ADAPTATION FUND

FULLY DEVELOPED PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Enhancing the land-based adaptation of communities adjacent to arid zones and forest protected areas of Armenia by duplicating and expanding the successful mechanisms of the previous projects
Country:	Republic of Armenia
Type of Implementing Entity:	National Implementing Entity
Implementing Entity:	**"**Environmental Project Implementation Unit" State Entity
Executing Entities:	**"**Environmental Project Implementation Unit" State Entity
Amount of Financing Requested:	**3,780,513** (in U.S Dollars Equivalent)
Letter of Endorsement (LOE) signed:	Yes ☒ No ☐

Stage of Submission:

☐ This proposal has been submitted before including at a different stage (concept, fully-developed proposal)

☒ This is the first submission ever of the proposal at any stage

In case of a resubmission, please indicate the last submission date: Click or tap to enter a date.

Project/Programme Background and Context:

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

Project's economic social, development and environmental context

Introduction

Given its geographical location in the South Caucasus, Armenia is highly susceptible to the compounding effects of climate change and land degradation. Its mountainous terrain, fragile ecosystems, and agricultural-based economy make it particularly vulnerable. With a population of approximately 3 million people, the livelihoods and economies of the country are at risk. Over the past 90 years, climate trends have shown a significant warming pattern, leading to drier summers and an increase in extreme events such as hailstorms. Projections indicate that these trends will continue and significantly impact marginal production areas. Crop and livestock production has already declined in some regions, and without additional climate adaptation measures, this decline is expected to persist.

Communities located near protected areas and forests, such as Khosrov Forest State Reserve and Dilijan National Park, face heightened vulnerability. These areas experience constant pressure on their remaining land and pasture resources, lack robust rural infrastructure, and suffer from a dearth of alternative income opportunities. The current capacity to adapt to a changing climate and its escalating impacts on rural livelihoods and production systems is limited. Therefore, concerted efforts are needed to address the complex challenges posed by both land degradation and climate change on rural livelihoods.

The rural areas adjacent to "Lake Sevan National Park" in Armenia confront a set of challenges due to their proximity to this vital freshwater ecosystem. One of the foremost challenges lies in the management and conservation of the lake itself. Lake Sevan faces various ecological issues such as water pollution, overfishing, and the impact of climate change, which have repercussions on the livelihoods of the communities living nearby.

Another pressing challenge arises from the reliance of these rural areas on the lake's resources. Fishing and tourism related to Lake Sevan contribute significantly to the local economies. However, overexploitation of fish stocks, coupled with environmental degradation, can threaten the sustainability of these livelihoods. Furthermore, the vulnerability of these communities is amplified by their limited access to alternative income sources, making it imperative to implement adaptive measures that not only address the challenges posed by the lake's ecosystem but also foster economic diversification and resilience in these rural areas bordering Lake Sevan.

Country Context

Armenia is a land-locked country within the Caucasus region between Europe and Asia.

The majority of the country is at high altitude (greater than 1,000 meters above sea-level), including a freshwater Lake Sevan, with a surface area of 1,279 km^2 and the Seven River Basin with a surface area of 4,721 km^2, spans approximately one sixth of the nation's total land area. As of 2022, Armenia's population was estimated at 2.78 million people[1] and its GDP at $ 19.5 billion[2]. Around one third of the nation's population lives in its capital city, Yerevan[3].

Over the past decade, Armenia has transitioned from an industry-dominated to a service-dominated economy. As of 2016, the service sector constituted 48.8% of the labor force. Agriculture remains a major employer with a labor market share of 35.3% and there remains a relatively high rate of unemployment (18%) as well as net out-migration. GDP is distributed less evenly than employment, with around 52,8% originating in the service sector, 26,64% in the industry and only 11,34% in agriculture. Poverty persists, affecting around 26,5% (2021 data) of the population based on the national poverty line[4].

Gender disparity in Armenia, like in many other countries, is influenced by a complex interplay of social, cultural, and economic factors. While Armenia has made significant progress in improving gender equality, particularly in urban areas and on the policy level, gender disparities still persist and are broadly comparable with those in Europe and Central Asia and better than those of lower-middle-income countries globally. These disparities are often rooted in deep-seated social norms and traditional gender roles that continue to shape the lives of women and men.

Deeply ingrained social norms and patriarchal structures persistently hinder women's active involvement in the economy, resulting in both the misallocation and underutilization of their valuable skills and talents. These barriers manifest in various ways, such as the tendency for women to be concentrated in specific job sectors, the unequal distribution of women in certain fields of study at the university level, a decline in female labor force participation during their childbearing years, and the notable absence of women in key leadership roles in both politics and entrepreneurship. Furthermore, the practice of gender-based sex selection, which favors male offspring, carries significant demographic and economic implications.

Efforts to address gender disparities in Armenia's regions require a multi-faceted approach that goes beyond policy changes and legal reforms. It involves challenging deeply ingrained stereotypes and promoting more inclusive and equitable attitudes and behaviors at the community level. This can be achieved through educational programs, awareness campaigns, and initiatives that empower women to become active participants in economic, social, and political life while engaging men and boys as allies in the journey towards gender equality.

Agriculture has long been the foundation of Armenia's economy. Although its contribution to GDP has decreased from 26% in 2000 to 18% in 2016, it remains the dominant employer, with 44.2% of the population engaged in the sector. The majority of

[1] World Bank data portal - Armenia
[2] World Bank data portal - Armenia
[3] Republic of Armenia – Fourth National Communication on Climate Change to the UNFCCC
[4] "Armenia – Country Risk Climate Profile", joint publication by World Bank and Asian Development Bank, 2021

Armenia's population is economically disadvantaged, and their livelihoods are highly susceptible to fluctuations in the agricultural industry. Notably, there is a gender disparity within the sector, with 82.1% of informal agricultural workers being women, who also face a significant gender wage gap, earning approximately 65.9% of what men earn on average (FAO, 2017). Furthermore, land ownership and management are predominantly male dominated, limiting women's access to land resources. Additionally, women encounter obstacles in acquiring agricultural technical knowledge and participating in training programs. These conditions underscore the critical role of agriculture in Armenia's economy and the importance of addressing gender disparities within the sector to promote inclusive and sustainable economic development.

Armenia's agricultural sector primarily revolves around subsistence farming, although any surplus production is sold in the market. Presently, the sector falls short of fulfilling the country's food requirements and still relies on government subsidies. The household farms sector, encompassing a substantial number of small-scale farms, rural and urban household farming, and gardening enterprises, is responsible for producing more than 90% of Armenia's agricultural output. The predominant agricultural system in Armenia is mixed farming, where both crop cultivation and livestock rearing hold significant importance. However, it's noteworthy that the relative dominance of crops or livestock can vary by region. It's important to recognize that due to differences in soil quality, climate, and access to water, many areas in Armenia, especially those at higher elevations, are unsuitable for high-value vegetable cultivation. Consequently, these regions tend to focus on the production of more resilient and less input-intensive crops like wheat, maize, and forage.

Armenia boasts remarkable and globally significant biodiversity, with forests covering 11.2% of its territory. However, due to extensive human activities, Armenia's natural landscapes have experienced significant anthropogenic alterations. Overexploitation has led to pollution, diminishing wild biodiversity, habitat loss for various species, and transformations in ecosystem services. Presently, the Republic of Armenia has designated three reserves, four national parks, and 27 sanctuaries, restricting the utilization of natural resources by local communities. This limitation has implications for the residents of nearby communities, as their access to land and water resources is restricted, consequently increasing both human and natural pressures on ecosystems near these communities. As a result, the gradual degradation of natural ecosystems in proximity to these communities diminishes their ability to adapt to the changing climate, further exacerbated by shifting climate conditions, including rising temperatures, decreased precipitation, and increased occurrences of floods and hailstorms, which all contribute to reduced agricultural productivity.

Land degradation emerges as a significant factor amplifying vulnerability to climate change and, through the loss of soil organic carbon, as a contributor to climate change itself. The degradation of land and the diminishing resilience of agro-ecological systems to climate change are intertwined. Armenia's "National Strategy and Action Program to Combat Desertification in the Republic of Armenia" from 2015 recognizes both natural and anthropogenic desertification factors. Natural factors comprise frequent droughts in the Ararat valley and specific areas of Vayots Dzor and Syunik regions, frequent sandstorms observed in the Ararat valley, Vayots Dzor, and Syunik regions, moisture deficits resulting from uneven seasonal and regional rainfall distribution, as well as

landslides and floods, along with salinization. Anthropogenic factors encompass urban expansion, agricultural practices, the absence or inappropriate application of crop rotation techniques, inefficient use of irrigation water and nutrients, overgrazing of pastures, road construction, illegal logging, and soil contamination. Water erosion affects nearly half of the cropland and forested areas, comprising 220,000 hectares and 186,200 hectares, respectively, while overgrazing affects approximately 170,000 hectares. Armenia has committed to achieving land degradation neutrality in its Land Degradation Neutrality National Strategy, an ambitious and voluntary goal that this project contributes to. It is estimated that interventions encompassing 407.5 square kilometers require an investment of US$ 210 million until 2040 to address these pressing land degradation issues.

Country overview

Armenia is a land-locked country within the Caucasus region between Europe and Asia. The majority of the country is at high altitude (greater than 1,000 meters above sea-level), including a freshwater Lake Sevan, with a surface area of 1,279 km^2 and the Seven River Basin with a surface area of 4,721 km^2, spans approximately one sixth of the nation's total land area. As of 2022, Armenia's population was estimated at 2.78 million people[5] and its GDP at $ 19.5 billion[6]. Around one third of the nation's population lives in its capital city, Yerevan[7].

Over the past decade, Armenia has transitioned from an industry-dominated to a service-dominated economy. As of 2016, the service sector constituted 48.8% of the labor force. Agriculture remains a major employer with a labor market share of 35.3% and there remains a relatively high rate of unemployment (18%) as well as net out-migration. GDP is distributed less evenly than employment, with around 52,8% originating in the service sector, 26,64% in the industry and only 11,34% in agriculture. Poverty persists, affecting around 26,5% (2021 data) of the population based on the national poverty line[8].

Climate baseline

Overview

Armenia's climate can be described as highland continental, with large variation between summer highs (June to August) and winter lows (December to February). The country also experiences large climatic contrasts because of its intricate terrain, and the climates range from arid to sub-tropical and to cold, high mountains. Summer highs in Armenia's capital Yerevan average around 30°C−33°C while the average in winter is 1°C−3°C. The more mountainous regions experience lower average temperatures and prolonged periods of snow cover. The average annual precipitation is low at 526 mm. Precipitation intensity is greater in Armenia's high-altitude regions with May and June the wettest months. For Armenia, altitude is the strongest controlling factor determining the spatial distribution of temperatures and precipitation in Armenia. Sub-zero average

[5] World Bank data portal - Armenia
[6] World Bank data portal - Armenia
[7] Republic of Armenia – Fourth National Communication on Climate Change to the UNFCCC
[8] "Armenia – Country Risk Climate Profile", joint publication by World Bank and Asian Development Bank, 2021

temperatures are common in Armenia's mountain ranges while its highest average temperatures are experienced in the relatively low-lying western plains. Similarly, Armenia's highest peaks may receive up to 1,000 mm of annual precipitation while precipitation can be as low as 200 mm in the western plains.

Due to the sharply intersected relief and the development of the slope processes, Armenia is characterized by active external processes. High frequency and magnitude of hazardous hydrometeorological phenomena (HHP) are characteristic for Armenia, which trigger droughts, landslides, mudslides, forest fires etc. and inflict significant losses to the population and the economy[9].

Key trends

Temperature - Armenia's NC4 reports that it experienced an average temperature rise of 1.23°C between 1929–2016. This historical rise in temperatures has resulted in the rapid shrinking of the glaciers in Armenia's mountain regions, with spatial extents retreating at around 8 m per year. Trends suggest climate variability is increasing and in 2018, Yerevan experienced a new record July temperature, reaching 42°C.

Precipitation - Armenia's NC4 reported a 10% reduction in average annual precipitation volume was documented over the period 1935–2012. The spatial distribution of precipitation changes is irregular: the northeast and central regions have become more arid. However, precipitation has increased in the southern and northwestern regions and in the western region of the lake Sevan basin. Additionally, the number of days with heavy rainfall and hailstorms has increased.

Climate future

Temperature

The model ensemble's[10] estimate of average warming in Armenia under the highest emission pathway is an average temperature increase of 2.8°C by the 2050s and 5.8°C by the 2090s. Ensemble estimates of warming under the lowest emission pathway also present an average temperature increase of 1.2°C by the 2050s and maintain through the end of the century. Both of these temperature increases represent greater rates of increase than the global average. By the 2090s, temperatures are projected to have increased around 35% to 40% higher than the global average. Under all scenarios, except for the lowest emission pathway, the number of summer days is expected to increase, and the number of frost and ice days are expected to fall dramatically by the end of the century.

In the case of Armenia, the rate of warming in maximum temperatures, is 5.8°C by the 2090s, which is notably faster than the warming in monthly average temperature. This points towards an increase in the intensity of temperature extremes and is among the some of the largest margins of warming projected anywhere on Earth. The seasonality of future temperature changes holds some uncertainty on lower emissions pathways.

[9] National Action Program of Adaptation to Climate Change and the List of Measures for 2021-2025

[10] Climate projections referred are derived from datasets available through the WB's Climate Change Knowledge Portal. These datasets are processed outputs of simulations performed by multiple General Circulation Models (GCM).

However, projected warming is strongest in the summer months from June to September. The months of July, August, and September are projected to see around 50% faster warming than the winter months from November to April under the highest emissions pathway.

Precipitations

While considerable uncertainty surrounds long-term projections in regional precipitation trends, global trends are evident. The intensity of sub-daily extreme rainfall events appears to be increasing with temperature, a finding supported by evidence from different regions of Asia. However, as this phenomenon is highly dependent on local geographical contexts further research is required to constrain its impact in Armenia. For Armenia, additional uncertainty remains around future changes in average annual precipitation, as well as for changes in seasons. Model ensemble estimates are not statistically significant across all emissions pathways. However, the trend indicated, which is consistent with historical climate behavior and most models, is towards a decline in average monthly precipitation. Under all emissions pathways, an increase in the precipitation associated with a maximum 5-day rainfall event is expected more predominantly in the northern and eastern areas of Armenia. Under all emissions pathways, precipitation reductions are projected in the western regions, and under lower emissions pathways reductions are also expected in the arid northern regions. These changes match global trends, which suggests the intensity of sub-daily extreme rainfall will increase as temperatures increase, a finding supported by evidence from different regions of Asia.

Climate related natural hazards

Armenia faces significant disaster risk levels and is ranked 101 out of 191 countries by the 2019 Inform Risk Index. This ranking is driven strongly by the exposure component of risk. Armenia has high exposure to natural hazards, including, riverine, flash, and coastal, and very high exposure to tropical cyclones and their associated risks. Drought exposure is also significant. Disaster risk in Armenia is elevated due to its moderate levels of social vulnerability and the country's decent coping capacity. The risks of disasters resulting from these drivers are likely to increase as the severity and frequency of extreme climate event increases. In recent decades the annual number of events designated as hazardous hydro-meteorological phenomena (such as hurricanes, snowstorms, heat waves) has increased.

Heatwaves: Armenia regularly experiences high maximum temperatures, with an average monthly maximum of around 13.2°C and an average August maximum of 27.5°C. The current annual probability of a heat wave (defined as a period of 3 or more days where the daily temperature is above the long-term 95th percentile of daily mean temperature) is around 3%. The model ensemble projects that the annual probability of a heatwave could increase from 5% to 18% (depending on emission scenarios) by the end of the century. The country is also projected to experience a significant increase in the number of very hot days (Tmax > 35°C). However, these increases primarily reflect the continual rise in temperatures against the model baseline period of 1986–2005.

Droughts: two primary types of droughts may affect Armenia, meteorological (usually

associated with a precipitation deficit) and hydrological (usually associated with a deficit in surface and subsurface water flow, potentially originating in the region's wider river basins). When low hydrological flows also coincide with imperfect crop choices and land management practices, agricultural drought can also result. At present, Armenia faces a significant annual probability of severe meteorological drought, as defined by a standardized precipitation evaporation index of less than 2.

The 2001 drought highlighted the vulnerability of the rural poor to drought. Agencies working in the region reported more than 25,000 poor households affected, the majority of whom were dependent on local food production which was severely damaged by the drought. The model ensemble projects a dramatic increase in the annual probability of drought increasing from 20% to over 80% (depending on emission scenarios) by the 2090s. Global overview of changes in drought conditions under different warming scenarios supports extreme projections, suggesting that the West Asia region could experience a considerable increase in the frequency of extreme drought. Under 1.5°C of warming what is currently a 1-in-100-year event may return every 20 years, and under 2°C of warming such an event may recur every 10 years or less[11].

Extreme Precipitation, Flood, and Landslide: heavy rainfall events are known to trigger landslides and floods in rural areas of Armenia, often affecting poorer and more isolated rural communities. River levels in Armenia are particularly variable, and high flows often hit communities without forewarning, resulting in flood disasters. Flooding can result in damage to subsistence agriculture and increase the incidence of poverty and health issues. Floods also represent a risk to national economic productivity particularly when affecting the capital city, Yerevan. While most climate models project a small increase in the intensity of extreme precipitation events, uncertainty remains in precipitation projections and model ensemble estimates. The general shift in the seasonality of precipitation away from the summer months, combined with the projected loss of many of Armenia's glaciers will likely intensify extreme events and highlight a need for disaster risk reduction measures. However, research and development in the climate modelling arena is needed to support decision makers and planning efforts, specifically more reliable downscaled modelling and additional work will be needed in order to better understand and map rural exposure and vulnerability.

Climate change impacts

Natural Resources

Water: uncertainty remains around the precise trajectory of future change in the availability of water resources in Armenia and river flows are expected to reduce dramatically. While vulnerability for basin and watersheds vary, under a "worst-case scenario", average decrease in river flow is estimated at 39% by the end of the century[12]. These changes would have a significant impact on the levels of Armenia's lakes and reservoirs, with implication for society potentially coming from the resulting damage to fish stocks and decline in water levels and water quality. However, caution should be applied as these projections are derived from a single climate scenario;

[11] Global Changes in Drought Conditions Under Different Levels of Warming, Naumann, G., Alfieri, L., Wyser, K., Mentaschi, L., Betts, R. A., Carrao, H., . . . Feyen, L. (2018).
[12] Republic of Armenia – Fourth National Communication on Climate Change to the UNFCCC

other scenarios provide less consistent trends. More recent analysis of runoff from Caucasus Glaciers suggests a significant increase in the short-term (up to 2022) as melting intensifies, but near total loss of glaciers and glacial meltwater towards the end of the 21st century.

A likely impact of the loss of Armenia's mountain glaciers is an increase in variability of water flows as glaciers typically act to smooth runoff over the year. Water scarcity towards the end of summer (August, September) is likely to increase. Armenia has already experienced declines in annual precipitation and desertification has been documented around the nation, including in the Ararat Valley, an important agricultural production area[13]. More information is needed to understand the potential threat of a broader restructuring of the nation's ecosystems, particularly whether tipping points threaten the viability of current agricultural operations.

Soil and Land Cover: a key route through which climate change may lead to soil and land degradation is its impact on soil moisture. With very large increases in the frequency and intensity of drought projected over Armenia, the potential for declines in soil quality are significant. The Caucasus region is among many regions where an expansion of the arid and semi-arid area is projected, with the affected area growing rapidly over the 21st century under higher emissions pathways. Such changes will reduce ecosystem productivity resulting in species range shifts, and potential loss of biodiversity.

Linked to issues of land degradation and drought are potential changes to Armenia's forest cover, Armenia's NC4 estimates a potential loss of 14,000–17,500 ha (around 3%–4%) by 2030 as a result of changes to ecosystems and growing conditions, as well as increased frequency of forest fire, pest and disease outbreaks, and invasive species. Armenia has already begun to enact adaptation and restoration plans to reduce deforestation through its National Forest Policy and Strategy, improved wildfire management policies and specific area action plans such as the City of Yerevan 5-Year Plan (2019–2023) to restore the city's buffer forest layer by 40 hectares. A general trend of species range shifts towards higher altitudes is expected and conversion of lower altitude land cover to arid forest types, steppe, and semi-desert. Armenia's National Strategy and Action Program to Combat Desertification was ratified in 2015 to increasing the effectiveness of land management, raising public awareness on desertification issues and their solutions, as well as international cooperation[14].

Economic Sectors

Agriculture

Climate change in Armenia is likely to influence food production via direct and indirect effects on crop growth processes. Direct effects include alterations to carbon dioxide availability, precipitation, and temperatures. Indirect effects include through impacts on water resource availability and seasonality, soil organic matter transformation, soil erosion, changes in pest and disease profiles, the arrival of invasive species, and decline in arable areas due to desertification. On an international level, these impacts

[13] Republic of Armenia – Fourth National Communication on Climate Change to the UNFCCC
[14] National Strategy and Action Program to Combat Desertification in the Republic of Armenia

are expected to damage key staple crop yields, even on lower emissions pathways. Projections estimate 5% and 6% declines in global wheat and maize yields respectively even if the Paris Climate Agreement is met and warming is limited to 1.5°C. Shifts in the optimal and viable spatial ranges of certain crops are also inevitable, though the extent and speed of those shifts remains dependent on the emissions pathway.

In some cases, changing temperature and rainfall patterns may be favorable for crop production. Under all scenarios of future climate change, the agricultural growing season could extend by 10–40 days in Armenia. However, this may also present challenges due to uncertainty and potential declines in future water resources. Armenia is already struggling with land degradation on most agricultural land; climate change could accelerate this degradation as temperatures rise and extreme weather events increase in frequency and severity. Temperature extremes are likely to result in sub-optimal growing conditions for many of Armenia's highest grossing crops, typically grains and vegetables. The increase in the number of very hot days (>35°C), even in the order of 5 days as projected for the low emissions pathway, is likely to damage yields for almost all crops grown in lowland areas of Armenia as well as for a majority of crops grown in intermediate and upland areas[15]. Studies have suggested pressure will be amplified by a potential doubling of the average water requirement of Armenia's crops as temperatures rise. As the glacier supply depletes, and its regulating effect on flows reduces, effective water storage and management infrastructure will grow in importance.

Armenia implemented sustainable agricultural development strategies to increase the unused arable land in rotation by approximately 10,000 hectares per annum in an effort to combat projected yield reductions[16]. Projections show that by the 2070s, potato crop yields will decrease by 21%, with the highest level of reduction expected in Shirak and Syunik marzes. The largest decline in the grape yields will be recorded in the Ararat Valley – by 20%[17]. At the same time the area of high productivity land is projected to shrink, with a 17% increase in less productive desert and meadow-steppe land. Agriculture, Forestry and Fisheries make up Armenia's lowest paid sector yet continue to employ over 30% of the population. These high levels of vulnerability, and risks in both slow and rapid onset hazards emphasize the serious risks climate change represents in Armenia, particularly under higher emissions pathways.

A further, and perhaps lesser appreciated influence of climate change on agricultural production is through its impact on the health and productivity of the labor force. Labor productivity during peak months has already dropped by 10% as a result of warming, and a decline of up to 20% might be expected by the 2050s under the highest emissions pathway. In combination, it is highly likely that the above processes will have a considerable impact on national food consumption patterns both through direct impacts on internal agricultural operations, and through impacts on the global supply chain. Without adaptation, the economic environment for smallholder agricultural operations is likely to become increasingly hostile[18].

[15] Building resilience to climate change in South Caucasus agriculture. World Bank
[16] Strategy of the Main Directions Ensuring Economic Development in Agricultural Sector of the Republic of Armenia for 2020–2030
[17] Republic of Armenia – Fourth National Communication on Climate Change to the UNFCCC
[18] Environmental and socio-economic vulnerability of agricultural sector in Armenia, Melkonyan, A. (2014), Science of The Total Environment

Urban and Energy

Research has established a reasonably well constrained relationship between heat stress and labor productivity, household consumption patterns, and (by proxy) household living standards. In general terms, the impact of an increase in temperature on these indicators depends on whether the temperature rise moves the ambient temperature closer to, or further away from, the optimum temperature range. The optimum range can vary depending on local conditions and adaptations. In Armenia, a general decline in productivity is expected due to high temperatures that are offset by a reduction in the frequency of extreme low temperatures. This trend can be measured in the change to the annual heating and cooling degree days. The full model ensemble projects an increase in the annual cooling requirement of around 1,000°C (degree days), versus a decline in the heating requirement of around 2,000°C (degree days). This points towards a potential net energy saving. Armenia's energy policy is focused on ensuring independence and increased security of the energy sector and promotion of the sustainable development of the energy sector based on efficient use of local primary (renewable) energy resources, further development of the nuclear energy sector, diversification of energy supply sources and introduction of energy efficient and advanced technologies. In the medium term, meeting increases in electricity demand, energy system reliability, and affordability of electricity services are important challenge to be addressed[19]. The country has begun to increasingly invest in the development of renewable energy sources and, more specifically, in recent years, electricity generation at photovoltaic (PV) solar plants, with a longer-term interest in further development of wind and nuclear energy.

The effects of temperature rise and heat stress in urban areas are increasingly compounded by the phenomenon of the Urban Heat Island (UHI) effect. Dark surfaces, residential and industrial sources of heat, an absence of vegetation, and air pollution can push temperatures higher than those of the rural surroundings, commonly anywhere in the range of 0.1°C−3°C in global mega-cities. As well as impacting on human health (see Communities) the temperature peaks that will result from combined UHI and climate change, as well as future urban expansion, are likely to damage the productivity of the service sector economy, both through direct impacts on labor productivity, but also through the additional costs of adaptation. The Armenian economy has great dependence on activity in its capital city, Yerevan, where around half of the nation's industrial production takes place. While the economy of the city is strong, and poverty rates comparatively low, the health risks of high temperatures require consideration. The 2018 heatwave, during which a new temperature record was set in Yerevan of 42°C, illustrated the strain that extreme climate events can place on the energy system, with technical faults and high demand putting strain on the energy system. Research suggests that on average, a one degree increase in ambient temperature can result in a 0.5%–8.5% increase in electricity demand.

Heating requirements continue to be an important part of Armenian energy needs. Individual heat boilers are primarily used for heating, of which 50% use natural gas. Natural gas is followed by wood use for heating, with an estimated 35% of Armenian

[19] Armenia Power Sector Policy Note, World Bank (2016).

households using wood for heating. This is primarily driven by affordability. As the country's deforestation rates are likely to continue, the use of biomass for heating is likely to continue to the trend, which is expected to adversely affect the poorest households due to a decline in firewood availability and price increase.

Communities

Poverty and Inequality: high poverty rates prevail in Armenia. These are in part linked to high unemployment rates, but also to the poor productivity of the agricultural sector which employs around 35% of the working population. According to the Armenian Statistical Committee wages in the agriculture, fisheries, and forestry sector are the lowest of all the primary sectors. Many households are dependent on remittances received from migrant workers. Disruption of remittance flows is possible as a result of climate change but is an issue which is poorly understood. Due to potential high impacts of climate change on the agricultural sector in Armenia, alongside the increased risk of climate-related disasters, the country faces major challenges from climate change, particularly under higher emissions pathways.

Many of the climatic changes projected are likely to disproportionately affect the poorest groups in society. For instance, heavy manual labor jobs are common among the lowest paid whilst also being most at risk of productivity losses due to heat stress. Poorer businesses are least able to afford air conditioning, an increasing need given the projected increase in cooling days. Poorer farmers and communities are least able to afford local water storage, irrigation infrastructure, and technologies for adaptation. According to the FAO, most agricultural holdings remain small, with an average size of 1.4 ha, many farming households are poor and many already rely on remittances sent from household members who migrate for work during fallow periods on the farm.60 Climate changes, such as changes to growing seasons, extreme weather events and species range shifts (potentially resulting in new invasive species) further threatens to expose a lack of adaptability and resilience in the population dependent on the agricultural sector. The majority of agricultural small-holders are not covered by any insurance system, resulting in reduced resilience to disaster events.

Gender: An increasing body of research has shown that climate-related disasters have impacted human populations in many areas including agricultural production, food security, water management and public health. The level of impacts and coping strategies of populations depends heavily on their socio-economic status, socio-cultural norms, access to resources, poverty as well as gender. Research has also provided more evidence that the effects are not gender neutral, as women and children are among the highest risk groups. Key factors that account for the differences between women's and men's vulnerability to climate change risks include gender-based differences in time use; access to assets and credit, treatment by formal institutions, which can constrain women's opportunities, limited access to policy discussions and decision making, and a lack of sex-disaggregated data for policy change[20].

Human Health: risk to human health from climate-related hazards are expected to increase, particularly under higher emissions pathways. Risks include the increased

[20] Gender Equality, Poverty Reduction, and Inclusive Growth, World Bank Group (2016)

probabilities of drought, exacerbated by the loss of mountain glaciers, and heat waves. Immediate risks include heat-related sicknesses and the increased vulnerability to malaria outbreaks. These impacts are likely to be followed by the risks to nutrition of associated agricultural losses and water shortages. Experience can be drawn from the 2001 drought, which necessitated emergency food distribution by the World Food Program to around 200,000 citizens in response to high levels of malnutrition. *Nutrition:* The World Food Program estimate that without adaptation the risk of hunger and child malnutrition on a global scale could increase by 20% respectively by 2050[21]. Projections suggest there could be approximately 81 climate-related deaths per million population linked to lack of food availability in Armenia by the 2050s. *Heat-Related Mortality*: research has placed a threshold of 35°C (wet bulb ambient air temperature) on the human body's ability to regulate temperature, beyond which even a very short period of exposure can present risk of serious ill-health and death. Temperatures significantly lower than the 35°C threshold of "survivability" can still represent a major threat to human health. Climate change could push global temperatures closer to this temperature "danger zone" both through slow onset warming and intensified heat waves. Armenia has also been identified as a having particularly poor air quality in many of its urban and developed areas and associated issues may be amplified by increased incidence of extreme heat[22]. It is estimated that without adaptation, annual heat-related deaths in the Central Asian region, could increase 139% by 2030 and 301% by 2050.

Priority areas for climate change adaptation

Armenia grapples with the compounding challenges of climate change and land degradation, which pose significant threats to local livelihoods and the regional economy. The project's primary focus revolves around addressing these intertwined issues of climate change adaptation, land degradation, and biodiversity in two crucial hotspots: land and forest degradation. Communities residing near protected areas and forest reserves represent key areas experiencing land degradation, rendering their rural livelihoods and production systems exceptionally susceptible to climate change impacts. This vulnerability stems from resource overexploitation and a dearth of alternative income opportunities.

Consequently, the project's core concentration lies in regions adjacent to the last three remaining protected areas in Armenia: **Khosrov Forest State Reserve**, located in the southwestern region of Ararat Marz, southeast of the capital Yerevan, **Dilijan National Park**, situated in the northeastern Tavush Marz and **Lake Sevan Natural Park** located in Gegharkunik marz. These protected natural ecosystems serve as critical biodiversity sites, while the neighboring communities contend with elevated poverty rates, resource-constrained livelihoods, and limited capacities to tackle land degradation effectively.

- Covering an area of 23,359 hectares, the **"Khosrov Forest" State Reserve** boasts a unique landscape characterized by semidesert, phryganoid, and sparse forest mountain-steppe ecosystems. Intrazonal wetland ecosystems also flourish along the riverbanks and in the vicinity of Mankuq and Gyolaysor settlements. The

[21] Two minutes on climate change and hunger: A zero hunger world needs climate resilience, WFP (2015)
[22] Armenia Environmental Performance Index (2019).

reserve shelters an impressive array of biodiversity, preserving 1,948 species of vascular plants and 1,783 species of animals, including 1,500 species of invertebrates and 283 species of vertebrates.

- On the other hand, **"Dilijan" National Park** spans 33,765 hectares and is predominantly covered by forests. Renowned for its rich and original biodiversity, the park features mesophile woodlands, distinct ecosystems of scientific, educational, and economic significance, and a host of environmental, cognitive, therapeutic, and recreational attributes. The park serves as a haven for biodiversity, housing 1,200 species of vascular plants and 1,660 species of animals, encompassing 1,431 invertebrates and 229 species of vertebrates.
- **“Sevan” National Park**, safeguards Lake Sevan and its surrounding ecosystems. The park oversees a research center that monitors and conserves these diverse environments. Additionally, the park regulates licensed fishing activities on Lake Sevan. The park's biodiversity is notable, hosting 267 bird species, including 56 from Armenia's Red Book of Animals, such as the Armenian gull and Mountain Chiffchaff. Reptiles and amphibians, including various lizard and snake species, inhabit the Masrik River valley. This region is essential for the reproduction of endemic fish species like Sevan trout and Gokcha barbel. The park boasts diverse invertebrates, some endemic, and is rich in plant life, with several endemic species and numerous medicinal and edible herbs. Sevan National Park plays a critical role in preserving Armenia's natural heritage and fostering biodiversity conservation.

The project will specifically target the following communities adjacent to these three protected areas:

1. **Ararat marz:**
   - **Urtsadzor** municipality *(beneficiary of pilot project)*;
   - Vedi municipality:
     - ✓ Goravan settlement;
     - ✓ Vanashen settlement;
     - ✓ Sisavan settlement;
   - Ararat municipality:
     - ✓ Zangakatun settlement;
     - ✓ Urtsalanj settlement;
     - ✓ Lanjar settlement;
     - ✓ Paruyr Sevak settlement;
     - ✓ Armash settlement;
2. **Tavush marz:**
   - Dilijan municipality *(beneficiary of pilot project)*;
   - Ijevan municipality:
     - ✓ Sevkar settlement;

- ✓ Achajur settlement;
- ✓ Khashtarak settlement;

3. **Gegharkunik marz:**
   - ➢ Sevan municipality:
     - ✓ Semyonovka settlement;
     - ✓ Tsovagyukh settlement;
4. **Armavir marz:**
   - ➢ Khoy municipality;

Excerpts from consultations with stakeholders (beneficiary municipalities) in determination of the Project's intervention framework are presented in the Annex I.

The vulnerability of the target communities to climate change is multifaceted. Firstly, it stems from land and biodiversity degradation along with marginal production systems. Second, the presence of weak infrastructure, inefficient irrigation systems, and limited adoption of climate-friendly technologies compounds this vulnerability. Third, poverty and the absence of alternative income opportunities exert additional pressure on natural resources. In particular, community pastures, situated 3-9 kilometers from residential areas, are intensively used by cattle breeders from March to late November. Regrettably, these pastures suffer from continuous grazing, lack watering points, and are underutilized due to poor road conditions and social constraints among residents. Consequently, pastures near communities have significantly degraded, leading to diminished soil quality, increased prevalence of non-grazed plant species, and prolonged degradation, exacerbated by animals crossing vast distances for water. The pastures' adaptive capacity has been severely compromised and is expected to further decline with ongoing climate change, potentially resulting in a 5% degradation of community pastures and the transformation of up to 30% into semi-desert ecosystems within the next decade, unless surface improvement measures are undertaken.

These challenges profoundly affect the communities' living standards. Reduced agricultural and livestock incomes restrict access to essential resources like gas and electricity for many residents, prompting the use of wood and dried manure as fuel. This intensifies pressure on forest ecosystems, diminishing their climate and water-absorbing properties. Additionally, illegal activities such as logging, grazing, and plant harvesting are prevalent in the region due to high levels of poverty and limited awareness regarding the value of protected areas. These illicit practices degrade vegetation cover, further eroding ecosystem resilience to climate change. Given the significance of specially protected natural areas for enhancing ecosystem resilience to climate change and their broader environmental, social, health, and scientific importance, fostering cooperation between communities and organizations managing these protected areas is essential. Nonetheless, this endeavor should be accompanied by efforts to improve social conditions among the population, with particular attention to women living in poverty who may lack access to alternative income opportunities and may engage in illegal activities for household subsistence. Communities should be regarded as contributing rather than impeding factors in the conservation of protected areas. However, community self-governing bodies face limitations in providing the

necessary financial resources for implementing climate adaptation measures, adopting energy-efficient technologies, and diversifying value chains. This includes initiatives such as installing solar water heaters, constructing modern greenhouses, repairing irrigation systems, diversifying agriculture, reconstructing roads for waterways, and establishing watering points in pastures. The analysis of community budgets in 2021 and 2022 reveals that these budgets primarily rely on communities' own revenues and government subsidies.

Project/Programme Objectives:

Main objectives of the project/programme.

The **overall objective** of the project is reducing the climate risk vulnerability of local communities living adjacent to the “Khosrov Forest”, “Dilijan” and “Lake Sevan” National Parks through promoting sustainable and climate-resilient agricultural practices in degraded areas and buffer zones, thereby reducing climate-related risks and vulnerabilities in production systems while sustaining protected areas. Through the implementation of community-based, climate-smart agricultural practices, strengthening of value chains and technology transfer, and raising awareness and capacity building, the **Project aims** to enhance the adaptive capacity of vulnerable rural communities, improve land degradation neutrality, and contribute to the long-term sustainability of agricultural ecosystems.

The **specific objectives** of proposed Project are:

- To implement climate-smart agricultural practices in degraded areas to enhance water use efficiency, rehabilitate pastures, establish perennial sowing areas, and improve adaptive capacity of community pastures and hay meadows;
- To strengthen value chains for climate-smart agriculture, enhance accessibility to climate-smart technologies, and promote sustainable land management practices for vulnerable rural communities;
- To raise awareness, build capacity, facilitate monitoring, and enhance decision-making regarding climate-smart agricultural practices and Land Degradation Neutrality (LDN) in targeted communities;
- To scale up successfully tested during pilot project practices and replicate in new communities;

The envisioned project will create adaptive strategies in response to the impacts of climate change on agricultural and natural landscapes. Its primary focus is to bolster the livelihoods of affected communities in a sustainable manner. This involves introducing climate-smart agricultural technologies, enhancing the value chain of selected products (like dried fruits, vegetables, and herbs), and fortifying the planning capacity of these communities to enhance their resilience. The project aims to prioritize and engage vulnerable groups such as women and impoverished households to ensure that it empowers rather than exacerbates existing inequalities. It aligns with the concepts of both land degradation neutrality and climate change adaptation.

The project will be centered around three core adaptive strategies: (i) adapting agro-ecological landscapes to maintain agricultural productivity in the face of escalating climate change, (ii) upholding climate-smart agricultural value chains through the promotion of cost-effective, energy-efficient technologies, and (iii) enhancing local communities' planning capabilities to reinforce their adaptive capacities. By harmonizing the principles of land degradation neutrality and climate-smart agriculture, the project becomes a pivotal steppingstone towards achieving land degradation neutrality.

Implementing "Climate Smart Farming" practices and techniques holds immense significance as they mitigate greenhouse gas emissions and enhance adaptability within natural and agricultural ecosystems. In light of rising temperatures and changing precipitation patterns, agriculture must proactively adapt. This entails focusing on various pivotal aspects to boost adaptability.

The project is structured into three main components, each yielding specific outcomes. Component 1 prioritizes community-based, gender-inclusive interventions to bolster the adaptive capacity of the agricultural sector. Component 2 supports climate-smart agricultural value chains, thereby establishing and sustaining income-generating initiatives for the involved communities. Component 3 encompasses capacity building, awareness raising, local training, knowledge management, and information dissemination to fortify national strategies and policies concerning climate change adaptation. The primary interventions will be executed in the adjacent communities neighboring the "Khosrov Forest" State Reserve, "Dilijan" National Park and “Lake Sevan” National Park.

This project's concept aligns with the policies of the Adaptation Fund and incorporates global best practices. The formulation of the Concept Note involved community consultations across all target areas, enabling participatory planning and the identification of priority climate change adaptation measures. Data collection through questionnaires and community meetings was conducted to pinpoint factors that could disrupt the adaptation of natural ecosystems and agricultural landscapes, resulting in the formulation of key intervention priorities for each community. These interventions primarily aim to enhance ecosystems' and communities' adaptability to climatic anomalies such as extreme temperatures, dry and hot winds, frosts, hails, rains, and increased air temperatures.

The Project operates as a pilot or incubator initiative, with the intention to be scaled up across vulnerable regions and buffer zones adjoining protected areas and forests in Armenia. It employs a bottom-up, community-focused approach where local actions are defined, prioritized, and executed by vulnerable communities, ensuring equal participation from both women and men.

Project/Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

For the case of a programme, individual components are likely to refer to specific sub-sets of stakeholders, regions and/or sectors that can be addressed through a set of well-defined interventions / projects.

Component 1: Community-based, Equitable, and Gender-Responsive Adaptive Capacity Strengthening

This component aims to enhance the adaptive capacity of local communities in the face of changing climate conditions. By adopting community-based, gender-responsive approaches, the component will empower vulnerable communities to effectively manage climate-related risks. Through a combination of infrastructure rehabilitation, sustainable land management, and pasture enhancement, the component seeks to improve water use efficiency, rehabilitate degraded lands, and promote sustainable livestock management practices.

Proposed activities under the Component 1:

- **Rehabilitation of Irrigation Water Supply Systems:** This activity involves rehabilitating irrigation water supply systems in six municipalities. Solar-powered pumps will be installed, increasing water use efficiency. This will ensure reliable water supply for agricultural activities and mitigate the impacts of water scarcity.
- **Installation of Water Efficient Drip Irrigation Systems:** Drip irrigation systems will be introduced in orchards across six municipalities. This activity will conserve water resources and improve the efficiency of water distribution, leading to healthier orchards and increased agricultural productivity.
- **Rehabilitation of Field Tracks to Remote Pastures:** This activity focuses on rehabilitating degraded field tracks to remote pastures. By restoring access routes, this activity will facilitate the sustainable movement of livestock and reduce land degradation caused by overgrazing in sensitive areas.
- **Creation of Perennial Plant Sowing Areas:** Establishing perennial plant sowing areas across 30 hectares will combat rangeland degradation. Perennial plants play a vital role in stabilizing soil, preventing erosion, and enhancing biodiversity.
- **Rehabilitation of Community Pastures and Hay Meadows:** Through the rehabilitation of 500 hectares of community pastures and hay meadows, this activity will improve adaptive capacity, strengthen grazing management, and enhance the overall resilience of these vital ecosystems.
- **Construction of Livestock Watering Points:** The establishment of five livestock watering points will provide a reliable water source for livestock, reducing the pressure on natural water sources and promoting sustainable grazing practices.

Component 1 focuses on enhancing adaptive capacity in agriculture through community-based and gender-responsive interventions. By improving water management, sustainable land use, and pasture conditions, the component aims to strengthen the resilience of vulnerable communities to climate-related challenges.

Component 2: Climate-Smart Agricultural Value Chain Strengthening

This component aims to strengthen the value chains of climate-smart agriculture, ensuring the accessibility of innovative technologies for vulnerable communities. By introducing energy-efficient agricultural practices and creating demonstration sites for sustainable land management, the component seeks to increase the adaptive capacity of local communities. Additionally, the promotion of agro-acceleration hubs and model agrotourism facilities aims to foster integration within existing supply chains and diversify income sources.

Proposed activities under the Component 2:

- **Introduction of Smart Agricultural Practices:** Implementing climate-smart practices, such as constructing anti-hail nets and planting shrubs, will mitigate climate risks and enhance agricultural productivity across six municipalities.
- **Establishment of Non-Heated Greenhouses:** The construction of lightweight, energy-efficient greenhouses will extend growing seasons, enabling year-round cultivation and improving the economic viability of agriculture.
- **Installation of Solar Dryers:** By introducing solar dryers, communities will have the means to process and preserve produce effectively, leading to reduced post-harvest losses and increased income.
- **Formulation of Business Plans for Climate-Smart Value Chains:** This activity will assist communities in formulating business plans that integrate climate-smart practices, fostering sustainable and profitable agricultural enterprises.
- **Piloting of Agrivoltaic Systems:** By testing agrivoltaic systems that combine agriculture with solar energy production, the component aims to enhance resource efficiency and create innovative income streams.
- **Construction of Demonstration Sites for Sustainable Land Management:** These sites will showcase best practices for land management, helping communities adopt sustainable agricultural techniques to mitigate land degradation.
- **Establishment of Agro-Acceleration Hubs:** This activity aims to establish two agro-acceleration hubs that connect local farmers with supply chains, enabling efficient market access and strengthening rural economies.
- **Piloting of Model Agrotourism Facilities:** The creation of two agrotourism facilities in each community will diversify income sources, promote rural tourism, and raise awareness about sustainable agricultural practices.
- **Testing New Varieties of Crops:** By piloting heat and drought-resistant crop varieties, this activity aims to enhance agricultural productivity under changing climate conditions.

Component 2 focuses on enhancing climate-smart agricultural value chains through the introduction of innovative technologies and practices. By creating demonstration sites, establishing agro-acceleration hubs, and diversifying income through agrotourism, the component seeks to strengthen rural livelihoods and increase the adaptive capacity of vulnerable communities.

Component 3: Awareness Raising, Capacity Building, Monitoring, and Decision

Making

This component aims to enhance awareness, build capacity, and facilitate effective decision-making in climate-smart agricultural practices. Through farmer field schools, extension services, and community-based adaptation planning, the component seeks to empower local stakeholders to make informed choices for sustainable land management. Additionally, strengthening the capacities of municipalities and civil society organizations will support the integration of climate-smart practices into local policies.

Proposed activities under the Component 3:

- **Provision of Farmer Field Schools and Extension Services:** Farmer field schools and extension services will share best practices of climate-smart agriculture and promote the adoption of sustainable techniques among 200 beneficiaries.
- **Formulation and Dissemination of Training Material:** This activity will involve the creation and dissemination of training materials on adapting to climate change, promoting best practices, and sharing examples of successful agricultural ecosystem adaptations.
- **Community-Based Adaptation Planning:** Formulating community-based adaptation plans will enable targeted communities to plan and implement climate-smart strategies that align with their specific needs and conditions.
- **Formulation of Strategies for Sustainable Agriculture and Land Degradation Neutrality:** Communities will formulate strategies to sustain climate-smart agriculture and promote land degradation neutrality, ensuring long-term environmental and economic viability.
- **Capacity Advancement of Local Stakeholders:** Enhancing the capacities of local stakeholders, including municipalities and various civil society organizations, will foster effective implementation and integration of climate-smart agricultural practices.

Component 3 focuses on building awareness, capacity, and decision-making abilities among local stakeholders regarding climate-smart agricultural practices. By providing training, facilitating community-based planning, and strengthening organizational capacities, the component aims to ensure that climate adaptation and land degradation neutrality principles are effectively integrated into local strategies and actions.

The proposed project aims to address the challenges posed by climate change on agricultural and natural landscapes. Through three distinct components, the project seeks to enhance adaptive capacity, strengthen agricultural value chains, and improve awareness and decision-making capabilities. By fostering community engagement, introducing innovative technologies, and promoting sustainable practices, the project aims to empower vulnerable communities and contribute to a sustainable and climate-resilient future for both people and ecosystems. Through a combination of comprehensive activities, the project strives to achieve its overarching goal of reducing climate-related vulnerabilities, enhancing agricultural sustainability, and

promoting land degradation neutrality.

N	Project/Program Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1.	**<u>Component 1:</u>** Community based, climate smart agricultural practices in degraded areas and buffer zone	<u>Output 1.1</u> Irrigation water supply systems in 6 new municipalities are rehabilitated increasing water use efficiency *(12,000 m and 6 solar-powered pumps)*; <u>Output 1.2</u> Orchards with drip irrigation system and anti-hail nets will be established in 6 communities (12 ha); <u>Output 1.3</u> Existing field tracks to remote pastures degraded lands are rehabilitated (15% of field tracks rehabilitated 20 km rehabilitated 25 culverts installed); <u>Output 1.4</u> Sowing areas of perennial plants are created reducing rangeland degradation *(30 ha of perennial sowing area established)*; <u>Output 1.5</u> Community pastures	**<u>Outcome 1:</u>** Community based, climate smart agricultural practices are implemented in degraded areas to reduce climate risks vulnerability of production systems and sustain protected areas	**748.000** **485.000** **165.000** **78.000**

		and hay meadows are rehabilitated and improved their adaptive capacity *(500 ha hay meadows, pastures and arable lands rehabilitated)*; <u>Output 1.6</u> Livestock watering points are constructed *(5 watering points constructed)*; <u>Output 1.7</u> Architectural and design drawings and estimates;		**268.000** **69.500** **95.000**
Subtotal for Component 1.				**1.908.500**
2.	**<u>Component 2:</u>** Strengthening value chains and climate smart technology transfer for vulnerable communities	<u>Output 2.1</u> Smart agricultural practices in 6 municipalities are introduced*, establishing 3 ha berry orchards with drip irrigation system* <u>Output 2.2</u> Non-heated, lightweight greenhouses are constructed in priority community areas *(3000m^2 of greenhouses constructed 40 beneficiaries)* <u>Output 2.3</u> Solar dryers are installed in priority community areas *(40 solar dryers constructed 40 beneficiaries)* <u>Output 2.4</u> Community management and business plans are	**<u>Outcome 2:</u>** Value chains for climate smart agriculture are strengthened and climate smart technologies are accessible for vulnerable rural communities	**75.000** **175.000** **124.352**

		formulated for climate smart agricultural value chains *(5 business plans formulated)* <u>Output 2.5</u> Agrivoltaic systems are piloted *(10 installations with 30 KW of installed capacity each)* <u>Output 2.6</u> Demonstration sites for sustainable land management practices are constructed in each municipality; <u>Output 2.7</u> 2 agro-acceleration hubs are piloted to enhance integration with existing supply chains; <u>Output 2.8</u> 2 model agrotourism facilities are piloted in every community <u>Output 2.9</u> New varieties of dry and heat resistant crops are piloted		**65.000** **405.000** **35.000** **250.000** **150.000** **45.000**
Subtotal for Component 2.				**1.324.352**
3.	**<u>Component 3:</u>** Awareness raising, capacity building, monitoring and decision making for climate smart agricultural practices	<u>Output 3.1</u> Farmer field schools and extension services have been provided to share best practices of climate smart agriculture and LDN for the targeted communities (200 beneficiaries) <u>Output 3.2</u> Best practices examples and training material on natural and agricultural	**<u>Outcome 3:</u>** Awareness, planning, monitoring and decision-making capacity on climate smart agriculture production methods and LDN has increased in target communities	**40.000** **40.000**

		ecosystems' adaptation under the conditions of climate change are formulated, disseminated and made accessible *(4 training programs and thematic topics)*; <u>Output 3.3</u> Community based adaptation planning is conducted for target communities *(4 community-based adaptation plans formulated)* <u>Output 3.4</u> Strategies for sustaining climate smart agriculture and LDN in target areas have been formulated *(4 community-based* strategies *adaptation plans formulated)* <u>Output 3.5</u> Capacities of local stakeholders, including municipalities, CSOs (women, youth, environmental) are advanced;		**15.000** **15.000** **90,000**
Subtotal for Component 3.				**200.000**
	<u>Total: Project Components</u>			**3.432.852**
4.	Project/Programme Execution cost			**51.492**
5.	Total Project/Programme Cost			**3.484.344**
6.	Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			**296.169**
	Amount of Financing Requested			**3.780.513**

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	10 January 2024
Mid-term Review (if planned)	10 January 2026
Project/Programme Closing	10 January 2028
Terminal Evaluation	10 March 2028

PART II: PROJECT/PROGRAMME JUSTIFICATION

A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

Component 1: Community-based, Equitable, and Gender-Responsive Adaptive Capacity Strengthening

Adaptation Activities:

- **Rehabilitation of Irrigation Water Supply Systems:** By rehabilitating irrigation systems and introducing solar-powered pumps, this activity enhances water use efficiency. Communities can better manage water resources, ensuring reliable irrigation for crops even during water-scarce periods. This builds resilience against changing precipitation patterns.
- **Installation of Water Efficient Drip Irrigation Systems:** Drip irrigation conserves water by delivering it directly to plant roots. This minimizes water wastage and enhances plant growth. The activity contributes to water scarcity resilience while maintaining agricultural productivity.
- **Rehabilitation of Field Tracks to Remote Pastures:** Rehabilitating field tracks prevents soil erosion and land degradation caused by uncontrolled livestock grazing. Communities can control grazing patterns, mitigating overgrazing impacts and building the resilience of pasture lands.
- **Creation of Perennial Plant Sowing Areas:** Establishing perennial plants reduces soil erosion, improves soil fertility, and enhances biodiversity. This activity boosts ecosystem resilience by stabilizing landscapes and promoting sustainable land use.

- **Rehabilitation of Community Pastures and Hay Meadows:** By rehabilitating these ecosystems, communities enhance their capacity to withstand extreme weather events. Restored pastures and meadows are better equipped to recover from disturbances, contributing to overall landscape resilience.
- **Construction of Livestock Watering Points:** Constructing watering points ensures reliable water access for livestock, even during droughts. This minimizes stress on natural water sources, maintains livestock health, and supports climate-resilient livestock management.

Climate Resilience Contribution: These activities collectively enhance local communities' ability to manage water resources efficiently, mitigate land degradation, and sustainably manage pastures. By implementing climate-smart agricultural practices, communities can better withstand erratic weather patterns, prolonged droughts, and other climate-related stressors.

Component 2: Climate-Smart Agricultural Value Chain Strengthening

Adaptation Activities:

- **Introduction of Smart Agricultural Practices:** Anti-hail nets and shrub planting protect crops from extreme weather events, thus enhancing crop resilience against hailstorms and other adverse conditions.
- **Establishment of Non-Heated Greenhouses:** Greenhouses provide controlled environments, shielding crops from extreme temperatures and weather fluctuations. This enhances crop production stability and resilience in the face of climate variability.
- **Installation of Solar Dryers:** Solar dryers help communities preserve excess harvests, reducing food loss during unpredictable weather events. This activity supports food security and resilience against changing conditions.
- **Piloting of Agrivoltaic Systems:** Integrating solar energy with agriculture diversifies income sources and reduces dependency on traditional energy. This resilience-building activity ensures continued productivity in energy and agriculture sectors.
- **Construction of Demonstration Sites for Sustainable Land Management:** Demonstrating sustainable land management techniques encourages widespread adoption. Communities can build resilience against land degradation and promote long-term ecosystem health.
- **Establishment of Agro-Acceleration Hubs:** These hubs link farmers with markets, enabling swift response to market fluctuations and economic shocks. Diversified income sources enhance community resilience in changing economic environments.
- **Piloting of Model Agrotourism Facilities:** Agrotourism diversifies income and raises awareness about sustainable practices. This supports communities by creating alternative income streams that are less dependent on climate-sensitive activities.
- **Testing New Varieties of Crops:** Piloting heat and drought-resistant crop varieties ensures continued agricultural productivity under changing climate conditions.

Climate Resilience Contribution: These activities contribute to economic diversification, increased energy efficiency, and improved agricultural practices. By integrating renewable energy, enhancing food preservation, and diversifying income, communities build resilience against climate-induced disruptions in both energy and agriculture sectors.

These components and their adaptation activities collectively empower communities to adapt to climate change by adopting sustainable practices, enhancing resource efficiency, and creating alternative income streams. By strengthening local adaptive capacity and promoting resilient agricultural practices, the project contributes to climate resilience and lays the groundwork for a sustainable and climate-smart future.

B. Describe how the project/programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The Project offers a range of economic, social, and environmental benefits, with a strong focus on the most vulnerable communities and groups within those communities. Gender considerations are integrated throughout the project to ensure inclusivity and compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund. Here's a breakdown of how the project delivers these benefits while avoiding or mitigating negative impacts:

Economic Benefits:

- **Income Diversification:** The project's activities, such as the establishment of agro-acceleration hubs and model agrotourism facilities, provide new income sources for vulnerable communities. This diversification reduces economic vulnerability and dependence on climate-sensitive activities.
- **Enhanced Agricultural Productivity:** Through the introduction of climate-smart practices, technologies, and diversified crops, communities can achieve higher yields and better-quality produce. This boosts local economies and food security.
- **Value Chain Strengthening:** The project's focus on improving value chains enhances the marketability of agricultural products, leading to increased income for farmers and community members.

Social Benefits:

- **Capacity Building:** The project's training programs and farmer field schools empower vulnerable communities with the knowledge and skills needed to adapt to changing climate conditions. This capacity-building enhances their ability to make informed decisions and manage resources effectively.
- **Inclusive Participation:** The project prioritizes the participation of vulnerable groups, including women, youth, and marginalized households. Their involvement ensures that

project activities are tailored to their needs and challenges, promoting inclusivity and social equity.

- **Awareness and Education:** Through awareness campaigns and dissemination of training materials, the project educates communities about climate-smart practices, sustainable land management, and adaptation strategies. This fosters a culture of environmental stewardship and resilience.

Environmental Benefits:

- **Sustainable Land Management:** Activities like rehabilitating pastures, using drip irrigation, and introducing sustainable land management techniques help prevent soil erosion, enhance biodiversity, and restore degraded areas.
- **Energy Efficiency:** The adoption of energy-saving technologies, such as solar dryers and non-heated greenhouses, reduces reliance on fossil fuels and minimizes greenhouse gas emissions.
- **Preservation of Ecosystems:** The project's focus on sustainable practices contributes to the preservation of natural ecosystems, enhancing their capacity to provide ecosystem services and maintain biodiversity.

Gender Considerations:

- **Women's Empowerment:** The project ensures that women are active participants in decision-making processes, training programs, and income-generating activities. This empowers women economically and socially, reducing gender disparities.
- **Gender-Responsive Practices:** The project's design considers gender-specific needs and challenges, addressing them through tailored interventions. This fosters gender equality and ensures that project benefits are equally accessible to all.

Mitigating Negative Impacts:

- **Environmental Safeguards:** The project adheres to environmental policies, ensuring that activities do not result in habitat destruction or ecosystem disruption. Measures are taken to minimize negative environmental impacts.
- **Social Safeguards:** The project takes precautions to avoid social disruptions and displacement. Vulnerable groups are consulted to ensure that their rights and interests are protected throughout project implementation.
- **Gender Mainstreaming:** Gender considerations are integrated into every aspect of the project to ensure that activities do not inadvertently reinforce gender inequalities. Gender-responsive approaches are adopted to mitigate any potential negative impacts on vulnerable groups.

Overall, the project's comprehensive approach ensures that economic, social, and environmental benefits are maximized while negative impacts are minimized. It is grounded in the principles of inclusivity, sustainability, and gender equity, aligning with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

A robust emphasis on enhancing capacities, engaging stakeholders at various levels – from governmental officials to technical experts and local communities – will play a pivotal role in facilitating the integration of novel technologies within target communities. By doing so, the project ensures a financially prudent implementation. The amplification of impacts through training trainers and community champions will enable a broader sphere of influence, indirectly involving a greater number of individuals in the project's ambit. The methodological tool of structured information dissemination will empower a myriad of citizens and civil society organizations, equipping them with skills to participate actively in community life. Farmer field schools and the exchange of experiential knowledge among peers serve as formidable conduits for sharing, replicating, and scaling successful strategies that stem from analogous challenges. This knowledge-sharing ethos fosters adaptive local planning, heightens stakeholder involvement in decision-making, and spurs resilience and adaptation in realms such as agriculture and water management.

The project's execution will be characterized by its efficient cost utilization, achieved through the application of competitive procurement procedures for requisite goods and services, aligned with government regulations and the fiduciary guidance of the Adaptation Fund. Importantly, the project's implementation will predominantly involve community-led efforts, localized procurement of resources and labor, and prudent restrictions on international consultancy and material importation, where feasible. For instance, the installation of locally produced lightweight greenhouses and the construction of solar dryers present cost-effective solutions with positive local market value. A comprehensive analysis will be conducted during project preparation to ensure optimal cost management.

Table 1. - Benefits from proposed interventions, alternatives and reasons for not adopting

Benefits from the proposed intervention	Alternative measures and reasons for not adopting
Component 1. ➢ The specified interventions have the potential to bolster climate resilience by effectively harmonizing competing land-use systems, all the while diminishing poverty, enriching biodiversity, heightening yields, and curbing greenhouse gas emissions. Furthermore, these interventions contribute to amplified nutrient cycling, equitable water distribution, provision of shade, erosion control, and augmented carbon storage. ➢ Enabling capacity development for diversifying agricultural practices, including the adoption of agroforestry and drip irrigation systems for	➢ Traditional farming systems exhibit several common traits: ✓ Significant capital investments are required for production, investments often beyond the means of local communities. ✓ Scarce financial resources hinder the enhancement of land and soil quality. ✓ Relying on external energy inputs is prevalent. ✓ Conventional practices exacerbate challenges like intensifying land pressures and rapid deforestation. ✓ Employing surface irrigation escalates water consumption and resultant losses.

orchards, lays a sturdy foundation for sustainable food production. Establishing a sustainable basis for fodder production and augmenting crop yields from pastures and hay-meadows significantly raises agricultural productivity. ➢ Embracing a participatory approach involving both local women and men in the management of natural resources and adaptation planning not only mitigates management costs but also endows the project outcomes with lasting sustainability. ➢ The refurbishment of primary irrigation water supply systems yields a multitude of advantages: ➢ Substantial reduction in water leakages within the system. ➢ A notable increase in crop yield. ➢ Marked decrease in production costs. ➢ Reduced expenditure on maintenance. ➢ Markedly improved water use efficiency.	✓ Such practices also contribute to soil erosion.
Component 2. ➢ Implementation of energy-efficient technologies, such as solar dryers and unheated greenhouses, entails the subsequent advantages: ➢ Encouragement of energy conservation, resulting in reduced reliance on gas and wood, consequently curbing greenhouse gas emissions. ➢ High efficiency, with approximately 80% of radiation converted into heat energy. ➢ Diminished expenses related to electrical energy, thereby benefiting community finances. ➢ Facilitation of job opportunities, particularly for women. ➢ Minimized crop loss and enhancement of storage practices.	➢ Traditional approaches relying on gas, electric energy, and wood consumption incur costs that are notably 4 to 5 times higher; ➢ The application of conservation strategies through a top-down method, which restricts activities like grazing without offering alternative income avenues, has demonstrated its lack of success in previous attempts.
Component 3. ➢ Incorporating a participatory	➢ The imposition of new technologies from a top-down approach has generally yielded limited success within

methodology that engages both local women and men in the management of natural resources and adaptation planning will result in reduced management expenditures and ensure the long-term sustainability of outcomes. ➢ By enhancing the organizational proficiency of farmers and community groups and augmenting their comprehension of climate change and variability matters, beneficiaries will be better equipped to adapt to evolving climate conditions if necessary. Consequently, this will diminish their reliance on external interventions over time.	many agricultural communities. Instead of dictating specific farming methods, a more effective approach is likely to involve training, participatory planning, and presenting diverse options for farmers to select from.

D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

Proposed Project is architected around key national development strategies and aligned with relevant sectorial policies, frameworks and strategies at the national and sub-national levels. More specifically, the alignment is demonstrated through:

- **National Adaptation Plan (NAP), Sectorial Adaptation Plans (SAPs for Water and Agriculture), and Marz Adaptation Plans (MAPs)**: The project is aligned with the triangular adaptation building framework comprised of NAP, SAPs and MAPs that provides a roadmap for adapting to climate change, identifying priorities, and integrating adaptation into national planning processes. The Project is aligning its objectives, activities, and outcomes with the priorities and goals outlined in the NAP, SAPs and MAPs;
- **National Development Plans:** The Project is aligned with the country's national development plans (e.g. Government Strategy for 2022-2026), which outlines the government's overall development objectives and strategies. By aligning with this document, the Project can contribute to the achievement of broader national development goals and ensure coherence in resource allocation;
- **Sectoral Strategies and Plans:** The Project is aligned with the “Strategy of the Main Directions Ensuring Economic Development in Agricultural Sector of the Republic of Armenia for 2020-2030”, other relevant sectoral strategies and plans, such as that forestry, water resources, and disaster risk reduction. This alignment ensures that the project contributes to the resilience and sustainability of key sectors;

- **National Communication N4 to UNFCCC:** The Project considers the climate vulnerabilities and adaptation priorities outlined in the country's National Communications N4 to the United Nations Framework Convention on Climate Change (UNFCCC). These communications provide an overview of the country's climate change vulnerabilities, adaptation efforts, and capacity-building needs;
- **Stakeholder Consultations:** Engagement with national and sub-national stakeholders, including government agencies, local authorities, and civil society organizations, has been crucial to understand their priorities and ensuring the Project's alignment with their needs and aspirations;
- **Policy Integration:** The Project explicitly communicates how its objectives and activities contribute to the achievement of national and sub-national sustainable development objectives. It also outlines how it aligns with existing policies and how it complements other ongoing initiatives;
- **Reporting and Coordination:** The project will report its progress and outcomes to relevant government authorities, ensuring transparency and accountability. Coordination with existing development partners and projects will help to avoid duplication and enhance synergies;
- **Long-Term Vision:** The Project's design is structured around the long-term vision of the country's sustainable development. By embedding adaptation efforts within broader development goals, the project contributes to lasting impacts and sustainability;

Demonstrating alignment with national and sub-national sustainable development strategies enhances the Project's credibility, fosters collaboration with government agencies and stakeholders, and increases the likelihood of sustained support for the Project's implementation and its long-term benefits to the country's development goals.

E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

Ensuring alignment with Adaptation Fund’s Environmental and Social Policy require that projects supported address the adverse impacts of climate change while avoiding unnecessary environmental and social harms. The relevance of the Project to the ESP can be described as follows:

Environmental and Social Management Commitment: The Project demonstrates a strong commitment to environmental and social management by incorporating an environmental and social management system. The implementing entities involved in the project will be responsible for assessing and addressing potential environmental and social risks throughout the project cycle. They will identify measures to avoid, minimize, or mitigate these risks, ensuring that the project aligns with the principles outlined in the ESP.

Compliance with Environmental and Social Principles: The Project adheres to the environmental and social principles set forth in the ESP. It ensures compliance with applicable domestic and international laws and respects human rights, gender equity,

and the rights of marginalized and vulnerable groups. The project's design prioritizes fair and equitable access to benefits, while minimizing adverse effects on public health and cultural heritage. Additionally, the Project promotes the conservation of biodiversity and efficient use of resources, including pollution prevention and resource efficiency.

Environmental and Social Assessment and Management: The Project implements a screening process to identify potential environmental and social impacts and categorizes projects/programmes based on their severity. Category A projects/programmes with significant adverse impacts and Category B projects/programmes with less adverse impacts are subjected to a thorough environmental and social assessment. The assessment includes identifying risks and proposing measures for mitigation and management. Implementing entities are responsible for monitoring and reporting on the status of these measures throughout the project's life.

Stakeholder Engagement and Grievance Mechanism: The Project incorporates stakeholder engagement and consultation to ensure the informed participation of all relevant stakeholders. It allows affected communities and individuals to voice their concerns through a grievance mechanism, which provides a transparent and accessible process for addressing complaints related to environmental or social harms caused by the project.

F. Describe if there is duplication of project/programme with other funding sources, if any.

Comprehensive desk research and rigorous stakeholders' consultation made sure that there is no duplication of efforts with other projects and initiatives. However, to avoid duplication with other funding sources in the future, the Project will implement several strategies to ensure coordination and collaboration with existing initiatives. Here's how the Project can take steps to prevent duplication:

- **Stakeholder Mapping:** Identify all relevant stakeholders, projects, and programmes operating in the target area. This includes government agencies, non-governmental organizations, international organizations, and other development partners;
- **Engage in Consultations:** Initiate consultations with relevant stakeholders to understand ongoing and planned projects. This will help to identify areas of alignment and potential overlaps;
- **Coordination Mechanisms:** Establish coordination mechanisms, such as regular meetings, workshops, and working groups, to share information and updates with other projects. This will encourage collaboration and ensure that everyone is aware of each other's activities;
- **Information Sharing:** Develop a platform or system for sharing information about the Project's goals, activities, and progress with other relevant projects. This transparency will help to avoid unintentional duplication;
- **Gap Analysis:** Conduct a thorough analysis to identify gaps or areas not covered by existing initiatives. Tailor the proposed Project's activities to address these gaps, ensuring that resources are used effectively;

- **Complementary Activities:** Collaborate with other projects to identify areas where activities can complement each other. For instance, if another Project is focusing on water resource management, this Project could focus on sustainable agriculture practices;
- **Resource Pooling:** Explore opportunities for sharing resources, expertise, and capacities with other projects. This will lead to more efficient utilization of resources and avoid duplication of efforts;
- **Clearly Defined Roles:** Clearly define the roles and responsibilities of each project and ensure that there is no overlap in terms of geographical coverage, target beneficiaries, and activities;
- **Joint Planning:** Engage in joint planning sessions with other projects to develop a coherent and integrated approach to addressing common challenges;
- **Regular Monitoring and Feedback:** Maintain regular communication and feedback loops with other projects to monitor progress and adjust activities if needed to prevent overlap;
- **Scale and Scope:** Ensure that the scale and scope of the proposed Project aligns with the specific niche it aims to fill, and that it doesn't duplicate efforts that are already being adequately addressed by other initiatives;
- **Reporting and Evaluation:** Include reporting requirements that detail how the project is coordinating with other initiatives to prevent duplication. Regular evaluation can help assess the effectiveness of coordination efforts;

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The learning and knowledge management component of the project plays a pivotal role in capturing, organizing, and disseminating valuable lessons learned throughout the project lifecycle. This process ensures that experiences, successes, challenges, and best practices are shared effectively to inform future actions, policies, and projects. The learning and knowledge management framework comprises the following key aspects:

Data Collection and Documentation: Relevant project activities, outcomes, and impacts are systematically recorded. This includes comprehensive documentation of implementation processes, methodologies, and stakeholder engagement.

Monitoring and Evaluation: Robust monitoring and evaluation mechanisms are established to track progress, assess outcomes, and gauge the effectiveness of interventions. Regular evaluations provide insights into what works, what needs adjustments, and what lessons can be drawn.

Lesson Identification: Throughout the project, lessons learned, both positive and negative, are identified through a participatory process involving stakeholders. This includes community members, experts, project staff, and relevant authorities.

Knowledge Sharing Workshops: Periodic workshops and forums are organized to

facilitate the exchange of experiences and knowledge. Stakeholders convene to discuss challenges faced, strategies employed, and innovative solutions developed.

Knowledge Repositories: A digital repository is established to compile project-related documents, reports, case studies, and resources. This accessible database ensures that stakeholders can access valuable information and lessons learned at any point.

Capacity Building: Targeted capacity-building activities are conducted to equip stakeholders with skills in documentation, knowledge sharing, and learning processes. This empowers individuals to contribute effectively to the knowledge management cycle.

Knowledge Dissemination: Information is disseminated through various channels, such as reports, publications, webinars, and community meetings. The aim is to reach a wide audience, including other projects, policymakers, researchers, and the general public.

Adaptation of Strategies: Lessons learned contribute to adaptive management. Insights gained from successes and challenges inform adjustments to strategies, enhancing project effectiveness and sustainability.

Replication and Scaling: Successful practices and innovative solutions identified through lessons learned are scaled up to benefit a larger audience. This fosters the broader application of effective strategies in similar contexts.

Feedback Loop: The knowledge management process incorporates a feedback loop that encourages continuous improvement. Stakeholders are encouraged to provide input, reflecting on the effectiveness of shared lessons.

Overall, the learning and knowledge management component serves as a dynamic and cyclical process that facilitates the dissemination of insights, encourages ongoing learning, and ensures that the project's impact extends beyond its immediate scope, contributing to the advancement of climate-smart agriculture and sustainable land management practices.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

During the Project's appraisal phase, extensive consultations have already been conducted with key stakeholder groups, including pertinent national entities, representatives of regional and municipal administrations, civil society organizations (CSOs), academia, and representatives from vulnerable communities[23]. These preliminary discussions have proven pivotal in comprehending the Project's significance and have furnished invaluable insights that have contributed to shaping

[23] Provided in the Annex I. to this Proposal

the initial roster of sectors and sub-sectors expounded in the proposal. It's noteworthy that these preliminary consultations will be succeeded by thorough and all-encompassing dialogues during the full proposal design phase, aimed at further refining and validating the Project's approach.

The engagement of these diverse stakeholder groups has played a decisive role in ensuring that the Project effectively addresses the exigencies and priorities of sectors and sub-sectors pinpointed as crucial for intervention and elaborated throughout the document. National entities and regional authorities have shared their expertise, providing context-specific insights into climate vulnerabilities and the requisites for adaptation. Representatives of municipal administrations have furnished invaluable perspectives on the localized repercussions of climate change and the unique challenges faced by communities.

CSOs have occupied a central role in advocating for the inclusion of vulnerable communities and marginalized groups in the decision-making process. Their contributions have been instrumental in identifying targeted interventions to augment the resilience of these communities. Academia's involvement has injected research-driven knowledge and technical proficiency, enriching the project's blueprint with innovative solutions and exemplar practices.

The consultative process has also underscored the significance of gender considerations, ensuring that the viewpoints and needs of women and other vulnerable groups are accorded due attention. Via these consultations, the Project preparation team has garnered a deeper insight into the disparate impacts of climate change across different genders and demographics.

Collectively, the inclusive and participatory nature of these consultations has underscored the Project's importance and its potential to effectively counteract the adverse impacts of climate change. The initial compilation of sectors and sub-sectors pinpointed during these discussions forms a foundational framework, serving as a robust starting point that furnishes a comprehensive groundwork for the ensuing rigorous consultations during the full proposal design phase. This iterative approach ensures that the Project is meticulously tailored to the specific requisites and priorities of the communities it aims to benefit, thereby maximizing its positive influence on climate resilience and adaptation.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

The funding request for this project is well-justified, with a strong emphasis on the full cost of adaptation. The total budgetary requirement for this project amounts to 3,797,030 USD, encompassing both project management and project execution fees. The funding request has been formulated based on available estimates of the expenses associated with the proposed climate-smart agricultural technologies, technology transfer, and capacity-building endeavors across four communities.

The comprehensive funding is vital to enable the successful implementation of a multifaceted strategy aimed at enhancing the resilience and adaptive capacity of

communities within the "Khosrov Forest" State Reserve, "Dilijan" National Park and “Lake Sevan” National Park adjacent areas. Several key justifications underline the necessity of the requested funding:

- **Holistic Approach to Adaptation:** The funding request encompasses a wide range of sectors critical for climate change adaptation, including degraded ecosystems, infrastructure, agriculture, water resources, energy efficiency, and supplementary income generation. This holistic approach addresses various dimensions of vulnerability, ensuring a comprehensive and effective response to the multifaceted challenges posed by climate change.
- **Technological and Knowledge Transfer:** The requested funds are essential to facilitate the transfer of climate-smart agricultural technologies and knowledge to local communities. These technologies, such as solar dryers, non-heated greenhouses, and drip irrigation systems, require initial investments for installation and training. However, they yield long-term benefits by increasing agricultural productivity, reducing losses, and enhancing water use efficiency.
- **Enhanced Adaptive Capacity:** The funding supports capacity-building initiatives for communities, producers, institutions, and stakeholders. This is crucial to bolster their understanding of climate change impacts and adaptation strategies. Strengthening adaptive capacities empowers these stakeholders to make informed decisions and implement effective measures in the face of changing climatic conditions.
- **Reducing Climate Risks:** The project's interventions aim to reduce the negative impacts of climate change, such as increased vulnerability to extreme weather events, water scarcity, and decreased agricultural yields. By investing in climate-resilient infrastructure, sustainable land management practices, and diversified income sources, the project mitigates these risks and fosters long-term sustainability.
- **Maximizing Long-Term Benefits:** While the initial costs of adaptation measures might seem significant, they lead to substantial long-term benefits. For instance, investments in energy-efficient technologies reduce ongoing operational costs, enhance resource efficiency, and contribute to carbon emissions reduction, resulting in economic and environmental gains over time.
- **Community Empowerment:** Adequate funding ensures active community involvement in decision-making processes and project implementation. Empowered communities are more likely to take ownership of adaptation strategies, ensuring their long-term effectiveness and sustainability.
- **Gender-Inclusive Approach:** The funding supports a gender-responsive approach, ensuring that the perspectives and needs of women and other vulnerable groups are integrated into adaptation strategies. This inclusivity not only fosters social equity but also improves the effectiveness of interventions.

In conclusion, the requested funding aligns with the full cost of adaptation, encompassing a broad spectrum of sectors, technological transfer, capacity building, and community empowerment. By addressing the complexities of climate change impacts comprehensively, the funding contributes to building a resilient future for the targeted communities, safeguarding livelihoods, enhancing environmental

sustainability, and promoting long-term well-being.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.

The sustainability of project outcomes has been a paramount consideration throughout the project's design, ensuring that the interventions deliver lasting benefits to the communities and ecosystems targeted within the "Khosrov Forest" State Reserve and "Dilijan" National Park adjacent areas. Several key strategies have been incorporated to ensure the sustainability of project outcomes:

- **Community Engagement and Ownership:** The project places a strong emphasis on participatory approaches, involving local communities, women, men, and vulnerable groups in decision-making processes. By actively engaging communities from the outset, the project fosters a sense of ownership, ensuring that beneficiaries are invested in the success of the interventions.
- **Capacity Building and Knowledge Transfer:** The project's capacity-building initiatives empower communities, producers, institutions, and stakeholders with the knowledge and skills needed to understand and address climate change impacts. This knowledge transfer not only enhances their adaptive capacities but also equips them to sustainably manage resources beyond the project's duration.
- **Technology Transfer and Local Solutions:** The adoption of climate-smart agricultural technologies, such as solar dryers, greenhouses, and drip irrigation systems, not only improves productivity but also strengthens local self-reliance. By training locals to operate and maintain these technologies, the project ensures that they continue to derive benefits even after project completion.
- **Gender Equity and Social Inclusion:** The project takes into account the different needs and roles of women and men, acknowledging their contributions and vulnerabilities. This gender-responsive approach not only enhances the effectiveness of interventions but also promotes social equity and inclusivity, contributing to long-term sustainability.
- **Economic Viability:** The project seeks to diversify income sources and enhance livelihoods through interventions like agroforestry and sustainable land management. By increasing income opportunities for communities, the project reduces dependence on external interventions and establishes economic resilience.
- **Institutional Strengthening:** Collaboration with national agencies, regional authorities, and civil society organizations helps strengthen institutional frameworks for climate change adaptation. These partnerships contribute to the sustainability of project outcomes by integrating climate resilience into policy and planning processes.
- **Monitoring and Adaptive Management:** Robust monitoring and evaluation mechanisms are integral to the project's design. Regular assessment of progress and impacts allows for adjustments and improvements based on real-time feedback, ensuring that interventions remain effective and responsive to changing circumstances.

- **Replication and Scaling:** The project is designed to be scalable and replicable in other vulnerable areas. Lessons learned, best practices, and successful strategies will be documented and shared, enabling the broader dissemination of effective approaches.
- In conclusion, the sustainability of project outcomes has been meticulously integrated into the project's design through community involvement, capacity building, technology transfer, gender equity, economic viability, institutional strengthening, monitoring, and replication strategies. These measures collectively ensure that the positive impacts of the interventions endure well beyond the project's conclusion, fostering resilience and adaptive capacity for the long term.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	All activities of the proposed Project are in line with RA laws and regulatory acts and there is no need for additional assessment on their conformity.	
Access and Equity		Further assessment is required as the project may not be sufficiently accessible to all groups.
Marginalized and Vulnerable Groups	Project activities does not have negative impacts on vulnerable and marginalized groups.	
Human Rights	Human rights in natural resources use, equity, education, health, and other relevant sectors are protected by the Constitution of the Republic of Armenia and other relevant laws. The Project's activities does not have negative impact on the human rights of the inhabitants of beneficiary	

	communities.	
Gender Equality and Women's Empowerment	Issues of gender equality and women's empowerment, as in case with other developing nations including Armenia, are under scrutiny, influenced by cultural nuances. Women possess distinct capabilities and play essential roles, particularly in rural settings where they engage in daily tasks and contribute to family and rural decisions. Although gender matters have not been explored extensively in prior studies, there could be potential risks in women's involvement.	Design of comprehensive Gender Action will be required.
Core Labour Rights	The protection of Core Labour Rights in Armenia is guaranteed by RA national legislation, including international conventions ratified by the country.	
Indigenous Peoples	Armenia's population is homogeneous (around 96%), so there is no issue of potential violation of the rights of indigenous people.	
Involuntary Resettlement	Project implementation does not include any resettlement of residents. No further assessment is required for involuntary resettlement.	
Protection of Natural Habitats		Further assessment is required to ensure that the interventions will cause no harm to natural habitats.
Conservation of Biological Diversity	Project activities will not have a negative impact on biodiversity conservation as within project design activities will ensure that the flora and fauna within the project area is conserved.	

Climate Change	The project does not have a negative impact on climate change. It will not generate significant and / or unjustified increase in greenhouse gas emissions or any other cause of climate change. Moreover, the creation of forested park will contribute to CO2 absorption and milder microclimate. No project interventions are expected to contribute to release of gases responsible for CC and thus are not expected to contribute to GHG emissions.	
Pollution Prevention and Resource Efficiency	Project is not expected to generate any environmental pollution and aims for higher resource efficiency for better management of available natural resources. Industrial wastes are stone residues that originate from quarrying. During the exploitation of quarries, the environment has been polluted by dust particles. The residents of the areas adjacent to floodplains crossing the town dump garbage into the floodplain, due to insufficient number of bins causing clogging during heavy rains and snowfall and causing floods thus creating anti-sanitary conditions that can cause infectious diseases during hot summers.	
Public Health	The stability of ecosystem balance will contribute to the improvement of public health. Thus, no adverse impact on public health related issues is envisaged.	
Physical and Cultural Heritage	During site assessments, heads of communities were consulted to make sure any cultural sites and sites with	

	unique natural values are identified. As a result of this, EPIU has determined that there are no physical and cultural heritage sites in interventions envisaged by the program: closed quarry, gorges, natural, and agricultural landscapes. The activities envisaged by the Project are not implemented in such sites where there are physical and cultural heritage monuments	
Lands and Soil Conservation	Restoration activities are envisaged to help in land and soil conservation and will not create any damages to land and soil resources.	

After undergoing initial screening, the proposed project concept is anticipated to align with Category B of the Adaptation Fund's Environmental and Social Policy (ESP), as its implementation is not expected to yield significant adverse environmental or social impacts. The Republic of Armenia, having been a member of the International Labour Organization (ILO) since 1992, has ratified all eight ILO Fundamental Conventions. This commitment ensures the application of ILO Core Labour Standards, including vital aspects such as freedom of association, collective bargaining, elimination of forced labor, eradication of child labor, and non-discrimination in employment.

Armenian national legislation is fortified by laws and regulations that enforce ILO Core Labour standards. These regulations include the Law on Children's Rights (1996), Governmental Decision on identifying hazardous work for minors and women (2005), Law on Guaranteeing Equal Rights and Opportunities for Women and Men (2013), Law on Employment (2013), and the Labour Code (2004).

In compliance with Armenian labor laws, the general age for employment admission is 16, with hazardous work requiring a minimum age of 18. Adolescents aged 14 to 16 can engage in employment with written parental consent, provided the work doesn't jeopardize their well-being, safety, education, or ethics. The Labor Code specifically forbids individuals under 18 from night work and weekend or holiday labor. However, these regulations might not extend to informal, self-employed, or unpaid work settings.

A noteworthy observation is that cultural, traditional, or religious grounds within Armenia, particularly within the project area, do not give rise to differential benefits allocation between genders. Consequently, no further assessment is deemed necessary in this context. It is worth mentioning that assessments conducted previously have not revealed any significant gender-related concerns. While potential risks associated with women's involvement exist, necessary mitigation measures will be elucidated in part 3 of the project.

Armenia's status as a member of the Council of Europe underscores its commitment to gender equality and human rights. The project area, which includes predominantly ethnic Russian residents, has responded favorably to the project's objectives and activities. The project anticipates the renovation of existing roads and irrigation networks, measures that are projected to have a limited negative environmental impact.

The adoption of climate-smart agriculture, facilitated by innovative technologies and organic fertilizers, is poised to augment adaptability while simultaneously bolstering land conditions and minimizing environmental harm. Moreover, the utilization of lightweight construction techniques is expected to prevent soil damage and environmental pollution. A comprehensive and thorough risk identification, mitigation, and prevention strategy, including the formulation of an Environmental and Social Management Plan, will be detailed in the meticulously developed project proposal.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project/programme implementation.

The project is slated for a four-year implementation period commencing in September 2024. The designated implementing entity (IE) for this endeavor will be the Environmental Project Implementation Unit (EPIU), which serves as the National Implementing Entity for the Adaptation Fund. The Government of the Republic of Armenia has specifically endorsed EPIU's role in executing this project, drawing upon its extensive experience, successful track record, and established collaborations with national stakeholders, including public and private entities, academia, and NGOs.

The Project Management Board (PMB) will assume responsibility for making key decisions pertaining to the project. Its role extends to project assurance through

monitoring and evaluation, performance enhancement, accountability, and learning. The PMB will approve multi-year and annual work plans, supervise their execution, and review reports. This board will comprise representatives from relevant ministries, local self-government bodies, and EPIU staff, with one member selected as the PMB secretary.

EPIU, functioning as the National Implementing Entity (NIE), will manage the project comprehensively. It will facilitate interactions with the Adaptation Fund Board (AFB) and relevant stakeholders, oversee portfolio implementation and budget reporting, ensure quality output and deliverables, manage fund disbursement, monitor progress, incorporate lessons learned into future projects, and maintain relationships with stakeholders.

Project management on a day-to-day basis will be overseen by EPIU's project management unit, in collaboration with beneficiary communities. This unit will assume responsibilities encompassing monitoring and evaluation in adherence to the Adaptation Fund's social and environmental standards, gender-responsive indicators, procurement of goods and services, technical expertise mobilization, and risk mitigation. The recruitment of specialized experts, such as project coordinators, procurement specialists, accountants, social and gender specialists, environmental specialists, and monitoring and evaluation specialists, will be conducted to ensure effective coordination, implementation, and monitoring.

To guarantee equal gender benefits from the adaptation measures introduced, a **Gender Action Plan** (GAP) will be crafted for the project during the inception stage. The GAP will feature gender-responsive indicators, gender-sensitive planning, implementation, and monitoring processes, and gender monitoring visits to project sites. The Social and Gender Specialist will lead GAP implementation, gender assessments, and awareness-raising workshops, as well as gender sensitivity training for project staff.

A grievance redress mechanism is established and managed by EPIU to enable stakeholders from target communities to submit concerns and complaints related to the project. This mechanism adheres to international best practices and offers various means of communication for raising concerns, including email, phone calls, and social media. Complaints will be handled transparently and effectively, with a gender-sensitive approach. Regular monitoring of the mechanism will be carried out by EPIU to address feedback and resolve concerns in consultation with relevant agencies as needed.

B. Describe the measures for financial and project/programme risk management.

Risk	Probability	Impact	Mitigation Measures
Institutional Risks			
Not all essential stakeholders might possess the necessary capacity and dedication to	Medium	High	➢ The Project will capitalize on an active approach to stakeholder

actively engage throughout the entire process, spanning from inception to completion, and some could perceive exclusion. Subsequently, resistance may arise from certain stakeholders when it comes to embracing the proposed measures.			engagement, fostering regular consultations within the designated beneficiary communities: ➢ To ensure equitable participation across various segments such as women, youth, the elderly, and potentially vulnerable groups, focused consultations and collaborative working groups will be established. These avenues will provide ample opportunities for addressing the distinct requirements of these stakeholder categories. ➢ The process of selecting project beneficiaries will entail multiple stages: (1) identifying potential beneficiaries through community consultation meetings, (2) municipalities offering recommendations, and (3) final beneficiaries chosen via face-to-face meetings and farm visits. These visits will evaluate the beneficiary's farming skills and readiness to embrace the project's terms. ➢ To facilitate community members and stakeholders in raising concerns, a grievance redress mechanism will be implemented.
Project outcomes, including properties such as, greenhouses, dryers,	Low	Medium	➢ Binding legal agreements will be established with

etc. are not well protected			beneficiaries who receive project assets such as greenhouses and dryers. These agreements will outline the beneficiaries' responsibility to uphold the assets' functionality and cover any repair costs required to maintain their operational status. In instances of negligence, the contract will specify the obligation to return the asset to the project in proper working order for potential reassignment to other beneficiaries. ➢ Beneficiaries will also receive informative materials and leaflets detailing proper maintenance and operation of the provided assets. ➢ The assets distributed will be marked with the logos of the project and the Project Implementation Unit (PIU).
Delays in project implementation including those related to delayed procurement	Low	High	➢ During the Project inception stage, the project's implementation plan will be revised and updated. ➢ The advancement of project implementation within set timelines will be overseen through bi-weekly meetings conducted by the PIU team.

			➢ Adherence to the Republic of Armenia's public procurement procedures is required by the PIU, where specific minimum timelines for various procurement stages are defined. To mitigate potential delays resulting from delayed procurement, the project timeframe includes maximum deadlines. ➢ Project activities have been meticulously prepared for completion within the proposed timeline. ➢ Monitoring initiatives will guarantee the realization of implementation objectives throughout the project's execution.
Implementation capacity constraints with limited human resources in national and regional authorities to ensure a timely implementation and the sustainability of the project.	Low	Low	➢ Knowledge and awareness building is one of the key components of the project. ➢ Project will equip all relevant authority workers, decision makers and local population will have sufficient knowledge on the landscape and ecosystem adaptation to climate change and efficient management of climate smart agricultural techniques.
Social Risks			
Project beneficiaries are resistant to change and/or the new technologies	Medium	Medium	➢ During the implementation phase consultations of

applied are difficult to manage			different stakeholders will ensure the ownership building for the project. ➢ Project will ensure active participation of stakeholders ➢ Awareness and knowledge raising activities will increase the capacity for managing the new technologies applied and will ensure that beneficiaries are not resistant towards adaptation activities.
Financial Risks			
Mismanagement of resources	Low	High	➢ Financial risk management will be possible by continuous evaluations, audits and reports as mentioned in M&E plan of the project.
Delays in the disbursement of funds.	Low	Low	➢ EPIU will ensure that all the funds are properly managed; all procurement activities are completed in a timely manner.

C. Measures for environmental and social risk management, in line with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

Risk	Probability	Impact	Mitigation Measures
Land and biodiversity degradation	*High*	*High*	➢ **Baseline Assessment:** Conduct a comprehensive baseline assessment to understand the current state of land and

			biodiversity in project areas. ➢ **Resource Mapping:** Implement resource mapping exercises to identify vulnerable ecosystems and species. ➢ **Conservation Plans:** Develop and implement conservation plans to protect and restore degraded lands and biodiversity. ➢ **Stakeholder Engagement:** Engage local communities and stakeholders in conservation efforts, fostering a sense of ownership and responsibility. ➢ **Capacity Building:** Provide training to local communities on sustainable land use practices and biodiversity conservation. ➢ **Monitoring:** Establish regular monitoring mechanisms to track changes in land and biodiversity health. ➢ **Contingency Plans:** Develop contingency plans to address unexpected land and biodiversity degradation.
Weak infrastructure and limited climate technology adoption	*Medium*	*High*	➢ **Infrastructure Assessment:** Assess existing infrastructure and identify weaknesses. ➢ **Infrastructure Improvement:** Invest in infrastructure upgrades, particularly for irrigation systems and roads. ➢ **Climate Technology Training:** Provide training on climate-resilient agricultural practices and technologies. ➢ **Technology Adoption Support:** Facilitate the adoption of climate-resilient technologies through capacity building. ➢ **Awareness Campaigns:** Launch awareness campaigns to promote the benefits of climate-resilient technologies. ➢ **Monitoring and Evaluation:**

			Implement rigorous monitoring and evaluation of infrastructure and technology adoption. ➢ **Community Resilience Plans:** Work with communities to develop resilience plans for addressing infrastructure challenges.
Poverty and lack of alternative income sources	*High*	*High*	➢ **Livelihood Diversification:** Facilitate livelihood diversification programs to reduce dependency on natural resources. ➢ **Alternative Income Generation:** Develop initiatives for alternative income generation, such as training in non-agricultural skills. ➢ **Social Safety Nets:** Implement social safety nets to support vulnerable populations during transitions. ➢ **Gender-Inclusive Programs:** Design gender-inclusive programs to ensure equitable access to income-generating opportunities. ➢ **Impact Assessments:** Conduct regular impact assessments of poverty reduction and income generation initiatives. ➢ **Community Empowerment:** Empower communities to take charge of their economic development through participatory processes.
Gender inequality and disparities	*Medium*	*High*	➢ **Gender Analysis:** Conduct a thorough gender analysis to identify existing disparities and gender-specific vulnerabilities. ➢ **Gender-Responsive Planning:** Integrate gender-responsive approaches into project planning and design. ➢ **Gender Mainstreaming:** Ensure that project activities consider the unique needs and roles of both women and men. ➢ **Capacity Building:** Provide gender-sensitive training to project staff and stakeholders to enhance their understanding of gender

			issues. ➢ **Women's Empowerment:** Implement initiatives that empower women in decision-making, economic activities, and leadership roles. ➢ **Gender-Disaggregated Data:** Collect and analyze gender-disaggregated data to monitor the project's impact on women and men separately. ➢ **Gender Audits:** Conduct periodic gender audits to assess the effectiveness of gender mainstreaming efforts. ➢ **Stakeholder Inclusivity:** Ensure the inclusion of women and marginalized groups in project activities and decision-making processes.

These measures align with the Environmental and Social Policy and Gender Policy of the Adaptation Fund and aim to address environmental, social, and gender-related risks associated with the Project. Regular monitoring and adaptation of these measures will be essential to effectively manage and mitigate risks throughout the project's lifecycle.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan, in compliance with the ESP and the Gender Policy of the Adaptation Fund.

The Project's monitoring and evaluation (M&E) arrangements encompass a comprehensive approach to oversee project progress and assess its outcomes. The M&E activities will be managed within the allocated M&E budget, as detailed below. Monitoring and evaluation will be a collaborative effort involving the Project Team, with verification by the National Implementing Entity (NIE). The progress will be evaluated based on predefined targets and indicators established in the Project Results Framework.

The Project Management Unit (PMU) will establish a robust system for monitoring the project's progress. This system will facilitate data collection and recording through participatory mechanisms, enabling the monitoring and evaluation of both outcome and output indicators. Key tasks during the Project Launch workshop will include introducing the project's results framework to all stakeholders, presenting the project team, fostering ownership, and planning the work plan in alignment with the project's results framework. This will involve defining roles, responsibilities, and functions of both the NIE and the Project Management team. Additionally, the M&E indicators, budget, and work plan will be collaboratively agreed upon and scheduled.

Throughout the project duration, the PMU and the dedicated monitoring and evaluation division will shoulder the responsibility for ongoing monitoring. Their actions will be guided by the Annual Operating Plan (AOP), which outlines all essential activities for the current year. Quarterly Status Reports (QSRs) will provide insights into the progress of executed activities. AOPs will be annually agreed upon during NIE meetings and will be guided by the project's results framework.

Several reports and evaluations will be developed over the project's lifecycle, including:

- **Inception Workshop Report:** This report, prepared after the inception workshop, will detail the roles, responsibilities, actions, and functions of all stakeholders. It will also encompass the first AOP and monitoring plan for the initial year.
- **Annual Operating Plan (AOP):** AOPs, to be approved by the NIE before each operating period, will outline all planned activities, milestones, and goals for the year. It will include the necessary financial activities relevant to the period.
- **Quarterly Status Reports (QSRs):** These reports, to be submitted by the project management unit at the end of each operating quarter, will track the execution of indicators as defined in the project results framework. They will also address challenges faced and constraints encountered during execution.
- **Annual Management Reports (AMR):** The AMR, covering the last AOP, will compare actual results against the targets and milestones outlined in the AOP. If necessary, it will propose improvements and corrective measures for the upcoming AOP.
- **External Audit Reports:** These reports, aligned with government Financial Regulations, will be prepared in conjunction with periodic financial statements.
- **Mid-term Evaluation:** Conducted halfway through project implementation, this external evaluation will assess progress towards achieving outcomes, taking into account project effectiveness and efficiency. It will suggest corrective actions if needed.
- **Final Report:** This report, presented three months before project completion, will primarily focus on assessing project results against planned outcomes. It will also evaluate project impacts and sustainability.
- **Final External Evaluation:** This evaluation will emphasize project impacts, sustainability, and long-term effects. It will provide recommendations for further actions to ensure project sustainability. These M&E arrangements will incorporate a gender-responsive stakeholder consultation process. If specific gender targets or gender-responsive outcomes are identified, a dedicated specialist will monitor these aspects closely.

M&E Budget breakdown:

Item	**Responsible**	**Project Lifespan**				**Total**
		1st year	**2nd year**	**3d year**	**4th year**	
Quarterly and annual	*EPIU PMU*	-	-	-	-	**-**

Reports						
Final Report	*EPIU PMU*	-	-	-	-	**-**
Project Management Board Meetings	*Project manager*	1,000$	1,000$	1,000$	1,000$	**4,000$**
Technical & copyright supervision	*Local expert/s*	10,000$	10,000$	10,000$	10,000$	**40,000$**
Inception and Final Workshops	*EPIU PMU*	2,000$	-	-	2,000$	**4,000$**
Mid-term evaluation	*International Expert*	-	-	20,000$	-	**20,000$**
Final Evaluation	*International Expert*	-	-	-	20,000$	**20,000$**
External Audit	*National audit company*	3,000$	3,000$	3,000$	3,000$	**12,000$**
TOTAL:		16,000$	14,000$	34,000$	36,000$	**100,000$**

E. Results framework for the project proposal, including milestones, targets and indicators

Result	Indicator	Baseline[24]	Milestone *(end of year 2)*	End of Project target	Means of verification	Responsibility
Objective: to scale up and replicate successful practices achieved during pilot project to reduce the climate risk vulnerability of local communities living adjacent to the "Khosrov Forest" and "Dilijan" National Parks through promoting sustainable and climate-resilient agricultural practices in degraded areas and buffer zones, thereby reducing climate-related risks and vulnerabilities in production systems while sustaining protected areas.	➢ **N** of Project beneficiaries *(direct & indirect)*; ➢ **%** of women beneficiaries; ➢ **N** of communities benefited; ➢ **N** of settlements benefited; ➢ **%** of vulnerable settlements benefited;	**16,000** beneficiaries out of which **40%** are women **2** communities **10** settlements **1%**	**26,000** beneficiaries **40%** **4** communities **6** settlements **2%**	**36,000** beneficiaries **40%** 6 communities 10 settlements **3%**	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Component 1: Community based, climate smart agricultural practices in degraded areas and buffer zone						
Outcome 1: Community based, climate smart agricultural practices are implemented in	➢ **N of ha** of land rehabilitated and with increased adaptation capacity;	➢ **N** of ha of land degraded in target communities; ➢ Water losses in irrigation system	➢ **N** of ha of land (**%**) rehabilitated; ➢ Water losses in irrigation system reduced to **50%** benefiting **30%** of	➢ **N** of ha of land (**%**) rehabilitated; ➢ Water losses in irrigation system reduced to **30%** benefiting **50%** of	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and	EPIU, targeted municipalities and settlements;

[24] Achieved in the result of implementation of the pilot Project

degraded areas to reduce climate risks vulnerability of production systems and sustain protected areas;	➢ Water loss in irrigation systems reduced; ➢ **%** of livestock benefitting adapted pasture management	reduced to **70%**; ➢ **10%** of livestock benefitting adapted pasture management	livestock;	livestock;	final reports; ➢ Impact assessment report (upon completion);	
Output 1.1 Irrigation water supply systems in 6 new municipalities are rehabilitated increasing water use efficiency;	➢ **Length** of irrigation system rehabilitated; ➢ **N** of solar-powered pumps installed;	➢ **6,200 m** of rehabilitated irrigation system; ➢ **4** installed solar-powered pumps;	➢ **7,200 m** of rehabilitated irrigation system; ➢ **3** installed solar-powered pumps;	➢ **12,000 m** of rehabilitated irrigation system; ➢ 6 installed solar-powered pumps;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 1.2 Orchards with drip irrigation system and anti-hail nets established;	➢ **N** of ha of orchards equipped with drip irrigation and anti-hail nets; ➢ **N** of communities benefited;	➢ **5.2** ha of orchards equipped with drip irrigation and anti-hail nets; ➢ **6** communities benefited;	➢ **4.0** ha of orchards equipped with drip irrigation and anti-hail nets; ➢ 3 communities benefited;	➢ **12.0** ha of orchards equipped with drip irrigation and anti-hail nets; ➢ 6 communities benefited;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 1.3 Existing field tracks to remote pastures degraded lands are rehabilitated;	➢ **%** of field tracks degraded / rehabilitated; ➢ **N of** km field tracks rehabilitated; ➢ **N** of culverts installed;	➢ **30%** of field tracks rehabilitated; ➢ **39.5** km rehabilitated; ➢ **50** culverts installed;	➢ **40%** of field tracks rehabilitated; ➢ **8.0** km rehabilitated; ➢ 15 culverts installed;	➢ **45%** of field tracks rehabilitated; ➢ **20.0** km rehabilitated; ➢ **25** culverts installed;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;

Output 1.4 Sowing areas of perennial plants are created reducing rangeland degradation *(30 ha of perennial sowing area established)*;	➢ **N** of ha of perennial sowing areas of perennial plants are created;	➢ **10** ha of perennial sowing areas of perennial plants are created;	➢ **25** ha of perennial sowing areas of perennial plants are created;	➢ **30** ha of perennial sowing areas of perennial plants are created;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 1.5 Community pastures and hay meadows are rehabilitated and improved their adaptive capacity;	➢ **N** of ha hay meadows, arable lands and pastures rehabilitated;	➢ **1,382** ha hay meadows, arable lands and pastures rehabilitated;	➢ **300** ha hay meadows, arable lands and pastures rehabilitated;	➢ **500** ha hay meadows, arable lands and pastures rehabilitated;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 1.6 Livestock watering points are constructed;	➢ **N** of watering points constructed	➢ **15** of watering points constructed	➢ 3 of watering points constructed	➢ 5 of watering points constructed	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 1.7 Architectural and design drawings and estimates;	➢ **N** of architectural and design drawings and estimates;	-	➢ 3 architectural and design drawings and estimates;	➢ 6 architectural and design drawings and estimates;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon	EPIU, targeted municipalities and settlements;

					completion);	
Component 2: Strengthening value chains and climate smart technology transfer for vulnerable communities						
Outcome 2: Value chains for climate smart agriculture are strengthened and climate smart technologies are accessible for vulnerable rural communities	➢ **N** of beneficiaries benefitting from climate smart technologies; ➢ Increased income, or avoided decrease in income; ➢ **%** of women beneficiaries benefitting from climate smart technologies	➢ **350** beneficiaries; ➢ **50%** of beneficiaries of climate smart technology are women;	➢ **500** beneficiaries; ➢ **50%** of beneficiaries of climate smart technology are women;	➢ **700** beneficiaries; ➢ **50%** of beneficiaries of climate smart technology are women;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 2.1 Smart agricultural practices in 6 municipalities are introduced, establishing berry orchards with drip irrigation system	➢ **N** of ha of berry orchards with drip irrigation system are constructed;	-	➢ **1** of ha of berry orchards with drip irrigation system are constructed;	➢ **3** of ha of berry orchards with drip irrigation system are constructed;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 2.2 Non-heated, lightweight greenhouses are constructed in priority community areas;	➢ **Surface** (m^2) of greenhouses constructed; ➢ **N** of beneficiaries with access to greenhouses; ➢ **%** of beneficiaries with access to green houses, which are women;	➢ **3,000** m^2 of greenhouses constructed; ➢ **100** beneficiaries with access to greenhouses; ➢ **70%** of beneficiaries with access to green houses, which are women;	➢ **1,500** m^2 of greenhouses constructed; ➢ **20** beneficiaries with access to greenhouses; ➢ **30%** of beneficiaries with access to green houses, which are women;	➢ **3,000** m^2 of greenhouses constructed; ➢ **40** beneficiaries with access to greenhouses; ➢ **40%** of beneficiaries with access to green houses, which are women;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;

Output 2.3 Solar dryers are installed in priority community areas;	➢ **N** of beneficiaries with access to solar driers; ➢ **%** of beneficiaries with access to solar driers, which are women;	➢ **100** beneficiaries with access to solar driers; ➢ **80%** of beneficiaries with access to solar driers, which are women;	➢ **120** beneficiaries with access to solar driers; ➢ **80%** of beneficiaries with access to solar driers, which are women;	➢ **140** beneficiaries with access to solar driers; ➢ **80%** of beneficiaries with access to solar driers, which are women;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 2.4 Community management and business plans are formulated for climate smart agricultural value chains;	➢ **N** of community management and business plans are formulated for climate smart agricultural value chains;	➢ **2** community management and business plans are formulated for climate smart agricultural value chains;	➢ **5** community management and business plans are formulated for climate smart agricultural value chains;	➢ 5 community management and business plans are formulated for climate smart agricultural value chains;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Business plans; ➢ M&E interim and final reports;	EPIU, targeted municipalities and settlements;
Output 2.5 Agrivoltaic systems are piloted;	➢ **N** of installations;	-	➢ **5** installations *(with 30 KW of installed capacity each);*	➢ **10** installations *(with 30 KW of installed capacity each);*	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 2.6 Demonstration sites for sustainable land management practices are constructed in each municipality;	➢ **N** of municipalities with installed demonstration sites on sustainable land management practices;	-	➢ **3** municipalities with installed demonstration sites on sustainable land management practices;	➢ 10 municipalities with installed demonstration sites on sustainable land management practices;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 2.7 2 agro-acceleration	➢ **N** of agro-acceleration	-	➢ **1** agro-acceleration	➢ **2** agro-acceleration	➢ 6 monthly project reports;	EPIU, targeted municipalities and

hubs are piloted to enhance integration with existing supply chains;	hubs piloted; ➢ **N** of beneficiaries benefited; ➢ **%** of women benefited;		hubs piloted; ➢ **30** of beneficiaries benefited, **50%** of which are women;	hubs piloted; ➢ **60** of beneficiaries benefited, **50%** of which are women;	➢ Annual PPRs; ➢ Surveys of beneficiaries; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	settlements;
Output 2.8 Model agrotourism facilities are piloted in every community;	➢ **N** of model agrotourism facilities piloted in every community; ➢ **N** of visitors;	-	➢ **6** model agrotourism facilities piloted in 3 communities; ➢ **500** of visitors;	➢ **12** of model agrotourism facilities piloted in 6 communities; ➢ **1,000** of visitors;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys of visitors; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 2.9 New varieties of dry and heat resistant crops are piloted	➢ **N** of new varieties of dry and heat resistant crops are piloted; ➢ **N** of beneficiaries piloted new crops;	-	➢ 3 new varieties of dry and heat resistant crops are piloted; ➢ **50** beneficiaries piloted new crops;	➢ 6 new varieties of dry and heat resistant crops are piloted; ➢ **100** beneficiaries piloted new crops;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys of beneficiaries; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Component 3: Awareness raising, capacity building, monitoring and decision making for climate smart agricultural practices						
Outcome 3: Awareness, planning, monitoring and decision-making capacity on climate smart agriculture production methods	➢ **N** of beneficiaries benefitting from awareness raising and capacity building for climate smart agriculture and	➢ **300** beneficiaries benefited from awareness raising and capacity building for climate smart agriculture and LDN;	➢ **450** beneficiaries benefited from awareness raising and capacity building for climate smart agriculture and LDN;	➢ **600** of beneficiaries benefitting from awareness raising and capacity building for climate smart agriculture and	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys of beneficiaries; ➢ M&E interim and final reports;	EPIU, targeted municipalities and settlements;

and LDN has increased in target communities	LDN; ➢ **%** of beneficiaries benefitting from awareness raising and capacity building for climate smart agriculture and LDN are women;	➢ **40%** of beneficiaries benefited from awareness raising and capacity building for climate smart agriculture and LDN are women;	➢ **40%** of beneficiaries benefited from awareness raising and capacity building for climate smart agriculture and LDN are women;	LDN; ➢ **40%** of beneficiaries benefited from awareness raising and capacity building for climate smart agriculture and LDN are women;	➢ Impact assessment report (upon completion);	
Output 3.1 Farmer field schools and extension services have been provided to share best practices of climate smart agriculture and LDN for the targeted communities;	➢ **N** of beneficiaries that are aware of climate change impacts and appropriate responses to threats; ➢ **%** of women beneficiaries that are aware of climate change impacts and appropriate responses to threats;	➢ **200** of beneficiaries that are aware of climate change impacts and appropriate responses to threats; ➢ **40%** of women beneficiaries that are aware of climate change impacts and appropriate responses to threats;	➢ **300** of beneficiaries that are aware of climate change impacts and appropriate responses to threats; ➢ **40%** of women beneficiaries that are aware of climate change impacts and appropriate responses to threats;	➢ **400** of beneficiaries that are aware of climate change impacts and appropriate responses to threats; ➢ **40%** of women beneficiaries that are aware of climate change impacts and appropriate responses to threats;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys of beneficiaries; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 3.2 Best practices examples and training material on natural and agricultural ecosystems' adaptation under the conditions of climate change are formulated, disseminated and made accessible;	➢ **N** of training programs and thematic topics for awareness raising at community level on climate change threats designed; ➢ **N** of community members benefited from the trainings; ➢ **%** of women	➢ **4** training materials are produced;	➢ **6** training programs and thematic topics for awareness raising at community level on climate change threats designed; ➢ **200** community members benefited from the trainings, of which **50%** are women;	➢ **8** of training programs and thematic topics for awareness raising at community level on climate change threats designed; ➢ **400** community members benefited from the trainings, of which **50%** are women;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Surveys of training participants; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;

	beneficiaries;					
Output 3.3 Community based adaptation planning is conducted for target communities;	➢ **N** of community-based adaptation plans formulated;	➢ **4** community-based adaptation plans formulated;	➢ 3 community-based adaptation plans formulated;	➢ 6 community-based adaptation plans formulated;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Community-based adaptation plans; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 3.4 Strategies for sustaining climate smart agriculture and LDN in target areas have been formulated;	➢ **N** of strategies for sustaining climate smart agriculture and LDN in target areas formulated;	➢ **3** strategies for sustaining climate smart agriculture and LDN in target areas formulated;	➢ **5** strategies for sustaining climate smart agriculture and LDN in target areas formulated;	➢ 6 strategies for sustaining climate smart agriculture and LDN in target areas formulated;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Strategies for sustaining climate smart agriculture and LDN; ➢ M&E interim and final reports; ➢ Impact assessment report (upon completion);	EPIU, targeted municipalities and settlements;
Output 3.5 Capacities of local stakeholders, including municipalities, CSOs (women, youth, environmental) are advanced;	➢ **N** of municipalities benefited from capacity building; ➢ **N** of women, youth and environmental CSOs benefited from capacity building;	-	➢ **3** municipalities benefited from capacity building; ➢ **5** women, youth and environmental CSOs benefited from capacity building;	➢ **6** municipalities benefited from capacity building; ➢ **10** women, youth and environmental CSOs benefited from capacity building;	➢ 6 monthly project reports; ➢ Annual PPRs; ➢ Municipalities' and CSO's mapping, capacity assessment and completion reports; ➢ M&E interim and	EPIU, targeted municipalities and settlements;

					final reports; ➢ Impact assessment report (upon completion);	

F. Project's alignment with the Results Framework of the Adaptation Fund

Project Objective(s)	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
The **overall objective** of the project is reducing the climate risk vulnerability of local communities living adjacent to the "Khosrov Forest", "Dilijan" and "Lake Sevan" National Parks through promoting sustainable and climate-resilient agricultural practices in degraded areas and buffer zones, thereby reducing climate-related risks and vulnerabilities in production systems while sustaining protected areas.	1. Threat level to ecosystems, related to climate change effects	Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress	5. Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	-
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Outcome 1: Community based, climate smart agricultural practices are implemented in degraded areas to reduce climate risks vulnerability of production systems and sustain protected areas.	Climate smart technologies are accessible for vulnerable rural communities;	Output 5: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change	**1,908,500**
Outcome 2: Value chains for climate smart agriculture are strengthened and climate smart technologies are accessible for vulnerable rural communities	Productivity of agricultural products has increased.	Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate	6.1.1.No. and type of adaptation assets (physical as well as knowledge) created in support of individual or community-	**1,324,352**

		change impacts, including variability	livelihood strategies 6.1.2. Type of income sources for households generated under climate change scenario	
Outcome 3: Awareness, planning, monitoring and decision-making capacity on climate smart agriculture production methods and LDN has increased in target communities.	The number of community workers, households, NGO representatives, Mass media representatives, schoolteachers and students participated in awareness and knowledge raising trainings.	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1 No. and type of risk reduction actions or strategies introduced at local level 3.1.2 No. of news outlets in the local press and media that have covered the topic	**200.000**

G. Detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

Output	Item	Budget Notes	Budget during Project lifespan (in USD)				Total Budget (in USD)	Comments
			Year 1	Year 2	Year 3	Year 4		
Component 1: Community based, climate smart agricultural practices in degraded areas and buffer zone								
Output 1.1 Irrigation water supply systems in 6 new municipalities are rehabilitated increasing water use efficiency *(12,000 m and 6 solar-powered pumps)*;	Construction Company N 1	Construction of the irrigation system	300,000	310,000	-	-	**610,000**	-
		Installation of 6 solar - powered pumps	30,000	40,000	-	-	**70,000**	-
		Establishment of parks without drip irrigation system	-	28,000	40,000	-	**68,000**	-
Output 1.2 Orchards with drip irrigation system and anti-hail nets will be established in 6 communities (12 ha);	Construction Company N 1	Construction of orchards with drip irrigation system and anti-hail nets	-	200,000	200,000	85,000	**485,000**	-
Output 1.3 Existing field tracks to remote pastures degraded lands are rehabilitated (15% of field tracks rehabilitated 20 km rehabilitated 25 culverts installed);	Construction Company N 2	Reconstruction of existing field tracks and Installation of water culverts	-	100,000	65,000	-	**165,000**	-
Output 1.4 Sowing areas of perennial plants are created reducing rangeland degradation *(30 ha of perennial sowing area established)*;	Implementing Company N 1	Establishment of perennial crop fields	18,000	30,000	30,000		**78,000**	-

Output 1.5 Community pastures and hay meadows are rehabilitated and improved their adaptive capacity *(500 ha hay meadows, pastures and arable lands rehabilitated)*;	Implementing Company N 1	Rehabilitation of community pastures and hay meadows	50,000	120,000	48,000	-	**218,000**	
		Rehabilitation of arable lands and	10,000	20,000	20,000	-	**50,000**	
Output 1.6 Livestock watering points are constructed *(5 watering points constructed)*;	Construction Company N1	Construction of livestock watering points	30,000	39,500			**69,500**	-
Output 1.7 Architectural and design drawings and estimates;	Architectural Design Company N 1	Preparation of Design-Estimated Document	55,000	40,000	-	-	**95,000**	-
Subtotal for Component 1			**493,000**	**927,500**	**403,000**	**85,000**	**1,908,500**	-
Component 2: Strengthening value chains and climate smart technology transfer for vulnerable communities								
Output 2.1 Smart agricultural practices in 6 municipalities are introduced, *establishing 3 ha berry orchards with drip irrigation system*	Implementing Company N 1	Smart agricultural practices, 3 ha of berry orchards with drip irrigation system	-	35,000	40,000	-	**75,000**	-
Output 2.2 Non-heated, lightweight greenhouses are constructed in priority community areas *(3000m2 of greenhouses constructed 40 beneficiaries)*	Construction Company N 2	Construction of solar greenhouses with drip irrigation	-	100,000	75,000	-	**175,000**	-
Output 2.3	Construction	Construction of the	30,000	30,000	30,000	34,352	**124,352**	-

Solar dryers are installed in priority community areas *(40 solar dryers constructed 40 beneficiaries)*	Company N 3	solar driers						
Output 2.4 Community management and business plans are formulated for climate smart agricultural value chains *(5 business plans formulated)*	Consulting Company N 1	Community management and business plans, including for climate smart agricultural value chains and increasing adaption of natural and agricultural ecosystems	30,000	35,000	-	-	**65,000**	-
Output 2.5 Agrivoltaic systems are piloted *(10 installations with 30 KW of installed capacity each)*	ESCO Company	Construction of the AgriVoltaic installations	-	200,000	205,000	-	**405,000**	-
Output 2.6 Demonstration sites for sustainable land management practices are constructed in each municipality;	Agricultural construction company	Construction of the demonstration sites	-	35,000	-	-	**35,000**	-
Output 2.7 2 agro-acceleration hubs are piloted to enhance integration with existing supply chains;	Construction Company N 3	Renovation of the premises for agro-accelerator	50,000	50,000	-	-	**100,000**	-
	Implementing Company N 2	Supply of the furniture for agro-accelerators	10,000	10,000	-	-	**20,000**	-
	Implementing Company N 3	Supply of office equipment for agro-accelerators	20,000	20,000	-	-	**40,000**	-
	Human Resources	Staff and experts for agro-accelerators	-	30,000	30,000	30,000	**90,000**	-
Output 2.8 2 model agrotourism	Construction Company N 3	Piloting model agro-tourism facilities in	30,000	40,000	40,000	40,000	**150,000**	-

facilities are piloted in every community		targeted municipalities						
Output 2.9 New varieties of dry and heat resistant crops are piloted	Implementing Company N 1	Piloting New varieties of dry and heat resistant crops in targeted municipalities	-	15,000	15,000	15,000	**45,000**	-
Subtotal for Component 2.			**170,000**	**600,000**	**435,000**	**119,352**	**1.324.352**	-
Component 3: Awareness raising, capacity building, monitoring and decision making for climate smart agricultural practices								
Output 3.1 Farmer field schools and extension services have been provided to share best practices of climate smart agriculture and LDN for the targeted communities *(200 beneficiaries)*	Consulting Company N 2	Workshops	5,000	-	-	-	**5,000**	-
		Development of questionnaires and conducting surveys	5,000	-	-		**5,000**	-
		Development of field schools training programs	5,000	-	-	-	**5,000**	-
		Organization of field school groups, knowledge enhancement, demonstration field experiments	-	10,000	10,000	5,000	**25,000**	-
Output 3.2 Best practices examples and training material on natural and agricultural ecosystems' adaptation under the conditions of climate change are formulated, disseminated and made accessible *(4 training programs and thematic topics)*;	Consulting Company N 3	Mapping and SWOT analysis of communities	10,000	-	-	-	**10,000**	-
		Develop a training and awareness-raising program,	5,000	-	-	-	**5,000**	-
		Develop topics for the project	2,500	-	-	-	**2,500**	-
		Implement knowledge and skills training program	-	10,000	10,000	2,500	**22,,500**	-
Output 3.3 Community based adaptation planning is conducted for target	Consulting Company N 4	Design of the community adaptation plans	-	15,000	-	-	**15,000**	-

communities *(4 community-based adaptation plans formulated)*								
Output 3.4 Strategies for sustaining climate smart agriculture and LDN in target areas have been formulated *(4 community-based strategies adaptation plans formulated)*	Consulting Company N 5	Develop strategies for sustaining climate smart agriculture and LDN in target areas	-	-	15,000	-	**15,000**	-
Output 3.5 Capacities of local stakeholders, including municipalities, CSOs *(women, youth, environmental)* are advanced;	Consulting Company N 6	Determine the existing non-governmental organizations, women, youth, environmental and other unions in the communities, develop and capacity building plan for them.	15,000	30,000	30,000	15,000	**90,000**	-
Subtotal for Component 3			**47,5**	**65,0**	**65,0**	**22,5**	**200,000**	
TOTAL for Project's Components			**710,500**	**1,592,500**	**903,000**	**226,852**	3,432,852	
Project Execution costs (EPIU)1.5% of total budget)			9,705	21,667	15,105	5,015	51,492	
TOTAL Project Costs			720,205	1,614,167	918,105	231,867	**3,484,344**	
IE Fee / Oversight Costs (*max 8.5% of total budget)			55,820	124,624	86,879	28,846	**296,169**	
GRAND TOTAL			**776,025**	**1,738,791**	**1,004,984**	**260,713**	**3,780,513**	

IE Fee / Oversight Costs *(*max 8.5% of total budget)*

Item	Responsible	Project Lifespan				Total
		1st year	2nd year	3d year	4th year	
I. Project Management						
Project Manager	*EPIU PMU*	15,750$	15,750$	15,750$	15,750$	**63,000$**
Project Coordinator	*EPIU PMU*	12,750$	12,750$	12,750$	12,750$	**51,000$**

Monitoring Specialist	*EPIU PMU*	7,250$	7,250$	7,250$	7,250$	**29,000$**
Social and Gender risk assessment specialist	*EPIU PMU*	7,250$	7,250$	7,250$	7,250$	**29,000$**
Environmental risk specialist	*EPIU PMU*	6,000$	6,000$	6,000$	6,000$	**24,000$**
Subtotal for Project Management		49,000$	49,000$	49,000$	49,000$	**196,000$**
II. Monitoring & Evaluation						
Quarterly and annual Reports	*EPIU PMU*	-	-	-	-	**-**
Final Report	*EPIU PMU*	-	-	-	-	**-**
Project Management Board Meetings	*Project manager*	1,000$	1,000$	1,000$	1,000$	**4,000$**
Technical & copyright supervision	*Local expert/s*	10,000$	10,000$	10,000$	10,000$	**40,000$**
Inception and Final Workshops	*EPIU PMU*	2,000$	-	-	2,000$	**4,000$**
Mid-term evaluation	*International Expert*	-	-	14,000$	-	**14,000$**
Final Evaluation	*International Expert*	-	-	-	14,000$	**14,000$**
External Audit	*National audit company*	3,000$	3,000$	3,000$	3,000$	**12,000$**
Translation		1,000	1,000	1,000	1,000	**4,000**
Other expenses		1,500	2,500	2,500	1,500	**8,000**
Subtotal for Monitoring & Evaluation		18,500$	17,500$	31,500$	32,500$	**100,000$**
TOTAL		**67,500 $**	**66,500$**	**80,500$**	**81,500$**	**296,000$**

Project Execution costs (EPIU)1.5% of total budget

Item	Project Lifespan				Total
	1st year	**2nd year**	**3d year**	**4th year**	
Finance Officer	4,000$	4,000$	4,000$	4,000$	**16,000$**
Administrative Support	3,000$	3,000$	3,000$	3,000$	**12,000$**
Procurement Specialist	2,500$	2,500$	2,500$	2,500$	**10,000$**
Field trips	2,500$	2,500$	2,500$	2,500$	**10,000$**
Misc	1,000$	1,000$	1,000$	492$	**3,492$**
TOTAL:	**13,000$**	**13,000$**	**13,000$**	**12,492$**	**51,492$**

ANNEX I.

Excerpt from the Stakeholder Consultations Report

I. Background

The “Environmental Project Implementation Unit” State Agency of the Ministry of Nature Protection of the Republic of Armenia (EPIU) has contracted Consultant to support in development of full proposals for Scaling up adaptation capacity in communities adjacent to arid zones and forest protected areas of Armenia and replicating successful mechanisms tested during pilot project;

One of the key components of the Consultant’s work is mapping of the environmental and climate change challenges existing in the most vulnerable communities of Armenia, as well as identification and development of potential interventions by the EPIU aimed at prevention or mitigation of the adverse impact on environment and increasing the climate change adaption capacities of the communities.

On July 24,2023 the Consultant’s team had a meeting with the management and respective experts of the EPIU. During the meeting the lists of the potential target communities of the upcoming project were discussed and agreed on (see the list of the potential target communities in the table below).

N	Region	Community	Stakeholder(s)
1.	Shirak	Ani consolidated community	Head and municipality officials
2.		Artik consolidated community	Head and municipality officials
3.		Ashotsk consolidated community	Head of the community and heads of all settlements administration
4.	Lori	Lermontovo community	Head and municipality officials
5.		Fioletovo consolidated community	Deputy head and municipality officials
6.	Tavush	Dilijan consolidated community	Head of the community and heads of all the settlements administration
7.	Gegharkunik	Sevan consolidated community	Municipality officials and heads of the Semyonovka and Tsovagyugh settlements administration
8.		“Sevan” National park	Officials of park
9.	Aragatsotn	Aragatsotn region	Deputy governor, head and other officials of the Agriculture and Environment protection Department of the Aragatsotn regional government

10.	Ararat	Vedi, Ararat and Artashat consolidated communities	Head and other officials of the Agriculture and Environment protection Department of the Ararat regional government, Municipality officials of the Vedi, Ararat and Artashat consolidated communities
11.	Armavir	Armavir region	Head and other officials of the Agriculture and Environment protection Department of the Armavir regional government
12.		Khoy consolidated community	Head and municipality officials

Stakeholder consultations have been conducted in the format of Focus Group Discussions (please see the photos in the Annex). For this purpose the Consultant's team has developed a questionnaire that would allow to reveal the environmental and climate change challenges existing in the communities, identify the impact of those challenges and identify potential interventions (see questionnaire in the table below).

N	Questions
1.	Are there any nearby mining or extraction activities? How do they impact the environment and the community's well-being?
2.	How is waste disposal managed in the community? Is there a proper waste management system in place, or is there evidence of improper waste dumping?
3.	What is the state of air quality in the community? Are there any noticeable sources of air pollution, such as burning of waste or biomass?
4.	Are there any industrial activities or agricultural practices nearby that potentially may release pollutants into the environment?
5.	Are there any specific health issues that might be related to environmental factors or climate change?
6.	How are energy needs met in the community? Are there renewable energy sources being utilized, or is there a reliance on fossil fuels?
7.	Is there any evidence of climate change impacts in the community? (e.g., extreme weather events, shifts in the timing of seasons, changes in precipitation patterns)
8.	How do changing weather patterns, such as extreme temperatures, droughts, floods, or storms, impact your daily lives and livelihoods?
9.	What are the common agricultural practices in the area? Are chemical fertilizers and pesticides used, and if so, are there potential risks to the environment and human health?
10.	What are the primary water sources for your community, and have you noticed any changes in their availability or quality due to climate-related factors?
11.	Is deforestation or land degradation (including erosion) a concern in the community?
12.	Are there any barriers or challenges hindering your community's ability to implement climate adaptation strategies?

II. Stakeholder consultations

During July 27 - August 1, 2023 Consultant's expert together with the EPIU's project implementation and monitoring department expert visited the pre-identified communities and had consultations with the relevant officials of the regional governments and communities.

The summary of the stakeholder consultations is as follows:

1. Shirak region: Ani consolidated community (consolidates 19 settlements), Artik consolidated community (consolidates 24 settlements), Ashotsk consolidated community (consolidates 25 settlements)

A. Mining or extraction activities

1. A.1. Ani community

- There are operational and non-operational mining sites in the territory of Dzorakap, Anipemza, Aniavan, Haykadzor and Bagravan settlements. The dust and dirt from the mining activities negatively impact the environment, air, humans, livestock, agricultural lands, etc.
- Heavy trucks and other machinery working in the mining sites destroy the roads of the nearby settlements.
- There is a closed stone mining site on about 5-6 hectares area between the Dzorakap and Maralik settlements. No conservation and reclamation works have been carried out.
- There is a non-operational (abandoned) stone mining site in Anipemza settlement dust from which (called Andesite Flour) is the cause of respiratory diseases among the inhabitants of Anipemza and Aniavan (Ani Kayaran) settlements.
- If a decision is made to recultivate and remediate land of any closed mining pit in the community there is around 250,000 m^3 of quality fertile soil extracted from different parts of the Shirak region during the construction of North-South Road Corridor.

1.A.2. Artik community

There are operational and non-operational mining sites that are mostly concentrated in the territory of Pemzashen, Tufashen, Nor Kyanq and Haritch settlements. The dust and dirt from the mining activities negatively impact the environment, air, humans, livestock, agricultural lands, etc. In addition, heavy trucks and other machinery working in the mining sites destroy the roads of the nearby settlements.

1.A.3. Ashotsk community

There is an operating basalt mining site in the Goghovit settlement. The dust and dirt from the mining activities negatively impact the environment, air, humans, livestock, agricultural lands, etc. In addition, heavy trucks and other machinery working in the mining site destroy the roads of the settlement.

B. Waste disposal and proper waste management

1.B.1. All 3 communities

- Waste disposal is organized by each communities'/settlements' respective services.
- There is not any centralized waste disposal or recycling facility neither in the communities nor in the region. Next to most of the settlements there are small landfills where the most waste from the settlements is dumped. Those landfills do not comply with any norms and standards defined by the legislation.
- There was a big project on construction of specialized solid waste disposal and recycling facility on the area of around 30 hectares near Beniamin settlement of Shirak region that should have been used for the whole Shirak region. However, the financing of that project was not ensured and facility had not been constructed.
- Ani and Ashotsk communities have shortage of waste collection trucks and waste bins
- In Artik community there is a need for reconstruction of 2 big mudflow canals and several bridges on those mudflow canals
- In the Mets Sepasar settlement of the Ashotsk community there is a biogas production facility. The waste from the settlement is used as a raw material. The capacity of the facility is 3,5 tons. The production capacity of the facility could be increased.

C. Major health concerns in the community

1.C.1. Ani consolidated community

Inhabitants of Anipemza and Aniavan (Ani Kayaran) settlements have respiratory diseases caused by the dust (called Andesite Flour) from the stone mining pit that has been exploited during the Soviet times. The mining pit is abandoned already 25 years.

1.C.2. Artik consolidated community

Inhabitants of Artik, Pemzashen, Tufashen and neighbouring settlements have respiratory diseases caused by the dust from the stone mining pits.

1.C.3. Ashotsk consolidated community

No major health issues.

D. Energy sources

1.D.1. All 3 communities

Almost all the energy consumed in all 3 communities is produced from fossil fuels. There are some private renewable (vast majority of which is solar) energy productions, but these are of small volumes and for own use only.

E. Climate change impacts in the community

1.E.1. All 3 communities

In all 3 communities there is an obvious impact of climate change. The negative impact of the climate change is observed as:

- droughts and reduction of the available water
- severe winds
- hails
- heavy rainfall

The positive impacts of climate change are also observed in all 3 communities. Particularly, currently new varieties of fruits, berries and vegetables (including high-value ones), that were impossible to grow in the region, now are growing.

F. Agricultural practices

1.F.1. All 3 communities

- The main agricultural activities in all 3 communities traditionally have been livestock breeding, crop cultivation and horticulture. The farmers in all 3 communities are using mainly “traditional” fertilizers, such as Ammonium nitrate, Superphosphate and Potassium chloride.
- Current agricultural practices also contribute to increasing the degradation of the soil. Hence, application of more sustainable agricultural practices such as intercropping, mixed cropping, no-till or reduced tillage methods, use and application of composting, mulching, use of organic fertilizers, etc. can contribute to climate change mitigation and adaptation.

G. Water resources

1.G.1. All 3 communities

- The region is reach with water resources. At a depth of 6 meters and up to 200 meters there are enormous volumes of water reserves in the territory of many settlements. However, due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost all the settlements.
- One of the major issues is unsustainable use of water resources. Almost all the existing irrigation networks in all 3 communities are of open (soil) streams and it results in huge losses of water. Another example of unsustainable use of water resources is the use of drinking water for irrigation in many settlements.

- For increasing effectiveness of water use it is advised to provide portable irrigation sprinklers systems to settlements (please see the photos in the Annex). Although it is less efficient than drip irrigation or sub-irrigation due to waste of water through run-off and evaporation, but it is much more efficient compared to flood irrigation (through open (soil) canals) which is currently widely applied in vast majority of cases.

- In Ashotsk community currently undergoing construction of main irrigation pipeline. In 2023 they have constructed around 1,2 km of it and in 2024 will construct the remaining 2 km. After that there will be need for construction of around 35-40 irrigation network to “connect” the settlements and ensure irrigation there.

- Most importantly, there is a need for more thorough investigation and expert consultancy on more effective management and use of existing water reserves in the communities or as whole in the region.

- Near Zuygaghbyhur settlement of the Ashotsk community there is an open water fountain that is throwing out water for already more than 30 years and nothing is done to stop that or to use that water (please see the photo in the Annex).

H. Deforestation or land degradation (including erosion)

1.H.1. All 3 communities

- All 3 communities have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Instead, the population overuses the lands that are closer to settlements and the soil becomes more and more degraded. Some parts of those remote pastures, arable lands and hay meadows are of good condition and population could benefit from it, and simultaneously decreasing intensity of use of the lands that are closer to settlements, if access to those areas is enhanced by construction of the field roads.

- Absence of watering points for the livestock in the remote pasture areas is a big problem. For watering the livestock they have to cover long (up to 10 km) distances and, as a result, milk productivity is lower by 20-25% and the pastures degradation is more intense. In all communities there is a need for installation of livestock watering points in the remote pasture areas

- Another huge problem is deforestation in the whole community. There is an urgent need for conservation and restoration of forests areas, especially with drought-resistant trees, shrubs and plants. Establishment of forests and recreational parks in some settlements would help to enhance climate change mitigation and adaptation. From one side this will regulate biodiversity, absorb essential amount of carbon dioxide (CO^2),

protect biodiversity in the region, and, at the same time, would support livelihoods and create more conducive conditions for tourism development in the region.

- In Artik consolidated community there is need for establishment of nursery for growing tree and shrubs seedlings

- A strong climate change mitigation and adaption measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of each community (please see the photos in the Annex). They will protect agricultural crops by reducing evapotranspiration and acting as windbreaks (reduce erosive windspeeds). These several forest belts would become a model for further replication by other settlements.

I. Challenges hindering implementation of climate adaptation measures

1.I.1. All 3 communities

- Absence of new or uselessness of the old infrastructure, including for water management, energy production, waste management, roads, etc.

- Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials

- Low level or luck of knowledge on sustainable agricultural practices among the population

- Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture

- Lack of financial resources

2. Lori region: Lermontovo consolidated community (consolidates 2 settlements, Molokan minority community), Fioletovo community (Molokan minority community)

A. Mining or extraction activities

2.A.1. Lermontovo community

- There is a closed stone mining site near Lermontovo settlement. Recultivation and remediation of lands is being carried out by the EPIU within another project.

B. Waste disposal and proper waste management

2.B.1. All 2 communities

- Waste disposal is organized by each communities'/settlements' respective services. There are no any major issues in this regard.

C. Major health concerns in the community

2.C.1. All 2 communities

No major health issues.

D. Energy sources

2.D.1. All 2 communities

Almost all the energy consumed in both communities is produced from the fossil fuels. There are some private renewable (vast majority of which is solar) energy productions, but these are of small volumes and for own use only.

E. Climate change impacts in the community

2.E.1. All 2 communities

No major adverse effects of climate change.

F. Agricultural practices

2.F.1. All 2 communities

- The main agricultural activities in both communities traditionally have been livestock breeding, crop cultivation and horticulture. The farmers in both communities are using mainly “traditional” fertilizers, such as Ammonium nitrate, Superphosphate and Potassium chloride.

- Current agricultural practices also contribute to increasing the degradation of the soil. Hence, application of more sustainable agricultural practices such as intercropping, mixed cropping, no-till or reduced tillage methods, use and application of composting, mulching, use of organic fertilizers, etc. can contribute to climate change mitigation and adaptation.

G. Water resources

2.G.1. All 2 communities

- One of the major issues is unsustainable use of water resources. There are several cases when irrigation networks are of open (soil) streams and it results in huge losses of water.

- In the Lermontovo community there is a need for reconstruction of 2 km of drinking water supply pipeline.

- For increasing effectiveness of water use it is advised to provide portable irrigation sprinklers systems to settlements (please see the photos in the Annex). Although it is less efficient than drip irrigation or sub-irrigation due to waste of water through run-off and evaporation, but it is much more efficient compared to flood irrigation (through open (soil) canals) which is currently widely applied in vast majority of cases.

H. Deforestation or land degradation (including erosion)

2.H.1. All 2 communities

- Both communities have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads.

Some parts of those remote pastures, arable lands and hay meadows are of good condition and population could benefit from it, and simultaneously decreasing intensity of use of the lands that are closer to settlements, if access to those areas is enhanced by construction of the field roads.

- In Lermontovo community construction of 8 km field roads would allow to use more than 400 hectares of pastures.
- In Fioletovo community construction of 15 km field roads would allow to use 260 hectares of arable lands and 300 hectares of hay meadows.
- In Lermontovo community there are watering points for the livestock in the remote pasture areas. However, due to some construction mistakes in the piping system the watering points become obstructed (blocked up).
- In Fioletovo community there is a need for installation of livestock watering points in the remote pasture areas
- A strong climate change mitigation and adaption measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of each community (please see the photos in the Annex).

I. Challenges hindering implementation of climate adaptation measures

2.I.1. All 2 communities

- Absence of new or uselessness of the old infrastructure, including for water management, energy production, waste management, roads, etc.
- Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials
- Low level or luck of knowledge on sustainable agricultural practices among the population
- Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture
- Lack of financial resources

3. Tavush region: Dilijan consolidated community (consolidates 9 settlements)

A. Mining or extraction activities

3.A.1. Dilijan consolidated community

- No major issues

B. Waste disposal and proper waste management

3.B.1. Dilijan consolidated community

- Waste disposal is organized by the community's respective services.

- The sewage system of Dilijan city has maintenance problems and there is a need for a specialized vehicle for sewage system repairs.
- In Dilijan city there is a need for reconstruction of the mudflow canals and strengthening of the retaining walls

C. Major health concerns in the community

3.C.1. Dilijan consolidated community

No major health issues.

D. Energy sources

3.D.1. Dilijan consolidated community

Almost all the energy consumed in the community is produced from fossil fuels. There are some private renewable (vast majority of which is solar) energy productions, but these are of small volumes and for own use only.

E. Climate change impacts in the community

3.E.1. Dilijan consolidated community

In all 3 communities there is an obvious impact of climate change. The negative impact of the climate change is observed as:

- droughts and reduction of the available water
- severe winds
- hails
- heavy rainfall

F. Agricultural practices

3.F.1. Dilijan consolidated community

- The main agricultural activities in all 3 communities traditionally have been livestock breeding, horticulture and to a lesser extent crop cultivation. The farmers in the community are using mainly “traditional” fertilizers, such as Ammonium nitrate, Superphosphate and Potassium chloride.
- Current agricultural practices also contribute to increasing the degradation of the soil. Hence, application of more sustainable agricultural practices such as intercropping, mixed cropping, no-till or reduced tillage methods, use and application of composting, mulching, use of organic fertilizers, etc. can contribute to climate change mitigation and adaptation.

G. Water resources

3.G.1. Dilijan consolidated community

- The community is comparatively reach with the water resources. However, due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost all the settlements.

- In Dilijan city there is a need for construction of water reservoir and irrigation network that could ensure proper irrigation of the Dilijan and neighboring settlements.
- In Dilijan city there is a need for specialized equipment for cleaning of irrigation and drinking water headstreams.
- There is an urgent need to clean the Aghstev river which is suffering from waste and mud accumulation. Biodiversity is in danger.
- The Gosh Lake is a natural reservoir of water resources. The Gosh settlement in general, including Gosh Lake, is a very popular tourist destination. However, due to improper management, lack of attention and maintenance the lake is suffering from waste and mud accumulation, weed infestation, biodiversity is in danger, the fishes and crawfishes are in danger of extinction. There is an urgent need to clean the lake and surroundings.
- One of the major issues is unsustainable use of water resources. There are several cases when irrigation networks are of open (soil) streams, and it results in huge losses of water. Another example of unsustainable use of water resources is the use of drinking water for irrigation in many settlements.

H. Deforestation or land degradation (including erosion)

3.H.1. Dilijan consolidated community

- The community has huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Instead, the population overuses the lands that are closer to settlements and the soil becomes more and more degraded. Some parts of those remote pastures, arable lands and hay meadows are of good condition and population could benefit from it, and simultaneously decreasing intensity of use of the lands that are closer to settlements, if access to those areas is enhanced by construction of the field roads.
- The results of land improvement (fertilization, restoration of vegetation) of the remote pastures, arable lands and hay meadows carried out during the previous project are very positive. However, still there is need for more similar works.
- Absence of watering points for the livestock in the remote pasture areas is a big problem.
- Another huge problem is deforestation in the whole community. There is an urgent need for conservation and restoration of forests areas, especially with drought-resistant trees, shrubs and plants. For instance, establishment of forests and recreational parks in some settlements would

increase the forest areas and, at the same time, would create more conducive conditions for tourism development in the region.

- A strong climate change mitigation and adaptation measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of the community.

- In Hovk and Haghartsin settlements there are several areas that are vulnerable to landslides. During the last several decades there were several cases of landslides in these areas. Although no major landslides have been recorded recently but the risk exists. In this regard it is advised to Initiate a comprehensive study on the causes of landslides and measures to prevent them in the future. Meanwhile, as an immediate action it is advised to establish forests (plant trees and shrubs) on hills to keep the soil packed and protected.

I. Challenges hindering implementation of climate adaptation measures

3.I.1. Dilijan consolidated community

- Absence of new or uselessness of the old infrastructure, including for water management, energy production, waste management, roads, etc.

- Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials

- Low level or luck of knowledge on sustainable agricultural practices among the population

- Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture

- Lack of financial resources

4. Gegharkunik region: Sevan consolidated community (consolidates 12 settlements), "Sevan" National Park

A. Waste disposal and proper waste management

4.A.1. Sevan consolidated community

- Waste disposal is organized by the communities' respective services. The main landfill is located in Norashen community where the most waste from the community is dumped.

- There is no any centralized waste disposal or recycling facility. However, there is a preliminary agreement with the waste disposal or recycling facility in Hrazdan community for recycling of some part of sorted solid waste. For this purpose, the community has started sorting out waste.

- In Sevan city there is a need for reconstruction of 2,5 km mudflow canals

B. Energy sources

4.B.1. Sevan consolidated community

- In the Semyonovka settlement a private company is piloting know-how of one of its founders - a new model of electricity production wind turbine.
- In the whole Sevan consolidated community there is a need for installation of PV panels for 8 schools and 5 kindergartens to reduce electricity costs

C. Climate change impacts in the community

4.C.1. Sevan consolidated community

In the community there is an obvious impact of climate change. The negative impact of the climate change is observed as:

- droughts and reduction of the available water
- severe winds
- hails (in Semyonovka (Molokan minority community) and Tsovagyugh settlements there are no anti-hail stations)
- heavy rainfall
- frost in late spring

4.C.2. “Sevan” National Park

- All the climate events happening due to climate change in Gegharkunik region very negatively impact also the flora and fauna of the “Sevan” National Park.
- During the last 2 years up to 15,000 hectares of the Pine trees (70% Pinus sylvestris and 30% Crimean Pine, Pinus nigra) has died (dried up), especially near Akhtamar peninsula. The scientists do not understand the reasons. Many of them are of the opinion that this is due to diseases, but there are no any scientifically justified evidences of that fact.

D. Agricultural practices

4.D.1. Sevan city, Semyonovka (Molokan minority community) and Tsovagyugh settlements

- The main agricultural activities in the settlements traditionally have been livestock breeding, apiculture, crop cultivation and horticulture. The farmers in the community are using mainly “traditional” fertilizers, such as Ammonium nitrate, Superphosphate and Potassium chloride.
- Current agricultural practices also contribute to increasing the degradation of the soil. Hence, application of more sustainable agricultural practices such as intercropping, mixed cropping, no-till or reduced tillage methods,

use and application of composting, mulching, use of organic fertilizers, etc. can contribute to climate change mitigation and adaptation.

E. Water resources

4.E.1. Sevan city, Semyonovka (Molokan minority community) and Tsovagyugh settlements and “Sevan” National Park

- The region is reach with water resources. However, due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost all the settlements.

- One of the major issues is unsustainable use of water resources. Almost all the existing irrigation networks in the community are of open (soil) streams and it results in huge losses of water.

F. Deforestation or land degradation (including erosion)

4.F.1. Semyonovka (Molokan minority community) and Tsovagyugh settlements

- Both settlements have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Instead, the population overuses the lands that are closer to settlements and the soil becomes more and more degraded. Some parts of those remote pastures, arable lands and hay meadows are of good condition and population could benefit from it, and simultaneously decreasing intensity of use of the lands that are closer to settlements, if access to those areas is enhanced by construction of the field roads.

- Absence of watering points for the livestock in the remote pasture areas is a big problem

- A strong climate change mitigation and adaptation measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of each community.

- During the last 2 years up to 15,000 hectares of the Pine trees (70% Pinus sylvestris and 30% Crimean Pine, Pinus nigra) has died (dried up) in the territory of the “Sevan” National Park, especially near Akhtamar peninsula. The Park has a low-capacity nursery for tree seedlings and the staff of the Park has already planted around 243 hectares of new trees on the deforested territory. However, the numbers are very small. It is advised to establish a new nursery for growing tree and shrubs seedlings. It can grow seedlings not only for Park forestation needs, but also or sale. Selling the seedlings could become a source of stable income and will ensure self-financing of its operations.

G. Challenges hindering implementation of climate adaptation measures

4.G.1. All 3 communities

- Absence of new or uselessness of the old infrastructure, including for water management, energy production, waste management, roads, etc.
- Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials
- Low level or luck of knowledge on sustainable agricultural practices among the population
- Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture
- Lack of financial resources

5. Aragatsotn region: 8 consolidated communities, 115 settlements

A. Mining or extraction activities

5.A.1. Ashtarak consolidated community

- There is a closed stone mining site with around 25 hectares area in between Agarak and Parpi settlements of Ashtarak community. The dust and dirt from that mining ste negatively impacts the environment, air, humans, livestock, agricultural lands, etc. of Parpi, Bazmaghbyur, Ghazaravan, Agarak, Voskevaz, Oshakan and Ashtarak settlements. It is neighbouring Arzni-Shamiram water canal and after the recultivation and remediation of those lands it will be possible to ensure drip irrigation there.

B. Climate change impacts in the community

5.B.1. Whole region

In the whole region there is an obvious impact of climate change. The negative impact of the climate change is observed as:

- droughts and reduction of the available water
- severe winds
- hails
- heavy rainfall

C. Agricultural practices

5.C.1. Whole region

- The main agricultural activities in the region traditionally have been crop cultivation, horticulture and to a lesser extent livestock breeding. The farmers of the region are using mainly “traditional” fertilizers, such as Ammonium nitrate, Superphosphate and Potassium chloride.

- Current agricultural practices also contribute to increasing the degradation of the soil. Hence, application of more sustainable agricultural practices such as intercropping, mixed cropping, no-till or reduced tillage methods, use and application of composting, mulching, use of organic fertilizers, etc. can contribute to climate change mitigation and adaptation.

D. Water resources

5.D.1. Whole region

- One of the major issues is unsustainable use of water resources. There are cases when irrigation networks are of open (soil) streams and it results in huge losses of water. Another example of unsustainable use of water resources is the use of drinking water for irrigation in several settlements.

- In Talin consolidated community there are settlements which have water scarcity. Close to those settlements there is a man-made water reservoir and it is possible to install an irrigation network from that source.

E. Deforestation or land degradation (including erosion)

5.E.1. Whole region

- The region has 131,000 hectares of pastures and only 15-20% of these lands are used. As a result, the population overuses those lands and the soil becomes more and more degraded. If field roads and watering points for the livestock are constructed in those pastures the farmers could benefit from it, simultaneously decreasing intensity of use of the lands that are overused.

- Another huge problem is deforestation in the whole region. There is an urgent need for conservation and restoration of forests areas, especially with drought-resistant trees, shrubs and plants. For instance, establishment of forest and recreational park in Amberd settlement (next to the road going to Stone Lake and Ashot Yerkat fortress) would increase the forest areas and, at the same time, would create more conducive conditions for tourism development in the region.

- A strong climate change mitigation and adaptation measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of each community.

F. Challenges hindering implementation of climate adaptation measures

5.F.1. Whole region

- Absence of new or uselessness of the old infrastructure, including for water management, energy production, waste management, roads, etc.

- Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials
- Low level or luck of knowledge on sustainable agricultural practices among the population
- Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture
- Lack of financial resources

6. Ararat region: Artashat city, Vedi consolidated community (consolidates 19 settlements), Ararat consolidated community (consolidates 12 settlements)

A. Mining or extraction activities

6.A.1. Whole region

- There is a Diatomit stone mining site in the territory of the region and cement production facility in the Ararat community. The dust and dirt from the mining and cement production activities negatively impact the environment, air, humans, livestock, agricultural lands, etc.

B. Waste disposal and proper waste management

6.B.1. Vedi consolidated community

- There is a need for construction of the waste disposal and recycling facility
- There is a need for establishment of forest belt around the waste disposal and recycling facility

C. Climate change impacts in the community

6.C.1. Whole region

In all 3 communities there is an obvious impact of climate change. The negative impact of the climate change is observed as:

- droughts and reduction of the available water
- severe winds
- hails
- heavy rainfall

D. Agricultural practices

6.D.1. Whole region

- The main agricultural activities in the region traditionally have been horticulture, aquaculture and to a lesser extent livestock breeding. The farmers of the region are using mainly “traditional” fertilizers, such as Ammonium nitrate, Superphosphate and Potassium chloride.

- Current agricultural practices also contribute to increasing the degradation of the soil. Hence, application of more sustainable agricultural practices such as intercropping, mixed cropping, no-till or reduced tillage methods, use and application of composting, mulching, use of organic fertilizers, etc. can contribute to climate change mitigation and adaptation.

E. Water resources

6.E.1. Whole region

- One of the major issues is unsustainable use of water resources. Most part of the existing irrigation networks in the region are of open (soil) streams and it results in huge losses of water. Another example of unsustainable use of water resources is the use of drinking water for irrigation in many settlements.

- Another major issue of unsustainable use of water is fisheries. There are many fisheries in the region, they use a huge amount of water and then the water is not disposed of properly and just lost.

F. Deforestation or land degradation (including erosion)

6.F.1. Whole region

- Ararat consolidated community has around 2,500 hectares of remote pastures most of which are not used because of the absence of field roads. Instead, the population overuses the lands that are closer to settlements and the soil becomes more and more degraded.

- If field roads and watering points for the livestock are constructed in the remote pastures of Sevakavan and Zangakatun settlements the farmers could use some additional 1,000 hectares of pastures, simultaneously decreasing intensity of use of the lands that are overused. The nearby water source is Arazap-2 reservoir and there will be need for construction of around 4,5 km water pipeline from there.

- In Lusashogh, Shaghap, Urtsadzor and Lanjanist settlements of the Vedi consolidated communities there are huge areas of remote pastures and there is a need for construction of field roads and watering points for livestock as much as possible.

- Another huge problem is deforestation in the whole region. There is an urgent need for conservation and restoration of forests areas, especially with drought-resistant trees, shrubs and plants.

- A strong climate change mitigation and adaptation measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of each community.

G. Challenges hindering implementation of climate adaptation measures

6.G.1. Whole region

- Absence of new or uselessness of the old infrastructure, including for water management, energy production, waste management, roads, etc.
- Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials
- Low level or luck of knowledge on sustainable agricultural practices among the population
- Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture
- Lack of financial resources

7. Armavir region: Khoy consolidated community (consolidates 17 settlements)

A. Energy sources

7.A.1. Khoy consolidated community

Almost all the energy consumed in Khoy community is produced from fossil fuels. There are some private renewable (vast majority of which is solar) energy productions, but these are of small volumes and for own use only. If PV panels for Arshaluys settlement administration are installed it would allow to reduce costs of electricity. With the preliminary agreement, the saved amounts could be directed towards implementation of climate adaptive measures in the settlements.

B. Climate change impacts in the community

7.B.1. Whole region

In the regions there is an obvious impact of climate change. The negative impact of the climate change is observed as:

- droughts and reduction of the available water
- severe winds
- hails
- heavy rainfall

C. Agricultural practices

7.C.1. Whole region

- The main agricultural activities in the region traditionally have been horticulture and to a lesser extent aquaculture. The farmers of the region are using mainly “traditional” fertilizers, such as Ammonium nitrate, Superphosphate and Potassium chloride.

- Current agricultural practices also contribute to increasing the degradation of the soil. Hence, application of more sustainable agricultural practices such as intercropping, mixed cropping, no-till or reduced tillage methods, use and application of composting, mulching, use of organic fertilizers, etc. can contribute to climate change mitigation and adaptation.

D. Water resources

7.D.1. Whole region

- One of the major issues is unsustainable use of water resources. Part of the existing irrigation networks in the region are of open (soil) streams (especially in Nalbandyan, Getashen, Shenavan, Khoy, etc.) and it results in huge losses of water. Another example of unsustainable use of water resources is the use of drinking water for irrigation in many settlements.

- Construction of around 3 km irrigation network would allow to irrigate around 60 hectares of agricultural land in Ferik community (Yazidi minority community).

- There is a need for construction of as long as possible irrigation network for up to 700 hectares of agricultural lands in several communities (including Arevadasht Koghbavan)

- In Armavir community construction of around 5 km irrigation network would allow to irrigate additionally around 14,4 hectares of agricultural land.

- In Armavir community they have planted 350 trees. Due to issues with the irrigation system 50 of those trees did not survive. There is a need for construction of around 1 km irrigation network will ensure survival and growth of the remaining trees.

- Another major issue of unsustainable use of water is the fisheries in Guy settlement. They use a huge amount of water and then the water is not disposed properly and just lost.

- A strong climate change mitigation and adaptation measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of the community.

E. Deforestation or land degradation (including erosion)

7.E.1. Khoy consolidated community

- The major problem is deforestation in the whole region. There is an urgent need for conservation and restoration of forests areas, especially with drought-resistant trees, shrubs and plants.

- In the Khoy consolidated community: Establishment of forest and recreational park in Aygeshat settlement with around 20 hectares area would increase the forest areas and would be useful for surrounding 3 settlements. There is also a need for establishment of around 10 hectares of forest and recreational park in the Arshaluys settlement (next to M-5 highway) and 8,000 m2 forest and recreational park in Aragats settlement.
- A strong climate change mitigation and adaptation measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of each community.

F. Challenges hindering implementation of climate adaptation measures

7.F.1. Whole region

- Absence of new or uselessness of the old infrastructure, including for water management, energy production, waste management, roads, etc.
- Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials
- Low level or luck of knowledge on sustainable agricultural practices among the population
- Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture
- Lack of financial resources

III. Identified problems and proposed interventions

Table below summarizes all the potential interventions that would mitigate negative impact on the environment and increase climate change adaption capacities of the communities that have been identified during the consultations with the stakeholders in each community. The proposed interventions are formulated taking into account the effectiveness and feasibility of implementation based on the existing preconditions, the priority and urgency, as well as other ongoing or planned similar interventions.

N	Region	Community	Problem	Proposed intervention
1.	Shirak	3 communities (Ani consolidated community, Artik consolidated community and Ashotsk consolidated community)	1.1. There are operational and non-operational stone mining sites in all 3 communities. The dust and dirt from the mining activities negatively impact the environment, air, humans, livestock, agricultural lands, etc.	1.1. Recultivation and remediation of lands, establishment of forests and recreational parks on the territories of the closed or adjacent to the open mining sites: 1.1.1. In Ani community: Recultivation and remediation of lands, establishment of forest and recreational park on the 5-6 hectares of Dzorakap settlement. There is around 250,000 m^3 of quality fertile soil available in the community. 1.1.2. In Ani community: Recultivation and remediation of lands, establishment of forest and recreational park on the territory of Anipemza settlement. There is around 250,000 m^3 of quality fertile soil available in the community. 1.1.3. In Artik community: Recultivation and remediation of lands, establishment of forests and recreational parks on the territories of Pemzashen, Tufashen, Nor Kyanq and Haritch settlements 1.1.4. In Ashotsk community: Establishment of forest on the territory of Goghovit settlement adjacent to the operational basalt mining site.
			1.2. Heavy trucks and other machinery working in the mining sites destroy the roads of the nearby settlements	1.2. In Ashotsk community: Construction of alternative road in Goghovit settlement for stone mining site trucks and machinery would allow to keep settlement road in good condition for a longer time period

			1.3. Absence of centralized waste disposal or recycling facilities	1.3. Construction of specialized solid waste disposal and recycling joint facility for Ani and Artik community or better, for the whole Shirak region 1.13.1 In the Mets Sepasar settlement of the Ashotsk community there is a biogas production facility. The waste from the settlement is used as a raw material. The capacity of the facility is 3,5 tons. If the production capacity of the facility is increased, it could process more waste. It could become a model for replication in other settlements.
			1.4. Mudflow management	1.4. In Artik city there is a need for reconstruction of 2 big mudflow canals and several bridges on those mudflow canals
			1.5. Sewage system in Arpeni settlement of Ashotsk community is out of order and the whole sewage flows into the river	1.5. Repair of the sewage system in the Arpeni settlement of Ashotsk community
			1.6. Scarcity of waste collection trucks and waste bins	1.6. Provision of waste collection trucks and waste bins to Ani and Ashotsk communities
			1.7. Almost all the energy consumed in all 3 communities is produced from the fossil fuels.	1.7. Support in installation of PV panels for all 3 community administrations that will allow to reduce costs electricity. 1.7.1. For instance, if PV panels with 170-180 kW power are built for municipality of Ashotsk community it would allow to reduce costs of electricity. With the preliminary agreement, the saved amounts could be directed towards implementation of climate adaptive measures in the settlements.
			1.8. Due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost all the settlements	1.8. Construction of water management systems, including reservoirs, pumping stations, main water supply and drip irrigation networks. Also, for increasing effectiveness of water use it is advised to provide portable irrigation sprinklers systems to settlements (please see the photos in the Annex). Although it is less efficient than drip irrigation or sub-irrigation due to waste of water through run-off and evaporation, but it is much more

				efficient compared to flood irrigation (through open (soil) canals) which is currently widely applied in vast majority of cases. 1.8.1. In Ani community: Construction of a new pumping station and irrigation systems in the cluster consisting of Gusanagyugh, Shirkavan, Isahakyan, Aghin and other neghbouring settlements would ensure irrigation of around 2,000 hectares of land in that part of the community. 1.8.2. In Ani community: Construction of a new pumping station and irrigation systems in the Sarnaghbyur settlement would ensure irrigation of more than 700 hectares of (more than 80 hectares of Sarnaghbyur, more than 260 hectares of Dzorakap and more than 350 hectares of Maralik) of agricultural land 1.8.3. In Artik community: Construction of an irrigation network in Anushavan, Vardakar and Nor Kyanq settlements (ca. AMD 31 million) 1.8.4. In Ashotsk community: currently undergoing construction of main irrigation pipeline. In 2023 they have constructed around 1,2 km of it and in 2024 will construct the remaining 2 km. After that there will be need for construction of around 35-40 irrigation network to “connect” the settlements and ensure irrigation there. 1.8.5. In Ashotsk community: Construction of 7-8 km irrigation system in Saragyugh settlement would ensure irrigation of more than 250 ha of lands 1.8.6. In Ashotsk community: Construction of 7-8 km irrigation system in Dzorashen settlement would ensure irrigation of more than 200 ha of lands of Dzorashen and additional 5 settlements 1.8.7. In Ashotsk community: There is a need for construction of inner irrigation system in Goghovit settlement which would ensure irrigation of lands backyard orchards of inhabitants

				1.8.8. In Ashotsk community: Koghamarg settlement has 3,5 km irrigation network and construction of 2 km pipeline would ensure irrigation of additional 180 ha of lands. If the retaining wall of the existing reservoir is overbuilt (raised the height) then more water could be accumulated and later more lands could be irrigated. 1.8.9. In Ashotsk community: Near Zuygaghbyhur settlement there is an open water fountain that has been throwing out water for already more than 30 years and the surrounding territory became a swamp (marsh). So far, nothing has been done to stop that or to use that water (please see the photo in the Annex). It is advised to investigate the case more comprehensively and find any solution to the problem.
			1.9. The region is reach with the water resources. However, there is no any water management and use strategy.	1.9. Support in thorough investigation and expert consultancy on development and implementation of water management and use strategy
			1.10. All 3 communities have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Instead, the population overuse the lands that are closer to settlements and the soil becomes more and more degraded.	1.10. Construction of the field roads leading to remote pastures, arable lands and hay meadows. Simultaneously, restoration of vegetation at the degraded lands is required. 1.10.1. Construction of field roads in remote areas of Saragyugh settlement of the Ashotsk community would allow to use around 120 ha pastures. 1.10.2. Construction of field roads in remote areas of Musaler settlement of the Ashotsk community would allow to use around 100 ha pastures. 1.10.3. Construction of around 30 km field roads in remote areas of Dzorashen settlement of the Ashotsk community would allow to use around 200 ha pastures for Dzorashen and neghbouring 5 settlements.

			1.11. Scarcity of livestock watering points for the livestock in the remote pasture areas.	1.11. Installation of livestock watering points in the remote pasture areas: 1.11.1.Ani community has already installed 5 watering points in different pasture areas, but installation of at least 6-7 additional water points is still required. 1.11.2.There is a need for installation of livestock watering points in the remote pasture areas of the Dzorashen settlement of the Ashotsk community.
			1.12. Deforestation	1.12. Conservation and restoration of forests areas, especially with drought-resistant trees, shrubs and plants. Establishment of forests and recreational parks in some settlements would help to enhance climate change mitigation and adaptation. From one side this will regulate biodiversity, absorb essential amount of carbon dioxide (CO2), protect biodiversity in the region, and, at the same time, would support livelihoods and create more conducive conditions for tourism development in the region. 1.12.1. In Ani community: Establishment of forest and recreational park in Sarnaghbyur settlement which has many tourist attractions (place of pilgrimage (Zagha), number of religious and historical monuments, etc.) and is a popular tourist destination. 1.12.2. In Artik community: Establishment of small park or at least construction of rest rooms near the Harichavank Monastery in Harich settlement which is a popular tourist destination. 1.12.3. In Ashotsk community: Establishment of nursery for growing tree and shrubs seedlings

			1.13. Land degradation	1.13. One of the crucial climate change adaptation measures would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) for agricultural fields in chosen settlements of each community (please see the photos in the Annex). They will protect agricultural crops by reducing evapotranspiration and acting as windbreaks (reduce erosive windspeeds). These several forest belts would become a model for further replication by other settlements.
2.	Lori	2 communities with Molokan ethnic minority (Lermontovo consolidated community and Fioletovo community)	2.1. Almost all the energy consumed in both communities is produced from the fossil fuels.	2.1. Support in installation of PV panels for both community administrations that will allow to reduce electricity costs. 2.1.1. For instance, if PV panels are built for Fioletovo administration then on average monthly AMD 100,000 electricity costs could be saved. With the preliminary agreement, the saved amounts could be directed towards implementation of climate adaptive measures.
			2.2. Due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost all the settlements	2.2. Construction of water management systems, including reservoirs, pumping stations, main water supply and drip irrigation networks. 2.2.1. In Lermontovo community: There is a need for reconstruction of 2 km of drinking water supply pipeline.
			2.3. Both communities have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Some parts of those remote pastures, arable lands and hay meadows are not accessible due to absence of field roads.	2.3. Construction of the field roads leading to remote pastures, arable lands and hay meadows. 2.3.1. In Lermontovo community construction of 8 km field roads would allow to use more than 400 hectares of pastures. 2.3.2. In Fioletovo community construction of 15 km field roads would allow to use 260 hectares of arable lands and 300 hectares of hay meadows.
			2.4. Scarcity of the watering points for livestock in the remote	2.4. Installation of watering points for livestock in the remote pasture areas:

			pasture areas.	2.4.1. In Lermontovo community: There is a need for fixing construction mistakes in the piping system because of which the existing watering points become obstructed (blocked up). 2.4.2. There is a need for installation of livestock watering points in the remote pasture areas of the Fioletovo community.
3.	Tavush	Dilijan consolidated community	2.5. The sewage system of the Dilijan city has maintenance problems	3.1. There is a need for a specialized vehicle for sewage system repairs
			2.6. Mudflow management	3.2. In Dilijan city there is a need for reconstruction of the mudflow canals and strengthening of the retaining walls
			2.7. Due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost all the settlements	3.3. Construction of water management systems, including reservoirs, pumping stations, main water supply and drip irrigation networks. Also, for increasing effectiveness of water use it is advised to provide portable irrigation sprinklers systems to settlements. Although it is less efficient than drip irrigation or sub-irrigation due to waste of water through run-off and evaporation, but it is much more efficient compared to flood irrigation (through open (soil) canals) which is currently widely applied in vast majority of cases. 3.3.1. In Dilijan city there is a need for construction of water reservoir and irrigation network that could ensure proper irrigation of the Dilijan and neighboring settlements. 3.3.2. In Dilijan city there is a need for a specialized equipment for cleaning of irrigation and drinking water headstreams 3.3.3. In Teghut settlement: Construction of 6-7 km irrigation network would allow to irrigate around 70 hectares of agricultural land 3.3.4. In Gosh settlement: Construction of 4 km irrigation network would allow to irrigate around 100 hectares of agricultural land 3.3.5. In Khachardzan settlement: There is a need for

				construction of 1,5 km irrigation network and installation of a pump 3.3.6. In Haghartsin settlement: Construction of 6-7 km irrigation network would allow to irrigate around 2,700 hectares of lands 3.3.7. In Aghavnavank settlement: Construction of 3 km irrigation network would allow to irrigate around 25-30 hectares of agricultural land 3.3.8. In Hovk settlement: Construction of 3 km irrigation network would allow to irrigate around 300 hectares of agricultural land
			2.8. Aghstev river is suffering from waste and mud accumulation. The biodiversity is in danger.	3.4. There is an urgent need for cleaning the Aghstev river
			2.9. The Gosh Lake is a natural reservoir of water resources. The Gosh settlement in general, including Gosh Lake is a very popular tourist destination. However, due to improper management, lack of attention and maintenance the lake is suffering from waste and mud accumulation, weed infestation, the biodiversity is in danger, the fishes and crawfishes are in danger of extinction.	3.5. There is an urgent need for cleaning Gosh Lake and surroundings.
			2.10. The community has huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence	3.6. Construction of the field roads leading to remote pastures, arable lands and hay meadows. 3.6.1. In Teghut settlement: Construction of 10 km field roads would allow to use 3000 hectares of pasture

			of field roads. Instead, the population overuse the lands that are closer to settlements and the soil becomes more and more degraded.	3.6.2. In Khachardzan settlement: Construction of 14 km field roads would allow to use 600 hectares of arable land and hay meadows 3.6.3. In Haghartsin settlement: Construction of 12-13 km field roads would allow to use 9,000 hectares of arable land and pastures 3.6.4. In Aghavnavank settlement: Construction of 5 km field roads would allow to use 1,500 hectares of arable land and pastures 3.6.5. In Hovk settlement: Construction of 6 km field roads would allow to use up to 800 hectares of arable land and pastures
			2.11. The results of land improvement (fertilization, restoration of vegetation) of the remote pastures, arable lands and hay meadows carried out during the previous project are very positive. However, still there is need for more similar works.	3.7. Land improvement (fertilization, restoration of vegetation) of the remote pastures, arable lands and hay meadows 3.7.1. In Teghut settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 800 hectares of hay meadows and pastures 3.7.2. In Gosh settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 150 hectares of arable land 3.7.3. In khachardzan settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 60 hectares of arable land 3.7.4. In Haghartsin settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 1000 hectares of arable land and pastures 3.7.5. In Aghavnavank settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 200 hectares of arable land and pastures 3.7.6. In Hovk settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 700 hectares of arable land, hay meadows and pastures

			2.12. Scarcity of the livestock watering points for the livestock in the remote pasture areas.	3.8. Installation of livestock watering points in the remote pasture areas: 3.8.1. In Gosh settlement there is a need for installation of 1 watering point in remote pastures 3.8.2. In Aghavnavank settlement there is a need for installation of 1 watering point in remote pastures
			2.13. In Hovk and Haghartsin settlements there are several areas that are vulnerable to landslides and during the last several decades there were several cases of landslides in these areas.	3.9. Initiate a comprehensive study on the causes of landslides and measures to prevent them in the future. Meanwhile, as an immediate action it is advised to establish forests (plant trees and shrubs) on hills to keep the soil packed and protected.
			2.14. Land degradation	3.10. One of the crucial climate change adaptation measures would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) for agricultural fields in chosen settlements of each community (please see the photos in the Annex). They will protect agricultural crops by reducing evapotranspiration and acting as windbreaks (reduce erosive windspeeds). These several forest belts would become a model for further replication by other settlements.
4.	Gegharkunik	Sevan city, Semyonovka (Molokan minority community) and Tsovagyugh settlements (Sevan consolidated community)	4.1. Mudflow management	4.1. In Sevan city there is a need for reconstruction of 2,5 km mudflow canals
			4.2. Energy sources	4.2. In the whole Sevan consolidated community there is a need for installation of PV panels for 8 schools and 5 kindergartens to reduce electricity costs
			4.3. Due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost	4.3. Construction of water management systems, including reservoirs, pumping stations, main water supply and drip irrigation networks. 4.3.1. In Semyonovka settlement: Construction of 5 km of main irrigation pipe and 5 km of irrigation network would allow to irrigate around 20 hectares of agricultural land and

			all the settlements	ensuring sufficient water for breeding around 2,000 livestock existing in the settlements 4.3.2. In Tsovagyugh settlement: Construction of 5 km of main irrigation pipe and 20 km of irrigation network would allow to irrigate up to 90 hectares of agricultural land and ensuring sufficient water for breeding around 2,700 livestock existing in the settlements
			4.4. Semyonovka and Tsovagyugh settlements have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Instead, the population overuse the lands that are closer to settlements and the soil becomes more and more degraded.	4.4. Construction of the field roads leading to remote pastures, arable lands and hay meadows. 4.4.1. Construction of 20-25 km of field roads in remote areas of Semyonovka settlement would allow to use around 5,700 hectares of pastures, arable lands and hay meadows 4.4.2. Construction of 50 km of field roads in remote areas of Tsovagyugh settlement would allow to use around 3,000 hectares of pastures, arable lands and hay meadows
			4.5. There is a need for land improvement (fertilization, restoration of vegetation) of the remote pastures, arable lands and hay meadows	4.5. Land improvement (fertilization, restoration of vegetation) of the remote pastures, arable lands and hay meadows 4.5.1. In Semyonovka settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 800 hectares of hay meadows and pastures 4.5.2. In Tsovagyugh settlement there is a need for land improvement (fertilization, restoration of vegetation) of around 800 hectares of hay meadows and pastures
			4.6. Scarcity of livestock watering points for the livestock in the remote pasture areas.	4.6. Installation of livestock watering points in the remote pasture areas: 4.6.1. There is a need for installation of 2 livestock watering points in the remote pasture areas of the Semyonovka settlement 4.6.2. There is a need for installation of 1 livestock watering point in the remote pasture areas of the Tsovagyugh settlement

			4.7. Semyonovka and Tsovagyugh settlements have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Instead, the population overuse the lands that are closer to settlements and the soil becomes more and more degraded	4.7. Construction of the field roads leading to remote pastures, arable lands and hay meadows. 4.7.1. Construction of field roads in remote areas of Semyonovka settlement of the Ashotsk community would allow to use around 120 ha pastures 4.7.2. Construction of field roads in remote areas of Tsovagyugh settlement of the Ashotsk community would allow to use around 120 ha pastures
		"Sevan" National park	4.8. During the last 2 years up to 15,000 hectares of the Pine trees (70% Pinus sylvestris and 30% Crimean Pine, Pinus nigra) has died (dried up)	4.8. Establishment of a new nursery for growing tree and shrubs seedlings. It can grow seedlings not only for Park forestation needs, but also for sale. Selling the seedlings could be a source of stable income and would ensure self-financing of its operations. In the territory of the Park the following types of the trees and shrubs have proven resiliency in and adaptability to local climate and environment: Maple, Birch, Breadfruit, Oak, Junipers, Apricot, etc.
5.	Aragatsotn	Aragatsotn region	5.1. There is a closed stone mining site with around 25 hectares area in between Agarak and Parpi settlements of Ashtarak community. The dust and dirt from that mining ste negatively impacts the environment, air, humans, livestock, agricultural lands, etc. of Parpi, Bazmaghbyur, Ghazaravan, Agarak, Voskevaz, Oshakan and Ashtarak settlements.	5.1. Recultivation and remediation of lands, establishment of forests and recreational parks on the territories of the closed mining site. It is neighboring Arzni-Shamiram water canal and after the recultivation and remediation of those lands it will be possible to ensure drip irrigation there
			5.2. In Talin consolidated	5.2. Close to those settlements there is a man-made water

			community there are settlements which have water scarcity.	reservoir, and it is possible to install an irrigation network from that source.
			5.3. The region has 131,000 hectares of pastures and only 15-20% of these lands are used. As a result, the population overuse those lands and the soil becomes more and more degraded	5.3. If field roads and watering points for the livestock are constructed in those pastures the farmers could benefit from it, simultaneously decreasing intensity of use of the lands
			5.4. Deforestation. There is an urgent need for conservation and restoration of forests areas, especially with drought-resistant trees, shrubs and plants.	5.4. Establishment of forest and recreational park in Amberd settlement (next to the road going to Stone Lake and Ashot Yerkat fortress) would increase the forest areas and, at the same time, would create more conducive conditions for tourism development in the region.
			5.5. Land degradation	5.5. A strong climate change mitigation and adaption measure would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) next to agricultural fields and settlement roads in chosen settlements of each community
6.	Ararat	Vedi, Ararat and Artashat consolidated communities	6.1. Absence of centralized waste disposal or recycling facilities	6.1. There is a need for construction of the waste disposal and recycling facility in the Vedi community and establishment of forest belt around the waste disposal and recycling facility
			6.2. Due to absence of new or uselessness of old reservoirs, pumping stations and water supply systems currently the access to drinking and irrigation water is a huge problem in almost all the settlements	6.2. Construction of water management systems, including reservoirs, pumping stations, main water supply and drip irrigation networks. Also, for increasing effectiveness of water use it is advised to provide portable irrigation sprinklers systems to settlements (please see the photos in the Annex). Although it is less efficient than drip irrigation or sub-irrigation due to waste of water through run-off and evaporation, but it is much more efficient compared to flood irrigation (through open (soil) canals) which is currently widely applied in vast majority of cases 6.2.1. Reconstruction of pumping station and replacement of the old irrigation network connected with the Mkhchyan

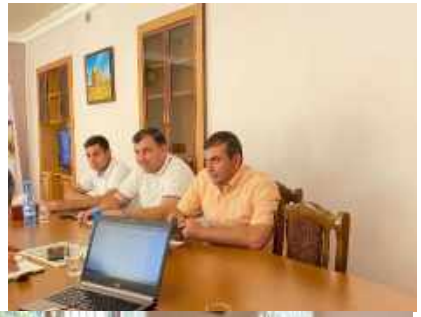
				pumping station 6.2.2. Reconstruction of pumping station and replacement of the old irrigation network connected with the Arazap-1 pumping station (4.5 km with 730 mm pipes) 6.2.3. In Vedi community: Construction of a 4 km irrigation network (closed or half-pipe) in Goravan settlement 6.2.4. In Vedi community: Construction of a 1.5 km irrigation network (even with half-pipe) in Vosketap settlement would allow to irrigate 40 hectares of agricultural lands. There is a need for a change of water by 200 meters. 6.2.5. In Vedi community: Construction of a 2.5 km irrigation network (even with half-pipe) in Nor Kyanq settlement 6.2.6. In Vedi community: Construction of a 8.6 km irrigation network and 5 (2mx6m – 4 and 3x6m - 1) reservoir in Urtsadzor settlement would allow to irrigate more than 25 hectares of agricultural lands. 6.2.7. In Vedi community: Construction of a 3.3 km irrigation network and 5 reservoirs (2mx6m – 4 and 1x6m - 1) in Shaghap settlement would allow to irrigate 560 hectares of pastures 6.2.8. In Vedi community: Construction of a 2.3 km irrigation network and 3 reservoirs (2mx6m) in Lusashogh settlement would allow to irrigate more than 350 hectares of pastures 6.2.9. In Vedi community: Construction of a 0.2 km irrigation network and 2 reservoirs (2mx6m) in Lanjanist settlement
			6.3. Another major issue of unsustainable use of water are the fisheries. There are many fisheries in the region, they use a huge amount of water and then the water is not disposed properly	6.3. Support in introduction of circular production and resource efficient and clean production (RECP) technologies and practices.

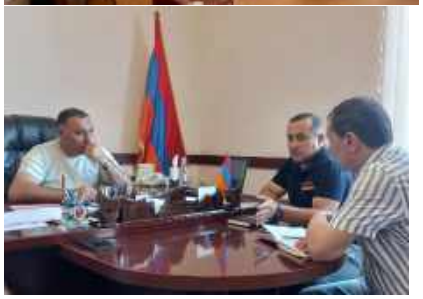
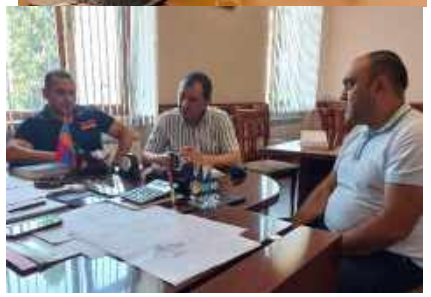
			and just lost.	
			6.4. All 3 communities have huge areas of remote pastures, arable lands and hay meadows that are not used because of the absence of field roads. Instead, the population overuse the lands that are closer to settlements and the soil becomes more and more degraded	6.4. Construction of the field roads leading to remote pastures, arable lands and hay meadows. Simultaneously, restoration of vegetation at the degraded lands is required 6.4.1. In Vedi community: Construction of 116 km field roads in remote areas of Urtsadzor settlement 6.4.2. In Vedi community: Construction of 3.3 km field roads in remote areas of Shaghap settlement 6.4.3. In Vedi community: Construction of 21.2 km field roads in remote areas of Lusashogh settlement 6.4.4. In Vedi community: Construction of 17 km field roads in remote areas of Lanjanist settlement 6.4.5. If field roads and watering points for the livestock are constructed in the remote pastures of Sevakavan and Zangakatun settlements the farmers could use some additional 1,000 hectares of pastures, simultaneously decreasing intensity of use of the lands that are overused. The nearby water source is Arazap-2 reservoir and there will be need for construction of around 4,5 km water pipeline from there
			6.5. Scarcity of the livestock watering points for the livestock in the remote pasture areas	6.5. Installation of livestock watering points in the remote pasture areas: 6.5.1. There is a need for installation of at least 4 livestock watering points in the remote pasture areas of the Vedi community
			6.6. Land degradation	6.6. One of the crucial climate change adaptation measures would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) for agricultural fields in chosen settlements of each community (please see the photos in the Annex). They will protect agricultural crops by reducing evapotranspiration and acting as windbreaks (reduce erosive windspeeds). These several forest belts would become a model

				for further replication by other settlements.
7.	Armavir	Armavir region	7.1. Almost all the energy consumed in the Khoy consolidated community is produced from the fossil fuels.	7.1. Support in installation of PV panels for all 3 community administrations that will allow to reduce costs electricity 7.1.1. Khoy consolidated community: If PV panels for Arshaluys settlement administration are installed it would allow to reduce costs of electricity. With the preliminary agreement, the saved amounts could be directed towards implementation of climate adaptive measures in the settlements.
			7.2. One of the major issues is unsustainable use of water resources. Part of the existing irrigation networks in the region are of open (soil) streams (especially in Nalbandyan, Getashen, Shenavan, Khoy, etc.) and it results in huge losses of water. Another example of unsustainable use of water resources is use of drinking water for irrigation in many settlements	7.2. Construction of water management systems, including reservoirs, pumping stations, main water supply and drip irrigation networks 7.2.1. Construction of around 3 km irrigation network would allow to irrigate around 60 hectares of agricultural land in Ferik community (Yazidi minority community). 7.2.2. There is a need for construction of as long as possible irrigation network for up to 700 hectares of agricultural lands in several communities (including Arevadasht Koghbavan) 7.2.3. In Armavir community construction of around 5 km irrigation network would allow to irrigate additionally around 14,4 hectares of agricultural land. 7.2.4. In Armavir community they have planted 350 trees. Due to issues with the irrigation system 50 of those trees did not survive. There is a need for construction of around 1 km irrigation network will ensure survival and growth of the remaining trees.
			7.3. Another major issue of unsustainable use of water are the fisheries in Guy settlement. They use a huge amount of water and then the water is not disposed	7.3. Support in introduction of circular production and resource efficient and clean production (RECP) technologies and practices.

			properly and just lost.	
			7.4. Land degradation	7.4. One of the crucial climate change adaption measures would be establishment of forest belts (windbreakers - a row of trees at the edge of a field) for agricultural fields in chosen settlements of each community.
8.	Armenia	General for all the regions, communities and settlements	8.1. Low level or luck of knowledge and awareness on climate change risks and adaption measures among the population, including regional and local officials	8.1. Provision of capacity development events (trainings, workshops, etc.) and awareness raising campaigns (info sessions, tours, etc., as well as dissemination of info leaflets) among the population, including regional and local officials
			8.2. Low level or luck of knowledge on sustainable agricultural practices among the farmers	8.2. Provision of capacity development events (trainings, workshops, etc.) to the farmers (trainings, study visits, establishment of demo farms where on-job trainings will be conducted, etc.) on sustainable agricultural practices
			8.3. Lack of alternative income sources for the population and their overreliance on subsistence and non-effective agriculture	8.3. Provision of model greenhouses, food frying equipment/facilities, small fruits and berries processing facilities, small fisheries with circular technology, etc.
			8.4. Lack of financial resources	8.4. Development of capacities of the farmers and local officials on fundraising, project proposal writing and project implementation, etc.

Photos

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[2]

Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:

Hakob Simidyan *Minister of Environment of the Republic of Armenia*	Date*: 18.08.2023*

B. Implementing Entity certification

Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address

[6] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

Name & Signature Implementing Entity Coordinator Armen Yesoyan, Director, "Environmental Project Implementation Unit" State Agency Under the Ministry of Environment of the Republic of Armenia	
Date: *21.08.2023*	Tel. and email: info@cep.am, +37410651631
Project Contact Person: Rubik Shahazizyan, Head of Project Implementation and Monitoring Department, "EPIU" SA Milena Kiramijyan, Acting Leading Specialist of Cooperation with Donors Department, "EPIU" SA	
Tel. And Email: rshahazizyan@yahoo.com, +37410651631 milena.kiramijyan@gmail.com/milena.kiramijyan@epiu.am, +37410651631	

ՀԱՅԱՍՏԱՆԻ ՀԱՆՐԱՊԵՏՈՒԹՅԱՆ
ՇՐՋԱԿԱ ՄԻՋԱՎԱՅՐԻ ՆԱԽԱՐԱՐ
REPUBLIC OF ARMENIA
MINISTER OF ENVIRONMENT
РЕСПУБЛИКА АРМЕНИЯ
МИНИСТР ОКРУЖАЮЩЕЙ СРЕДЫ

№ 1/27.1/12088

«21» «08» 2023

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for the project "Enhancing the land-based adaptation of communities adjacent to arid zones and forest protected areas of Armenia by duplicating and expanding the successful mechanisms of the previous projects"

In my capacity as designated authority for the Adaptation Fund in the Republic of Armenia, I confirm that the above national grant proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Republic of Armenia.

Accordingly, I am pleased to endorse the above grant proposal with support from the Adaptation Fund. If approved, the project will be implemented by the "Environmental Project Implementation Unit" State Agency of the Ministry of Environment of the Republic of Armenia and executed by the same Agency.

Sincerely,

18.08.2023

X

ՀԱԿՈԲ ՍԻՄԻԴՅԱՆ

Signed by: SIMIDYAN HAKOB 3004840588

Mr. Hakob Simidyan

"Environmental Project Implementation Unit" State Agency
Armen Yesoyan, +37410651 631