivery of irrigation water.							
Advantages	It is economically more effective than surface and most fully satisfies the needs of agricultural production. crops, because optimal conditions are created for the growth and development of plants, a higher coefficient of water consumption, simplicity of design during construction and operation, the productivity of the sprinkler increases by 30-50%, high yields are ensured regardless of weather conditions, nutrients and microelements are retained in the soil.							
Action	Activities to be implemented	Sources of financing	Responsible authority and focal point	Time frame	Risks	Success criterion	Indicators for monitoring implementation	Budget for action
Action 1 Creating favorable conditions	Activity 1.1 Preparation of legal acts to provide benefits for the development of drip irrigation	RB, donor funds	Ministry of Agriculture, SVR Ministry of Agriculture	2024-2026	Lack of funds Lack of political will	Accepted benefits	Prepared legal acts	22605.324
	Activity 1.2 Preparation/participation in the development of the State Program on the economical and rational use of water resources in connection with Climate Change	RB, donor funds	KM KR, MOA, SVR MOA	2024-2026	Lack of funds Lack of political will	Adopted State Program	Prepared State Program	45210.648
	Activity 1.3 Study of the possibility of organizing PPP	RB, private investment	SVR Ministry of Agriculture	2024-2026	Lack of funds Lack of political will	Conducted research	Recommendations for organizing PPP	22605.324

	Event 1.4 Preparation of a Solid Sediment Monitoring Program at Sources ³⁹	Republic of Belarus, external investments	Ministry of Emergency Situations of the Kyrgyz Republic (Agency for Hydrometeorology) SVR Ministry of Agriculture of the Kyrgyz Republic	2024-2026	Lack of funds Lack of political will	Current monitoring system	Number of monitoring systems	45210.65
Action 2 Increase potential	Activity 2.1 Conducting training on best irrigation practices aimed at reducing the use of water resources for managers and operators	Republic of Belarus, external investments	SVR Ministry of Agriculture of the Kyrgyz Republic		Lack of funds Lack of political will	Training activities carried out	Number of specialists covered by training	1735129.561
	Activity 2.2 Conducting research on the possibilities of using this Technology in the Republic with the development of recommendations	Republic of Belarus, external investments	SVR Ministry of Agriculture of the Kyrgyz Republic	2024-2026	Lack of funds Lack of political will	Conducted research	Recommendations communicated to interested parties	22605.3
	Activity 2.3 Studying the practice of using this Technology and raising awareness of farmers in the republic	Republic of Belarus, external investments	SVR Ministry of Agriculture of the Kyrgyz Republic	2024-2026	Lack of funds Lack of political will	Conducted information campaign based on research	Number of people covered by the information campaign	1735129.3

³⁹LAW of the KR dated August 8, 2006 No. 154 “On hydrometeorological activities” Chapter IV, paragraph 3: “Hydrometeorological activities can be carried out on a contractual basis at the request of legal entities and individuals without prejudice to the performance of work financed from budgetary funds, as well as for account of environmental and other funds as part of the implementation of environmental programs.”

	Activity 2.4 Increasing the potential of GME SVR Ministry of Agriculture of the Kyrgyz Republic: technical	Republic of Belarus, external invest- ments	SVR Ministry of Agriculture of the Kyrgyz Republic	2024- 2026	Lack of funds	Work car- ried out to improve the condi- tion of the cdc	Quantitative characteristics, km	1141683 ⁴⁰
	Total:							4770179.10 7

⁴⁰Estimated indirectly, based on the volume of annual funding for the GME SVR Ministry of Agriculture, which is 93.0, of which 68.0 million soms for capital repairs.

2.2 Project ideas for sector A

2.2.1 Summary of project ideas for sector A

2.2.2 Specific project ideas

The proposed project idea is based on an analysis of the country's strategic documents, consultations with stakeholders, research work carried out in the preparation of TNA project products, the emerging situation with water resource shortages and, especially for irrigation in the Republic in recent years.

The project idea is to create a Center for the rational use of water resources, which can be created:

1. as a state body based on the decision and coordination of the Cabinet of Ministers of the Kyrgyz Republic with the support of the Ministries of Agriculture, Natural Resources, Ecology and Technical Supervision, Emergency Situations, State Construction Committee, scientific and educational organizations
2. or on the initiative of non-governmental organizations such as the Union of WUAs, the National Association of Pasture Users “Kyrgyz Zhaiyty”, the Association of Forest and Land Users of Kyrgyzstan, i.e. as a voluntary Union of individuals, legal entities and non-governmental organizations. Moreover, the second option is more preferable. Because it will allow us to approach the issues of conserving water resources, their rational use in agriculture, forestry, and for watering pastures.

The work of the Center for the rational use of water resources will be as follows:

initiation and participation in the preparation of the State Program for the rational use of water resources for the period until 2040. Moreover, the development of which should be carried out on the basis of an integrated approach, taking into account:

- scientific research on the quantitative volume of water,
- forecasts of surface and groundwater flow for the coming period,
- comprehensive research, practice of already used technologies: soil condition, productivity, payback, etc.
- research results and relevant recommendations for regions, river basins, existing irrigated lands, agricultural, horticultural and other crops on the possibilities of introducing water-efficient systems by type: drip, subsurface irrigation, aerosol irrigation/sprinkling, etc.

The work of the Center should also be aimed at:

- conservation of water resources: afforestation in areas where river flows form
- improvement of pasture management: improvement by removing crops inedible by animals and reseeding necessary crops and, of course, watering
- dissemination of water-efficient technologies throughout the republic: sprinkling, subsurface irrigation, drip irrigation, etc.

Also the work of the Center d.b. is aimed at preparing and promoting legal acts aimed at encouraging the introduction of water-efficient technologies, providing benefits for local manufacturers when delivering equipment from abroad, etc.

The center will work using modern IT technologies, GIS to promote and implement water-efficient technologies among agricultural producers, district and regional state administrations, and village ok-mots.

A special focus of the Center's work should be aimed at attracting funding for research and implementation of Technologies, for which the capabilities of the Adaptation and Green Climate Fund, as well as potential donors - national, foreign: private capital, sponsors, etc. should be used.

This project idea is considered as one of the important tools for adaptation to global warming of the earth's climate, as it will help resolve issues of effective, rational and economical use of water resources for the needs of the republic⁴¹.

It also corresponds to the Objective of "introducing technologies for the efficient use of water resources that significantly increase the water use coefficient..."⁴².

The main field of activity of the Center is the valley, foothill, pasture and river flow formation zones of the republic and, especially in the Batken, Osh, Jalalabad, Talas and Chui regions.

The results of the implementation of IP can be:

- attraction of investments
- adopted State Program for the rational use of water resources for the period until 2040
- increasing the area of irrigated land using water-efficient technologies
- reducing water scarcity
- increasing the yield of agricultural crops, pasture productivity
- increasing the area of forest plantations in runoff formation zones, etc. Almost all of the proposed results can be assessed quantitatively.

The staffing level of the Center will depend on the organizational and legal form of the organization, as well as the areas in which the Center will carry out its activities. As noted above, the second option, when the Center is created as a voluntary Union of individuals, legal entities and non-governmental organizations, is more preferable. In this option, the staff of the Center will consist of management, representatives of associations included in the Center, as well as scientific and educational circles, about 15-20 people, taking into account the possibility of annual hiring of short-term experts, with an average salary of 31,000 soms is 150.0- \$200.0 thousand per year.

The creation of the Center will take about a year, since it will require preliminary consultations - internal, with representatives of government agencies, mainly the Ministry of Agriculture, preparation and adoption of the Charter, State Registration, which requires hiring a lawyer, etc.

Undoubtedly, for a positive decision on the creation of the Center, approval from interested individuals and legal entities, organizational support, for example, allocation of premises, provision of office equipment at the initial organizational stage, etc. are necessary.

⁴¹PPKR dated July 21, 2017 No. 440 "On approval of the State Program for the Development of Irrigation of the Kyrgyz Republic for 2017-2026"

⁴²UP KR No. 22131.10. 2018 National Sustainable Development Strategy for the period up to 2040.

The activities of the Center are possible with the interest and initiative of primary water, land and pasture users and their associations, government agencies whose activities are aimed at providing food.

1.3. Cross-cutting issues

As shown above, one of the main reasons for not implementing these Technologies is the conservative thinking of both managers and primary water users, lack of funding, undeveloped regulations regarding the provision of benefits to local producers, farmers, stimulating energy, water conservation, etc.

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Appendix I. List of stakeholders involved and their contacts

Below is a list of stakeholders who participated in the preparation process for the meetings, the work of the AWG, and consultations.

This list is changed and supplemented as necessary and circumstances, for example, in connection with new personnel appointments.

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