ADAPTATION FUND

PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category:	Regional project
Country:	Armenia and Georgia
Title of Project/Programme:	Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction
Type of Implementing Entity:	MIE
Implementing Entity:	UNDP
Executing Entity/ies:	UNDP
Amount of Financing Requested:	$7,475,650 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

Summary

1. This project seeks to increase the resilience of mountain communities and forest ecosystems to climate-induced hazards, and in particular to the increasing risk of forest wildfire in mountainous regions of the Southern Caucasus. By doing so, the project aims to improve the safety and livelihoods of forest-dependent communities, reduce bio-diversity losses and other environmental impacts, reduce the costs associated with large scale wildfire response, loss of life and other damages, and maximise ancillary benefits associated with sustainable forest management, including the role of forests as carbon sinks.

2. The forest biome of the South Caucasus covers around 20% of the Caucasus Ecoregion. The region is listed by WWF as a global conservation priority area with extremely rich biodiversity. The project activities will be undertaken in two countries of the Southern Caucasus - Armenia and Georgia which contain a significant proportion of the forest resources.

3. Wildfires in forest mountain eco-systems in the two countries have shown an increasing trend over recent years, having historically been of less importance. While the evidence indicates that the most significant cause of these wildfires is anthropogenic (e.g. agricultural residue burning, recreational tourism), their increasing frequency and severity clearly reflects changes in the climate. Higher temperatures and changes in precipitation are making the forests drier and more susceptible to combustion and rapid wildfire spread. Climate change is a significant threat multiplier.

4. Future climate predictions indicate that wildfire risk is likely to increase further over time, particularly in less humid and temperate forests away from the Black Sea coast and towards the Central and Eastern area of the Southern Caucasus. This has the potential to impose significant costs on mountain forest communities, who together with the local forest agencies act as stewards of the landscape forest resource. Communities not only benefit from livelihoods supported by forest resources (timber products, fuel wood, forest products, tourism, agriculture) but are also important participants in wildfire identification and response.

5. The project will seek to both reduce the risk of wildfire outbreak as well as build capacity for more effective engagement when wildfires do occur to minimize environmental and economic damage. It will also promote sustainable eco-systems and enhance the livelihoods of those living in mountain forest regions. It will seek to do this by building an integrated regional wildfire management approach with the following components:

    a. Regional regulatory and institutional capacity to reduce risk and improve response;

    b. Enhanced use of data for wildfire forecasting, early warning and decision making;

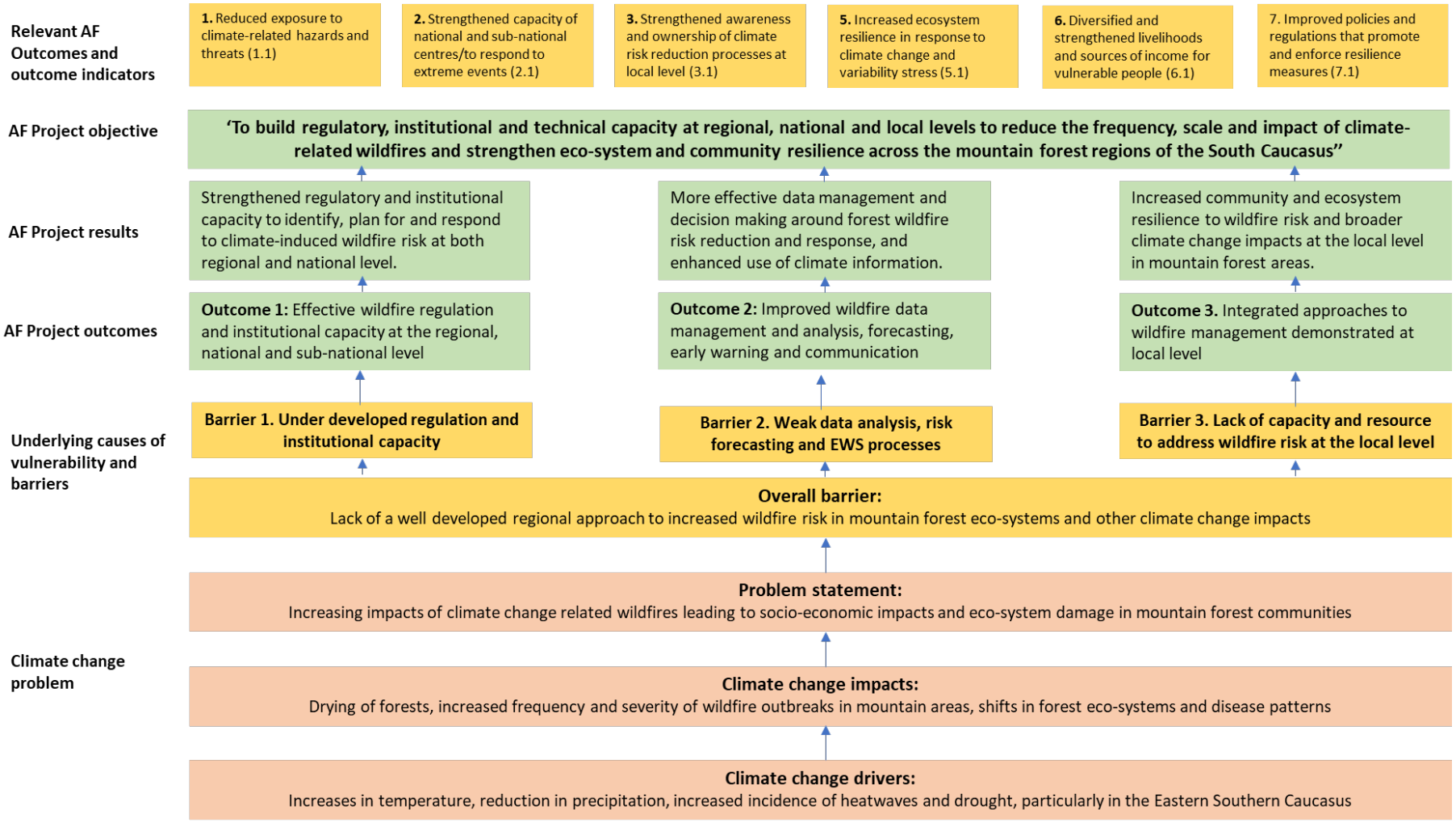
    c. More effective wildfire and sustainable forestry management at the local level.

6. Given the regional and transboundary nature of the problem, addressing wildfire risk offers an opportunity for strong coordination and alignment between countries. There are already high levels of joint response in fighting major wildfire incidents. The common challenges create an opportunity for greater regional alignment in regulation, vulnerability assessment, data analysis, forecasting, and learning. The project will promote common approaches and strengthen regional coordination and learning mechanisms where these add value.

7. The regional approach will allow building cooperation between the two countries on regulatory reform (e.g. volunteering), hydro-meteorological, forest and wildfire data management, harmonizing hazard assessment methodologies, monitoring and forecasting of wildfires and other climate-induced disasters, and setting up joint Early Warning Systems. The project will develop common modelling tools for risk and vulnerability assessment, common SOPs on information collection, storage and dissemination, as well as reporting standards on climate induced hazards. Regional cooperation on fire surveillance and firefighting also will be strengthened. Finally, the regional project will facilitate sharing of lessons on ecosystem-based climate change adaptation and the role of communities in reducing risk.

8. The project will work directly with the forest and protected area agencies and the emergency services in the respective countries for project implementation. Activities will be undertaken at a regional, national and local (e.g. forest district or enterprise) level and are likely to help improve the resilience of 500,000 ha of mountain ecosystems and the safety and livelihoods of 800,000 people in the two countries.

Figure 1: Theory of Change for the proposed project

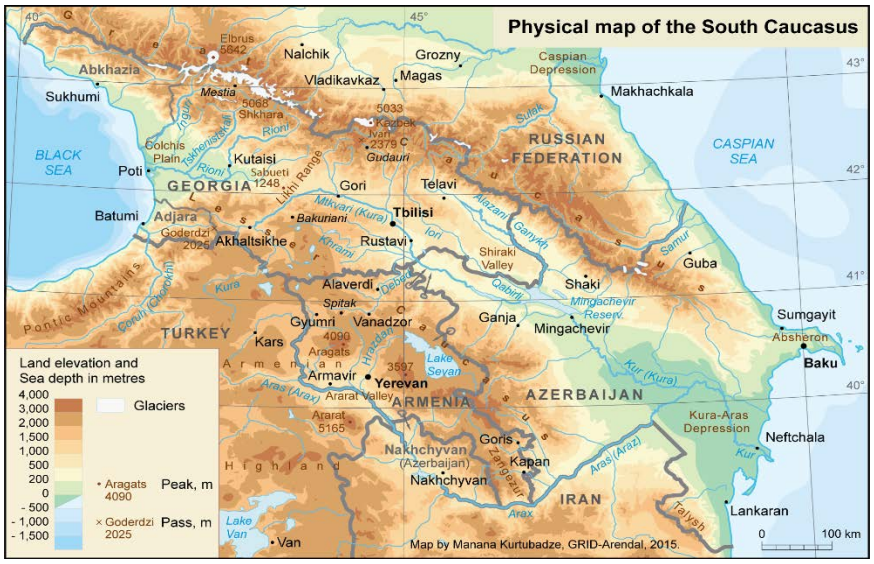


Overview of South Caucasus region (Armenia and Georgia)

South Caucasus Profile

9. This project will be implemented in the South Caucasus region, with project activities focused in the Republics of Armenia and Georgia. Both countries are situated to the South of the High Caucasus mountain range that runs West to East along the Russian border. They are surrounded by Turkey to the West, Iran to the South and Azerbaijan to the East. Armenia is landlocked, whereas Georgia enjoys access to the Black sea coast.

Figure 2: Map of Caucasus region



10. The Republic of Armenia is a mountainous, landlocked country with the total area of 29,743 square km. The majority of Armenia's territory (76.5%) is situated on the altitudes of 1000-2500 m above sea level with the lowest point at 380m in the gorge of Debed river and the highest point being Mount Aragats with an elevation of 4090m. Administratively, the country is divided into ten units (Marz), plus the capital Yerevan. In 2018, the population stood at approximately 3 million with approximately 37% of the population living in rural areas in 2018.[1] In Armenia, the poverty rate in 2016 was 29.8%, while the World Bank forecast that the poverty rate would fall to 22.2% in 2019.[2] Unemployment in Armenia remains high and volatile – 18%. Unemployment is mostly concentrated in urban areas, among the young and women. Youth unemployment (36.6%) is twice that of the population aged 25 to 64.[3]

11. Armenia is considered by the International Union for Conservation of Nature (IUCN) as one of the 25 worldwide biodiversity hotspots.[4] Most of the high biodiversity hotspots are linked to forests or forestlands. Due to intensive use, the level of anthropogenic impacts on natural landscapes in Armenia is high. Overexploitation has resulted in pollution and reduction of wild biodiversity, loss of habitats of certain species and changes in the services provided by ecosystems.

12. The Republic of *Georgia* is situated between Russia to the North, Azerbaijan in the East and Armenia and Turkey to the South. It borders the Black Sea in the West. The total area of Georgia is 69,700 square kilometres. Administratively, the country is divided into nine regions and one city. There are also two autonomous republics. The population of Georgia was approximately 3.7 million, with 41% of the population living in rural areas in 2018.[5] The unemployment rate declined from 13.9 percent in 2017 to 12.7 percent in 2018. The poverty rate was 16 percent in 2017 (16.4% in 2016) and is expected to fall to 13.4 per cent in 2019.[6]

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[1] See https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS

[2] See http://www.am.undp.org/content/armenia/en/home/sustainable-development.html

[3] Ibid

[4] As a part of the Caucasus-Anatolian-Hyrcanian Temperate Forests Ecoregion, which is listed by WWF as a Global 200 Ecoregion, the forests of Armenia have been identified as a global conservation priority. Additionally, significant shares of Armenia's territory belong to the Caucasus and the Irano-Anatolian biodiversity hotspots identified by Conservation International.

[5] See https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS

[6] ECA Macro Poverty Outlook, Spring 2019 (World Bank) - http://pubdocs.worldbank.org/en/896101492021924164/data-geo.pdf

13. Georgia's landscape is varied - humid subtropical coastline, lowlands and wetlands, plains, semideserts, highlands, and mountains covered by forests and glaciers. Much of the landscape is mountainous, with 54 percent of land at an altitude over 1,000 m above sea level. Nearly 40 percent of land is covered by forests, mainly located in the mountainous areas. Georgia is a country rich in biodiversity, most of which can be found in the forests, freshwater habitats, marine and coastal ecosystems and high mountain habitats.

Profile of forests in the South Caucasus

14. The South Caucasus is home to a varied range of forest landscapes (sub-tropical, temperate and coniferous) which support rich biodiversity. The forest patterns are set out in Figure 3 below. The Caucasus forest belt can be subdivided into three major elevation zones: broad-leaved forests (50–900m), coniferous forests (900–1700 m), high mountain subalpine forests (1700–2000 m) with krummholz forest at higher elevations (2000–2800 m).[7]

Figure 3: Overview of forest and landscapes in South Caucasus Region

Source: Grid Arendal

15. In *Armenia*, it is estimated that forests currently represent approximately 11.2% of the overall territory. This represents 334,100 ha which includes 283,600 ha of natural forests and 50,500 ha of plantation forests. Armenia is thought to contain 110 tree and 152 shrub species. The dominant tree species are broadleaf deciduous trees.

16. A mix of oak, beech and hornbeam make up the majority of Armenian forest cover (81.3%). Pine trees (mostly in plantations) represent 5.3%, while the remainder (10.9%) is a mix of juniper and other broadleaf deciduous trees. The north-eastern and south-eastern parts of the country and the eastern bank of Lake Sevan offer the most favourable climatic and environmental conditions for forest growth. At present, 62% of the forest cover is found in the northeast, 36% in the southeast, and only 2% in the central region of the country.

17. While there is evidence that up to 30% of Armenia was once forested, forest cover has been relatively limited in Armenia over the recent years. Forested areas were heavily impacted following Armenian independence in 1991, with the collapse of country energy system and the rise of illegal

[7] See Forest Habitat Restoration in Georgia (2015). http://www.cleanup.ge/documents/tkis_habitati-2015_eng.pdf

logging and community use of timber resources. However, reliable data on forest resources remains limited.

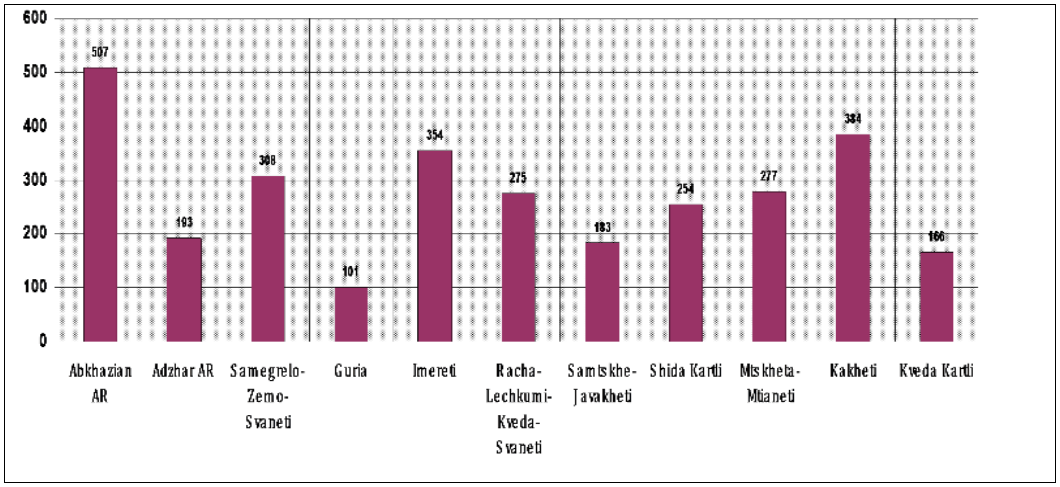
Figure 4: Distribution of forest in the South Caucasus

Source: Grid Arendal, https://www.grida.no/resources/7908

18. *Georgia* has significantly higher levels of forest cover than Armenia (estimated at 2.8 million ha or approximately 43% of Georgian territory), in part a reflection of the different topography and climate, making it a forest-rich country.[8] Approximately 97% of forests are located in mountainous areas, with 80% on steep slopes (of 21 degrees of more). It is estimated that c. 600 thousand ha are virgin forest. Forests are diverse and shaped by elevation, soil conditions and climate.

19. Broadleaf species are mainly beech, Georgian oak, hornbeam and chestnut. The Colchic foothills in Western Georgia are dominated by chestnut and beech forests. Dark coniferous forests, made up mainly of oriental spruce and Caucasian fir, are found in the western part of the Lesser Caucasus Range and on both sides of the western and central Greater Caucasus Range. Native pine forests occur in the northern parts of Georgia in the high mountains of Khevsureti. They are also found in the southern Caucasus in the Kura River watershed. Arid open woodlands can be found on dry, rocky slopes in south-eastern Georgia, consisting of pistachio juniper, and hackberry. Forests are generally distributed across the territory of the whole of Georgian Territory as set out in Figure 5.

Figure 5: Distribution of forest in Georgia by region (000s ha) (2012)



Source: Reram (2016)[1]

[8] National Biodiversity Strategy and Action Plan of Georgia (2013-2020)

20. As in Armenia, Georgian forests have suffered over exploitation, with canopy cover reaching critically low thresholds in more than 55% of forested areas. At these levels, forests begin to lose their protective functions and regeneration capacity which can impact on biodiversity. Climate change is a key driver of degradation, alongside logging, grazing, alien species and unsustainable use.[9]

21. Both Georgia and Armenia suffer from a lack of an up-to-date forest inventory and poor monitoring systems, both of which reflect the economic and structural challenges since the collapse of the Soviet Union. Efforts are ongoing in both countries to undertake new forest inventories and set up monitoring systems that will allow for better data and support improved decision making and resource allocation for forest conservation and regeneration.

South Caucasus climate

22. The South Caucasus has a varied climate due primarily to the large variation in elevation and the mixture of lowland plains and mountains and upland plateaus.

23. *Armenia's* climate is influenced by the Caucasus Mountains, and ranges from dry sub-tropical to cold alpine. The average annual air temperature is 5.5°C, but ranges from 12-14°C to below zero at altitudes above 2,500 m. Summers are temperate: the average temperature at the end of July is 16.7°C, while in Ararat valley it ranges between 24-26°C. The recorded absolute highest temperature is 43.7°C. Winters are cold. January is the coldest winter month, with an average temperature of -6.7°C, but with lowest minimum recorded at -42°C. Winters in the northeastern and southeastern parts of the country are temperate.

24. Armenia's average annual precipitation is 524 mm (1960-2015), over 40 percent occurring April through June; with average annual precipitation of 200 to 250 mm in low-land areas, and 800 to 1,000 mm at higher altitudes.

Figure 6: Average temperatures in the South Caucasus

Source: ENVSEC[10]

[9] See EPNI-FLEG http://enpi-fleg.ge/index.php/ka/2-uncategorised/9-georgian-forests

[10] See http://www.envsec.org/publications/climatechangesouthcaucasus.pdf

25. *Georgia* has a diverse climate, with two distinct climatic zones separating the East and West. On the West coast, along the Black Sea, the climate is humid and subtropical, with average annual temperatures of 14°C to 15° C and extremes from -15°C to 45°C. The East is more varied, with a dry subtropical climate in the plains and an alpine climate in the mountain regions.

26. The Greater Caucasus mountain range plays an important role in moderating Georgia's climate and protects the nation from the penetration of colder air masses from the north. The Lesser Caucasus Mountains partially protect the region from the influence of dry and hot air masses from the south. The average annual temperature is 11ºC to 13°C in the plains, and 2ºC to 7°C in the mountains, with a minimum of -25°C and -36°C, respectively.

27. Annual precipitation in Georgia is 400 to 600 mm in the plains, and 800 to 1,200 mm in the mountains. Precipitation in Western Georgia tends to be consistent throughout the year, although it can be particularly heavy during the autumn months. The foothills and mountainous areas experience cool, wet summers and snowy winters, with snow cover often exceeding 2 meters in many regions. Annual precipitation in Eastern Georgia ranges from 400–1,600mm, and is considerably less than in Western Georgia.

Figure 7: Average precipitation in the South Caucasus

Source: ENVSEC (2011)

Historic climate change

28. There is significant evidence that the climate has been changing over recent decades across the South Caucasus region in both Armenia and Georgia.

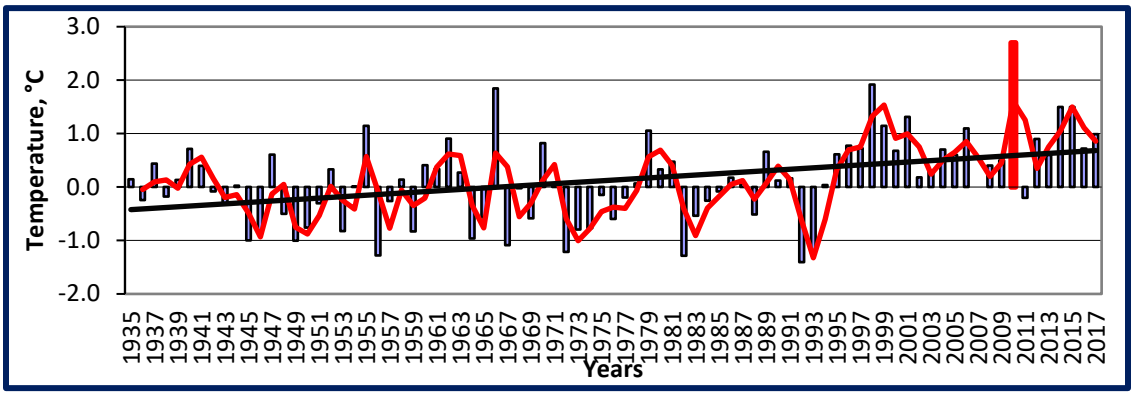
Temperature

29. In *Armenia,* temperatures have been rising steadily over recent years (see Figure 8). In 2015, the Third National Communication to the UNFCCC reported an annual mean temperature increase of 1.03C against the 1935-1996 average. There is some variation in season, with summer temperatures increasing by an average of 1.1C but winter temperatures recording much lower levels of increase.[11] In recent years, there has been a significant increase in the number of heat related extreme events in Armenia which can be a significant cause of wildfire. The number of days over 25C has significantly increased particularly in arid semi-desert and steppe zones, and

[11] Armenia Third National Communication (2015) https://unfccc.int/sites/default/files/resource/armnc3.pdf

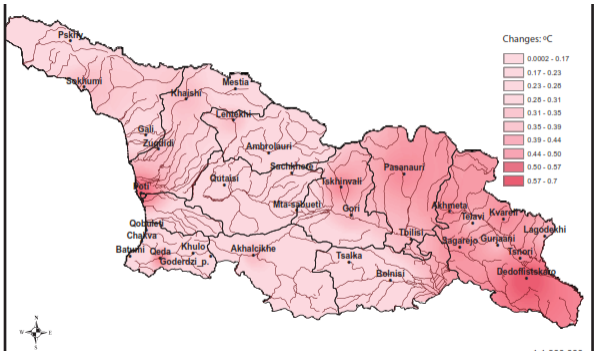
the duration of heat waves has increased. The average value of heat waves in the different climatic zones of Armenia varies between 12-26 days with the maximum value ranging from 34-70 days.

Figure 8: Armenia: Annual changes in observed temperature vs. 1961-1990 average



30. In Georgia, temperatures have also been increasing across the whole country, with increases in the East (0.5C) generally higher than in the West (0.3C). Between two reference periods (1961-1985; 1986-2010), the maximum increase was 0.7C in Dedoplistskaro in the far East of the country, with a maximum increase in the West (Poti) of 0.6C.

Figure 9: Spatial distribution of changes in temperature in Georgia 1961-85 vs. 1966-2010 averages

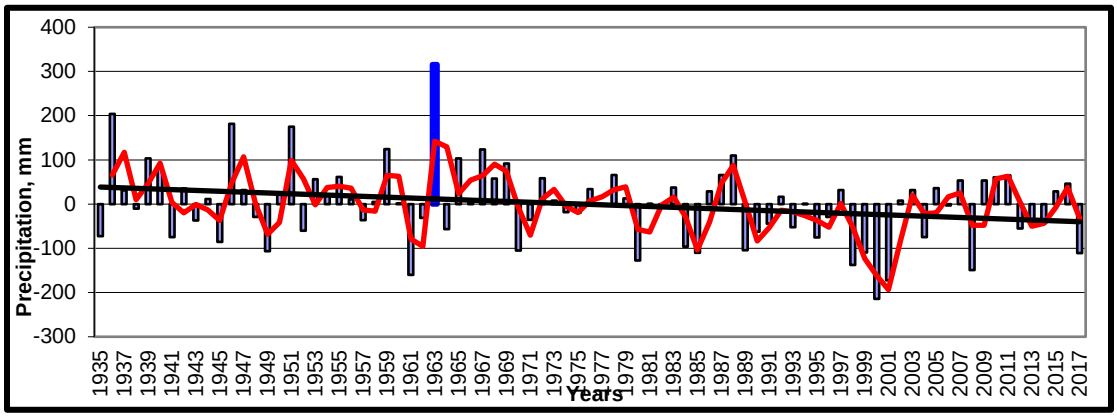


Source: Georgia Third National Communication to the UNFCCC

Precipitation

31. There has been decreasing precipitation trend in Armenia with a decrease of 10% over the period 1935-1996. There is also significant spatial distribution, with north-eastern and central regions becoming more arid, while precipitation has increased slightly in southern and north-western regions and across the western part of Lake Sevan basin. The average number of consecutive dry days has also increased. Dry periods are high in Meghri and Ararat (averaging 61 and 58 days). Over the period 1935-2012 the number of dry days increased across almost all zones of Armenia, with the greatest increases in the dry sub-tropical zone.

Figure 10: Armenia: Annual changes in precipitation vs. 1960-1991 average



Source: Climate Change Information Centre of Armenia

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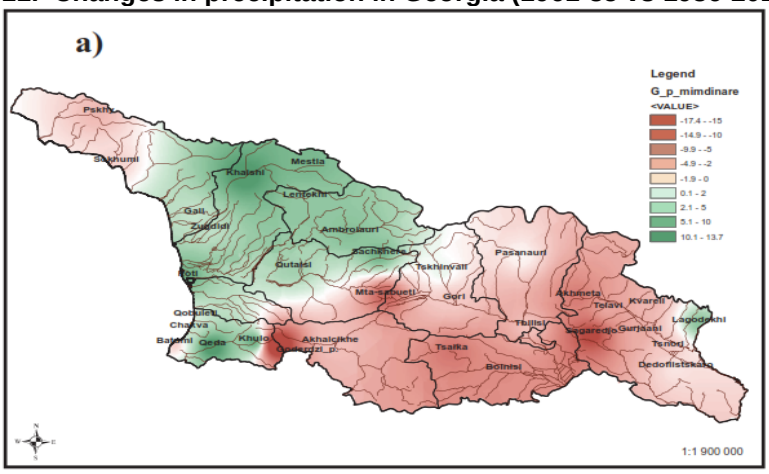
32. Since 1960, there has been a general pattern of increasing precipitation in the west of Georgia. The mountain areas of Svaneti and Adjara both saw increases of 14 percent. There have been decreases in the central and eastern areas of Georgia with lower precipitation along the Likhi Ridge and to the East, which in turn has the potential to increase the risk of wildfire.

Figure 11. Changes in precipitation in Georgia (1961-85 vs 1986-2010)



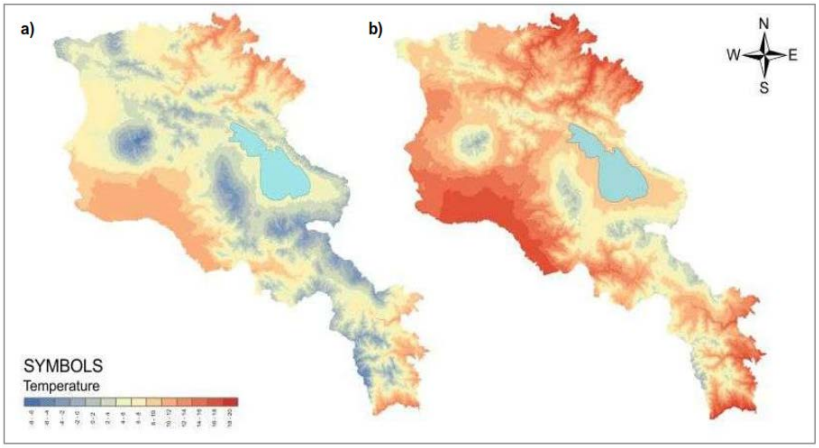
Source: Georgia. Third National Communication to the UNFCCC

Projected Future Climate change

Temperature

33. In *Armenia*, the Third National Communication to the UNFCCC reports projections for temperature increases by 1.7C by 2040, 3.2C by 2070 and 4.7C in 2100 under an A2 emissions scenario, and 1.3C, 2.6C and 3.3C respectively under the B2 emissions scenario. There are indications that the already hot and dry conditions associated with summer will worsen, creating significant impacts across a range of sectors. Temperatures increases are projected to accelerate significantly after 2040. As a result, annual mean negative temperatures will be maintained only in the highlands of Aragats, Geghama and the Zangezur mountains.

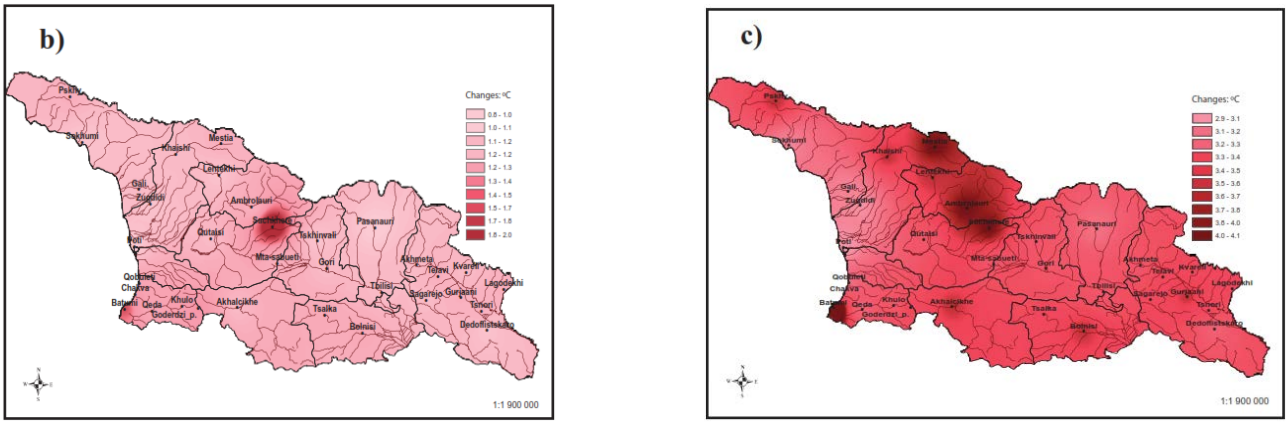
Figure 12: Annual average temperature in Armenia: (a) 1961-1990 vs b) 2071-2100 (RCP 8.5 Scenario)



Source: Armenia: Third national communication to the UNFCCC

34. In *Georgia*, average annual temperatures are expected to increase by 0.8°–1.4°C by 2050 and 2.2°–3.8°C toward 2100 with the greatest increases in the Northwest mountains. There will also be an increase in the number of hot days (which may double in some mountain areas), with more frequent heat waves June–August.

Figure 13: Projected increase in temperature in Georgia vs historic baseline (b)2050, c)2100)



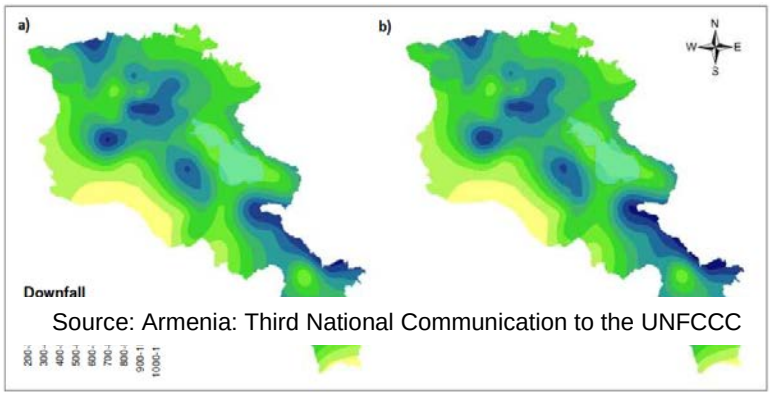
Source: Georgia: Third National Communication to the UNFCCC

Precipitation

35. Annual precipitation trends in *Armenia* are projected to be relatively flat, with inconsistent signals across the models and emissions scenarios. However, summer precipitation is expected to decrease across all three time periods (2040, 2070 and 2100) by 23% compared to the baseline average (1961-1990)

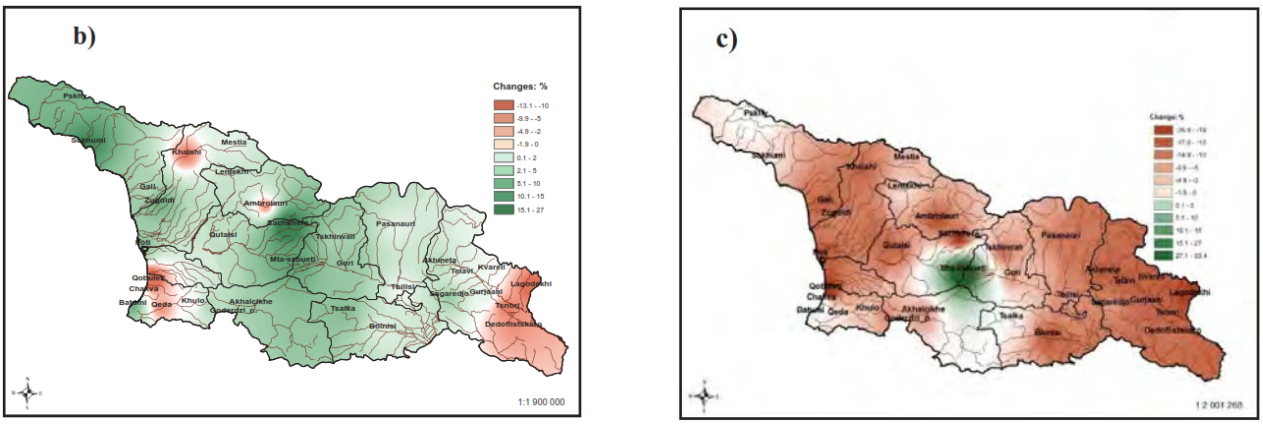
36. In *Georgia,* there is likely to be an overall increase in precipitation compared to historic averages over the period to 2050, followed by a period of more significant decline in overall precipitation levels (of up to 24%) in the period to 2100. Drying effects are likely to be greatest in the East of Georgia.

Figure 14: Distribution of annual average precipitation in Armenia in (a) 1961-1990 and b) projections for 2071-2100, RCP 8.5 Scenario



Source: Armenia: Third National Communication to the UNFCCC

Figure 15: Projected changes in precipitation in Georgia vs historic baseline in (b)2050 and (c)2100



Source: Georgia: Third National Communication to the UNFCCC

37. Relative humidity is also predicted to decline across the majority of stations over the period to 2100, which has significant implications for wildfire risk.

Impacts of climate change

38. The South Caucasus is already witnessing significant impacts associated with climate change. Increased temperatures and changes in precipitation are accompanied by increased frequency of extreme events (drought, floods, high winds and storms). These impacts of climate change are expected to be felt across a range of sectors (agriculture, eco-systems, health, infrastructure, tourism and water resources).

39. The higher temperatures and lower precipitation/drying associated with climate change lead directly to loss and damage to forest ecosystems. This occurs not only due to increased fire risk but also from the wider degradation and the increased prevalence of pests and diseases. In turn, a number of sectors are directly impacted. Livelihoods are affected (e.g. through lower forest productivity, forest loss, loss of biodiversity and impacts on tourism). Infrastructure is directly at risk. Human and animal health is impacted due to increased heat stress. Further details on overall impacts of climate change at the sector level are provided in **Annex 4.**

The problem that the project will address - wildfires in mountain forest eco-systems

40. The project will focus on addressing the increasing **wildfire risk in mountain eco-systems** associated with rising temperatures and declining precipitation and humidity. It will do so by focusing on forest areas in the Central and Eastern parts of the South Caucasus where these climate signals and associated risk are already strong, and where the greatest changes are predicted to occur in the future. By addressing this risk, the project will improve the resilience of mountain forest communities and address the wider challenges of climate change impacts on their livelihoods.

41. Wildfires are a significant and increasing threat to Armenia and Georgia. They regularly impact upon significant areas of forest, resulting in significant ecological damage, evacuation of local communities, and occasional death, injury and destruction of infrastructure and property.[12] Fire damage can lead to secondary disasters such as landslides, mudflows or floods especially in mountain terrain as the loss of tree cover can destabilize soil integrity on steep slopes. Fires on terrain contaminated by unexploded ordnance and land mines – both remnants of previous conflicts – can pose an additional threat to personnel involved in firefighting and civilians.[13]

Figure 16: International wildfire response in Borjomi national park, Georgia (2017)

42. Forest fires in both countries are caused by a combination of both natural and anthropogenic factors. The main causes of anthropogenic fires are proximity to the residential areas (negligence of population, existence of landfills etc.), practice of burning agricultural areas, absence of fire breaks, and the violation of forest use rules. A smaller portion of forest fires are solely due to natural causes (e.g. extreme heat, lightning) such as the outbreaks in Georgia in summer 2014.

[12] Decree of Georgian Government N 4 on approval of the Disaster Risk Reduction strategy 2017-2020 and Action Plan, January 11, 2017
[13] Proposal for a National Fire Management Policy of Georgia, ENVSEC, 2014

However, high temperatures and low precipitation act as a significant catalyst to exacerbate the probability and impacts of man-made fires.[14]

Table 1: Causes of forest wildfire (Project team analysis)

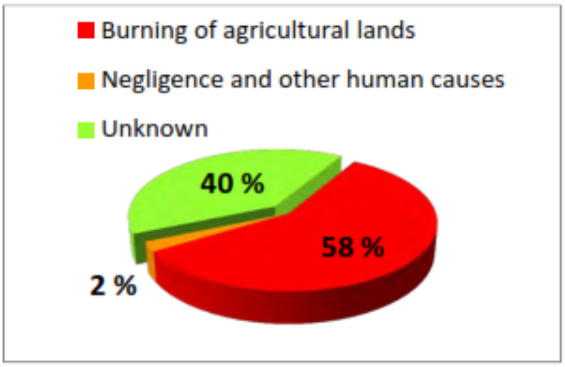
Causes/origins of wildfires in South Caucasus	Root causes	Drivers of exacerbated probability/scale/impact	Mitigation measures – Adaptation solutions
Agricultural residue/field burning	Cultural practice Lack of awareness Lack of residue uses	Lack of fire breaks near fields Lack of fire controls for burning Climate change and variability Combustible material Poor forest management Weak firefighting response (e.g. tools), suppression equipment	Farmer education and awareness Enforcement and fines Training in field management Fire breaks/field gap construction Mineralisation Productive uses of agri residues Improved fire response capacity
Irresponsible forest users/ tourism	Lack of awareness Deliberate vandalism	Lack of zoning and facilities Climate change and variability Forest drying/combustible material Poor forest management Weak firefighting response (e.g. tools), suppression equipment	Improved signage More robust enforcement/fines Recreational zones/fire pits Awareness raising Early warning/risk communication Improved fire response capacity
Landfills	Poor solid waste management	Climate change and variability Forest drying/combustible material Poor forest management Weak firefighting response (e.g. tools), suppression equipment	Improved solid waste management collection and disposal
Electricity cables (transmission, transport)	Siting close to forest areas	Climate change and variability Forest drying/combustible material Poor forest management Weak firefighting response (e.g. tools), suppression equipment	Improved siting
Natural causes (lightning)	Natural phenomena	Lower precipitation and humidity Increased temperatures Pest outbreaks / deceases Poor forest management	Improved forest management Residue removal Pest and decease control Firefighting access and water

[14] Decree of Georgian Government N 4 on approval of the Disaster Risk Reduction strategy 2017-2020 and Action Plan, January 11, 2017

43. In both countries, anthropogenic causes are the main cause of forest fire (estimated at up to 90%). For example, according to one report, at least 60% of forest fires in Armenia had human origins between 2007-2011, with only 2% being identified as being of purely natural causes.[15]

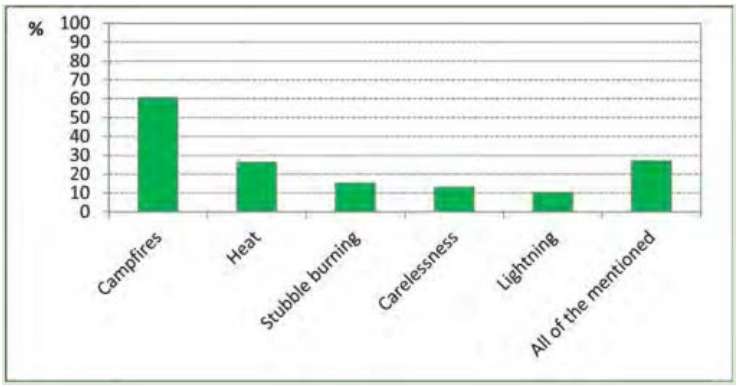
44. However, perceptions of the anthropogenic causes of fire risk among local populations are much lower, suggesting that awareness of risks could be improved. The following chart shows the perceptions among forest communities in one of the project locations in Syunik province in southern Armenia as to the perceived causes of forest fire.

Table 2: Causes of forest fire in Armenia (UNDP/GEF 2012)



Historical trends

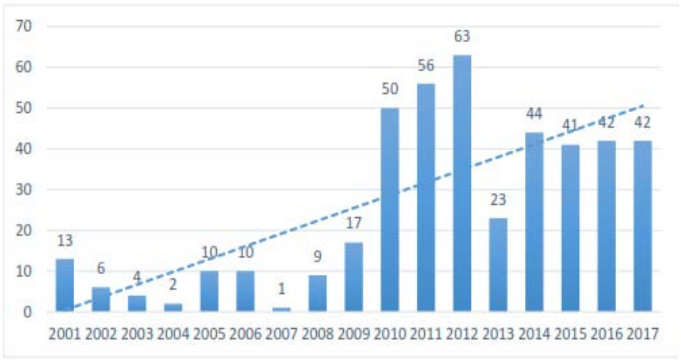
Figure 17: Perceptions of the causes of forest fire in Syunik Province, Armenia (UNDP/GEF 2012)



45. In both Georgia and Armenia, there has been a consistent upward trend in the number of forest wildfires and the area impacted over recent years.

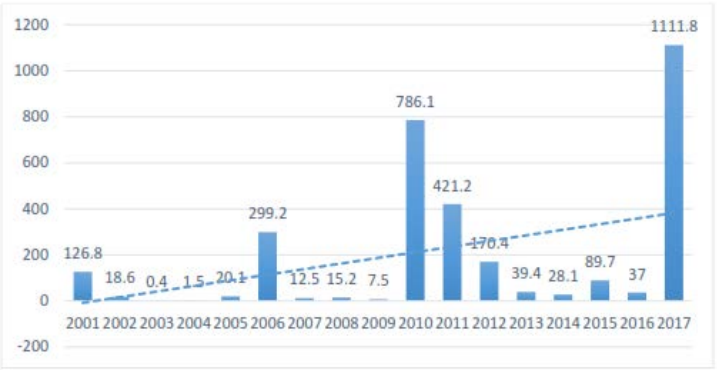
46. In *Armenia*, incidence and scale of forest fires has increased dramatically. The number of fires per annum has increased from less than ten in 2000 to more than fifty on average by 2018. Likewise, the scale of forest damaged per annum increased from less than 50ha in 2000 to more than 400ha in 2017. The incidence of large-scale fires has also been noticeable. For example, in wildfires in the Khosrov Forest Reserve, and Vayots Dzor and Aragatsotn Forestry areas destroyed more than 1000 ha of forest in 2017 with significant biodiversity loss.[16]

Figure 18: Incidence of reported forest fires in Armenia



Source: Armenia Statistical Committee

Figure 19: Armenia: Reported hectares of forest destroyed by wildfire



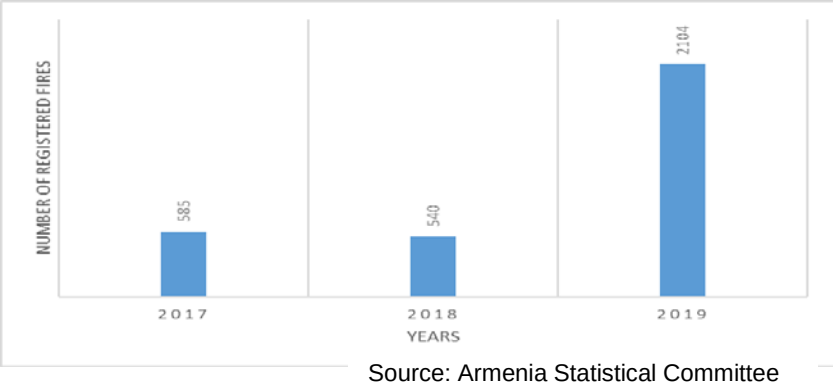
Source: Armenia Statistical Committee

[15] See https://www.un.am/up/library/Wildfire%20Management_eng.pdf

[16] State Forest Monitoring Center (SFMC)

47. The number of fires in vegetated areas has grown significantly by 2019 as set out in Figure 20. For example, in the first half of 2017 there were 585 cases of wildfires, while in 2019 2109 cases were registered. So, the number of fires in the vegetation areas increased by 1364, which is a rather serious indicator.

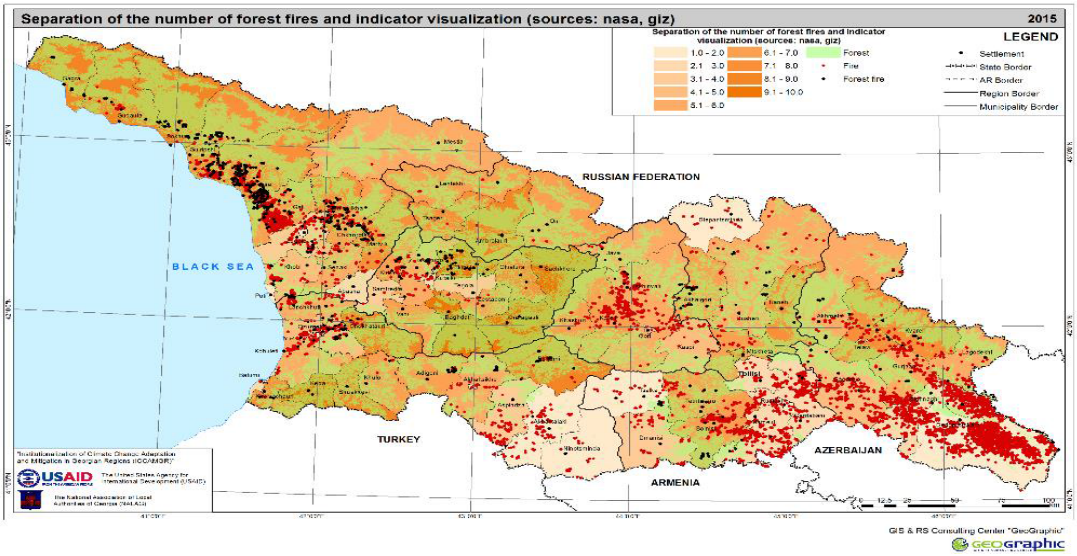
Figure 20: Number of registered fires in vegetated areas of Armenia (2017-2019)



Source: Armenia Statistical Committee

48. In *Georgia*, forest fires are also a significant problem. From 2000 to 2015, a total of 6,000 fires were recorded in Georgia (see Figure 21). Over the period 1998-2011, the average number of forest fires registered was approximately 25 per annum with an average annual area of destroyed forest of 270 ha.

Figure 21: Geographic distribution of wildfires in Georgia 2000-2015



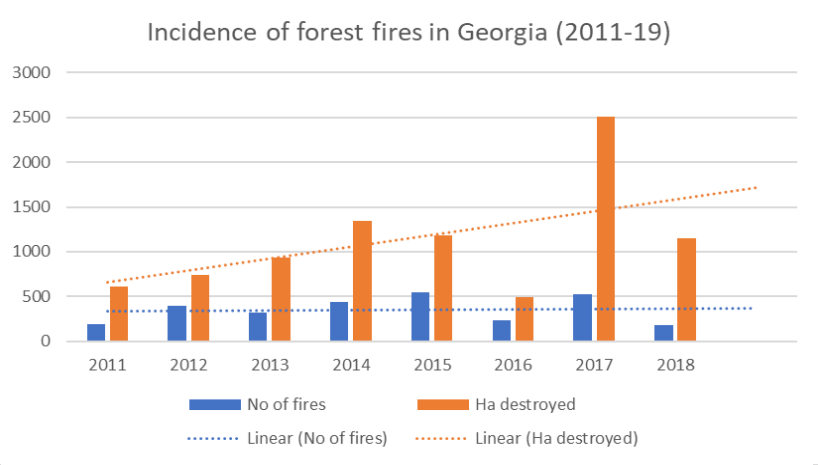
Source USAID

49. Over recent years, there have been significant increase in large-scale wildfire events in Georgia. For example, there were major incidents in 2006 (765 ha), 2008 (1270 ha) and 2010 (430 ha) which show a growing risk of larger-scale fire disasters.[17] According to the National Forestry Agency (NFA), fires cause significant damage every year, with the Samtskhe-Javakheti region most heavily impacted in this regard.[18]

[17] These statistics does not include forest areas burnt due to military activities during the war in 2008
[18] Source: National Forestry Agency, May 2019

50. Protected Areas (PAs) occupy about 9.55% of Georgia's territory with forests covering approximately half of this area. Over the period 2012-2018, 79 cases of fires were observed within PAs, covering 6,967ha. Most of the fires occurred in coniferous and broadleaf forests of semi-arid ecosystems. Within the protected areas, forests at risk include the Borjomi-Kharagauli National Park (Akhaltsikhe, Adigeni and Borjomi municipalities). The coniferous forests of Tusheti protected areas are also considered high risk, as well as mixed forests of Algeti National Park. The coniferous forests of Mariamjvari Strict Nature Reserve on southern slopes of Gombori ridge are also considered to be under heavy fire risk.[19]

Figure 22: Forest wildfires in Georgian forests 2011-2019 (National Forest Agency)



Source: Emergency Services Georgia

51. The Georgian Emergency Management Service, National Forest Agency and the Agency for Protected Areas report significant numbers and damages associated with wildfires in forested areas between 2011-2019 (see Figure 22). While the trend for the number of fires is slowly increasing, there has been a significant increase in the overall trend for their scale and impact of these fires. This is in part due to extensive wildfire damage in 2017, caused by high temperatures and very dry climatic conditions.

Projected future changes

52. Wildfire risk is projected to increase under all climate change scenarios, along with other risks to the sustainability of forest resources in the South Caucasus. For example, according to Armenia's Second National Communication on Climate Change, with the expected aridification of climate, the probability of more intensive forest fires will increase. This particular danger is relevant for forests in central, southern and south-eastern forested areas of the country. In total, climate change related wildfires may account for up to 1300 ha of lost forest eco-system by 2030 (above the existing baseline).

Table 3: Projected losses of forest stock in Armenia due to climate change by 2030

Vulnerability factors	Possible losses of forest areas (ha)	Carbon accumulation re-duction (T/year)
Changes in the boundaries of forest ecosystems	3000-4000	1625-2200
Fires	1200-1300	650-700
Pests and diseases	10000-12000	5420-6500
Total	14200-17300	7695-9400

Source: Armenia Second National Communication

53. In Georgia, modelling suggests that the increasing occurrence of extreme dry spells and heat waves currently observed, as well as climate modeling-based predictions (general circulation

[19] Source: Agency of Protected Areas of Georgia, May 2019

models), suggest that extreme weather periods favoring the recurrence of more frequent and larger fires and higher associated damages will aggravate in the coming years and decades.[20]

Socio-Economic impact of forest fires

54. In general, there is limited information on the socio-economic cost of forest fires in the South Caucasus. While government agencies record the area ha of forest lost and any details of death and injury (for example the death of a forest ranger in the 2018 Borjomi National Park), there is little consideration of losses that affect livelihoods or the wider economic value of forests (e.g. timber, forest products, tourism, grazing etc.).

55. It should be noted that forest fires are only one component of economic damage associated with climate change. One estimate in Armenia suggests that climate change has the potential to degrade between 21-34 percent of the country's forested lands. An economic valuation (based only on timber and firewood values) estimates that this would be in the range of US$230-370 million -or equivalent to 0.04% of GDP lost each year in forestry revenues, on average each year between 2010-2100. Note that this excludes other types of socio-economic benefits and livelihoods.[21]

Selection of Project sites

56. The project has identified a number of project territories based on high level risk analysis and through discussions with national and local stakeholders. The selection of forest areas is based on the following criteria:

    a. *Climate risk:* (i.e. prioritizing those forest regions where current and projected climate signals are strongest (heat, precipitation, number of drought days);
    b. *Fire risk:* Higher prevalence of existing fire risk (whether due to natural or anthropogenic factors);
    c. *Forest type:* Targeting drier rather than temperate or humid (sub-tropical) forests;
    d. *Cooperation opportunities:* Aligning with other existing or historic forest investments and donor programmes (e.g. inventories, capacity building)
    e. *Economic value:* Having potential to support socio-economic resilience by addressing areas with active forest and agricultural communities;
    f. *Transboundary cooperation:* Maximising opportunities to promote transboundary cooperation (i.e. forest areas close to the border between Armenia and Georgia.

57. This multi-criteria analysis has informed the selection of a shortlist of **six** forest areas across the two countries where the project activities will be targeted. The regions have been discussed and agreed with the respective government agencies involved as fulfilling the above criteria. The selected regions are as follows:

    a. Armenia
        i. North Western Armenia (Lori forest enterprises)
        ii. Central/West Armenia (Kotayk/Aragatsotn forest enterprises)
        iii. Southern Armenia (Vayots Dzor/Syunik forest enterprises)
    b. Georgia
        i. Samtskhe Javakheti region
        ii. Kakheti region

[20] The Georgian Road Map on Climate Change Adaptation, NALAG, 2016
[21] The Socio-Economic Impact of Climate Change in Armenia (2009)
https://www.undp.org/content/dam/armenia/docs/Report%20SOI%20of%20CC.pdf

iii. Shida Kartli region

58. These project territories are located to the Central and Eastern areas of the South Caucasus, where the climate signals (temperature increase, drying and aridification) are greatest, and are areas where there is already significant history of wildfire risk.

Figure 23: Proposed project territories in Armenia and Georgia

59. More detail is provided on the individual project areas below and in the Annexes 5 and 6:

a. *Lori Province (Armenia):* Lori province represents one of the most heavily forested area of Northern Armenia with more than 100,000 ha of forest under management by State Forest Enterprises. The region is on the Southern border of Georgia, making it interesting from the perspective of trans-boundary fire planning (given that there are areas of shared border forest and wildfire risk).

b. *Kotayk/Aragatsotn Provinces (Armenia):* Aragatsotn and Kotayk are the key areas of the remaining surviving forests in Central Armenia in what is now a heavily deforested area and have significant biodiversity and economic value.

c. *Vayots Dzor/Sunik Provinces (Armenia):* Vayots Dzor and Sunik are the Southern Provinces of Armenia and the second largest forest area in Armenia. The increasingly dry and arid climate make these forests highly susceptible to fire risk.

d. *Samtskhe-Javakheti region (Georgia)* is considered by Georgian EMS to have the most significant wildfire risk and is within the Borjomi-Kharagauli Protected Areas where there have been significant large-scale forest wildfires.

e. *Kakheti region (Georgia)* is a heavily forested area, including a significant Protected Areas, such as Tusheti and Vashlovani protected areas. With more than 288,435 ha of forest, and a major tourist area it is already subject to significant wildfire risk and impacts.

f. *Shida Kartli (Georgia)* has more than 115,325 ha of forest under state management. The area, a middle section of lowland between the Greater and Lesser Caucasian mountain range in East Georgia is highly exposed to the greatest impacts of climate change. The following table sets out the basic parameters of the chosen sites, including population, ha under management by forest enterprises and protected area agencies and Global Forest Watch assessment of forest integrity (canopy cover).

Table 4: Overview of key parameters for selected sites

	Population	**Forest enterprises (FE)**	**Forest enterprise managed ha**	**Ha of forest cover integrity (GFW)[22]**
Armenia (Provinces)				
Lori	235,537	Gougark FE Dsegh FE Jiliza FE Lalvar FE Stepanavan FE Tashir FE Yeghegnut FE	101,279ha	65,500 ha
Aragatsotn Kotayk	132,925 254,397	Aragatsotn FE Hrazdan FE	10,848ha 23,213ha	2,860 ha 5,220 ha
Vayots Dzor Sunik	58,324 141,771	Vayots Dzor FE Syunik FE Kapan FE Sisian FE	15,046ha 60,202ha	2,650 ha 32,400 ha
Georgia				
Samtskhe Javakheti region	154,100	Samtskhe Javakheti regional forestry service: Akhaltsikhe forestry unit Borjomi forestry unit Bakuriani forestry unit Adigeni forestry unit Aspindza-Akhalkalaki forestry unit Agency of Protected Areas: Borjomi-Kharagauli Protected Areas Administration Javakheti Protected Areas Administration	 32,997 ha 19,697 ha 26,291 ha 76,365.46 ha 200.02 ha	 29,037 ha 15,695 ha 24,714 ha
Kakheti region	312 500	Kakheti regional forestry service: Akhmeta forestry unit Kvareli forestry unit Sagarejo forestry unit Telavi forestry unit Gurjaani forestry unit Lagodekhi-Dedoplistskaro-Signaghi forestry unit Agency of Protected Areas: Vashlovani Protected Areas Administration Tusheti Protected Areas administration, Agency of Protected Areas	 64,945 ha 54,496 ha 42,598 ha 6,375.5 ha 18,154 ha 5,029 ha	 61,698 ha 51,771 ha 39,616 ha

[22] Global forest watch data measures forest integrity (canopy cover >30%) https://www.globalforestwatch.org

		Tusheti Protected Landscape Administartion, Akhmeta municipality		
Shida Kartli region	257 300	Shida Kartli regional forestry service: Kareli forestry unit Khashuri forestry unit Gori forestry unit Kaspi forestry unit	 23,697ha 26,473 ha	 21,801 ha 24,620 ha
Total	**1,552,254**		**607,905.98 ha**	**463,705.98 ha**

Source: Project team research, Global Forest Watch

60. More detailed information on the proposed sites is set out in **Annexes 5 and 6**.

Baseline

Armenia – forest sector institutions and policies

61. In Armenia, the forest sector is primarily managed by the Ministry of Environment, which takes responsibility for wildfire risk reduction among other aspects of forestry management. Within the Ministry, there are a number of relevant divisions, the most relevant of which is the Biodiversity and Forest Policy Department. The Ministry overseas a number of external agencies of relevance to the project, including:

    a. State Forest Committee
    b. State Forest Monitoring Centre (SNCO)[23]
    c. State non-commercial organisations (SNCO) overseeing national parks (e.g. Dilijan) under the Biodiversity Management Agency
    d. Hayantar (Forest Enterprise Agency SNCO) under the State Forest Committee (Ministry of Environment)
    e. State Hydromet Service[24]

62. Currently, about 75% of forest areas including 13 sanctuaries (out of total 27) are managed by "Hayantar" and its 19 branches although these are currently undergoing administrative review and restructuring.

63. In *Armenia*, wildfire response is managed centrally through the Ministry of Emergency Situations (MES) and its regional and local structures. MES is a fully vertically integrated structure, with all local emergency services managed directly from the Ministry, rather than with the involvement of local authorities. MES cooperates with Hayantar structures at the local level to manage wildfire risk reduction and response.

64. Communities in Armenia play an ad hoc role in supporting wildfire response. The role of the public tends to be confined to wildfire identification. Local authorities provide support to emergency services and NFA during larger scale wildfire firefighting operations.

65. The *Armenian* forest sector is overseen by a range of policy and strategy documents, supported by a number of by-laws.

    a. National Forest Policy and Strategy (2004)
    b. National Forest Program 2005-2015 (2005)

[23] Previously under the Ministry of Agriculture, but recently transferred to the Ministry of Environment in July 2019

[24] Previously under the Ministry of Emergency Situations, but transferred to the Ministry of Environment in July 2019

c. Forest sector improvement strategy and action plan *(*2017*)*

d. Forest Code (2005) plus subsequent regulations

e. RA Law on SPNAs (2006), the revised version is in the process of approval.

f. RA Strategy and National Action Plan for 2016-2020 on Conservation, Protection, Reproduction and Use of Biological Diversity (2015)

g. RA State Program and Strategy on Specially Protected Nature Areas (SPNA), their Conservation and Use (2014)

h. Illegal Logging Action Plan (2005)

i. State Forest Monitoring Program (2006)

66. The National Forest Policy of the Republic of *Armenia* is the key document governing sustainable management of forests and forest areas and setting out the importance of forest conservation. The objectives of the National Forest Program are to protect forest ecosystems, rehabilitate degraded forest ecosystems, continuous and effective use of forest resources and implementation of the policy on sustainable forest management. Important objectives of the program include activities on mitigation and prevention of illegal logging, eradication of economic and social causes of illegal logging, improvement of environment, institutional improvement, scientific-educational development and capacity building. The National Forest Program, approved on July 21, 2005 included a plan of action with deadlines. It covered the period to 2015 but was only partially implemented. A new programme has not yet been prepared, despite the 2014 National Development Strategy stressing the importance of forestry management.

Georgia institutions and policies

67. In Georgia, the forest sector is managed by the Ministry of Environment Protection and Agriculture (MEPA). The Ministry includes Biodiversity and Forestry Policy Department and number of agencies, including National Forestry (NFA), the Agency for Protected Areas (APA), Environmental Information and Education Centre (EIEC) and the Department of Environmental Supervision. Forest resources are managed separately between the NFA and APA, although within a common policy framework.[28] The National Forestry Agency is authorized to manage almost two million hectares of forest in the country (including maintenance, restoration, renewal, regulation and inventory).

68. MEPA is responsible for promoting wildfire risk reduction within a broader framework of sustainable forestry management. The NFA acts as a support agency for the Emergency Services in wildfire response and provides detailed cartographic data to support this.[29] The Agency of Protected Areas (APA) is also under MEPA and oversees activities on its territories, including coordination with Emergency Management Services in the event of wildfire and other extreme events. [30]

69. Governing law for emergency management, including wild forest fires, is the Law on Civil Safety. The latter defines the scale of emergencies (national and local) based on which specific roles assigned to each member of National Civic Protection System.

[28] Note that the Adjara Autonomous Republic and Tbilisi City Hall also have independent management roles for forests
[29] Source: National Forestry Agency of Georgia, May 2019
[30] Source: Agency of Protected Areas of Georgia, May 2019

70. National Security Council, through National Crisis Management Center (department) is responsible to provide policy guidance to Prime Minister during the national level emergencies, as well as ensure coordination of emergency response of various Ministries through Situation Room[31].

71. Emergency wildfire response is managed through the Emergency Management Service (EMS) under the Ministry of Internal Affairs. The EMS has a vertically integrated structure delivering national response services through its own structures at the local level. The EMS is responsible for prevention, preparedness and response of emergency situations, organizing restoration activities within the emergency zones, and implementation of national plan on civil protection .[32] The firefighting and Rescue Forces Department is responsible for firefighting and rescue activities. The department acts through Tbilisi division, Adjara AR division, and 9 regional divisions.[33] The EMS takes responsibility for wildfire response and suppression with the NFA as a supporting institution.

72. Local communities also play a role in forest management and wildfire response. Local municipalities have responsibility for management of forest and water resources that belong to the local municipality. There are no specific provisions for their involvement in wildfire response. However, they are engaged in addressing the impacts of local emergencies of local level (emergencies within the border of one or bordering municipalities) and in some cases, have an operational oversight in managing protected areas (as is the case in Akhmeta municipality, where the Tusheti Protected landscape is partially managed by the local administration). In practice, where significant wildfires occur, local municipalities generally are engaged to provide support in the response to the EMS and NFA. [34]

73. The forestry sector in Georgia is framed by a number of recent reform processes:

    a. The sector is governed by the Forest Code (1999).

    b. In 2012, the GoG undertook comprehensive sector reform through the adoption of the National Forest Concept – Georgia's first national forest policy which sets the current regulatory and institutional framework for sustainable forest management.

    c. In 2013, the National Forest Program (NFP) process was launched to support Forest Sector Reform. Based on the NFP, a forest sector reform strategy and action plan has been development and approved as part of the National Environmental Strategy and Action Plan 2017-21.

    d. In 2019, the new Forest Code was submitted to the Parliament for approval, setting out sustainable forest management, planning, fuelwood supply approaches and regulations

    e. The development of Georgia's first National Forest Inventory is also underway, and the government is working on the development of a Forest Information and monitoring system.

Regional Coordination

74. Given the long border and limited capacities at a national level, regional cooperation on wildfire management is important, particularly from a response perspective. Regional approaches can also help align systems and planning and create economies of scale for relatively small economies. However, regional cooperation and alignment on wildfire related issues is under-developed. There

[31] Source: # 337 Decree of the Government of Georgia on Approval of the Charter of Office of the National Security Council, 17 July, 2019
[32] Decree N 387 of Georgian Government on approval of the Statute of the Emergency Management Service, July 31, 2018
[33] Source: Organigram of the EMS, May 2019
[34] Georgian Code of Local Self-Governance, №1958-IIs, 05/02/2014

are formal structures to support inter-governmental cooperation in the event of wildfires and other natural disasters but these tend to be responsive and ad-hoc.

a. The Government of the Republic of Armenia and the Government of Georgia signed a declaration on economic cooperation in 1993. The document foresees cooperation in different fields, including national security, environment protection and eradication of consequences of natural disasters;

b. There is an "Agreement of Cooperation between the Government of the Republic of Armenia and the Government of Georgia on Prevention and Elimination of Consequences of Natural and Manmade Emergencies" signed in 1997. The Agreement entered into force in May 31, 2000 for the 5 year period and is still used, although it has not been officially renewed or updated since;

c. The Governments of Republic of Armenia and Georgia signed an agreement on friendship, cooperation and mutual security (signed on 23/10/2001, into force since 12/03/2004). Parties agreed to support regional cooperation on security, cooperation and partnership. For effectiveness of the bilateral agreement, parties agreed to establish a joint working group in the framework of the Armenian-Georgian Intergovernmental Economic Council. The Council itself meets periodically to address specific thematic issues, including forest related issues.

75. A draft memorandum of Understanding between the Government of the Republic of Armenia and the Government of Georgia on cooperation in the field of Forestry was developed under the ENPI East FLEG II program. The purposes of the MOU were to strengthen forest management capacities, to broaden and expand relations between specialists of the forestry sectors of both countries, and to promote cooperation in the field of sustainable forest management for mutual benefit. According to the memorandum, each Party shall encourage and promote cooperation in different areas, including among others:

a. Exchange of information in the forms of shared systems/databases for warning (i.e. pests, diseases, fires, etc.);

b. Joint efforts for forest protection (i.e. pests, diseases, forest fires) on bordering forest territories;

76. There is limited pro-active planning in relation to capacities, interoperability of systems, cross-border coordination and training and only limited access to technical expertise to support such a dialogue. Cross border exercises have only tended to happen in the context of regional projects and it has been a number of years since such practical exercises were undertaken. Despite this, there has been successful cooperation on major wildfires. For example, more than 70 Armenian firefighters responded to the large 2017 wildfire in Borjomi national park at the request of the Georgian government. Both countries often have to call upon support from larger countries with regards to air support (for example Russia provided a large airplane to address the large fire in Khosrov State Reserve in Armenia in 2017).

Forest fire risk forecasting and data

77. Several efforts have been undertaken over recent years to strengthen the information systems that support wildfire risk identification, forest monitoring and wildfire damage impact assessment. These break down into the following:

a. *Wildfire risk forecasting:* Ministries of Environment and their respective forest agencies are responsible to assessing the fire risk within forests. Both Armenia and Georgia have piloted wildfire risk forecasting systems that draw upon meteorological and forest inventory data to forecast risk levels. These models combine forest, soil and hydro-meteorological data to provide spatial

assessment of risks and potential hotspots. The approaches have been derived using different technical models (although with similar theoretical approaches), with Armenia deriving from Russian experience (supported through UNDP by the Government of the Russian Federation) and Georgia developing a system based on Canadian models and classifications. In both countries, these systems have not been fully operationalized, although the technical approach and methodologies have been developed.

b. *Forest inventories:* In both Armenia and Georgia, forest inventories are outdated (with the last complete baseline undertaken in the 1980s). Significant changes have taken place in the profile of forest cover in the intervening years (mostly due to socio-economic factors). Partial inventories have since been completed since as part of scientific or project research. For example, in Georgia, the recent forest management level inventories (and 10-year forest management plans elaborated based on these results) only cover up to 13% of the whole forest area. A range of international organisations is currently supporting both countries to build more robust National Forest Inventories (NFIs). For example, GIZ is currently supporting Georgia to update its forest inventory on the basis of a statistical methods approach.

c. *Wildfire damage impact assessment:* In both countries, governments use remote sensing and satellite data to estimate the spatial impacts of wildfires, rather than for their identification. Currently, resource constraints mean that both governments tend to rely on publicly available lower resolution data available from MODIS and VIIRS which allow the tracking of thermal anomalies at a 1km resolution. There is currently no system to assess the economic damage associated with spatial impacts in either country. Assessments are undertaken on an ad-hoc basis. NGOs such as Global Forest Watch monitor the number and scale of forest fire events using available satellite data.

d. *Forest management information systems.* Both countries are developing Forest Management Information Systems (FMIS) as a basis for integrating a range of spatial and numerical data sets and this work is on-going. In addition, in 2019 FAO and UNECE have released guidelines for national forest monitoring systems, including indicator sets to support sustainable forest management and these are being promoted at a regional level, including in Armenia and Georgia under the project Accountability Systems for Sustainable Forest Management for the Caucasus and Central Asia.[25] There are also wider environmental management information systems for reporting on international conventions in both countries into which forest data could be integrated. Currently, sources of data are not well integrated or presented in such a way that supports decision making.

Wildfire risk management capacity

78. *Wildfire management plans:* In both countries, wildfire risk reduction is integrated at the local level into Forest Management Plans (FMPs). These are developed and managed by the local forestry agencies and set out the overall approach to forest management, or which wildfire risk is a small subset. In terms of wildfires, the FMPs include measures to reduce risk (e.g. forest thinning, pest control, removal of combustible material) and support response (water sites, access, mineralized strips). They also set out overall roles and responsibilities for the Forest Management Agencies and their coordination with other agencies (including emergency services) in case of fire. In practice, the implementation of FMPs is constrained by a lack of funds and capacity. There is also

[25] See https://sdg.iisd.org/news/fao-unece-share-sfm-criteria-and-indicator-guidelines-for-caucasus-and-central-asia/

a concern that FMPs do not exist for all forest or protected area agency sites in either Armenia or Georgia, and where they do exist, they are based on outdated forest inventory information.

79. *Early warning systems* to communicate risk to populations are generally underdeveloped in both countries. While national hydromet services and Ministries of Environment are responsible for issuing general fire risk warnings on the basis of hot and dry weather in practice, these warnings are very general and not oriented towards specific locational risks or behavioral change. Often these warnings are more oriented towards public bodies than towards communities who are the primary cause of fire risk, and limited attention is paid to the types and channels of messaging that might be successful in changing risk behavior.

80. *Awareness* is an issue for both countries, with poor compliance among forest communities with sound wildfire risk management practices. In both countries, there are periodic attempts in both countries to systematically raise awareness with specific groups (e.g. farmers, tourists) around fire risk. This is done through awareness raising meetings at the local level (e.g. between farmers and local EMS) and the installation of signs prohibiting fires in forested areas or warning of the risks. However, attempts to change behavior have been relatively unsuccessful to date, partly due to weak enforcement of existing laws (around agricultural residue burning) and a lack of capacity to provide sufficient oversight at the local level. There has also been limited exploration of the role that mobile and social media might play in communicating risk and changing attitudes. Recreational zoning (e.g. for tourism or hunting) is not well developed, leading to uncontrolled use of fires for cooking purposes.

Wildfire identification and response capacity

81. *Wildfire identification* in both countries is based on community support, with community members or rangers raising the alarm and contacting local authorities, emergency services (e.g. 112) or forest services directly. There is currently no centralized system in either country for the use of ground- or satellite-based remote sensing to identify wildfire outbreaks. The topography of both countries (with significant mountain forest areas) makes ground based visual systems challenging, although there might be more use made of observation towers. All stakeholders consulted shared the view that that fire identification was a lesser issue than capacity to respond, given the relatively small territories of both countries, high population densities and strong levels of community level engagement. However, stakeholders also recognised that delays in fire identification can result in slower response times, allowing small fires to take hold and expand before emergency services can engage. The efficiency and effectiveness of inter-agency coordination and communication following a wildfire alarm was raised as a bigger challenge in both countries in terms of response delays.

82. *Technical capacity and equipment* in fire response were identified a key area of concern. Emergency services generally have the primary mandate for response and are generally better equipped than forest agencies to engage, particularly with large-scale fires with access to heavy equipment and fire trucks. However, in practice, rangers from forest/protected area agencies are more likely to play the role of first responder and still require smaller-scale technical capacity in terms of tools and manual suppression equipment. Capacities vary significantly between forest agencies (depending on the scale of forest under management) and between countries. However, in general, the availability of fire-fighting equipment across both types of institutions (forest agencies and EMS) is limited and that equipment which does exist is often outdated (e.g. protective equipment, communications equipment, firefighting tools and pumps). For example, visits to local forest agencies in both countries revealed that many of the existing backpack water carriers and pumps were not functioning. A key gap in relation to mountain areas is in the availability of all-terrain vehicles that can support both rapid small-scale (e.g. quadracycles for forest agency staff) and large-scale response (e.g. all terrain trucks for EMS). Even where EMS has trucks, they often struggle to reach steep sloped forest areas. Both countries lack aerial capacity (e.g. planes,

helicopters) that can engage in firefighting and often rely on international assistance in this regard. In both countries, EMS and forest agencies are often dependent on support from local communities (both in terms of manpower but also tractors and bulldozers) to engage with larger fires. Low salaries also contribute to capacity constraints, with rangers and firefighters often moving to better paid employment after training. Annex 7 sets out national level needs equipment assessment for forest agencies and EMS in the respective countries.

Community livelihoods and resilience

83. Communities in mountain forest eco-systems are not only exposed to the risks of climate change but are also key contributors to enhancing climate risk (through poor agricultural and recreational practices). A key issue is the disconnect between the collective need to preserve the forest, and how it is used as an economic and social resource at the individual level. Communities have typically relied on the forest in unsustainable ways for socio-economic reasons (fuelwood during periods of economic and political instability), exploiting forest resources for food, forest products and tourism. This has been compounded by weak governance and oversight by local authorities and forest agencies. There is little collective or institutional incentive to ensure that forests are protected from risk.

Adaptation solution: reversal of the problem

84. Reducing the increased climate-change related risks of wildfires requires a multi-pronged regional approach that brings together institutional, informational and community level interventions to improve the resilience of mountain forest eco-systems and associated community livelihoods. Key areas for intervention include:

    a. A strong legal, regulatory and institutional basis to support regional and national level wildfire preparedness, coordination and response;

    b. Better use of observation, information systems and data analysis to support improved wildfire forecasting, monitoring, and resource allocation;

    c. Effective risk reduction strategies and supporting resilience solutions at sub-national and community level, building capacity and awareness to address wildfire risk.

Barriers to the adaptation solution:

85. A range of barriers exist to achieving these solutions as set out below:

Legal, regulatory and institutional capacity barriers:

a. *Incomplete policy and regulatory frameworks:* Policy frameworks and regulations for wildfire management remain incomplete in both Armenia and Georgia. At the regional level, there is a lack of harmonised standards and operating protocols which makes regional liaison and international cooperation more challenging. There is also limited consideration of climate change trends (increased temperatures and lower precipitation) in relation to strategic planning for wildfire management, meaning that climate change is poorly reflected in wildfire planning resource allocation at regional, national and sub-national level. Local forest management plans are broadly well developed, although some remain only partially complete and there is little consideration of community involvement or economic incentives. National level wildfire regulations (e.g. recommendations developed previously under the ENVSEC project) are not yet fully elaborated or implemented in either country. Key regulatory frameworks that would facilitate community-level engagement in both countries (e.g. rules around volunteer groups for fire response) are also yet to be developed, which in turn reduces the ability of community level capacity to be fully leveraged and once again confirming need to establish functional volunteer

groups. There is also a lack of clear frameworks at the local level to reduce wildfire risk and respond effectively (e.g. poorly elaborated community wildfire management and response plans).

b. *Challenges in institutional cooperation:* Cooperation between the relevant agencies responsible for wildfire risk reduction, identification and response is an area that could be improved in both Armenia and Georgia, and at a regional level between the two countries. While on paper, national roles and responsibilities are elaborated, in practice, the roles played by forest management agencies and emergency services can be much more fluid, with forest agencies acting as first responders and undertaking smaller scale fire suppression activities. However, this role is often not well recognised in terms of resource allocation, equipment and training. At the regional level, mechanisms for joint response and coordination between the two countries exist, but in practice these are responsive, ad-hoc, and lack clear protocols and resources. A more pro-active and capacitated regional mechanism is required.

c. *Limited capacity to plan and respond to wildfire risk:* In both countries, the responsibilities for wildfire risk reduction, identification and response are spread across a large number of stakeholders (emergency services, forest management and protect areas agencies, local authorities, community teams). There is limited awareness of best practice in relation to wildfire risk reduction and response among senior decision makers in government, key responsible agencies and among community leaders. There are also limited opportunities for multi-stakeholder wildfire training and drills that would allow for assessment and improvement of existing capacity. Drills would allow for streamlining of procedures and protocols, and provide valuable experience to the respective agencies, whether at a regional, national or sub-national level. Previous experience of international coordination for major wildfire events suggests that there are challenges (linguistic, protocols, equipment interoperability) which also present barriers to effective response. A greater focus on transnational collaboration in training exercises would also be beneficial in this regard (whether in border areas or as a joint response to large-scale events).

d. Lack of equipment and technology for effective wildfire response: In both countries, emergency response teams, forest agency staff and community level fire response teams lack sufficient equipment to monitor wildfire risks and respond effectively to engage in fire suppression. Existing equipment is often old or functions poorly when used tested in operations. This is true both of small-scale response (e.g. where forest rangers are expected to address localized fires without support from the emergency services), as well as larger scale response (where vehicular access and more specialized fire-fighting technology is required, often with EMS involvement). There is limited use of advanced monitoring technology (e.g. cameras, sensors) to provide rapid identification of wildfire outbreaks.

Data analysis, forecasting and communication barriers

e. *Underdeveloped systems for fire risk monitoring, forecasting and analysis:* In both Armenia and Georgia, initial work has been undertaken to support the uptake of more developed fire risk forecasting systems based on international best practice (e.g. Canadian and Russian risk forecasting approaches). These systems incorporate climatic monitoring with forest cover variables to assess wildfire risk across the countries involved. However, these systems, while piloted, have not yet been operationalized at scale nor fully adopted by key agencies. Similarly, agencies in both countries are not making full use of forest wildfire emergency response data to understand how anthropogenic-induced wildfires clustered, and how preventative measures and resources might be better organised as a result. At a broader level, capacity to gather data is constrained, with limited use of GIS or ground-based systems for monitoring or impact assessment. As a result, there is limited data available for senior policy makers who are charged with making decisions around strategic planning or operational resourcing. This also extends to

the challenge of incorporating an understanding of wildfires in the national GHG inventories and the NDCs.

f. *Limited effectiveness of early warning systems to communicate risk:* Even where robust forest wildfire risk data exists, there is limited use of effective early warning systems to communicate risk, change behaviours and increase preparedness. Currently, there is some communication to inform key constituencies (policy makers, local agencies and authorities, general public) about wildfire risk (although this can be as limited as a fax issued to relevant ministries at the national level). Public messages can also be issued (e.g. on radio or television). However, the messages, channels and formats are often very general, lack specificity and are not well designed to create a specific risk reduction response among potential stakeholders. They lack a 'user-focused approach' and end users are often not clear as to what the implications are or how to interpret warnings.

g. *Weak data management around forest inventories and wildfire risk and impacts:* Currently data sets useful for improving the understanding and forecasting of fire risk are too fragmented and lack common standards, thereby preventing interoperability at both national and regional level. Institutional fragmentation, frequent restructuring of responsible agencies and a culture of institutional siloes also discourage data sharing. This can reduce the capacity to manage data over time, which can in turn impact upon the ability to identify and analyze trend data. In both countries, there is a general lack of integration of forest inventory information, weather and climate data, economic impact data, and response cost assessment. This makes evidence-based policy making challenging. There are also disparate technical data standards and a lack of common data protocols. This is reflected at regional level where there is a fragmentation of wildfire risk assessment approaches, and no common approach towards risk and vulnerability assessment to improve wildfire response planning and resource allocation.

h. *A lack of innovation and adoption of wildfire monitoring and forecasting technologies.* The development of more advanced monitoring, data analysis and communication technologies can provide an opportunity to innovate around how wildfires are identified (sensors, drones), and how risk can be better assessed and reduced (big data analysis). Such advances have the potential to reduce the costs of wildfire monitoring, response and wildfire impacts. However, the uptake of new approaches is relatively limited in both Armenia and Georgia, in part due to lack of awareness among policy makers, and in part due to the lack of formal mechanisms to promote the testing, adoption and funding of such technologies within publicly managed forest and EMS institutions and systems. Platforms and windows need to be created that allow for low cost – low risk trialing of such technologies and business models explored that allow for private sector engagement with public budgets.

Capacity and awareness barriers at the local level

i. *Lack of capacity to address fire risk reduction and response at the local level:* In both Armenia and Georgia, there are capacity and resource challenges associated with effective wildfire risk reduction and response at the local level (shared by forest enterprises, local emergency services, local authorities and communities). These capacity issues include poorly elaborated forest fire risk management and response plans and protocols (as set out earlier), but also derive from limited investment over recent years in effective forest management practices that can contribute to reduced risk (forest thinning, pest control, fuel removal, control over agricultural burning) as well as in response and fire suppression infrastructure (maintenance of forest access routes, water storage sites, fire suppression equipment, vehicles, communications and monitoring).

j. *Weak community forest conservation practices and economic incentives.* A significant and shared challenge across both countries relates to the relationship between forests and the communities that live in proximity and use forest resources. While there are strong cultural ties to the forest landscape, communities lack the economic incentives to engage in better forest

management and improved stewardship. This results in unregulated forest access and resource use, gradual deforestation and increased risk of anthropogenic wildfire incidence. By improving the structure of interaction between communities and their forest resources (encouraging fuel clearance, sustainable forest products and tourism, reducing uncontrolled burning of agricultural residues and fields) and encouraging reforestation activities, it is possible to build greater awareness among forest communities of the value of their resources, diversify forest community livelihoods, and improve the broader resilience of these communities to climate change.

k. *Low levels of awareness of fire risk and good behavioral practice at the local level:* A key challenge relates to low levels of awareness of the links between anthropogenic activity and forest wildfire risk in mountain regions. Despite best efforts by the respective forest management agencies in Armenia and Georgia, key stakeholder groups continue to ignore these risks. Such groups include forest users (recreational tourists, hunters etc.) who continue to set fires in increasingly hot and dry conditions, as well as agricultural communities, who maintain strong cultural belief in the value of field and residue burning as a form of land productivity improvement. While in theory regulations exist to prevent both types of activity, in practice these are not strictly enforced, leading to the need for better awareness and education among target groups.

Project Objective:

86. The project objective is as follows: 'To build regulatory, institutional and technical capacity at regional, national and local levels in order to reduce the frequency, scale and impact of climate-related wildfires and strengthen eco-system and community resilience across the mountain forest regions of the South Caucasus'.

87. The project will achieve the following results:

a. Strengthened regulatory and institutional capacity to identify, plan for and respond to climate-induced wildfire risk at both regional and national levels.

b. More effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information.

c. Increased community and ecosystem resilience to wildfire risk and broader climate change impacts at the local level in mountain forest areas.

Project / Programme Components and Financing:

Project Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)
1. Strengthening policy, regulatory and institutional frameworks	1.1 Strengthened regulatory and institutional capacity to identify, plan for and respond to climate-induced wildfire risk at both regional and national level.	1.1.1 *Policy and regulatory frameworks are enhanced and aligned:* Regional assessment and enhancement of wildfire-related regulatory and policy frameworks and their enforcement in place, with targeted interventions to mainstream understanding of climate change in wildfire risk management systems, create harmonised regional wildfire standards and protocols, and facilitate improved response at the local level (e.g. through volunteering regulations). 1.1.2. *Institutional cooperation strengthened at regional, national and local levels:* Assessment and enhancement of institutional roles, responsibilities undertaken at regional, national and local level, with recommendations made for clarifying operational roles and resources, and support provided for improved coordination at all levels.	Armenia, Georgia	1,728,000

		1.1.3. *Human and technical capacity for wildfire response enhanced at national and regional level:* A system for regular training on wildfire risk reduction and response in place involving all relevant agencies at regional and national level, including undertaking regular multi-stakeholder extended drills. 1.1.4. *Technical capabilities for wildfire response improved:* Firefighting response capacities of forest and protected area staff, regional emergency units and relevant community voluntary firefighting groups are strengthened at the local level through provision of equipment.		
2. Improving the use of climate and wildfire risk information by decision makers	2.1. More effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information	2.1.1. *Strengthened wildfire risk monitoring and forecasting system:* Common modelling tools and data analysis approaches for vulnerability assessment, wildfire risk monitoring and forecasting developed and implemented at regional level to improve decision making and resource allocation. 2.1.2. *Effective early warning system communications in place:* Existing climate information and wildfire-related Early Warning System (EWS) products improved and further tailored to sectoral and end user needs. 2.1.3. *Harmonized protocols for data collection, storage and reporting:* Set of common SOPs on information collection, storage and dissemination, as well as internal reporting standards on climate induced hazards developed for at regional scale and implemented in both countries. 2.1.4. *Private and third sector innovation supported through the CCTA:* Climate Change Technology Accelerator funds universities and private developers to innovate and operationalise new wildfire monitoring and forecasting technologies, and trial data analysis techniques.	Armenia, Georgia	1,042,400
3. Reducing wildfire risk and promoting forest eco-system adaptation at the local level	3.1 Increased community and ecosystem resilience to wildfire risk and broader climate change impacts at the local level in mountain forest areas	3.1.1. *Wildfire risk reduction activities prioritised at the local level:* In-depth community vulnerability profiling and participatory scoping undertaken to prioritise investments in local adaptation measures for wildfire risk reduction and response and community level activities promoting resilient sustainable forestry. 3.1.2. *Integrated forest fire risk management measures implemented:* Integrated eco-system and forest fire management measures implemented, reducing wildfire risk and improving response at the local level (measures identified in 3.1.1). 3.1.3. *Community forest eco-system enterprises supported:* Increased community involvement in eco-system-based adaptation (EbA), sustainable forest management, increases resilience and reduces wildfire risk (measures identified in 3.1.1). 3.1.4. *Public awareness campaigns organised:* Public awareness campaigns implemented to change behaviours among forest users and farmers most likely to be the cause of wildfires in climate vulnerable areas.	Armenia, Georgia	4,016,250
4. Project/Programme Execution cost				103,350
5. Total Project/Programme Cost				6,890,000
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				585,650
Amount of Financing Requested				7,475,650

Projected Calendar:

Milestones	Expected Dates
Start of Project/Programme Implementation	2020
Mid-term Review (if planned)	2023
Project/Programme Closing	2025
Terminal Evaluation	2025

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.

88. The project aims to address the increasing risk of wildfires in forest eco-systems across the Southern Caucasus, while also promoting more sustainable forest management practices, protecting biodiversity and enhancing the capacity of forest communities to adapt to climate change. It has three components:

    a. Strengthening policy, regulatory and institutional frameworks

    b. Improving the use of climate and wildfire risk information by decision makers

    c. Reducing wildfire risk and promoting forest eco-system adaptation at the local level

89. These three components are described in more detail below.

Component 1: Strengthening policy, regulatory and institutional frameworks

90. In both Armenia and Georgia, the enabling policy, regulatory and institutional frameworks for wildfire management will be strengthened to support wildfire risk reduction, increase preparedness, and improve regional cooperation and alignment on wildfire management. Institutional capacity will be strengthened through the organization of training (including transboundary drills) and the provision of technical equipment. The following outputs are envisaged:

Output 1.1. Policy and regulatory frameworks are enhanced and aligned

91. Output 1.1 seeks to improve the effectiveness of the policy and regulatory framework in each country, and to improve their alignment at the regional level.

    a. The current policy and regulatory framework for wildfire management will be assessed from an effectiveness perspective to identify gaps related to climate risk management. This will be done at a regional, national and local level.

    b. At *national level*, wildfire management policy approaches, including those elaborated under previous support (ENVSEC, Russian Trust Fund and GEF/SPA in Armenia) will be reviewed and updated, and their adoption and implementation supported. The project will address any identified gaps in implementing regulation. It is envisaged that the project will

prepare specific reports outlining recommendations for legal and regulatory reform in conjunction with the relevant Ministries and project partners. These will then be considered by legislators as part of the legislative reform process. The following imminent and ongoing legislative processes provide opportunities to engage in both countries:

i. In *Armenia*:

1. Ministry of Environment has already circulated a draft Government decision (available at the e-draft portal https://www.e-draft.am/en/projects/981/about) on the postponement of National Adaptation Plan (NAP) to 2020. This allows time for the project to engage in integration of wildfire management in the BAO

2. In addition, the MoES has developed draft Government decisions on which the project will also engage to promote better wildfire management practice: (a) on approval of EWS formation concept, https://www.e-draft.am/projects/1233, and (b) on approval of Structure of Marz, Community and Organizations Risk Management Plans, https://www.e-draft.am/projects/1492

ii. In *Georgia*

1. The draft Forest Code that has been submitted to the parliament. Parliament will start hearings in autumn 2019;

2. Update of the Resolution N508 of Georgian Government on approval of national plan on Civil security, (September 24, 2015) has been initiated;

3. The draft Emergency Management Plan of the Ministry of Environment Protection and Agriculture has been recently approved (Order N2-559 of the Minister of Environment Protection and Agriculture of Georgia, 18/06/2019);

iii. At *a regional level*, in both countries, the project will develop a common roadmap for the harmonized implementation of wildfire management policy using common standards, risk assessment procedures and response protocols (that can be implemented in normative acts as part of the development of secondary legislation) in the respective countries. Regional guidance on wildfire risk reduction and CC adaptation will be developed. National Forest Management Plans, DRR documents and forest community development plans will be revised to incorporate resilience measures. Recommendations will focus onClimate change vulnerability assessment (CCVA) standard procedures for forest/wildfires expanding the current LLRM module and ensuring the CCVA compatibility and coexistence with the available disaster risk assessment arrangements

iv. Early Warning management procedures by establishing the hazard evolution criteria, indicators and thresholds, hazard monitoring and warning communication principles, evidence-based decision making and contingency plan activation procedures

v. Community preparedness and response capacity minimum standards including for human and technical resources, emergency communication and information management, operation management and coordination mechanisms, elaboration of worst scenarios and contingency planning

vi. Introduction of post disaster damage and loss assessment using the FAO proposed PDNA software (includes damage and loss database) which was already presented to the agricultural authorities of Armenia. MoES with support of UNDP intends to utilize it throughout the entire emergency management system.

c. Regulations to facilitate the functioning of *voluntary community level response* and rescue teams will be enabled in both countries, to include questions of liability and insurance, roles and responsibilities, and interface with government agencies. For example, in Armenia, there is a draft Law on Volunteer Activity and Volunteer Work circulated by the Ministry of Labour and Social Protection.[26] The Law is yet in a process of negotiation and much probably will be submitted to the Parliament by the end of this year or beginning of 2020. The Project may contribute to these processes by elaborating sector specific volunteer management procedures as an integral component of the community- based disaster risk management, particularly regulating the performance of volunteer firefighters and their relations with the recruiting community. Such standard procedures do not exist.

d. Enforcement of regulations will be strengthened to ensure that policy is operationalized in an effective manner on the ground.

e. Mainstreaming of wildfire risk into other government plans and strategies where appropriate (e.g. forest, environmental and bio-diversity plans, national development strategies, community development plans, sector plans).

92. To support the analysis and improvement of national level fire management systems, the project will seek to create links with existing international fire management structures such as the European Fire Institute (EFI) and the Global Fire Monitoring Centre (GFMC) to capture and analyze lessons from fire cases in the Mediterranean region and other European countries to understand the management drawbacks and institutional gaps, and to document on the ground practices of hazard management and response mechanism.

93. For example, the GFMC has already engaged in wildfire management approaches in the framework of the ENVSEC Initiative. has been assisted the South Caucasus countries in enhancing their wildfire management capacities. Between 2009-14, the project “Enhancing fire management and wildfire risk reduction capacities in the South Caucasus” provided a series of wildfire management training events organized in Antalya, Turkey in close co-operation with the Government of Turkey and Global Fire Monitoring Center (GFMC) with European experts and supported the translation of European wildfire management materials as well as helped draft wildfire management policies in the region. Further development of collaboration with Global Fire Monitoring Center (GFMC), as an international partner and Black See Cross Border Cooperation and Eurasian Economic Union, continued in 2018/2019 within the frame of Russia -UNDP TF funded project “Addressing climate change impact through enhanced capacity for wildfires management in Armenia”. Aside from the spheres of policy and legislation, one of the benefits of this networking would be the revision of existing national criteria for the identification of the classes of forest fire.

Output 1.2. Institutional cooperation strengthened at regional, national and local levels

94. Output 1.2 seeks to streamline and strengthen the institutional frameworks for wildfire risk reduction, detection and response. It will review the roles and responsibilities of relevant institutions, as well as their coordination and operational mechanisms at regional, national and local levels. The project will undertake a review of the institutional frameworks and protocols at regional, national and sub-national level, in particular identifying areas of split responsibilities between institutions, funding mechanisms and perverse incentives (e.g. resource allocation decisions) with a view to making recommendations to improve institutional coordination and response.

[26] https://www.e-draft.am/projects/389/about

95. At a *regional* level, the project will support the development of more effective cross-border coordination mechanisms and seek to ensure sustainable institutional and funding mechanisms. There is an existing "Agreement of Cooperation between the Government of Armenia and the Government of Georgia on Prevention and Elimination of Consequences of Natural and Manmade Emergencies" signed in 1997. The Agreement is currently outdated (although it is still referred to by both governments.[27] Key issues are as follows:

    a. It has not been extended since its initial formal 5-year operating period lapsed in 2005. Renewal together with a revised timeframe are required.

    b. It was signed within the frame of the Commonwealth of Independent States (CIS) which Georgia left in 2009. A separate bilateral framing is required;

    c. The authorities signing the agreement have since changed in both countries. It needs to be agreed between the current institutional structures

    d. The agreement is prepared in 3 languages (Armenian, Georgian and Russian), however Armenia and Georgia no longer use Russian for international agreements (now English). A new version needs to be drafted in the relevant languages

    e. The context for cooperation has changed, due to changes in national and international DRM and DRR practices (including new national policies and programmes in each country); The agreement should be informed by new policies and frameworks in each country which can help frame and direct the focus of the agreement.

96. Both governments have indicated their willingness to modernize and improve the operationalization of this agreement. This will be done with the involvement of the Ministries of Territorial Administration and Infrastructures, Environment and Economy (Agriculture) of Armenia, and the Ministries of Regional Development and Infrastructure, Environment Protection and Agriculture of Georgia should be involved along with emergency authorities. The outputs will be as follows:

    a. A set of recommendations to both governments to support the updating of the bilateral "Agreement between the Republic of Georgia and the Republic of Armenia on cooperation in the field of prevention of natural and man-made disasters and elimination of their effects", likely to include:

        i. Extending the timeline to cover the new period into the 2020s;

        ii. Revising the legal jurisdiction and authority to reflect political and constitutional changes in national authorities, and bilateral and regional relationships;

        iii. Updating the text language to reflect changes in the official languages used by both countries;

        iv. Integration and referencing of the most recent DRR policies and programmes in both countries;

        v. Agreement on the institutional and funding mechanisms for its sustainable operation (e.g. identifying budget lines);

[27] The agreement is still hosted in the official sites of the MoES (http://www.mes.am/files/docs/966.pdf) and the Ministry of Internal Affairs of Georgia (https://police.ge/en/ministry/structure-and-offices/international-relations-department/international-legal-cooperation/saertashoriso-khelshekrulebebi.

b. A report setting out options to establish a Disaster Management Inter-Governmental Standing Commission (DMSC) including officials, donors, NGO representatives, academia and business to provide technical and operational guidance to decision makers on fire risk management as part of the agreement;

c. Capacity support to existing national interagency bodies, such as the Inter-Governmental Task Force on DRR to improve awareness of fire risk;

97. To support this process, the project will involve all relevant stakeholders and convene the first regional high-level Inter-Governmental meeting in order to:

a. Present the background on the existing situation and findings, identify major problems impeding regional cooperation and coordination;

b. Restate the Governments' readiness and commitments to establish mutual coordination and cooperation mechanisms in managing disasters, including transboundary cases;

c. Discuss and reach consensus over the measures and Action Plan required for the revitalization of the previous Agreement, including a need for the establishment of inter-governmental coordination body/commission (DMSC) to lead the process;

d. Facilitate the establishment of the DMSC and initiate action plan implementation and drafting the intergovernmental agreement for further implementation, including mechanisms for monitoring and reporting;

e. Identify capacity building and support needs for the DNSC and existing interagency bodies (e.g. Task force on DRR), including supporting partnerships, consultation and transfer of best practice;

98. At a *national* level, the project will work with responsible agencies and DRR Platforms to improve clarity around institutional roles and responsibilities for fire monitoring, forecasting, identification and response (e.g. between forest management and emergency response agencies), and provide recommendations for improvement, together with an assessment of resource allocation implications. For example, in *Georgia*, recommendations will be made as part of the process of the establishment of the National Security Council Office that is being established (Decree of Georgian Government N337, 17/07/2019). The office is responsible for development of the state policy/conceptual documents related to national security, as well as recommendations to the prime minister on prevention of natural disasters and the emergency response.

Output 1.3. Capacity for wildfire response enhanced at national and regional level

99. Output 1.3 will undertake a detailed review of capacity development needs for key institutions involved in wildfire management and response. This will be done at regional, national and local levels. Key stakeholders will include emergency services, forest management agencies, protected area authorities, local authorities and community teams. On the basis of this assessment, a series of training events and emergency drills will be organised to strengthen capacity improve wildfire management and response and a system for regular training will be developed.

100. At a *regional* level, the project will support multi-level training to improve alignment between Georgia and Armenia fire management authorities. This is likely to include:

a. Extended transboundary wildfire training exercises in suitable locations in forest areas along the Georgian/Armenian border. This will be done in order to assess the interoperability of response protocols, communications and other equipment. Lessons learned will be used to further align national level approaches and improve the efficiency and effectiveness of response mechanism.

b. Training for policy officials in key institutions (emergency services, forest management, local government, etc.) in relation to institutional, regulatory and technical best practices to minimize fire risk (e.g. emerging technologies) and improve response coordination.

101. At *national* and *community* level, technical capacities of the fire-fighting emergency units and sectorial responsible units (forest and protected areas entities, local communities) will be strengthened to ensure adequate monitoring and response to climate induced wildfires though professional training based on the packages developed with support of Global Fire Monitoring Center under the umbrella of ENVSEC project. This will be done in close coordination with wider fire risk reduction and adaptation investments made under Component 3.

Figure 24: Forest wildfire training exercise in Georgia (GFMC 2010)

Output 1.4. Technical capabilities for wildfire response improved

102. Output 1.4 will improve the technical capabilities of forest and protected area staff, regional emergency units and relevant community voluntary firefighting groups through the provision of equipment. This will be done both at a national level, and in the targeted areas. This will include procurement of the following types of equipment:

a. Specialized vehicles (quadracycles, off road water carrying vehicles, bulldozers/tractors)

b. Water tanks and pumps

c. Protective equipment (uniforms, helmets, glasses, respirators, gloves, shoes)

d. Mobility equipment (sleeping bags, flashlights, backpacks)

e. Hand tools (rakes, chainsaws, petrol scythes, spades, axes, backpack and fans)

f. Communications equipment and GPS

103. Annex 7 provides the submitted equipment requirements and needs assessments made by the respective authorities in Armenia (Hayantar) and Georgia (Emergency Management Service). These discussions have informed the sizing of the budget for component 1.4 in order to meet the specific demands of the six project regions, as well as improve overall national capacity. However, more detailed scoping and prioritisation will be undertaken with the relevant authorities in each country in targeted regions during inception phase. Resources will be prioritised for the 6 targeted project areas (particularly for large items such as vehicles and tanks) with some national level support provided to build national capacity for smaller scale tools and equipment. The selection of supporting equipment will be done in close coordination with wider fire risk reduction and adaptation investments envisaged under Component 3. Where appropriate, procurement activities will be undertaken at a regional scale to ensure value for money.

104. Ownership of resources will be transferred to the relevant authorities during the course of the project. At the moment, the proposed structure is that Hayantar (Armenia) and EMS (Georgia) will take ownership of the equipment respectively in each country. For equipment provided to support the formation of community level brigades, this will be transferred to the relevant convening bodies –the Local Administration in Armenia and EMS in Georgia (with the potential for further transfer to the local administration based on project discussions).

105. For example, the Armenian public government system at the local level (urban and rural Communities) is exercised through local self-governance. Local self-government is the right and power of the community to resolve on its own responsibility issues of local significance aimed at the welfare of the inhabitants in accordance with the Constitution of the RA (Chapter 7) and the RA Law "On Local Self-Government". Powers of the local self-government bodies consist of their own responsibilities - funded by the local budget (generated from local taxes, e.g. land use, etc.) and delegated responsibilities funded by the state budget, including responsibilities for asset management. RA Law on Rescue Forces envisages the involvement of community-based volunteer rescuers/fire fighters (though Law on Volunteerism is still under discussion). It is envisaged that MES Rescue Service will provide the necessary equipment (firefighting equipment, transport and tools) to the community which is being used for training purposes and that this will then remain in the community special stock as its property for future firefighting and rescue operations.

106. Maintenance of the equipment provided by the project will be undertaken by the relevant agencies (Hayantar/Local Administration in Armenia, EMS in Georgia). All of these agencies have the necessary storage and workshop facilities within their regional structures, and already manage the maintenance and repair or a wide range of other types of equipment (e.g. vehicles, pumps etc.) necessary for fulfilment of their existing duties and obligations as set out by government.

107. For example, in Armenia, community authorities bear a sole responsibility for the maintenance of equipment and assets that are on their balance sheet. Volunteers bear the responsibility when using the equipment during the firefighting operation. There is a special clause in the volunteer recruitment agreement on the rights and responsibilities of volunteer and the recruiting entity (community) which contain a provision on the use of material values. Possible damages to the equipment which may occur during the operation are subject to investigation by the community relevant commission. They decide on the future of damaged items (further use, repair or written it off). Sustainability/replenishment of damaged equipment is carried out by the community in consultation with the MoES. Upon receipt of the equipment its maintenance and replenishment is considered in the community budget similar to any asset the community possesses. To cover related expenses the community will utilise its own funds or may also get support from the state budget. In some cases, the community may get also dedicated donations from private donors. The MoES monitors regularly the conditions of the transferred equipment (as a preparedness measure) and may replace the damaged items (depreciation or due to objective reasons).

Component 2: Improved use of climate and wildfire risk information by decision makers

108. Component 2 will address gaps in the generation and use of climate and fire risk information in order to strengthen decision making and improve early warning activities. The project will review existing wildfire forecasting and early warning systems with a view to developing improved capacity at the regional and national levels. It will do this in part by harmonizing and improving the management of climate and wildfire risk data to support easier institutional cooperation and risk platform development. The outcome will be improved access to more robust and accessible decision-making tools that can support decision makers to communicate risk information to relevant stakeholders and allocate resources appropriately.

Output 2.1. Strengthened wildfire risk monitoring and forecasting system

109. Output 2.1 will support the development of more robust approaches to the forecasting and classification of wildfire risk. This will build upon existing preparatory work undertaken in both countries to support the implementation and uptake of an integrated risk management system. Common regional approaches will be sought where appropriate, with common data systems and protocols (see Output 2.3). Activities envisaged include:

a. Operationalization and scaling of integrated fire risk forecasting models (incorporating weather and forest data), building upon earlier pilot work in both Armenia and Georgia and liaising with ongoing forest inventory processes;

b. Exploring the predictive role of 'big data' in understanding the relationship between the frequency and location of emergency services response, climate risk and anthropogenic factors (e.g. agricultural burning, tourism);

c. Reviewing options for remote-based sensing to improve risk and vulnerability assessment, as well as cataloguing outbreaks of fire, including improved GIS mapping and database management in key agencies;

d. Explore options to enhance ground-based observation networks to monitor risk and improve forecasting reliability (e.g. improved hydro-meteorological network coverage, station upgrades, cameras);

e. Providing modelling and advisory support to strategic decision makers (e.g. national security teams, development planners) on likely changes in wildfire threat levels due to climate change and broader socio-economic development;

f. Supporting understanding of linkages between forest fire risk and carbon sinks for the purposes of strengthening national GHG inventories and improving NDC development and implementation.

Output 2.2. Effective early warning system communications in place

110. Output 2.2 will seek to improve the dissemination, relevance and accessibility of wildfire risk information for end users. This is with a view to both reducing risk (e.g. through changing behaviours) and improving preparedness (e.g. management of response). A review of existing EWS services will be undertaken as well as a mapping of potential users and demand. The project will develop 'user case assessments' to understand their preferred information requirements, formats, language and dissemination channels, thereby improving the 'last mile' delivery of EWS.

111. Data and ICT protocols will be developed to support the piloting of 2-3 EWS products which will be tailored to sectoral and local needs. Examples include the issuance of threat warnings to economic groups (e.g. local farmers engaged in agricultural burning), better targeted and disaggregated communications on threat levels to key institutional stakeholders (local emergency response teams, forest managers), and geo-cell based mobile telephone network warnings to the public entering areas of heightened risk.

Figure 25: Forest fire in Borjomi Valley region (2017)

Output 2.3. Harmonized protocols for data collection, storage and reporting

112. Currently data sets useful for improving the understanding and forecasting of fire risk are too fragmented and lack common standards, thereby preventing interoperability at both national and regional level. Institutional fragmentation also discourages data sharing and reduces capacity to manage data over time. This can result in loss of valuable trend data over time. Output 2.3 will seek to support the standardization and integration of key data sets with a view to improving the quality of wildfire risk assessment, forecasting and reporting. The following activities are envisaged:

a. Mapping of relevant data sources in key ministries and other agencies (including legacy projects) to include fire frequency and type, weather and climate data, forest inventories, economic costs and emergency response data;

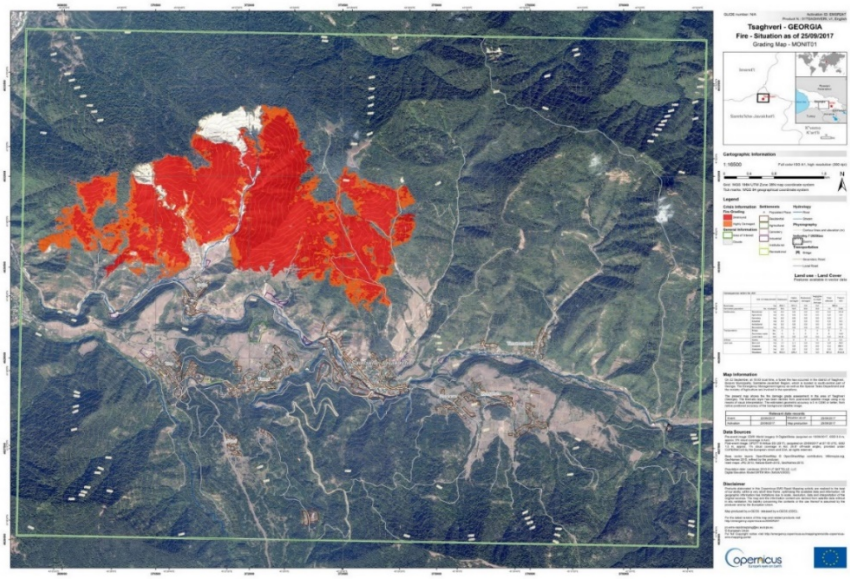
b. Harmonize classification and reporting frameworks for wildfires and other climate induced hazards (e.g. threat level, impacts, economic costs) at both national and regional level to ensure common definitions and risk assessment;

c. Develop common technical standards to allow for interoperability between systems, allowing modelers or risk platform developers to work on common platforms (database, GIS);

d. Support integration of existing data sets into unified repositories under management of a single national responsible institution to encourage better data management over time;

e. Agree permissions and protocols for data sharing and access between different ministries and agencies as well as between countries to overcome institutional silos and protectionism;

Figure 26: Satellite mapping and data impact assessment of wildfire impacts and losses in Georgia



Source: Copernicus EU

Output 2.4. Private and third sector innovation supported through the CCTA

113. The project will support the development and scaling of innovative tech solutions to wildfire risk reduction and response through the Climate Change Technology Accelerator (CCTA). Based

on the ImpactAim platform, the Climate Change Technology Accelerator (as part of a wider UNDP Impact Investment Vehicle concept) is implemented together with the Ministry of Environment and various Implementing Partners - Innovative Solutions and Technologies Center, Founder Institute, Enterprise Incubator Foundation. It offers an independent platform that aims to develop different, field-based acceleration programs to support early stage and established start-ups that address identified gaps of achieving the Sustainable Development Goals (SDGs).

114. CCTA in Armenia has already supported the development of innovative tech solutions for forest/wildfire monitoring and EWS systems. Early stage ventures supported during 2017-2019 include ForestBerg, Forest Guard and DataThon which supported the monitoring and early warning of forest-related risks, as well as wildfire risk modeling. Selected through open global competition, these ventures received technical support (business, technology, impact and field expertise), mentorship and participation in large international conferences to bridge them with impact investment ecosystem. Among various tech solutions - remote sensor-based networks capable of monitoring smoke, humidity, temperature and sound in forests in real time, based on wireless, off grid, geolocation-based technology was developed.

115. Output 2.4 will support the CCTA to scale the concept in Armenia and Georgia and to explore innovation around other aspects of risk monitoring and response (e.g. big data, remote sensing, drone technologies). Private companies, universities and research institutions will be encouraged to engage with policy makers to create systemic improvements in national capacity, whilst also supporting the development of markets to address key climate risks.

116. Based on a competitive review of the most promising technologies (technology effectiveness, likely uptake by national bodies), a selection will be made for those technologies or solutions to support for wider scaling. These may include existing technologies piloted by the CCTA or new technologies identified during this funding round.

Figure 27: Examples of innovative technologies funded through CCTA Armenia

117. The main infrastructure for the CCTA will be housed in the existing CCTA facility in Yerevan (which services the CCTA globally for UNDP). This will support all back-office functions (finance, selection, mentoring support). To promote the model in Georgia, it is planned that CCTA will employ a local representative in Tbilisi who will facilitate promotion of the CCTA call for proposals, hold discussions with potential partners, and take part in project assessment, granting and capacity building in cooperation with the central team.

118. UNDP ImpactAim CCTA has established extensive network working with global partners from the private sector and tech ecosystem, such as IBM, Innovative Solutions and Technologies Center, Founder Institute, Enterprise Incubator Foundation, Smart Gate VC, Granatus Ventures, Impact Hub Yerevan, ADB Ventures, and others. Such network and the multi-stakeholder partnership facilitate the process of scaling up and replicating the CCTA program to in different countries. The existing structure of CCTA program is systemized and adaptable based on the needs and targets of the countries engaged. Initial discussions to replicate the model in Serbia, Ukraine and Indonesia have started, and successful replication in the Georgian context may catalyze its replication into a scalable model globally.

Component 3: Reducing wildfire risk and promoting forest eco-system adaptation at the local level

119. Component 3 will focus on the implementation of concrete adaptation actions that will increase adaptive capacity and resilience of communities and ecosystems in vulnerable mountain forest areas. In total, the project will engage with 6 forest areas (3 per country) further described below. Supported by new tools developed and applied under Component 2, the project will carry out vulnerability analysis in targeted communities and ecosystems to prioritise wildfire risk reduction and other adaptation measures that promote more sustainable forest management. Lessons learned will be captured and disseminated through regional workshops, publications, online, and tailored to different groups.

Output 3.1. Wildfire risk reduction activities prioritised at the local level

120. For each forest area, the project will undertake an in-depth participatory consultation to develop a detailed profile of wildfire risk and wider climate vulnerability. The project will engage with key stakeholders (forest managers, emergency response, local authorities, forest and agricultural communities) to develop this risk assessment. Working collaboratively, the project will draw up a prioritised and costed list of risk reduction and resilience measures for implementation. Opportunities will also be identified to reduce risk and improve resilience through local forest management plans and other local development strategies. Recommendations will be implemented under Outputs 3.2 and 3.3.

Output 3.2. Integrated forest fire risk management measures implemented

121. On the basis of the risk and vulnerability assessment, the project will support and co-finance the implementation of a number of best practice measures to enhance fire risk reduction and preparedness in the priority regions. These measures will include:

a. The project will review the impact of climate change on the type of species and growth patterns and engage in *reforestation* where existing degradation has occurred (including wildfire impacts), using native species suitable to emerging climatic conditions.

Figure 28: Forest wildfire outbreak in Aragatsotn project region, Armenia (2017)

122. Currently, there is limited information in terms of the quantified costs and benefits of individual interventions. As part of the programme the project will undertake cost benefit analysis of selected community level interventions under 3.2 to support prioritization and help develop the evidence base.

Output 3.3. Community forest eco-system enterprises supported:

123. Output 3.3 will increase the resilience of forest and adjacent agricultural communities by promoting activities that support the adaptation of forest eco-systems to climate change. It will also aim to improve the resilience of forest communities by diversifying economic activity away from those than can impact negatively on sustainable forest management or increase fire risk.

124. The project will work with selected communities to identify and prioritise economic resilience activities, prioritizing those that also reduce fire risk and increase the attractiveness of sustainable forest management. Typical activities are likely to include the following:

a. *Briquetting facilities:* Creating an economic supply chain for the production of fuel briquettes to ensure markets for waste wood and incentivize thinning and fuel removal. Investment in briquetting facilities can also help reduce unsustainable forest use, thereby supporting reduced deforestation and enhancing carbon sinks. Biomass briquettes are pressed biofuel made from dehydrated wood chips and agricultural waste. After collection of biomass, the material is shredded and then formed under high pressure without glue or other artificial additives. The production of briquettes can support a market for collection of waste dead wood or thinning residues from forests (which creates a fire risk in summer) while also reducing the market for illegally logged firewood among households. A typical briquetting facility (such as that shown in the image below) can produce approximately 75 tonnes of briquettes per month. As well as being marketed through retail distribution chains, briquettes can also be used to provide fuel for public buildings such as schools and clinics. Compared to firewood, briquettes have a higher heat and energy capacity – one cubic meter firewood produces 700-1000 kw/hr, while the same volume of briquettes generates 5,500 kw/hr. They are also cleaner (producing less ash and smoke). Additionally, transportation of briquettes is much easier and does not require large vehicles. Successful examples of commercial forest based briquetting facilities can be found in both Georgia and Armenia, set up with initial grant support from UNDP/GEF and more recently through support from the Government of Russia. These facilities have been able to expand their capacity as the environmental and economic benefits of briquettes become better understood by local markets.

Table 5: Price advantage of wood briquette compared to wooden residue per KWh

	Firewood of wooden residue	RUF wood briquette
Density	250 kg / m^3	1000 kg / m^3
Water content	30-40 %	< 12 %
Energy density	700 KWh / m^3	5500 KWh / m^3
Price franco consumer	30 USD / m^3	120 USD / m^3
Price equivalent per energy	**0.042 USD per KWh**	**0.021 USD per KWh**

Figure 29: Briquetting facility in Manavi, Eastern Georgia (UNDP)

b. *Supporting opportunities for forest eco-system services:* The project will explore opportunities to increase the economic value of forests to local communities, including sustainable tourism, forest products (medical, food, materials) while ensuring that these do not increase fire risk. Competitive grants will be offered to co-finance the establishment of sustainable forest-related enterprises in the following areas:

    i. *Non-timber forest products (NTFPs)* are biological resources of plant and animal origin, harvested from natural forests, manmade plantations, wooded land, farmlands, and trees outside forests and or domesticated. These products are vital sources of income, nutrition and sustenance for many forest-based communities around the world. In Armenia and Georgia, NFTPs typically include berberis, nuts, cornel, quince, fig, medlar trees, mulberry, pomegranate, crab-apple, almonds, sweetbrier, raspberries, currants, bilberry, blackberry, capers, bamboo, asparagus, mushroom, brushwood, humus, pine cones, forest land, and peat among others. The market for NFTP is growing in the South Caucasus, with opportunities for export (e.g. to Russia, EU markets. The project will identify and support local entrepreneurs seeking to scale sustainable production of these products in project areas under risk, and work with them to encourage sustainable forest management approaches and to achieve eco-certification.

    ii. *Sustainable tourism:* The number of visitors to the South Caucasus is increasing steadily, and this is reflected by increasing tourism in mountainous forested areas which often fall within National Parks or other Protected Areas. Irresponsible tourism is a key driver of fire risk (e.g. BBQ in forested areas) and promoting ECO-tourism practices is an important route to protecting forests. The project will support enterprises that promote forest conservation and sustainable forest management. Support might typically be provided to eco-guesthouses in forest areas that promote forest or other forms of ECO-conservation, or sustainability-oriented forest activity enterprises (e.g. hunting, wildlife viewing, trails/cycle routes, tree-top route enterprises). These enterprises will be economically self-sustaining, and the project will provide grants to mainstream forest conservation and fire education approaches into their activities. The project will also work with community level organisations to identify and develop demarcated recreational zones near touristic with BBQ areas, fire signs and other risk reduction practices.

c. *Promoting sustainable land management practices:* Output 3.3 will work with local agricultural communities to raise awareness of fire risk from uncontrolled burning of residues and promote sustainable land management practices. The proximity of agriculture and forest areas is the primary driver of forest fire in the South Caucasus. These farmers are already engaged in profitable agricultural activities and so the challenge is to ensure that they can be educated to understand that there are (potentially more beneficial) alternatives to burning in order to deal with agricultural residue and maintain field fertility. The project will engage with agricultural experts to work with farmers to demonstrate the relative benefits of alternative approaches to residue management and fertilisation.

125. Measures will be selected on the following basis

    a. *Proximity to forests at risk:* Extent to which the enterprise is located in proximity to vulnerable forested areas and communities identified as being at risk from anthropogenic or natural causes of fire risk or other forms of forest degradation.

    b. *Ability to mainstream sustainable forest management practices:* Extent to which the intervention can promote reduced forest fire risk or other sustainable forest management approaches through direct engagement with forest users or management;

    c. *Deliverability:* Assessment of the feasibility of the enterprise (e.g. from at market demand perspective and assessment of quality of management)

d. *Alignment with national/local priorities:* Extent to which the intervention is aligned with national/and or local priorities (forest management, tourism, economic development)

e. *Financial and economic sustainability:* Evidence that the enterprise can be financially sustainable, and that overall socio-economic returns are likely to be higher than the costs of the project (as evidenced by estimated payback period and benefit cost-ratios);

f. *Replicability:* Extent to which the enterprise is likely to support development of similar clustering of enterprises in a given region;

g. *Gender responsiveness:* Extent to which the enterprise is likely to provide opportunities for women (e.g. jobs, services, income streams) or is delivered through female ownership or participation.

126. *Sustainability:* Interventions that are supported will be done on the basis of 'going concern' – i.e. only those interventions that can demonstrate a commercial underpinning or similar (e.g. social enterprise supported from budget allocation), will be supported. These interventions will not be dependent on further grant funding after initial capital and capacity building support and will be expected to meet their operational costs from revenue streams (e.g. sales of goods and services).

127. There are already good examples of best practice for these sorts of investments supported as pilots by other programmes. These include:

a. *Briquetting:* For example in Armenia, successful briquetting facilities have been established with grant support by UNDP programmes, including in Mets Parni (under the Sustainable Land and Forest Management in Mountain Landscapes of North-Eastern Armenia) and more recently under the programme 'Addressing climate change impact through enhanced capacity for wildfires management in Armenia' in Northern Armenia. Likewise, similar facilities were established in Georgia with GEF/UNDP support in a range of locations including Matani. These facilities remain operational and are producing profitably on an operating cost basis serving increased demand amongst local populations. This is further supported by government-based procurement of briquettes to support poor communities currently engaged in deforestation activities. [28]

Figure 30: Example of briquetting entrepreneur in Georgia (Tsalamura Ltd. in Kakheti Region)

b. Ecotourism: Both Armenia and Georgia are promoting eco-tourism as a key growth area for sustainable revenue generation. For example, visitors to forested protected areas increased from less than 6,000 in 2005 to 303,700 in 2011 and up to 954,400 in 2017.

[28] See https://www.ge.undp.org/content/georgia/en/home/projects/promoting-biomass-production-and-use-in-georgia.html and https://www.am.undp.org/content/armenia/en/home/projects/mainstreaming-sustainable-land-and-forest-management-in-mountain.html

There are multiple examples of successful guesthouses in forest regions promoting forest-based activities and improving forest engagement and conservation. For example, Georgia has a sustainable eco-tourism promotion plan, with the National Tourism Association of Georgia estimating that there were approximately 500 small guest houses operating in rural areas of Georgia by 2018. In Armenia, UNDP has been supporting rural communities to develop commercial opportunities through the Armenia Integrated Rural Tourism Development (IRTD) Project and has provided grant funds to private sector operations in a number of protected areas.[29] These are supported by activity based tourism companies (e.g. www.adventurearmenia.com) who partner with local guesthouses to promote forest based activities such as hiking, mountain biking, photography and gastronomy/wine-oriented vacations).

Figure 31: Distribution of eco-tourism guesthouse facilities in rural areas of Georgia.[30]

Support for the promotion of eco-tourism in forest and protected areas in Georgia

Forest based eco-tourism in Georgia, as a promising source for the diversification of the rural economy, is widely promoted by the Ministry of Environment Protection and Agriculture (MEPA). Under the European Neighbourhood Programme for Agriculture and Rural Development (ENPARD) 'A New Approach for Rural Development in Georgia', since 2015, the Ministry has aimed to modernize agriculture, stimulate new agriculture and non-agriculture initiatives in rural development, and thereby tackle rural poverty in Georgia. The Forest Agency in the same ministry also considers Ecotourism at the community level to be relevant for the conservation and management of forests. A specific Mountain Law and a Mountain Development Strategy promote mountain tourism as a sustainable development option In addition, the Strategy for Small and Medium Enterprises Development, adopted in 2016, highlights the "Think Small First" principle that has been proposed in the E.U. Small Business Act for Europe, and supports private forms of investment in rural and mountain areas.

Based on an ''Eco-tourism Development Action Plan for Borjomi Municipality State Forest Fund'' has been developed, with the aim to define the areas on the National Forest Agency territories for eco-tourism development in Borjomi municipality. The document identifies high value tourist locations and potential products in the forest fund of Borjomi municipality. Sixteen tourist destinations have been identified in Borjomi municipality forest fund, each destination described with a potential tourist product which aims at better regulated tourism activities on NFA areas.

The Association Agreement between the E.U. and Georgia promotes community-based tourism in Georgia and the cooperation of all stakeholders. Article 9 of the Agreement states that Georgia has to maintain "partnership between public, private, and community interests in the field of tourism, with the aim of strengthening the development of a competitive and sustainable tourism industry as a generator of economic growth and empowerment, employment, and international exchange". In article 330, the "development and promotion of, inter alia, community-based tourism" is mentioned as an important field of economic development.

Source: Khartishvili et al. (2019)

[29] See https://www.am.undp.org/content/armenia/en/home/projects/integrated-rural-tourism-development.html

[30] See Khartishvili et al. (2019), Rural Tourism in Georgia in Transition: Challenges for Regional Sustainability

c. *Non timber forest products:* The development of the non-timber forest product sector has been a focus of both the Armenian and Georgian governments for several years. There is a strong local market for such products as well as significant export potential. For example, the Austrian development agency has identified more than 20 companies involved in the production of natural forest based products including honey, berries and herbs that are certified as both organic and meeting EU/US export standards.[31] A recent OECD/EU report identified added value products such as dried apricots (wild and farmed), fruit kernel oils, herbs (ideally in form of extracts) and specialty honey.[32] In Georgia, the EU-Georgia Association agreement has created additional trade opportunities to support export of such products. Enterprise Georgia lists at least 20 companies successfully trading in NFTP areas, including honey, nuts and herbs.[33] An example of a successful producers include Caucasan (www.caucasan.ge) who produce (e.g. herbs, fruits, berries, seeds, honey, jams, herbal teas) for the local and international markets. Georgia has also in 2019 set up an organic certification programme supported by the Austrian Development Agency and is promoting rural organic farming and certification with the EU supported "Green Economy: Sustainable Mountain Tourism & Organic Agriculture (GRETA)" project.

128. Activities that are not expected to create direct revenue streams (e.g. investment in better community level fire management practices (e.g. farmer residue burning behaviours, community recreation sites for barbeque) will be sustained through transfer of ownership and best practice to the local authorities and community structures as appropriate.

129. Based on the evidence provided above, the proposed community initiatives are likely to be sustainable after the initial grant support from the Adaptation Fund. However, it should be noted that as illustrated above, such start-up grant support from the AF project is still instrumental to catalyze local adaptation investments. The project support with the start-up capital, capacity building and market access will be required to unleash local enterprise potential building upon the experience of other successful technical assistance projects referenced above.

130. Gender responsiveness will be supported through active outreach to female entrepreneurs and households, particularly in those sectors which are traditionally likely to have female input (e.g. eco-tourism, forest products). The project will have a target of at least 30% lead participation by women in grant preparation and submission.

Output 3.4. Public awareness campaigns implemented

131. The project will work with local stakeholders in identified communities to build capacity and awareness around key forest fire management issues, as well as on broader climate resilient livelihoods and forest adaptation. In each region, the project will convene seminars for key stakeholders (agriculturalists, forest managers, emergency services, local authorities) to promote awareness of best practices. The project will work through a range of channels to change attitudes and behavior to wildfire risk, including:

a. Targeted field seminars with farmers engaged in residue burning

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[31] See the following link for an overview of companies in Armenia engaged in NFTP type collection, production and marketing: https://www.entwicklung.at/fileadmin/user_upload/Dokumente/Publikationen/Downloads_Laender_DivBerichte/Armenien/OASI_Organic_Armenia_2019.pdf

[32] See https://wedocs.unep.org/bitstream/handle/20.500.11822/22934/EaP%20Green%20Final%20report.pdf?sequence=1&isAllowed=y

[33] See http://www.tradewithgeorgia.com/

b. Promoting wildfire risk through public schools and other educational facilities

c. Engaging with volunteer groups supporting wildfire and forest management

d. Using local NGOs and environmental activist networks to raise awareness

e. Partnering with emergency services and forest managers on signs

f. Engaging with local media (press, tv, social media) to promote best practice

132. These best practices and experiences will be compiled and disseminated at the regional level through internet, publications, case studies and round tables. These will be disseminated through national channels and stakeholders, as well as through UNDP regional and global learning platforms (ALM).

B. Describe how the project /programme would promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms.

133. The programme will bring a range of innovative approaches, technologies and mechanisms that support improved forest fire risk reduction and response within the South Caucasus region. The integrated approach of the project (bringing together policy, institutional, technological and socio-economic risk management approaches) is in itself innovative as the root causes of forest fire risk are complex. The project will involve a number of areas of intervention that are new for both Armenia and Georgia:

a) Strengthening regional cooperation mechanisms between governments that allow for more pro-active risk management and resource planning (through more consistent risk assessment, training, response mechanisms), and shifting away from ad-hoc cooperation on disaster response;
b) Piloting new approaches to community engagement in wildfire response in both Georgia and Armenia by addressing the legal and institutional barriers to the formation of community volunteer brigades and helping to equip and train these groups in pilot regions;
c) Aligning standards and approaches to fire risk categorisation and reporting at a regional level, and linking fire risk planning to climate change/adaptation in sectoral and national development planning for more integrated policy making;
d) Developing and operationalising new and more effective approaches to fire risk forecasting, drawing upon technical and scientific approaches developed in other regions (e.g. Russia, Canada), and integrating hydromet and forest inventory data to issue more accurate fire risk warnings;
e) Supporting the development and piloting of new and innovative fire risk identification and forecasting technologies (e.g. remote sensing, big data mining) by the private sector/universities through the Climate Change Technology Accelerator;
f) Addressing the root causes of forest fire risk by addressing cultural and behavioural norms (e.g. agricultural residue burning, irresponsible forest recreation) and supporting public awareness campaigns;
g) Building innovative approaches to community-level forest management that create incentives for improved forest stewardship and align economic incentives among forest users (e.g. through supporting sustainable forest enterprises, briquetting).

C. 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 of the Adaptation Fund.

Socio-economic benefits

134. The programme, through the strengthening of regional wildfire management approaches and improvements in forest management resilience will deliver social and economic benefits for an estimated 800,000 people living in identified mountain forest regions. This includes those directly dependent on forest services (e.g. wood fuel, timber, tourism, forest products) as well as those living in adjacent agricultural communities. Indirectly, the project will enhance adaptation capacities and climate risk knowledge among a much larger number of households and enterprises.

135. Through the reduction of wildfire risk, communities living in mountain forest regions in Armenia and Georgia are less likely to face threats to their livelihoods and economic wellbeing associated with wildfire. Those engaged in forest-related economic activities will benefit from more sustainably managed forest resource that underpin future prosperity. These communities are also less likely to suffer losses (death, injury, infrastructure damages) associated with fire risk.

136. Under Component 3.3., communities directly supported will also receive additional socio-economic benefits associated with income diversification and the promotion of eco-system services that also reduce wildfire risk. Potential investments include the development of briquetting facilities, support for forest product enterprises, implementation of sustainable tourism zoning and recreational facilities, as well as promoting more sustainable agriculture and land management in forest-agriculture border areas. Farmers and forest communities will be encouraged to explore forest-eco-system services in order to strengthen the commercial value proposition of sustainable forest management and exploitation.

137. More broadly, reducing the incidence and scale of forest wildfires reduce the potentially economic losses associated with wildfire damages as set out earlier as well as reduce the large national (and often international) economic burden placed upon local and national response agencies that deal with firefighting and eco-system restoration. However, there is currently no robust or reliable estimate of the economic costs of wildfires in the South Caucasus region, nor an estimate of the current costs of responding to existing wildfire risk. Cost benefit analysis indicates that the returns of investments in improved wildfire management are substantial with cost-benefit ratios reported in the international literature well in excess of up to 30:1 for activities supporting wildfire awareness and education.[34] Further cost benefit analysis will be undertaken for individual investments made in the selected communities (state, private, community-level) to build the basis for better decision making.

138. As the project is implemented in close cooperation with the government structures in both countries, there is strong potential for the replication and scaling of benefits more broadly across Georgia and Armenia to support other forest communities and surrounding agricultural communities.

Social benefits (including gender):

139. The project has been carefully structured to ensure that project activities are targeted at those regions and communities that are most vulnerable to climate change and fire risk in Armenia and Georgia. The six targeted regions are relatively under-developed and are distant from large urban centres, with the primary source of livelihoods based around agriculture, forestry and associated activities. These regions generally have lower incomes and asset bases than in more

[34] See www.srs.fs.usda.gov/factsheet/pdf/fire-economic.pdf

developed parts of the country. In selecting community level investments, the project will incorporate social vulnerability methods to support prioritisation those likely to bring the greatest benefit to economically deprived groups and other populations at risk (Output 3.1.).

140. Gender considerations will be fully mainstreamed into project implementation. Please refer to the detailed Gender Assessment and Action Plan (GAAP) in the **Annex 11**. The project will actively consider the roles of women within the project structure and seek to promote a rethinking of existing perspectives in the sector where this is culturally and politically feasible. This will include ensuring the role of women in any legal or regulatory amendments (e.g. around volunteering in wildfire response) and supporting the consideration of female perspectives in any communication or training materials developed.

141. Consideration will be given to prioritizing female access to resources, training and inclusion in local political processes which govern forest management and emergency response. Regional experience shows that insufficient attention is paid to participation of women in forest management and wildfire risk, and that without leadership examples women do not try to engage in management structures. Women at the local level generally have less access to decision-making, capacity building and knowledge.

142. Participants in community level planning activities (vulnerability assessment, identification of sustainable community-based forestry management approaches) will be selected to ensure adequate representation of women, considering prevailing social norms around roles and responsibilities within the forestry sector. The project will aim to ensure that at least 30% of participants in consultation or training activities are women and that there is fair and equal opportunity to access resources. The project will also reach out pro-actively to potential female entrepreneurs in Component 3.3 for development of sustainable forest enterprises. The project will gather gender-disaggregated data for evaluation purposes and use gender sensitive indicators (particularly around beneficiaries) to facilitate planning, implementation and monitoring.

143. As necessary the project will partner with local NGOs and women's cooperatives in order to integrate and support on-going local initiatives, and to make capacity-building and other implementation activities gender-sensitive (adjusting factors such as content and training times to ensure that the needs of female beneficiaries are equally accounted for). The project will also build upon lessons learned from development projects where successful women's participation has been supported in sectors traditionally dominated by men.

144. Implementation strategies to deliver these targets will be designed and delivered by the project team in conjunction with key project partners. This will be done through the clear setting of targets in project agreements, payment by results and regular monitoring of progress.

Environmental benefits:

145. At its core, the project will seek to deliver significant environmental benefits through the reduction of wildfire risk, and a shift towards more sustainable forest management practices. The integrated approach adopted by the project is likely to deliver significant environmental benefits at both national and local level. Benefits are likely to arise from the following types of outcomes:

a. Reduced incidence and severity of forest wildfire
b. Improved forest management practices, leading to forest restoration
c. More sustainable agricultural practices in forest border regions

146. Environmental benefits arising as a result of the project are likely to be as follows:

a. Conservation and improvement of biodiversity in 500,000 ha of mountain ecosystems in forest regions
b. CO2 emissions reduction and enhancement of carbon sinks

Risk mitigation

147. In regard to environmental and social risk assessment and mitigation, the programme is committed to complying with the Environmental and Social Principles (ESP) of the Adaptation Fund, with UNDP's Social and Environmental Standards (SES), as well as with applicable national and international policies, laws and regulations.

148. The project is comprised of low risk capacity building activities as well as downstream pilot activities for which detailed design and site-specific details are not yet known. To manage E&S risks an Environmental and Social Management Framework has been prepared that addresses risks identified for the known activities and provides a mechanism for screening and impact management of downstream activities. Key environmental and social risks will be incorporated into the project risk register and will be fully monitored during programme implementation, with formal review of any potential issues by the project team and the project board.

149. The Environmental and social screening activities completed to-date indicate that the proposed project has risks and potential impacts consistent with a Category B project. It was determined that the risks identified at this time are low to moderate when evaluated against the AF's ESP principles. Risks identified at this stage have potential adverse impacts that are few in number, small in scale, localized, and reversible or easily mitigated. Actions that contribute to reduce and manage risks are:

a) Stakeholder participation and utilization of participatory community planning, detailing the specific objectives, adaptation activities, implementation arrangements and commitments, partner institutions and beneficiaries.

b) Adherence to UNDP's established work practices including travel safety and security, procurement including vetting and monitoring of contractors, and monitoring and evaluation

c) Mainstreaming of the human rights approach to development and gender equality and women's empowerment.

d) Use of the environmental and social management framework to screen, assess and manage potential environmental and social effects of downstream activities (Annex 9).

e) Development of a permit plan for each downstream activity that identifies all regulatory permits that are required prior to implementation, including EIA approval as determined in consultation with

f) Use of grievance redress mechanism to capture and address stakeholder grievances.

150. The project will consist of activities and downstream implementation of programmes for which site-specific details will not be fully known until later in the project cycle. For this reason, an Environmental and Social Management Framework has been prepared to provide a mechanism for the social and environmental screening, impact assessment and impact management of the future, downstream actives, including risks associated with: biodiversity, community health and safety, core labor rights (including worker health and safety), and pollution prevention and abatement. The screening completed to date indicates there is low risk adverse trans-boundary or global environmental impacts. This will be confirmed in the additional screening for each site-specific activity, along with screening for potential secondary or consequential development, and cumulative effects.

151. The proposed project will not result in significant greenhouse gas emissions nor would exacerbate climate change impacts, but rather has been designed to mitigate anticipated impacts of climate change. Furthermore, the benefits from improved forest management, afforestation and recovery can include reduced green-house gas emissions from the soil and improved carbon storage. The project will therefore indirectly increase social and environmental resilience to climate

change now and in the future through mitigation benefits, in addition to its explicit goal of enhancing environmental and social resilience in the face of climate change through adaptive agricultural practices.

152. The project will not support site-specific activities that require physical displacement. It is anticipated that the site-specific demonstration activities will be implemented on state land under the management of the respective National Forest or Protected Area Agencies, which would not exacerbate land tenure arrangements and/or community-based property rights/customary rights to land, territories and/or resources. However, as per the ESMF additional screening will be completed for each site-specific activity to identify risks and impacts related to land tenure and livelihoods.

153. More detailed environmental and social assessment, which may take the form of an Environmental and Social Impact Assessment (ESIA) depending on the scale and type of infrastructure, will be undertaken with regards to any direct investments in infrastructure (e.g. community level facilities such as briquetting) as to ensure that potential direct and indirect negative impacts are mitigated. For further information on environmental and social risk mitigation, please refer to the Social and Environmental Screening Report.

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

154. Addressing wildfire risk and promoting resilience in mountainous forest areas of the South Caucasus requires engagement by a broad range of stakeholders, including national policy makers, local authorities, forest communities and private enterprise. The multi-pronged approach adopted by the programme (institutional, technology, community), represents the most sustainable approach to addressing the complex issues involved. The proposed adaptation solution is more cost-effective than the business-as-usual scenario characterized with the growing vulnerability and losses; it is also more cost effective in comparison with currently prevailing public investments into response and firefighting. The following elements of cost-effectiveness have been considered for the project design:

(i) The proposed adaptation solution prioritizes and enables prevention of wildfire risk rather than focusing entirely on response. Investment into prevention and risk reduction activities are more cost effective than addressing consequences of wildfires, especially when full costs of impacts (social, environmental, health, etc.) are taken into account. Thus, a combination of investments into risk reduction and prevention of wildfires (through soft and infrastructure measures) with the increased response and risk management capacities represent the most cost-effective strategy.

(ii) The proposal enhances regional cooperation for addressing regional and transboundary climate-driven risks, which is more cost-effective than continuing uncoordinated individual country responses;

(iii) The proposal relies on the existing institutional frameworks and platforms for implementation and scaling up; the project also builds upon lessons learned from the earlier interventions and on successful earlier pilots with the prove of concept demonstrated in the region;

(iv) CCTA approach (Outcome 2) and incentives for community-based resilience and risk reduction investments (Outcome 3) have evidently been cost-effective as they enable local initiative, unlocks local potential and embedded into the local market and value chain. This is a much more cost-effective approach for ensuring replication and scalability of innovative solutions rather than top-down pre-designed singular strategies;

(v) The project catalyzes and facilitates private sector investment into resilience technologies; CCTA have earlier practiced support to local low-cost IT-based solutions led by local private sector. Creating space and incentives for the private sector investments in climate resilience and risk reduction is a more cost-effective strategy rather than a complete reliance on limited public funds for DRR and emergency response.

(vi) Individual risk reduction, EbA and community forest management practices proposed for the project have been piloted in the region and proved to be cost effective options, while for their application during the project implementation at specific locations and scope additional cost effectiveness analysis will be undertaken.

155. Therefore, the project is designed to ensure that its investments are undertaken in the most cost-effective manner, and that project approaches and institutional mechanisms are easily replicated and scaled up using existing facilities and platforms in country. The above elements of cost-effectiveness are further elaborated and supported with evidence below.

156. *The project will use existing national and local institutional arrangements* for delivery of project interventions, rather than creating additional and costly alternative project-specific alternatives. Under Component 1, the project will work directly through the relevant national government structures (respective Ministries of Environment and Emergency Services). This provides the most cost-effective route as these institutions and their policies set the framework for forestry and wildfire management at the regional, national and local level. Addressing risks without engaging policy makers (e.g. through community level engagement only) would not represent a sensible approach as interventions would not be underpinned by sustainable funding, governance or enforcement mechanisms. These include:

a. Using existing platforms and implementation modalities: The project will be carried out in cooperation with the respective existing regional and national structures for fire risk forecasting (e.g. hydromet, risk reduction (national forest agencies) and response (emergency management services). The project will work directly through the respective national and sub-national structures already tasked with wildfire management. The project does not seek to replicate or develop new implementation structures, but to build and strengthen capacity within the existing system.

b. Partnering with programmes and other delivery partners where possible: The project is seeking to maximise the presence of previous and ongoing initiatives (including the soon to be completed UNDP implemented wildfire support programme in Armenia), and to partner with projects, including support to the national forest inventory (e.g. GIZ) and other ongoing forestry projects in both countries (see section F).

157. Component 2 also focuses on cost effectiveness by *building systemic capacity within government institutions* (e.g. EWS). It aims to link existing databases and resources rather than develop (and potentially duplicate) new information systems, thereby leveraging existing investments by each government in forest and wildfire information and data management. In particular, providing investment in wildfire management innovation through the CCTA (Component 2.4) is likely to be more cost effective than promoting pre-packaged international solutions in the South Caucasus. This is because the interventions identified are built upon local initiative, leverage national commercial and academic institutional capacity, and are embedded in local markets, partnerships and value chains. This means that they are not only likely to be more cost-effective but are also likely to be more sustainable over the medium-long term.

158. *Investment into reduction of wildfire risk/wildfire prevention and in forest management* in Georgia and Armenia is likely to be highly cost-effective compared with the strategies focusing predominantly on response and firefighting. Component 3 brings together an integrated set of measures designed to promote a sustainable solution to wildfire risk while increasing the wider

resilience of mountain forest communities. Ensuring a participatory planning process (3.1), promoting investment in improved risk reduction and response (3.2), encouraging community enterprise that strengthens local forest stewardship (3.3), all supported by community level awareness raising activities (3.4) represents a multi-channel approach that offers the greatest likelihood of addressing the systemic weaknesses that exacerbate the increasing climate-induced wildfire threat. Reducing the incidence and spread of forest fires through a combination of improved risk information, soft measures and risk reduction infrastructure reduces costs across several areas, including:

a. Suppression costs (i.e. firefighting response costs)
b. Infrastructure damage
c. Loss of life and injury (to local communities, firefighters)
d. Impact upon livelihoods in affected communities (tourism, forest products)
e. Eco-system and other natural capital losses (temporary and permanent)

159. Currently, limited data exists for Armenia and Georgia that would allow for a structured assessment of the relative costs and benefits of more effective wildfire risk management. However, there is a significant body of evidence in the international literature that indicates that the costs of improved preparedness are significantly lower than the potential benefits from reduced response and damage costs associated with wildfire. Benefit cost ratios for investment in wildfire prevention education and the reduction in wildfire related losses and firefighting costs for example were assessed as high as 35:1 in an international study.[35]

160. In terms of *promoting the wider resilience of mountain forest communities and ecosystems*, there is a strong body of literature that supports the cost effectiveness of typical interventions to promote more sustainable forest management (e.g. briquetting, forest enterprises, and SLM practices). Given the lack of available data on the costs and benefits of interventions in the South Caucasus context, the project will undertake additional work to strengthen the knowledge base by undertaking more specific cost benefit appraisal in relation to selected interventions financed under Component 3. This will ensure that all investments maximise the socio-economic benefits to the relevant beneficiaries. The process that will be followed is set out in more detail below:

a. Under component 3.1, the project will undertake ex-ante economic assessment on the costs and projected benefits of selected EbA and forest fire management measures (3.2) and community forest management (3.3) activities.[36] This work will help contribute to the general awareness and understanding of the value for money of wildfire management.

b. This will be done through support provided by the project team to communities and local agencies developing and prioritizing intervention activities. The project team will be supported by an experienced national economist able to undertake cost benefit analysis where this capacity does not exist.

c. Each proposal for funding will include an ex-ante cost benefit analysis (based on the likely avoided losses and productivity returns at the community/firm/state entity level). It should be noted that the economic returns are highly context specific However, strategic elements of the project and criteria that are employed for sub-projects can provide a clear indication;

d. The results of the cost-benefit analysis will be used as one factor in the selection and prioritisation of local agency or community interventions and will influence which of the interventions are selected and presented to the project board for approval;

[35] https://www.srs.fs.usda.gov/factsheet/pdf/fire-economic.pdf

[36] Forest fire management includes fire prevention, fire identification and fire suppression

e. As part of the approval process, the cost-benefit analyses will be formally reviewed by the technical working group and an international economist as part of a quality assurance mechanism;

f. The selection criteria will be focused around the benefit-cost ratio (BCR) and the likely payback period (yrs.) of the interventions. Those interventions that cannot demonstrate a BCR in excess of 2:1 and a payback period of less than 10 years will not be funded. Proposals will be ranked on the basis of their economic returns as part of the selection process;

161. *Targeting and efficient design of specific risk reduction and resilience interventions* will further increase the overall cost-effectiveness of the AF investment. The cost-benefit analysis will be one of a broader set of criteria used to identify the cost effectiveness of individual investments in wildfire risk reduction, response or sustainable forest management to be used by the Project Board. These criteria will include:

a. *Targeting most vulnerable groups:* Extent to which the intervention will be relevant to/supportive of vulnerable communities or high value natural resource and biodiversity exposed to wildfire climate risk;

b. *Deliverability:* Assessment of the feasibility of the intervention from a technology and project management perspective (including timing and budget parameters);

c. *Alignment with national/local priorities:* Extent to which the intervention is aligned with national/and or local priorities in terms of reducing wildfire risk and increasing resilience (including evidence of co-development of proposals with key stakeholders);

d. *Economic case:* Evidence that the socio-economic returns are likely to be higher than the costs of the project (as evidenced by estimated payback period and benefit cost-ratios);

e. *Sustainability:* Evidence that interventions are likely to be maintained over time post-project in terms of operations, maintenance and/or commercial viability;

f. *Replicability:* Extent to which proposals are likely to be replicated and/or scaled within the project area or through national structures.

162. The programme team, together with the beneficiaries will undertake ex-post analysis as part of the project following implementation to review and assess the actual socio-economic impacts of the interventions in order to learn from experience and feed through into future national planning;

163. *Efficiency of individual risk reduction, EbA and community forest management practices* proposed for the project have been demonstrated through earlier initiatives in the region. It is already clear that the key interventions are cost effective.[37] For example, there are examples of briquetting facilities being financially and economically sustainable in both Armenia and Georgia. Briquettes provide significantly higher heat output than the equivalent volume of wood, with the cost per unit of heat approximately 50%. One cubic meter firewood produces 700-1000 kw/hr, while the same volume of briquettes generates 5,500 kw/hr. They are also cleaner (producing less ash and smoke). Additionally, transportation of briquettes is much easier and does not require large vehicles. Overall, they are more economically attractive for users, with costs per unit of heat approximately 50% of the equivalent firewood. These facilities typically have payback periods of 3 years and can deliver sustainable financial returns to their operators.

164. A number of sites have been piloted under the Russian Trust Fund project – 'Addressing climate change impact through enhanced capacity for wildfires management in Armenia' and these

[37] See https://medium.com/@UNDPGeorgia/biofuelling-sustainable-development-in-georgia-6539b13936c6

will be reviewed from a financial and economic view point prior to additional investments being made through the AF project. The FAO provides guidance on cost effectiveness on briquetting that will be followed as part of the project assessment process.[38] A number of international CBA studies have been undertaken to assess the BCRs of briquetting facilities. These all indicate that such investments are both financially and economically viable, and that the benefits outweigh the costs with Benefit Cost Ratios (BCR)s >1.6:1 – 3:1.[39]

165. There is also strong evidence for cost-effectiveness of measures associated with *reducing crop residue burning* (Output 3.3). Analysis undertaken by GIZ in Georgia[40] suggests good benefit cost ratios (BCRs) for reducing residue burning. Benefits accrue from both improved soil productivity (by ploughing residues back into the soil rather than burning), and from the sale of straw at market prices. Cost benefit to farmers (financial) was estimated at 3.8:1, whereas overall socio-economic benefits were estimated at 4.4:1, increasing to 5.3:1 where carbon sequestration benefits are included.

Small farmers	EANB/ha	NPV/ha	NPV district wide	BCR
Ecosystem service benefits from not burning				
Residue retention and integration in soil (100%)	78	632	0.8 million	3.7
Collection and sale of straw residues (100%)	- 5	-40	- 32'000	0.9
Welfare economic impacts from a ban of burning				
Welfare benefit from ban of residue burning	38	306	489600	N/A*
Protection of remaining hedges	6.8	56	89600	N/A*
Aggregate net-benefits				
Burning banned and all residues are integrated in the soil	**123**	**994**	**1.1 million**	**5.2**

*Assuming that government authorities bear the costs of prohibiting burning, there is no cost involved for farmers.

Large farmers	EANB/ha	NPV/ha	NPV district wide	BCR
Ecosystem service benefits from not burning				
Residue retention and integration in soil (100%)	105	855	7.8 million	5.2
Collection and sale of straw residues (100%)	147	1196	11.0 million	2.4
Welfare economic impacts from a ban of burning				
Welfare benefit from ban of residue burning	36	295	5.4 million	N/A*
Protection of remaining hedges	6.8	56	1.0 million	N/A*
Aggregate net-benefits				
Burning banned and all residues are integrated in the soil	**148**	**1206**	**15.8 million**	**6.9**
Burning banned and all straw collected and sold	**190**	**1547**	**17.4 million**	**2.9**

*Assuming that government authorities bear the costs of prohibiting burning, there is no cost involved for farmers.

Societal net-benefits	EANB/ha	NPV/ha	NPV district wide	BCR
Farmers as a whole	**166**	**1343**	**16.9 million**	**3.8**
Georgian society			**16.8 million**	**4.4**
Global society, including carbon sequestration			**21.2 million**	**5.3**

Assuming that: 8% and 92% of land in Dedoplistskaro district is cultivated respectively by small and large farmers (as revealed by the household survey undertaken for this study), and that large farmers adopt a mixed strategy of collecting half the straw and integrating the other half,,

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

[38] See http://www.fao.org/3/a-bp845e.pdf
[39] Examples can be found as follows:
https://www.researchgate.net/publication/289475852_Economics_of_briquette_production_using_forest_residue_and_wood_based_industrial_waste
https://www.researchgate.net/publication/316854266_Economic_Feasibility_of_Briquetted_Fuel
[40] See https://biodivers-southcaucasus.org/uploads/files/81206850_R_Westerberg_CBA%20Shiraki_2015-2016.pdf

166. The project has been developed in close partnership with a range of government agencies (forest, protected areas, emergency services) in each country and is fully aligned with existing national development plans and strategies related to climate change, disaster risk reduction and sustainable forestry as well as wider national development strategies. Key enabling strategies, plans and frameworks that support and are aligned with project objectives and activities are set out below:

Climate change

167. The project is aligned with core National Communication documents and Nationally Determined Contributions (NDCs) in both Armenia and Georgia that recognise forest wildfire threat and broader issues of forest degradation:

168. Armenia

a. *Third National Communication on Climate Change (2015):* The 3rd NC identifies wildfires as a key and increasing climate change impact on forest ecosystems in Armenia and has a commitment to restore degraded forest ecosystems.[41]

b. *Armenia NDC:* Promotes an increase in Armenia's forest cover from about 11.8% to 20.1% by 2030, supports the adaptation process of key ecosystems including forest ecosystems; establishes institutional mechanisms to overcome barriers for the introduction of innovative technologies for climate change adaptation; supports the establishment of consistent processes for professional training and education on climate change related issues in the forest governance domain, as well as enhance cooperation at the international and regional levels

169. Georgia

a. *Georgia's Third National Communication to the UNFCCC (2015):* The 3rd NC identifies wildfires as an important climate impact and details trends and impacts across the sub-regions of Georgia.[42]

b. *Georgia NDC:* Recognizes the role of forests in climate change mitigation and the impacts on forest ecosystems driven by climate change, including increased frequency of forest fires. NDC states that "Climate change adverse impacts pose severe threats to Georgia's forests. Rising temperatures, changes in precipitation patterns, reduced water availability, increased frequency of forest fires, as well as pests and disease outbreaks have reduced carbon sequestration ability of forests." The NDC includes national commitment for SFM and protection of forests to reduce CO2 emissions.

Disaster risk reduction

170. Armenia

a. *National Disaster Management Strategy and Action Plan (2017):* The strategy identifies wildfire risk as a key risk related to climate change and forest degradation and the action plan reviews measures to improve response and recovery.[43]

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[41] See https://unfccc.int/sites/default/files/resource/armnc3.pdf

[42] See https://unfccc.int/documents/106898

[43] See www.mes.am/files/legislation/477.doc

b. *National Program and Comprehensive Action Plan for Improving Fire Safety in Forests and Other Vegetation Area (2013).* This government protocol sets out the current framework for managing and reducing fire risk in forests and elsewhere.[44]

c. *National Fire Fighting Policy, its Implementation Strategy and Action Plans in Forest Lands, Specially Protected Areas, Agricultural Lands and Settlements (2015):* Setting out policy for firefighting and emergency response.[45]

171. Georgia

a. *The Disaster Risk Reduction strategy 2017-2020 and Action Plan* set outs out the approach to dealing with natural and human-induced disasters. Wildfire management is one of the key DRR areas for the government (Annex 2) and the strategy calls for improved cooperation and coordination. Annex 3 sets out actions aligned to the project, including access, water reservoirs, mineralized fire breaks, equipment and vehicles for transportation and rescue. [46]

b. *Georgia NDC*: highlights an increase in frequency and impact of climate-induced natural disasters and states that "Establishment of Early warning systems for climate related extreme events is considered as priority measure by the Government of Georgia".

c. *Law on the rule of planning and coordination of the national security policy* includes a mandate to develop conceptual documents that address critical situations, including planning and risk reduction.[47]

d. The *Georgian law on Civil Security* defines a range of measures, including prevention of disaster risk and sets out the actions, categories of risk and the structure of response. [48]

e. *The National plan on civil security* (2015) sets out the rules and responsibilities for addressing disaster risk, including forest fires. The Emergency Services are nominated as the lead institution, with others as supporting agencies.[49]

f. The *Emergency Management Plan of the Ministry of Environment Protection and Agriculture* is under development.

Forestry management

172. Armenia

a. *Forest sector improvement strategy and action plan (2017):* Sets out fire risk in Armenian forests and incorporates strategy for risk reduction and creation of wildfire management plans.[50]

b. National Forest Policy and Strategy (2004): Supports the sustainable management and protection of forest resources in the country.

c. "Approval of national target programmes for improving fire safety in forests and other plant covered areas, and on approval of the list of comprehensive activities intended for improving fire safety in forests and other plant covered areas".

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[44] See https://www.arlis.am/DocumentView.aspx?docid=83710 (In Armenian)
[45] See https://www.arlis.am/DocumentView.aspx?docID=95474 (In Armenian)
[46] Decree of Georgian Government N 4 on approval of the Disaster Risk Reduction strategy 2017-2020 and Action Plan, January 11, 2017
[47] Georgian law on the rule of planning and coordination of the national security policy, N3126-IIს, March 4, 2015
[48] Georgian law on Civil Security, N2608-IIს, June 27, 2018
[49] Resolution N508 of Georgian Government on approval of national plan on Civil security, September 24, 2015
[50] See http://www.irtek.am/views/act.aspx?aid=92963 (In Armenian)

173. Georgia

a. The *Rule on forest Tending and Reforestation* is the regulatory basis for the National Forest Agency. It provides an overview of types of fires, mineralized zones etc. as a mandate for fire prevention and eradication support to EMS.[51] [52]

b. The *Statute of the National Forestry Agency* defines the functions of the Agency related to emergency situations on forest fund territory (excluding under licence) and ensuring fire prevention rules are followed and inform EMS in case of fire.[53]

National development strategy

174. *Armenia*

a. *Armenia Development Strategy for 2014-2025* does not mention wildfire as a risk, but does have specific objectives relating to forest protection, restoration and biodiversity enhancement as part of a wider environmental protection focus.[54]

b. *Action Plan of the Government of the Republic of Armenia for 2019* promotes sustainable forest management and action to promote forest conservation and preventative measures.[55]

175. Georgia

a. The Socio-Economic Development Strategy of Georgia 2014-18 does not include wildfire management but does note the importance of forest conservation and protection and the value of forest eco-system services in supporting livelihoods.[56]

*b. The Rural Development Strategy of Georgia 2017-2020 i*dentifies forest wildfire as a risk and stresses the need for more sustainable forest management practices, and forests as a key resource in terms of socio-economic development.[57]

176. Detailed matrixes on consistency of the project outcomes with national policies, plans, strategies and development goals in Armenia and Georgia are presented in the Annex 8.

F. 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.

177. The project will mostly be focused on capacity building, regulatory reform and equipment and enterprise support. Procurement of equipment (e.g. wildfire fighting tools, clothing, transport) will be undertaken in agreement with government agencies and to national government specifications. The project will also involve downstream implementation of pilot and demonstrations activities for which site-specific details will not be fully known until later in the project cycle. The downstream pilot activities will be small-scale capital investment in community level wildfire preparedness, prevention and response. Typical investments might include mineralization of roads, construction of fire breaks, and water reservoirs for firefighting. In addition, there will be some funds allocated to community level interventions in forest areas to support adaptation such as briquetting facilities and forest product services.

178. An ESMF (Annex 9) has been prepared to provide a mechanism for the social and environmental screening, impact assessment and impact management of downstream actives in

[51] Decree No. 563A from 29 May 2013
[52] Decree N241 of Georgian Government on the Rule of Forest Tending and Reforestation, August 13, 2010
[53] Source: National Forestry Agency of Georgia, May 2019
[54] See https://eeas.europa.eu/sites/eeas/files/armenia_development_strategy_for_2014-2025.pdf
[55] See https://www.gov.am/files/docs/3133.pdf (In Armenian)
[56] See https://www.adb.org/sites/default/files/linked-documents/cps-geo-2014-2018-sd-01.pdf
[57] See http://enpard.ge/en/wp-content/uploads/2015/05/Rural-Development-Strategy-of-Georgia-2017-2020.pdf

accordance with AF and UNDP environmental and social safeguard policies and guidelines. Downstream pilot activities will also be planned and implemented in accordance with applicable law, including compliance with EIA, land use, waste management, and building permit regulations. Legal Framework and Compliance of the Proposed Activities with the National Permitting System and Standards in Georgia and Armenia are presented in detail in the ESMF (Annex 9).

179. The Environmental and Social policy of the Adaptation Fund, as well as UNDP Social and Environmental Standards, calls for consultative processes in the development of projects/programmes with "particular reference to vulnerable groups, including gender considerations." Consultation completed as part of project preparation is summarized in Section I and **Annex 10** of this project proposal. Commitments to stakeholder engagement as part of project implementation are set out in the ESMF (Annex 9).

180. During the implementation phases of any project, a person or group of people can be adversely affected, directly or indirectly due to the project activities. The grievances that may arise can be related to social issues such as eligibility criteria and entitlements of selected beneficiaries, gender norm changes, access to project benefits by marginalized groups, disruption of services, temporary or permanent loss of livelihoods and other social and cultural issues. Grievances may also be related to environmental issues such as impacts on water quality, damage to infrastructure due to construction or transportation of raw material, noise, decrease in quality or quantity of private/ public surface/ ground or surface water resources during implementation of livelihoods assets or water provision, damage to home gardens and agricultural lands etc. In order to address any grievances that may arise, in additional to any grievance mechanisms available at the local or national levels, all project stakeholders have access to the UNDP Stakeholder Response Mechanism (SRM) as well as the Adaptation Fund's grievance mechanism. These are both noted in the ESMF (Annex 9).

181. All UNDP supported donor funded projects are required to follow the mandatory requirements outlined in the UNDP Programme and Operational Policies and Procedures (UNDP POPP). This includes the requirement that all UNDP development solutions must always reflect local circumstances and aspirations and draw upon national actors and capabilities. In addition, all UNDP supported donor funded projects are appraised before approval. During appraisal, appropriate UNDP representatives and stakeholders ensure that activities have been designed with a clear focus on agreed results. The appraisal is conducted through the formal meeting of the Project Appraisal Committee (PAC) established by the UNDP Resident Representative. The PAC representatives are independent in that they should not have participated in formulation of the project and should have no vested interest in its approval. Appraisal is based on a detailed quality programming checklist which ensures, amongst other issues, that necessary safeguards have been addressed and incorporated into the design.

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

182. There are several initiatives of relevance to the proposed AF project that are ongoing, or recently completed and upon which the project builds. Efforts have been made to ensure that there is no duplication with other initiatives and that potential synergies are explored. UNDP has been implementing a series of relevant projects and initiatives in both Armenia and Georgia that have generated lessons, pilots, baseline analysis in the areas of sustainable forest management, forest fire management, risk and vulnerability assessment, climate and disaster information systems, EWSs to be used by the proposed project. Extensive stakeholder consultation has been undertaken with the major donors in the forestry sector in both Armenia and Georgia, including the World Bank, European Union, selected bi-lateral donors (GIZ, KfW, FAO, etc.). The primary previous, current and planned activities of relevance are identified as follows:

Table 6: Summary of Previous, current and planned projects related to wildfire risk management in the South Caucasus

N	Title of the project	Description	Implementing agency	Donor	Duration	Main activities	Potential alignment with the project
1	Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation (Armenia)	Large scale forestry programme	FAO MNP	GCF	2020-25 (est.)	Reforestation activities Energy efficiency activities to promote sustainable forest management Community forest governance and monitoring strategy	Under development. Concept submitted to GCF. Will look more generally at integrated forest management and governance. The concept references wildfires as a risk, but the project team has met with KfW and this will not be a core component of the project support in terms of capacity, systems development or technical support. Potential areas of alignment: - Component 1 (5,700 ha of forest and agroforestry investments are secured in Lori and Syunik forests). Project will align to ensure no overlap under AF Component 3 - Component 3 (Forest Governance strategy developed and implemented in 207 communities). Project will engage and cooperate with GCF project to support mainstreaming of wildfire management into governance strategy as part of AF Component 1.
2	Scaling-up Multi-Hazard Early Warning System and the Use of Climate Information in Georgia (Georgia)	Building integrated EWS programme across a range of hazards and sectors	UNDP MEPA	GCF	2019-25 (est.)	Expanded hydro-meteorological observation network and modelling capacities Multi-hazard early warning system and new climate information products supported with effective national regulations, coordination mechanism and institutional capacities Participatory community risk assessment and adaptation planning Municipal disaster preparedness plans; enhanced capacities of first respondents	Program is under implementation. Current programme excludes wildfire as a risk category. The Adaptation Fund programme will work to integrate wildfire risk into this wider DRR and EWS framework and will be able to benefit from enabling work undertaken by relevant stakeholders Potential areas of alignment -Component 1: Observations and modeling. Project will support hydrometeorological observation and modelling network. AF project will work to integrate fire risk modelling into same institutional multi-risk hazard system Component 2: Early warning systems: Project will develop EWS for non-fire hazards. AF project will look to use EWS platforms for delivery and dissemination to forest and agricultural communities. -Component 3 – local awareness raising and community investment programme does not have any alignment (mostly targeted at flood prevention and risk reduction)
3	National Adaptation Plan (NAP) to advance medium and long-term	Developing national action plan for climate change	UNDP	GCF	2019-22	Identified information and capacity gaps to improve synergies and coordination between and across sectorial initiatives.	Project is under implementation. It targets improvement the existing climate-related knowledge and evidence base to support more comprehensive and consistent assessments of climate risks, vulnerabilities and impacts to efficiently and effectively integrate CCA into national and sectorial planning and management. The project will also support the engagement of the private sector through a comprehensive

	adaptation planning (Armenia)	adaptation (CCA)				Strengthened institutional, functional and technical capacities to plan for gender sensitive CCA Established climate change adaptation monitoring capacity to efficiently and effectively integrate CCA into national and sectorial planning and management. Developed a CCA financing strategy.	assessment of the enabling environment and barriers, in line with Armenia's priorities for the development of the private sector. AF has the potential to feed into a number of Components of the NAP development and benefit from its processes. These include: Output 1: AF to provide inputs into institutional and regulatory knowledge gaps for wildfire management Output 2: Provision of more detailed risk analysis and scientific basis (e.g. risk modelling for NAP development Outputs 3 + 5: Use NAP process to support mainstreaming of wildfire risk management into national budgeting
4	Addressing climate change impact through enhanced capacity for wildfires management in Armenia (Armenia)	Targeted programme in 2-3 areas of Armenia exploring models for better	UNDP Ministry of Nature Protection Ministry of Emergency Situations	Govt of Russian Federation	2017-2020	Revising legislative standards and acts in Armenia on forest and wildfire management Building community capacity for rescue and response Supporting entrepreneurship to prevent and mitigate wildfire risks Innovation in adaptation in the forestry sector	A relatively small project, it has undertaken valuable preparatory work which has fed into the design of this Adaptation Fund proposal. It will close in early 2020 before the Adaptation Fund regional project begins. The AF project will be able to support the scaling and deepening of reforms and activities identified. Lessons and best practices from all four project components are being used to inform and support the implementation of the AF project. These include: -Component 1: Revision and updating of policy and legislation documents, normative acts and/or standards related to forest and wildfire management. The AF project will build on the initial scoping work undertaken through Component 1.1. -Component 2: Developing forest and wildfire fighting community-based rescue team and regional administrative capacities (including the institute of volunteers) for prevention and mitigation of forest and wildfire risks. The AF project will take initial work undertaken and develop the full legislation and pilot community approaches through Components 1.1 and 1.4 -Component 3: Developing and supporting alternative entrepreneurship-based activities for the prevention and mitigation of wildfire risks. The project has successfully piloted investments in briquetting facilities in selected regions and will scale this model through Component 3.3 Component 4: Establishing sustainable mechanism for the promotion of innovations and replication of technological solutions in Climate Change adaptation and mitigation activities related to agriculture and forestry sector. The AF

							project will support the scaling of innovation through investments in the CCTA (Component 2.4)
5	Adaptation to climate change impacts in mountain forest ecosystems of Armenia (Armenia)	Climate risk management in forest ecosystems piloted in Syunik Province, national policy development on forest fire management	UNDP Ministry of Nature Protection	GEF/SPA	2009-2013	The project aimed to bolster fire management capacities by training and equipping early response forest firefighting teams in Syunik Province (in 4 pilot sites), helping to shape national policies to control fires, and improving public awareness through a grass-roots campaign. A second prong involved increasing abilities to monitor and control pests, and a third entailed establishing three pilot projects to restore forests.	The project helped improve forest health and forest fire management on more than 100,000ha and spearheaded the development of national forest management legislation that takes climate risks into account. The early response teams have successfully prevented the spread of multiple grassland fires to neighbouring forests, spurring replication of the model. The National Assembly amended the Law on Atmospheric Air Protection to reduce the causes of forest fires, and the first National Action Programme for Forest Fire Prevention and Response was developed. The new Adaptation Project will learn from the local community-based work of the GEF/SAP initiative and will build upon the policy work by enhancing the enforcement. Component 1 undertook broad based policy and planning support to align forest management with climate change risks. Component 2 sought to pilot these aspects in Syunik region, including wildfire risk management (Output 2.3) (AF project region) Component 3 provided training to foresters for better forest resource management and climate change. Several lessons learned have been identified as set out in more detail below this table.
6	Upscaling of Global Forest Watch in Caucasus Region	Empower decision-makers in government and civil society with technology and information to help reduce deforestation, facilitate commitments to restoration and conserve forest biodiversity through	UNEP/WRI/GFW	GEF, WRI, REC MoNP (Armenia) MEPA (Georgia	2019-2022	The project aims to build information capacity on monitoring forest cover in the South Caucasus using remote sensing and other inventory analysis to promote better land use planning, restoration and forest policy	Component 1 involves information and policy development in relation to forest land use planning and restoration. The AF project will cooperate to identify potential areas of alignment in policy development and seek to use tools developed for better forest risk analysis. Component 2 provides training and capacity building on forest land use information to policy makers. AF project will coordinate to ensure that curricula and timings are aligned and that there is no overlap

		information systems					
7	Global Forest Watch (Georgia)	Online platform that provides data and tools for monitoring forests. Real time information. Georgian Forest and Land Use Atlas.	World Resources Institute (WRI) Managed by MEPA	Multiple donors	2016-2019	Identification of direct drivers of tree cover loss/tree cover gain Geo-statistic database of wildfires using MODIS and VIIRS satellite data Assessment of burnt areas and development of a report on natural regeneration of forests and soil erosion	The project included activities related to forest fires, such as creation of statistics database on wildfires, and assessment of the areas burned during the fires which will be useful in Component 2. The project will be completed by the time the Adaptation Fund program begins.
8	Integrated Biodiversity Management in Caucasus (IBiS) (Regional)	Regional biodiversity programme in South Caucasus	GIZ	German Federal Ministry of Economic Cooperation and Development (BMZ)	Dec 2015 - Nov 2019	General support to biodiversity across southern Caucasus across a range of landscapes	In 2018, the IBiS project supported training in wildfire management for forestry authorities in Kakheti, involving authorities from Kvareli,Dedoplistskaro and Akhmeta municipalities. The project has a number of components of interest to AF: Component 1 has been promoting biodiversity management and afforestation in Akhmeta province in Georgia (AF project site) Component 4 has been supporting improved forest inventory and forest information system (NFIS) in Georgia - This may be used as an input into the forest fire risk warning system.
9	Enhancing National Capacities on Fire Management and Wildfire Disaster Risk Reduction in the South Caucasus (ENVSEC) (Regional)	Reducing fire risks in the South Caucasus Countries through enhancement of potential for effective response and deepening regional cooperation	Former Ministry of Environment and Natural Resources Protection of Georgia (currently MEPA), Forest Policy Service, LEPL National Forestry Agency, LEPL Agency of Protected Areas	ENVSEC Finnish Govt	2012-2014	Draft National Policy on Forest Fire management has been elaborated (not approved) Regional trainings on fire management has been conducted, which also supported regional experience exchange for the South Caucasus countries	The only project that has focused on natural disasters and forest fires at a regional scale; The project supported building the capacity of different institutions on preparedness and response; Within the project a draft National Policy on Forest Fire management has been elaborated. The ENVSEC can serve as the basis for further legislative reform and provides useful materials for training.
10	Training in forest fire management for APA staff (Georgia)	Introductory course on firefighting and restoring burned scars	USAID department of Interior	-	2009-2010	Trainings of APA staff	Historic project supporting the capacity of APA staff in firefighting and restoring burned areas. The AF project will review any training or educational materials that remain from the project as the basis for Output 1.4.

183. In particular, a number of key lessons have been identified from the wildfire management component of the *project 'Adaptation to climate change impacts in mountain forest ecosystems of Armenia'* (5 in the above table):

a. Disturbances are becoming a significant threat to forest biodiversity, forest ecosystem functioning and forest resilience under Armenia's aridifying climate – and the control of forest fires is of great urgency to reduce the vulnerability of forests to climate change

    i. The forest rehabilitation pilot projects of the "Adaptation to climate change impacts in mountain forest ecosystems of Armenia" project have highlighted the increasing difficulty and the more intensive tending required to achieve successful forest regeneration under climate variability in disturbed forest areas located in arid parts of the country. Rehabilitation of disturbed areas under climate change will require increasing inputs and resources, which may not be available in forest management units. Natural regeneration on disturbed sites in arid areas will likely be insufficient to maintain forest ecosystem functioning at levels similar to those prior to the disturbance. The lack of replacement creates a significant threat to forest biodiversity, forest connectivity as well as forest ecosystem functioning and provision of ecosystem services;

    ii. Protection of forests from damage by taking efficient proactive measures is critical for maintaining forest functioning and forest resilience under climate change. Otherwise maintaining sufficient forest cover will become resource intensive, which on a wider scale and under the prevailing economic conditions will lead to lower rates of reforestation and prioritization of more productive sites/

b. Transfer of suitable technologies and the establishment of forest fire early response teams have yielded significant short-term improvements in managing the wildfire problem:

    i. The establishment of forest fire early response teams by providing equipment and tools suitable for the suppression of surface fires in the mountainous terrain to three forest management units in the Syunik Province, despite being limited to suppressing smaller scale fires, had immediate positive impacts on the wildfire management capacities in the region. The project enjoyed wide support among partners and stakeholders, and spurred replication at the national level by national authorities. The comparative simplicity of the introduced technologies, which however are specifically well suited for the mountainous terrain, and the relatively low initial investment costs associated especially with some of the hand tools has supported the adoption of the approach by local stakeholders. With immediate impacts in the short term, the early response teams create an enabling environment for the development of more comprehensive national responses to wildfires and wildfire management in the longer term. Furthermore, the provision of horses to the forest management units built the critical capacities of forest rangers to monitor the forest areas for fires, pests as well as violations in the use of forest resources.

c. Formalization of the results is key to long-term improvements in wildfire management

    i. Building on the initiated process of improving co-operation and coordination of all relevant stakeholders involved, a National Task Force on Wildfire Management was established by the decree of the Minister of Emergency Situations and with the endorsement of UNDP, OSCE and the Environment and Security Initiative. The Task Force convened technical experts from all relevant government organisations and ws led by the national Rescue Service. Its main task is to develop a short-term Action Plan for the improvement of prevention, pre-suppression and suppression of wildfires in Armenia. The Task Force was a instrumental for ensuring long-term development of wildfire management in Armenia and up-scaling of project activities to the national level. Furthermore, the formalized Action Plan

was important for securing adequate resources for carrying out the longer-term processes including revision of the legal framework and establishment of adequate institutional system to ensure law enforcement as well as acquisition of suitable equipment and machinery to build responsive capacities to forest fires. The Action Plan additionally contributes to the long-term public awareness raising through inclusion of the topic into national curricula.

ii. The inclusion of climate change considerations into the guiding document of forest management plan development had the same importance for mainstreaming climate change risk into forest management at the national level. The successful endorsement of the legal ban on burning of organic matter in forests and agricultural lands was key to beginning the process of changing behavior related to the use of fire and controlling the main cause of wildfires in Armenia.

d. The need for improved capacity to respond to disasters such as forest fires under changing climate conditions as well as the need to adapt to climate change is recognised by the project stakeholders

i. The rapid increase in wildfire danger makes climate change induced impacts in forests felt immediately compared to other impacts with slower onset. Forest managers already report drying conditions in the forests that they manage causing more forest fires and fire fighters have had to deal with significantly worsening grassland fire situation over the recent years. Additionally, both actors have to deal with the increasing wildfire problem with limited resources. The stakeholders identified not only the need for improved capacities to respond to the increasing disturbances under climate change, but also the need for enhanced co-operation between different authorities to organise wildfire fighting in an efficient manner. National ownership has paved the way for the activities carried out under the project which provided an opportunity to adopt new approach;

ii. The initiative to establish the National Task Force on Wildfire management, which was supported by international organisations, created a formal platform to develop the organisation of wildfire management in Armenia with the involvement of all relevant stakeholders and importantly with the leadership of local technical experts under the mandate created by the decree of the Minister of Emergency Situations.

e. Partnerships are essential

i. Strong national ownership of forest managers and fire fighters of the issue of improving wildfire management has been pivotal for the formation of good co-operation between key stakeholders and the project. The establishment of these partnerships, on the other hand, was instrumental for the effective and efficient implementation of project activities.

ii. The project successfully formed good relations with the main local stakeholders but has also created synergistic relationships with other international organisations and initiatives sharing parallel targets in improving wildfire management in Armenia. Partnering with other organisations (e.g. GIZ) resulted in enhanced outcomes and effectiveness of the project.

f. Wide stakeholder consultation contributes to a good working environment, broad project support and identification of a comprehensive approach to address the wildfire issue

i. Inclusion of a wide range of stakeholders representing government agencies, ministries, national, regional and local authorities as well as the private sector and the civil society into the activities under the wildfire management component of the project contributed to enhanced communication between different parties, establishment of co-operation between national stakeholders as well as identification of measures to comprehensively address

issues contributing to the wildfire problem. Importantly, this has strengthened the support for the project activities and has successfully brought the urgent issues of wildfire management to the national agenda. The key stakeholders, such as the regional forest enterprises and the protected area management authorities, have been involved in the project from the planning stages on, which has contributed significantly to individual and institutional capacity building and to the creation of a working environment supporting revision of current practices and adoption of new approaches as well as for example to the utilisation of local traditional knowledge to the fullest extent to identify adaptation options and for instance non-commercial tree species resilient to drought.

184. In summary, the project will be highly complementary to existing initiatives, whilst avoiding duplication in the few cases where this might exist. Where possible, the project will seek to build on the systems and infrastructure of past or ongoing initiatives (e.g. using existing sites for training and capacity building, engaging with existing programme participants as potential resilient extension service providers for the private sector). Where potential activities overlap (e.g. capacity building and policy support) the Adaptation Fund project will target thematic areas relevant to its core mandate (e.g. wildfire risk reduction rather than wider forest sector reform). In all cases, the project team will liaise and coordinate with other projects to maximize synergies given that the reform process is a dynamic one. Ongoing discussions will be held with other stakeholders (such as the FAO, GIZ, KfW) to monitor and align programming activities with potential emerging initiatives.

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

185. The knowledge management strategy forms a core element of the project. While budgets and activities are mainstreamed across the three project components, in operational terms the implementation of the knowledge strategy will be managed and coordinated centrally within the core project team by dedicated staff resources (estimated at an average of 0.5 FTE over the course of the project), with the Project manager also playing an oversight role in coordination and delivery of the strategy. Technical inputs and products will be developed as part of the mandate of the international and national consultant teams.

186. During project implementation, the project team will work with project partners (primarily the respective Forestry Agencies and Emergency Services in the development and dissemination of knowledge products as well as through online systems. Consultations with these partners confirm that they are both committed to building and disseminating knowledge on wildfire prevention, preparedness and response to relevant stakeholders within the project framework and beyond.

187. These partners already have good capacity to engage with knowledge development and dissemination activities on the basis of their existing mandates and institutional structures. Where necessary, UNDP will provide capacity support to knowledge partners to maximise the effectiveness of outreach and communication through their channels.

188. Lessons learned will be captured across the three main components and will include the following:

a. *Component 1:* Regulatory and institutional improvements to address wildfire risk;

b. *Component 2:* Insights from improving data and decision-making tools;

c. *Component 3:* Lessons learned from wildfire risk reduction at the local level.

189. In addition, the project's annual reporting will create summaries of lessons learned. The project will systematically document key lessons, good practices and challenges experienced in

supporting wildfire risk reduction, preparedness and response and moving towards more resilient policies at national level. The Adaptation Learning Mechanism (ALM) http://www.adaptationlearning.net and other relevant platforms will be used for knowledge dissemination.

190. As major adaptation programme in Armenia and Georgia, the AF project envisages a process of dissemination of findings both to the respective Governments and to the wider donor and civil society communities. It is expected that the Steering Committee will act as the main point of dissemination for the participating Ministries. The project team will hold regular briefings with the Steering Committee in this regard. Component 1 will involve close cooperation with the Steering Committee in terms of addressing institutional development and scale up of practices proven to be effective under Components 2 and 3.

191. In parallel, regular meetings will be held with relevant programmes within UNDP, the EU, GIZ, FAO and KfW, who represent the most active funding and implementation agencies of forestry and climate related technical assistance in the region. This will allow for AF project findings to inform the scope and to be incorporated into the design phase of other donor initiatives where relevant.

192. Key findings will be prepared in a format for dissemination to key stakeholder audiences. These may include government officials, foresters, private sector farmers, emergency response teams. It is also envisaged that a number of training and consultation events will be held under the various component work-streams, and the outcomes of these events will be captured.

193. The project will create a Facebook page or similar social media platform in each country and establish a link to the existing UNDP website on which all relevant reports, documents and findings will be posted for access by interested parties.

194. With regards to longer term sustainability of knowledge transfer and uptake, the following strategy is envisaged:

a. Learning materials developed to explain regulatory and legislative development will be transferred to the relevant ministries as well as other partner institutions for further dissemination and/or update. It has been agreed that these will continue to be disseminated as part of the mandate of these institutions and form part of their knowledge offering;

b. Capacity and materials developed around improved decision making and information will be mainstreamed into those structures responsible for data management and information systems. These materials and climate resilience best practice guidance notes will continue to be maintained and disseminated;

c. Lessons learned from the community level interventions will be transferred to the relevant departments in the Ministries of Environment, Forest Agencies, Protected Area agencies and Emergency Services institutions where they can serve as the basis for improving forest management practices through the relevant research institutes and other Ministry structures. The Ministries and relevant agencies have already discussed and confirmed their willingness to engage on this approach;

d. All lessons learned will be used as input to consultative workshops and meetings with project stakeholders and disseminated to other donors and relevant agencies.

I. 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 of the Adaptation Fund.

195. This proposal has been developed in full consultation with a broad range of stakeholders in Armenia and Georgia over several visits and consultation events.

196. During the project proposal development process, detailed stakeholder consultations were organized at national, provincial and local levels. The project development process included numerous local community meetings/visits, two missions of international consultants, and extensive stocktaking and validation stakeholder consultations with relevant government counterparts and civil society.

197. Furthermore, during these consultations gender specific vulnerabilities and needs were identified. During these consultations the roles and responsibilities of key stakeholders and the specific mechanisms and strategies for their direct involvement in project activities were identified. Considerations of vulnerability, participation and gender empowerment in the formulation of activities will be a key focus area, while gender mainstreaming tools will be applied in the development of technical guidelines for integration of climate change adaptation into planning processes. The project will ensure that both men and women are able to participate meaningfully and equitably, have equitable access to project resources, and receive equal social and economic benefits.

198. Key institutions and groups consulted in the development of this proposal include:

Table 7: Institutions and groups consulted during project preparation

Armenia	Georgia
• Aparan community • Aparan Forest Enterprise • Aragatsotn rescue service • Armenia Hydromet • Armenian Rescue Service • Armenia Climate Change Center • Dilijan National Park Administration • FAO Armenia Representative Office • GIZ Armenia Representative Office • Gugark Forest Enterprise • Eghegnut Forest Enterprise • Kotayk Emergency Services • Lori Rescue Service • Ministry of Emergency Situations • Ministry of Environment • Razdan Forest Enterprise • State Forest Committee • State Forest Monitoring Center • Tavush rescue Service • UNDP programme teams • WWF Armenia • Vanadzor Municipality • Vanadzor Branch of State Agrarian University • Vayots Dzor Forest Enterprise • Yeghegnadzor Municpality	• Agency of Protected Areas (APA) • Akhmeta municipality and local forestry service • Caucasus Nature Fund (CNF) • CENN (NGO) • Centre for Biodiversity Research & Conservation – NACRES (NGO) • Emergency Management Service of Georgia • Environmental Information and Education Center (EIEC) • Geo Outlook (NGO) • GIZ Georgia representative office • Global Forest Watch • Green Alternative (NGO) • Ministry of Internal Affairs, 112 emergency service • Ministry of Environment Protection and Agriculture (MEPA) • National Forestry Agency • PPRD East project team • Regional Environmental Center (REC) • Tianeti municipality and local forestry service • IUCN • UNDP programme teams • World Bank • WWF Caucasus

199. In addition, two multi-stakeholder workshops were held in Tbilisi and Yerevan for policy makers, NGOs and academics with more than 30 attendees. Three community level consultation events were also held at potential project sites as set out below:

Table 8: Example of community consultations conducted during the project development and validation in Armenia:

Date	Community	Number of people attending
15th April 2019	Aparan (Aragatsotn region, Armenia) – EMS, local administration, forest agency, community members	20
17th April 2019	Vanadzor (Lori region, Armenia) - Farmers, foresters, surrounding community heads, EMS, local administration	40
17th July 2019	Yeghegnadzor (Vayots Dzor region, Armenia) – local administration, forest agency, NGO, community members	18

200. A validation workshop with the national stakeholders has been conducted in Yerevan prior to the submission of the proposal, 20 representatives from relevant Governmental and development organizations (including Deputy Minister of Environment, Chair of the State Forest Committee, Deputy Head of Armenian Rescue Service, Director of Hayantar, GIZ, etc.) attended this Stakeholder Consultation Meeting to review final draft document and provide final recommendations. Participants welcomed the proposed project scope and strategy, and stressed the importance of systemic approach applied in the project (from policy and regulatory measures to local level adaptation and CB). A more detailed information and meeting notes on stakeholder and community consultations are presented in the **Annex 10.**

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

201. The programme costs are additional to other costs associated with wildfire management currently being met by the governments of both countries. The success of the intervention from an adaptation perspective is not dependent on co-financing activities by other parties. The proposal aims rather to build on existing public platforms to fund the additional costs of adaptation associated with emerging climate risk as a threat multiplier.

202. It is expected that going forward, project partners will continue to make their own investments (both financial and in-kind) into the development of effective wildfire and forest management strategies. The project will fund the full costs of adaptation, such as legislative reform and capacity development for promoting climate resilience within wildfire risk reduction policy, as well as the full costs of any investments in local level wildfire response and risk reduction activities not currently being met by regional authorities or local communities.

203. The project is structured to allow a high proportion of funds to flow into capacity building, policy development and institutional activities associated with the promotion of climate resilience for forest communities and agencies. As such, the components are expected to result in a significantly higher adaptation benefit than would otherwise be the case under a baseline scenario. A significant component of poor wildfire management and response remains structural in nature (lack of adequate policy, institutional frameworks, preparedness and response platforms), and requires investment in these enabling aspects to change behavior, and build awareness of best practice, both among policy makers and forest communities. Further cost of adaptation reasoning is set out below:

Component 1: Strengthening policy, regulatory and institutional frameworks

204. Baseline (Without AF funding):

a. Without AF funding, institutional processes would continue to operate with a poor degree of institutional clarity, particularly in relation to the division of roles and responsibilities between agencies (e.g. emergency response and forest management/protected area agencies, local communities). At a regional level, there would be no common methodologies or approaches

for wildfire management. Inter-government cooperation would remain ad-hoc and reactive to emerging wildfire situations. There would be limited opportunities for wildfire drills at both national and regional level, and responders would not be sufficiently equipped and trained for firefighting response in the face of increasing wildfire risks.

205. AF Additionality (With AF Funding):

a. With AF funding, both Armenia and Georgia will be able to strengthen their institutional capacity for wildfire management in a coordinated manner, drawing upon common understanding of risk assessment and response protocols and sharing best practice on a regional basis. They will develop common roadmaps for wildfire assessment and classification, data management and share lessons learned in the mainstreaming of resilience into forest management plans and DRR strategies. Roles and responsibilities will be clearer and capacity increased due to additional wildfire training and drills at local, national and regional level. Regional communication and interaction will be more structured, with higher technical capacity and greater knowledge sharing between the countries at all levels. As a result, these more efficient wildfire management systems at the regional and national levels will be able to more effectively prevent and respond to the wildfires in the face of climate change.

Component 2: Improved use of climate and wildfire risk information by decision makers

206. Baseline (Without AF funding):

a. Without AF funding, national governments in both Armenia and Georgia will fail to maximise the value of available information that can support better national and regional planning around fire risk reduction and response in mountain forest areas. Fire event databases, forest inventories, emergency response data and economic impact assessments will continue to be collected in a piecemeal and poorly coordinated manner by different agencies, limiting the ability for more integrated risk forecasting and informed analysis at a national and regional level. Risk assessment and wildfire forecasting systems will remain only partially developed, limiting the development and effectiveness of user-oriented Early Warning Systems (EWS) that can support better preparedness, behavioral change and resource positioning. Innovation around fire risk forecasting and early warning would be slow.

207. AF Additionality (With AF funding):

a. With AF funding, there will be a stronger and more integrated approach towards data collection, analysis and communication of risk to decision makers. Fire risk forecasting models will be strengthened, alongside better mapping of anthropogenic causes of fire risk through emergency response data. Monitoring networks will be strengthened (both remote and ground based) to allow improved forecasting, fire identification and estimate of damages. Senior decision makers (e.g. national security council, climate adaptation planning) will have access to improved information on the basis of which to make informed long-term planning decisions around resources and reforms. Early warning systems will be trialed for specific user groups, build upon more integrated and higher quality data sets. New and innovative approaches to fire risk monitoring and communication will be developed in conjunction with the private sector and academia.

Component 3:

208. Baseline (Without AF funding):

a. Without AF funding, those mountain forest regions and communities in Armenia and Georgia at greatest risk of wildfire will continue to operate with limited technical and organisational

capacity to reduce the growing wildfire risk associated with climate change. The relevant agencies (Forest management, EMS) will continue to struggle to access to sufficient resources, technical capacity and planning expertise to implement sustainable forest fire management practices from both a risk reduction and response perspective. Targeted communities will continue to exploit forest resources in a non-sustainable manner that both increases fire risk and causes environmental degradation. There will be more limited implementation of forest eco-system services that can build better community stewardship over forest resources. Awareness in relation to wildfire risk associated with poor agricultural and forest management practices would remain low.

209. AF Additionality (With AF funding):

a. With AF funding, highly vulnerable mountain forest areas and communities will be supported to identify their vulnerabilities. Investment plans will be drawn up to address key vulnerabilities in in their forest management practices, both in terms of fire risk reduction (e.g. pest, residue management) and fire suppression (e.g. access roads, water availability, mineralized breaks). Communities will be better supported to engage in economic activity that both reduces forest fire risk (e.g. briquetting, sustainable tourism, sustainable agricultural burning). Different stakeholder groups will be more aware of the potential risks for wildfire and best practices in how to reduce the incidence and impact.

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

The programme has been designed to ensure sustainable outcomes in the following ways:

210. *Component 1* is designed to create sustainable institutional capacity and long-lasting regulatory reform, using common regional approaches. The project is working with existing state institutions in both countries (EMS, National Forest/Protected Area Agencies) to ensure that knowledge and know-how is mainstreamed into key responsible institutions. The project builds upon earlier work undertaken by UNDP, OSCE, GIZ and others to support reforms in the forestry and DRR sectors with a view to creating sustainable change. At a regional level, the project will build the capacity of existing regional coordination structures and mechanisms. At a national level, guidelines on wildfire risk management and climate change adaptation will be fully adopted and mainstreamed into government processes. At a local level, the project will enable a solid legal basis for volunteer group participation in wildfire response. Institutional reform and capacity strengthening can create a template for wider strengthening of wildfire institutions across the South Caucasus region.

211. *Component 2* builds upon existing national data collection and analysis systems, and communication processes in order to ensure that outputs have ownership by national and regional stakeholders.

a. Improvements in *wildfire forecasting (2.1)* will build upon existing pilot and demonstration activities (2.1) undertaken under previous projects and ensure that their further development is fully embedded within the relevant national institutions. Investments in improved remote sensing and ground-based monitoring systems will also be fully embedded in national fire risk and climate monitoring systems.

b. *Early warning systems* (2.2.) will be developed in conjunction with key institutions (e.g. 112 EMS, Forest Agencies) and implemented as part of their operational activities on the basis that they will form the basis of an ongoing service offering supported by the respective national budgets. In Georgia, the program will be designed so that it can be integrated into the wider UNDP/GCF MHEWS project supporting the Government to build systems that provide early warning and response to a broader set of disaster risks beyond wildfire.

c. Improved *data management approaches* (2.3) will be implemented through the provision of support to the existing nominated data agencies and align with other ongoing national processes (e.g. forest inventory processes). Where there is uncertainty in relation to ongoing reforms or institutional restructuring, the project will wait until these reform processes and institutional responsibilities are clear before engaging.

d. Innovation around wildfire monitoring and data analysis (2.4) will be made sustainable in part by supporting the scale-up of existing successful pilots that have already achieved a level of institutional acceptance and credibility among state agencies in Armenia and Georgia. New innovations will be undertaken with the close cooperation of the relevant state agencies (e.g. in terms of enabling access to data or testing sites) to maximise the chances of long-term success.

Component 3

212. *Component 3* activities will be planned and executed with a high degree of community and local authority participation and ownership to maximise the likelihood of long-term success.

a. *Participatory planning* around vulnerability assessment and investment prioritisation (3.1) will involve all relevant stakeholders at the local level, including forest and protected area management agencies, emergency response, local authorities and wider communities of foresters and agriculturalists. By engaging a broad cross section of the community is important to obtain buy-in and agreement around a shared vision for local interventions that can be broadly supported.

b. Investments in *improved forest fire risk management at the community level* (3.2) in the selected municipalities will be grounded and build upon existing sub-national plans, processes and institutions, working through the relevant local agencies of the forest and emergency services with a view to developing a more coherent system. Participating forest agencies and emergency management services will continue to receive funding from central government post project, and activities under Component 1 will strengthen and support the relationship between policy and practice at a sub-national level. The sustainability (financial, environmental) of interventions will be included as a criterion in project selection.

c. Investments in *community level forest resilience activities (3.3) including* briquetting, forest enterprises and recreation areas, more sustainable agricultural practices will be developed on the basis of economic sustainability (natural resource availability, potential markets). Grants will be made to assist with capital costs, but activities will only be funded on the basis that there is clear private or local authority ownership, and that operating costs can be met out of envisaged revenue streams or budgets. These enterprises are expected to be self-sustaining with limited need for ongoing budget support. Revenue streams include the following:

i. Sale of briquettes to households for cooking fuel

ii. Sale of forest products (medicines, foodstuffs, herbs)

iii. Revenue from sustainable tourism (homestays, forest activities)

iv. Improved yields from higher agricultural productivity.

d. Awareness raising activities (3.4) are focused on delivering long term behavioral change among key constituencies.

213. These proposals have been discussed at the highest level with the Governments of Armenia and Georgia who both recognise the importance of building capacity around better wildfire management and are both committed to supporting improvements in wildfire risk reduction and

response over the medium-long term with increased strategic focus and resource allocation, as reflected in key climate change and DRR strategies.

214. The project will work across its institutional, policy and capacity building workstreams in order to further promote ownership among key line ministries with a view to ensuring adequate funding for continued and increasingly coordinated wildfire planning and response. It will do so by building and presenting the economic case during implementation of the specific project measures setting out the costs and benefits of intervention – and work with the relevant governments to estimate the costs of scaling up project level interventions to national level, and mainstreaming approaches into the relevant government departments.

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

215. The proposed project activities were evaluated against the AF ESPs to identify potential risks. Table 9 provides a checklist of project compliance with AF ESPs, indicating for each principle if "no further assessment required for compliance" or "Potential impacts and risks – further assessment and management required for compliance".

216. The screening and assessment considered the following:

a) Readily available published information on environmental and socio-economic conditions in the beneficiary countries including mapping and databases, reports generated by development aid and other organizations, and government generated information including census data;

b) Information received during consultations with government agencies and stakeholders;

c) National regulations; and,

d) Professional experience with projects of a similar nature.

217. Based on the screening and assessment results from an environmental and socioeconomic risks perspective, the project is considered as **Category B (across all three components**). Risks identified at this stage have potential adverse impacts that are relatively few in number, small in scale, localized, and reversible or readily mitigated.

218. Additional information is provided in the Environmental and Social Management Framework (ESMF) provided in Annex 9, and in the Gender Action Plan provided as Annex 10.

Table 9: Checklist of Adaptation Fund Environmental and Social Principles

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		✓
Access and Equity		✓
Marginalized and Vulnerable Groups		✓
Human Rights		✓
Gender equity and women's empowerment		✓
Core labour rights		✓

Indigenous populations	✓	
Involuntary Resettlement		✓
Protection of natural habitats		✓
Conservation of biological diversity		✓
Climate change	✓	
Prevention of pollution and efficiency of resources		✓
Public health		✓
Physical and cultural heritage		✓
Soil and soil conservation		✓

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

219. At the request of the Governments of Armenia and Georgia, UNDP is the Multilateral Implementing Entity (MIE). As a Multilateral Implementing Entity, UNDP is responsible for providing a number of key oversight and specialized technical support services. These services are provided through UNDP's global network of country, regional and headquarters offices and units and include assistance in project formulation and appraisal; determination of execution modality and local capacity assessment; briefing and de-briefing of staff and consultants; general oversight and monitoring, including participation in reviews; receipt, allocation and reporting to the donor of financial resources; thematic and technical backstopping; provision of systems, IT infrastructure, branding, and knowledge transfer; research and development; participation in policy negotiations; policy advisory services; programme identification and development; identifying, accessing, combining and sequencing financing; troubleshooting; identification and consolidation of learning; and training and capacity building.

220. As outlined in UNDP's application to the Adaptation Fund Board for accreditation as a Multilateral Implementing Entity, UNDP employs a number of execution modalities determined on country demand, the specificities of an intervention, and a country context. The project will be executed by **UNDP Country Office in Armenia in close cooperation with UNDP in Georgia** under the UNDP Direct Implementation Modality (DIM) in line with UNDP's Programme and Operations Policies and Procedures and Standard Operating Procedures for Regional Programme Management. **UNDP Armenia will be the Lead Country Office** for the regional project management and will be responsible for delivery of the project outputs. UNDP Armenia will be responsible for overall management, quality assurance, coordination, ensuring project coherence, the preparation and implementation of work plans and annual audit plans; preparation and operation of budgets and budget revisions; disbursement and administration of funds; recruitment of national and international consultants and personnel; financial and progress reporting; and monitoring and evaluation. UNDP GEF Regional Technical Advisor based in the Istanbul Regional Hub will provide technical advice and expertise to the project's activities. The **UNDP Country Offices (COs)** will implement in-country activities as per agreed workplans. The assigned CO staff will support the project implementation, monitoring, and contribute to the financial and operational closure and final reporting.

221. A Regional Project Board (RPB) will serve as the project's coordination and decision-making body. The RPB's role will include: (i) providing overall leadership, guidance and direction in successful delivery of outputs and their contribution to outcomes under the regional programme, ensuring the

project remains within any specified constraints; (ii) overseeing project implementation; (iii) approving all work plans and budgets, at the proposal of the Project Manager (PM), for submission to UNDP-GEF; (iv) approving any major changes in plans or programmes; (v) reviewing annual progress reports and end project report; (vi) ensuring commitment of resources to support implementation; (vii) arbitrating any conflicts within the project and/or negotiating solutions between the project and any other stakeholders. The RSC will also be the focal point for data sharing and dissemination through its existing transboundary coordination functions and links with the national structures. UNDP-GEF Unit will represent UNDP in the RPB along with representatives from UNDP country offices. Senior level officials from the Ministry of Environment and the Ministry of Emergency Situations from Armenia, as well as Ministry of Environment Protection and Agriculture and Ministry of Internal Affairs.from Georgia will represent governments in the RPB. RPB will meet according to necessity, but not less than once in 12 months, to review progress, approve work plans and approve major deliverables.

Key National Stakeholders/Partners	Roles and responsibilities
Ministry of Environment, Republic of Armenia	Member of the project board. The Ministry of Environment will provide oversight of and support implementation of national and sub-national wildfire risk reduction activities in relation to forest areas (forest enterprises, national parks) as well as coordinate on regional risk reduction activities. The role of the Ministry will incorporate representatives from key agencies under the Ministry including 'Hyantar' Forest Enterprise agency and the State Forest Monitoring Agency (currently under Ministry of Agriculture, but undergoing institutional reform)
Ministry of Emergency Situations Republic of Armenia	Member of the project board. The Ministry of Emergency Situations will provide project oversight in relation to national and subnational elements related to wildfire response in Armenia as well as coordinate on regional fire response activities. The MES is a vertically integrated agency that provides emergency response capabilities at both national and local level. It will incorporate representatives of Armenia Hydromet and other relevant agencies that currently sit under the ministry.
Ministry of Environment Protection and Agriculture Republic of Georgia	Member of the project board. The Ministry of Environment Protection and Agriculture will provide oversight of and support implementation of national and sub-national wildfire risk reduction activities in relation to forest areas (forest enterprises, national parks) as well as coordinate on regional risk reduction activities. The role of the Ministry will incorporate representatives from key agencies under the Ministry, including the Agency for Protected Areas (APA), National Forestry Agency (NFA) and Environmental Information Centre.
Emergency Management Service Republic of Georgia	Member of the project board. The Emergency Management Service (EMS) under the Ministry of Internal Affairs will provide project oversight in relation to national and subnational elements related to wildfire response in Georgia as well as coordinate on regional fire response activities. The role of the Ministry will incorporate representatives from relevant agencies including 112 and the crisis management council.

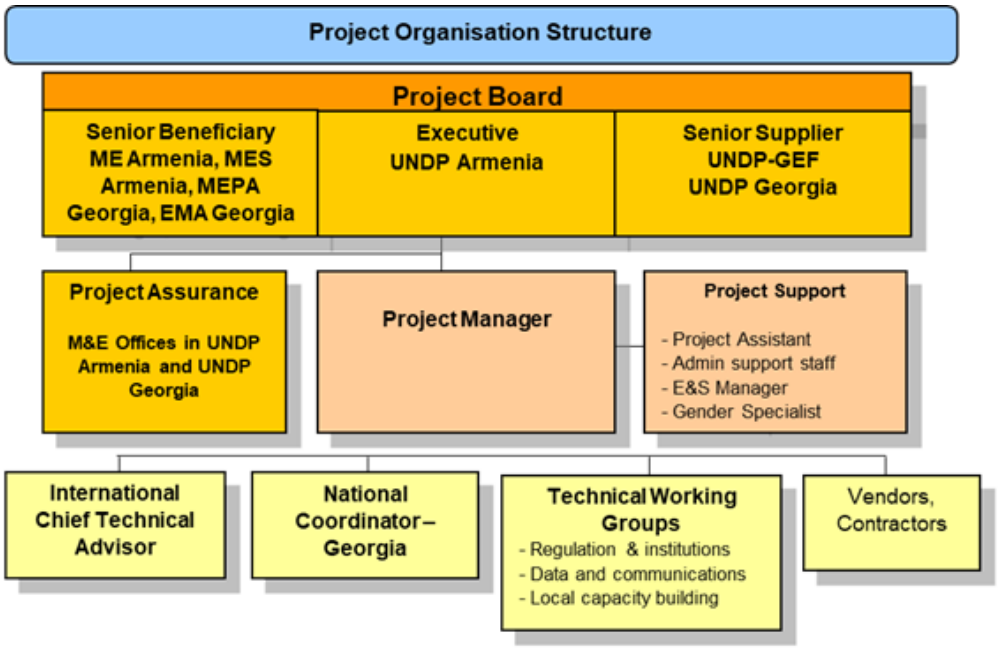
222. The **National Project Boards or Steering Committees** in the two beneficiary countries will be established to oversee and guide project implementation at the country level, including implementation of forest fire management and community engagement activities at the national and local levels. The national Steering Committees will be composed of the national project stakeholders and will be co-chaired by UNDP Country Offices. Nominees from the Ministry of Environment with its subordinated agencies, such as "Hayantar" SNCO, State Hydrometeorological Service, "Forest Monitoring Center" SNCO, Armenian Rescue Service, National Statistical Committee, as well as the Ministry of Economy will represent national project board in Armenia. In Georgia, the NPB membership will include (but not limited to) the representatives from MEPA, EMS, APA and NSC. Representatives from regional administration, selected local communities, enforcement agencies, such as Police, Ministry of Health, academia and other relevant entities may be invited to the PB meetings. Final composition of the National Project Boards will be decided at the PAC meeting.

223. **Project Assurance:** UNDP Country Offices will support project implementation by monitoring project budgets and expenditures, recruiting and contracting project personnel and consultant services, subcontracting and procuring equipment. UNDP Armenia will monitor the overall project

implementation and achievement of the project outcomes/outputs and ensure the efficient use of donor funds through an assigned UNDP Project Manager. UNDP IRH will support Project Assurance.

224. **Mechanisms for local participation:** the project will use the existing locally established mechanisms for local consultation and participation.

225. The day-to-day administration will be carried out by a Project Manager (PM) and Project Assistant (PA), who will be located within the UNDP Armenia and by the National Coordinator (NC) for Georgia based at UNDP Tbilisi. The PM will, with the support of the PA and NC, manage the implementation of all activities, including: preparation/updates of work and budget plans, record keeping, accounting and reporting; drafting of terms of reference, technical specifications and other documents as necessary; identification, proposal of consultants to be approved by the PB, coordination and supervision of consultants and suppliers; organization of duty travel, seminars, public outreach activities and other events; and maintaining working contacts with partners at the central and local levels. The Project Manager and NC will liaise and work closely with all partner institutions to link the project with complementary national programmes and initiatives. The PM is accountable to UNDP and the RPB for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PM will produce Annual Work and Budget Plans (AWP&ABP). The PM will further produce quarterly operational reports and Project Performance Reports (PPR). These reports will summarize the progress made versus the expected results, explain any significant variances, detail the necessary adjustments and be the main reporting mechanism for monitoring activities. The PM will be technically supported by contracted national and international service providers, based on need as determined by the PM and approved by the PB. Recruitment of specialist services will be done by the PM, in consultation with the UNDP and in accordance with UNDP's rules and regulations.



226. The PM will be supported by an **International Chief Technical Advisor (CTA, part time)** recruited by UNDP for this project. CTA will provide (i) state of the art technical advice and (ii) associated policy advice to the programme and its activities. S/he will provide guidance and advice to the Project Manager and National Coordinator on identifying the best methods to ensure that the project achieves maximum impact, in accordance with international best practice, towards its adaptation objectives.

227. UNDP will provide Direct Project Services (DPS). DPS costs are those incurred by UNDP for the provision of services that are execution driven and can be traced in full to the delivery of project inputs. Direct Project Services are over and above the project cycle management services. They relate to operational and administrative support activities carried out by UNDP. DPS include the provision of the following estimated services: i) Payments, disbursements and other financial transactions; ii) Recruitment of staff, project personnel, and consultants; iii) Procurement of services and equipment, including disposal; iv) Organization of training activities, conferences, and workshops, including fellowships; v) Travel authorization, visa requests, ticketing, and travel arrangements; vi) Shipment, custom clearance, vehicle registration, and accreditation. These service costs are assigned as Project Management Cost, identified in the project budget as Direct Project Costs. Eligible Direct Project Costs should not be charged as a flat percentage. They should be calculated on the basis of estimated actual or transaction-based costs and should be charged to the direct project costs account codes: "64397 – 'Services to projects - CO staff' and 74596 – 'Services to projects - GOE for CO'. UNDP recognizes that these services are not mandatory and will only be provided in full compliance with the UNDP recovery of direct costs policies. The DPS will be charged annually using the UNDP Universal Price List.

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

Risk	Risk Rate	Action
Reluctance of decision makers to adopt recommendations on new legislation or regulation	Medium	Active engagement of Ministry partners at senior level. Project design phase has included close consultations with Ministries and includes elements that are considered realistic within given timescales. The project has engaged closely with government stakeholders during development, and builds upon extensive relationships between UNDP and the respective governments
Institutional conflict (e.g. between EMS and forest agencies) or between national governments prevents the development of a strategy for improved wildfire management	Medium	Strong focus on stakeholder consultation and alignment, bringing together EMS and Forest and protected area agencies with other stakeholders. Work to strengthen existing bi-lateral coordination mechanism at the regional level
Due to staff turnover at the target Ministries and agencies, trained staff may leave for other job opportunities undermining installed technical capacity	Medium	Special training conditions and / or training for trainers will be arranged to leave the trained staff at the target Ministries.
Ongoing institutional reform and reorganization create challenges for more integrated and aligned wildfire management processes	Medium	Ensure that significant structural reform processes are completed before identifying institutions to host EWS product development or database management
Lack of willingness among public and community level partners to engage in local activities.	Medium	Provide strong facilitation support for vulnerability and prioritisation processes at the local level
Local stakeholders may be unwilling to change existing livelihoods and cultural practices in relation to fire	Medium	Review uptake of awareness raising and capacity building activities and undertake course correction where necessary. The project will be introducing incentives for sustainable livelihoods and forest management practices in the targeted communities.
No finances are available for proper operation and maintenance of the	Medium	Both countries are upscaling budgetary support for forest and wildfire management. Activities will only be

equipment and structural/non-structural fire prevention measures		implemented in the context of ongoing sustainable finance from government and this will be agreed in advance with key stakeholders
Weather extremes/natural climate-induced disasters (heat waves, etc.)	Medium	Climate sensitive activities will be screened for potential exposure to changing climate and extremes (e.g. reforestation, water storage).

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

228. UNDP's management of environmental and social risks is comprised of the following:

a. For unspecified downstream sub-projects an Environmental and Social Management Framework was prepared as a mechanism for risk screening and preparation of a site-specific environmental and social impact assessments and environmental and social management plans for the downstream activities for which detailed design and site-specific details are not available at this time (Annex 9);

b. Stakeholder engagement as part of planning and implementation of site-specific activities;

c. Grievance Redress Mechanism designed to capture and address stakeholder grievances;

d. A gender plan with specific actions and targets aimed to mainstream gender equality and women's empowerment (Annex 11);

e. Incorporation of project-specific environmental and social requirements into the procurement process and selection of contractors;

f. Procedures for consultation with stakeholders regarding site-specific projects;

g. For site-specific activities UNDP will apply a Permit Compliance Management System that includes provisions for: i) listing permitting requirements; ii) connecting legal requirements to permits; iii) create and track compliance actions related to permits; and iv) provide record-keeping of checklists, notes, documents, etc. related to permits;

h. Inclusion of an Safeguards Officer, and a Gender Specialist on the project management team.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

229. Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will be carried out by the Project team and verified by UNDP IRH and Country Offices in two beneficiary countries. Dedicated support by the technical adaptation teams in the UNDP Istanbul Regional Hub and UNDP-GEF New York will be provided on a regular basis.

230. A comprehensive Results Framework for the project will define execution indicators for project implementation as well as the respective means of verification. A Monitoring and Evaluation system for the project will be established based on these indicators and means of verification.

231. Targeted M&E activities for the proposed project include the following:

- A Project Inception Workshop will be conducted within two months of project start up with the full project team, relevant government counterparts and UNDP. The Inception Workshop is crucial to building ownership for the project results and plan the first-year annual work plan. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and

execution, document mutual agreement for the proposed executive arrangements amongst stakeholders and assist the project team to understand and take ownership of the project's goals and objectives.

- Another key objective of the Inception Workshop is to introduce the project team which will support the project during its implementation. An Inception Report will be prepared and shared with participants to formalize various agreements decided during the meeting.
- A UNDP risk log will be regularly updated in intervals of no less than every six months in which critical risks to the project have been identified.
- Quarterly Progress Reports will be prepared by the Project team and verified by the Project Board.
- Project Performance Reports (PPR) will be prepared to monitor progress made since project start and for the previous reporting period. These annual reports include, but are not limited to, reporting on the following:
    - Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
    - Project outputs delivered per project Outcome (annual);
    - Lessons learned/good practices;
    - Annual expenditure reports;
- Reporting on project risk management.
- Government authorities, members of Steering Committee/Project Board and UNDP staff will conduct regular field visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess firsthand project progress.

232. The Audit will be conducted in accordance with UNDP Financial Regulations and Rules and applicable audit policies on UNDP projects.

233. The project will undergo an independent Mid-Term Evaluation (MTE) at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes and identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term.

234. Final External Evaluation will be conducted no later than 3 months before project closure.

The budgeted Monitoring & Evaluation plan is as follows:

Type of M&E activity	Responsible Parties	Budget US$	Timeframe
Inception workshop	Project Manager UNDP COs	$7000	Within first two months of project start up
Inception Report	Project team UNDP COs	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	Project Manager	None	State, mid and end of project

Annual measurement of indicators	Project Manager	None	Annual prior to annual reports and the definition of annual work plans
Monthly/quarterly reports	Project team	None	End of each month
Annual reports	Project team UNDP IRH, COs	$5000 (total amount for all years)	End of each year
Meetings of project Regional Steering Committee and National Steering Committees	Project team UNDP IRH, COs,	$25,000 ($5000/5 years)	After inception workshop and thereafter at least once a year
Technical reports	Project team External consultants	None	To be determined by Project Team and UNDP CO
Mid-term external evaluation	Project team UNDP CO External consultants	$30,000	Mid-point of project implementation
Final external evaluation	Project team UNDP CO External Consultants	$30,000	End of project implementation
Final report	Project team UNDP CO	None	At least one month before end of project
Publication of lessons learned	Project team	$15,000 ($3,000 per year)	Yearly
Monitoring of the implementation of GAP	Project Team, Gender Specialist	$20,000 ($4,000 per year)	Yearly
Monitoring of the implementation of ESMF	Project Team, safeguards specialist	$20,000 ($4,000 per year)	Yearly
Visits to field sites	UNDP CO CoRI Project team	$20,000 ($4,000 per year)	Yearly
Total indicative Cost		**$172,000**	

NB: Above costs do not cover UNDP staff time. All UNDP staff costs associated with M&E are covered by the MIE Fee.

The M&E budget will be taken pro-rata from the three project component budgets, reflecting the size of the TA.

E. Include a results framework for the project proposal, including milestones, targets and indicators.

	Objective: To assist Armenia and Georgia in the implementation of an integrated transboundary climate-resilient wildfire management approach in order to improve climate resilience of South Caucasus mountain communities, livelihoods and ecosystems.					
	Indicators	**Baseline**	**Goals** **Project completion**	**Means of verification**	**Monitoring responsibility**	**Risks and assumptions**
Objective of the Project **To assist Armenia and Georgia in the implementation of an integrated transboundary climate-resilient wildfire management approach in order to improve climate resilience of South Caucasus mountain communities, livelihoods and ecosystems**	Area (ha) of national forest cover benefiting from improved wildfire forecasting, preparedness and risk reduction capacity	0 ha	At least 500,000 ha of mountain ecosystems benefiting from improved regional, national and subnational wildfire and climate management	Project annual reports; Mid-term evaluation, final report.	UNDP Project team (M&E)	Wildfire risk is a growing threat due to increased temperatures, lower precipitation magnifying anthropogenic causes High level engagement from the governments (Forest agencies, Emergency services) of Armenia and Georgia. Active engagement from targeted project sites (local agencies, local authorities, communities).
	Number of people (# and % of the total population) in targeted forest areas benefiting from reduced exposure to wildfire risk and improved sustainable forest management (disaggregated by sex)	0	At least 800,000 people in target areas benefiting from reduced climate and wildfire risk, representing just under 10% of overall population of Armenia and Georgia with 50% being women.	Project annual reports; Mid-term evaluation, final report. Assessment of project areas under improved EWS and forest management approaches	UNDP Project team (M&E)	
	Knowledge and capacity for improved wildfire management embedded in relevant public agencies and communities at regional, national and local level (measured through institutional capacity	Baseline to be established during Year 1 of the project	75% increase over baseline with participants in training and capacity building being at least 30% women.	Institutional capacity scorecard KAP survey Project annual reports; Mid-term evaluation, final report. Participation in workshops, consultations and training	UNDP Project team (M&E)	

	scorecard and KAP survey)					
Outcome 1 Strengthened regulatory and institutional capacity to identify, plan for and respond to climate-induced wildfire risk at both regional and national level	**Indicator 1.1** Number of legal and regulatory frameworks that are strengthened, including on the basis of common regional approaches	Policy and regulatory frameworks remain incomplete with a lack of harmonization, limited consideration of climate change and only partial implementation of previous ENVSEC recommendations. There are ongoing regulatory barriers to community level involvement in fire response and often incomplete community level response plans. Regional cooperation between Armenia and Georgia on wildfire risk is ad-hoc and reactive and lacks a solid analytical and procedural basis to improve outcomes. Challenges exist in institutional cooperation, between emergency services and forest agencies in terms of roles, responsibilities and allocation of resources.	1.1.1 At least 4 regulatory frameworks have been updated/developed and implemented by national governments (including regulations on wildfire volunteer groups). Regulations to be gender sensitive, with at least 30% of participants in consultation/development process being women At least 4 roundtables held to discuss policy and regulatory issues will be held across the two countries At least 2 training events will be held with public officials on legislative and regulatory reform. At least 2 knowledge products will be created on legislation and regulation in wildfire management across the two countries At least one study will be undertaken to assess international best practice (e.g. EU) in wildfire legislation, institutional management and technical response	Project annual reports; Mid-term evaluation, final report. Legal journals	UNDP Project team (M&E)	National capacity building activities are not translated to the sub-national level. Governments engage with regulatory reform and adopt regulations. National governments are willing to engage and harmonize on a regional basis in the South Caucasus. Potential institutional rivalries over resource allocation do not prevent cooperation between EMS and Forest agencies. National and sub-national agencies are willing to participate in training and multi-stakeholder drills.
	Indicator 1.2 1.2.1. Agreement on institutional and funding mechanisms for regional wildfire coordination 1.2.2. Strengthened regional wildfire coordination mechanism developed between Armenia and Georgia		**Indicator target 1.2** 1.2.1. Written agreement reached between Governments of Georgia and Armenia on institutional and funding arrangements for strengthened cooperation framework and plan produced 1.2.2. Regional cooperation framework on wildfire management between Georgia and Armenia is strengthened and fully operationalized by 2025 and is gender sensitive 1.2.3. At least 4 examples of improvement in institutional	Project annual reports; Mid-term evaluation, final report.	UNDP Project team (M&E)	

	1.2.3. Number of institutional wildfire cooperation and coordination frameworks that are improved at national level	Limited capacity in understanding best practices in forest wildfire risk reduction and response, and few opportunities for multi-stakeholder drills at the regional and national level. Local emergency response and forest agency teams lack the necessary equipment and technology for effective wildfire identification and response:	cooperation between forest management agencies and emergency services in each country by 2025, including gender sensitive screening of recommendations At least 2 knowledge exchange events will be held to support cooperation at the regional level			
	Indicator 1.3 1.3.1 Number of regional training exercises undertaken for preparedness and response 1.3.2 Number of staff from targeted regional and national institutions trained in wildfire management best practice and climate risks 1.3.3 Number of local level multi-stakeholder training exercises undertaken		**Indicator target 1.3** 1.3.1 At least 2 regional training exercises undertaken with cross-government cooperation (either cross border or in country) 1.3.2 At least 200 officials and other key national/regional stakeholders trained on improving the enabling environment and emerging technologies for wildfire management (including at least 30% women) 1.3.3 At least 4 multi-stakeholder training exercises undertaken at the local level in target regions (including at least 30% women)	Project annual reports; Mid-term evaluation, final report. Capacity review Training test results	UNDP Project team (M&E)	
	Indicator 1.4 1.4.1 Number of professionals equipped with equipment improving wildfire preparedness and response provided		**Indicator target 1.4** 1.4.1 At least 1000 professionals equipped with improved wildfire identification and response equipment across the 2 countries	Review of procurement and distribution plan Review of targeted local EMS and forest agency capacity	UNDP Project team (M&E)	
Outcome 2 More effective data management and decision making around forest wildfire risk reduction and response,	**Indicator 2.1** 2.1.1 Number of wildfire risk forecasting and modelling	Systems for fire risk monitoring, forecasting and analysis in both Armenia and Georgia, remain	**Indicator target 2.1** 2.1.1 At least 4 examples of risk forecasting approaches developed or strengthened across the 2 countries At least 1 knowledge product will be	Project annual reports; Mid-term evaluation, final report; Assessment of	UNDP Project team (M&E)	National agencies are willing to adopt and implement more advanced fire risk

and enhanced use of climate information.	approaches developed and piloted	only partially developed and implemented. Poor use of forest wildfire emergency response data to understand how anthropogenic forest wildfires clustered, and how preventative measures and resources could be organised. Limited use of GIS or other remote or ground based remote sensing systems to undertake wildfire vulnerability and impact analysis Policy makers have limited access to comprehensive and well-structured data for evidence-based decision making Poorly developed and targeted wildfire early warning preventative systems with limited consideration of end user perspectives, channels and messaging Fragmented and poorly managed datasets detailing forest inventories,	developed setting out results and lessons learned form fire risk modelling and forecasting approaches	capacities of extension services before and after AF project intervention Partner reporting and audit.		monitoring and forecasting platforms. Data is available to understand clustering of anthropogenic wildfires and EMS. are willing to engage in data analysis. National government agencies are able to evolve EWS services to more user-focused demand driven products. Governments are willing to adopt regional approaches to wildfire risk classification and impact assessment. Ongoing institutional reorganization does not disrupt plans for better wildfire and forest data management and integration. Capacity and interest exist in the academic and private sector to engage on wildfire risk monitoring and forecasting.
	Indicator 2.2. 2.2.1 Number of early warning system (EWS) products developed and piloted 2.2.2. Number of beneficiaries able to access EWS		**Indicator target 2.2.** 2.2.1 At least 2 EWS products developed and piloted with individual user groups (public/institutional) with EWS communication and delivery systems being gender sensitive 2.2.2. At least 800,000 users are able to receive targeted and customized EWS information in local language (of which 50% women) At least one knowledge product will be developed setting out results and lessons learned from EWS piloting.	Project annual reports; Mid-term evaluation, final report; Community surveys EWS network distribution data	UNDP Project team (M&E)	
	Indicator 2.3 2.3.1 Regional data protocol for wildfire risk classification and assessment in place 2.3.2 Number of data sets or databases aligned and integrated under a common data policy for improved analysis		**Indicator target 2.3** 2.3.1 A single common set of advisory data classification protocols developed at the regional level by 2023 2.3.2 At least 4 examples of databases and/or data sets being better aligned and integrated under a common data management approach by 2025 At least one knowledge product will be developed setting out improvements and lessons learned under the data integration	Project annual reports; Mid-term evaluation, final report; Technical review of data systems	UNDP Project team (M&E)	
	Indicator 2.4 2.4.1 Number of academic or private sector teams supported		**Indicator target 2.4** 2.4.1 At least 4 academic or private sector innovation teams develop, pilot and/or scale new approaches to wildfire identification, monitoring or	Project annual reports; Mid-term evaluation, final report;	UNDP Project team (M&E)	

	to develop, pilot and/or scale innovative wildfire monitoring and forecasting products	wildfire risks, damages and impacts and climate risk information with a lack of common standards, interoperability reducing usefulness and availability of trend data A lack of innovation and adoption around wildfire monitoring, data analysis and forecasting technologies with limited liaison with external providers and developers (e.g. academia, private sector).	forecasting with all projects incorporating gender considerations where appropriate. At least one knowledge product will be produced outlining innovation results and lessons learned from under the CCTA	CCTA reports		
Outcome 3 Increased community and ecosystem resilience to wildfire risk and broader climate change impacts.	**Indicator 3.1:** 3.1.1 Number of forest regions with completed vulnerability assessment and plans for improved fire risk management, response and improved community sustainable forest management	Capacity and resource challenges associated with effective wildfire risk reduction and response at the local level including poorly elaborated forest fire risk management and response plans and protocols Investment constraints undermining effective forest management practices and shortages of fire and suppression	**Indicator target 3.1.** 3.3.1 At least 6 forest areas develop investment and capacity building plans for improved wildfire risk reduction, response and improved community management of forest assets. At least 30% of participants in consultation are women. At least 6 round table workshops will be held with communities and relevant agencies to support planning and lesson learning.	Project annual reports; Mid-term evaluation, final report; Field visits Participatory consultation outputs	UNDP Project team (M&E)	The 6 targeted forest enterprise regions have the capacity to engage with vulnerability assessment and resource prioritisation processes. Local communities demonstrate interest and capacity in engaging on sustainable forest management enterprise. Project implementation team has the capacity to oversee investment
	Indicator 3.2: 3.2.1 Range of interventions to improve fire risk reduction and response		**Indicator target 3.2.** 3.2.1 At least 6 different types of intervention are piloted in target regions At least 2 knowledge products will be produced setting out results and	Project annual reports. Mid-term evaluation, final report Field visits Demonstration	UNDP Project team (M&E)	

		equipment, access routes and water infrastructure. Weak community-level forest conservation practices and economic incentives to undertake activities that reduce fire risk. Low levels of awareness of potential fire risk and behavioral best practice at the local level with ongoing challenges of changing behaviours among certain high risk groups (recreational forest users, farmers).	lessons learned from the wildfire risk reduction activities	site reports		implementation across the 6 regions. Improved awareness of wildfire potential can change behavior among high risk groups (farmers and recreational forest users) and change cultural norms.
	Indicator 3.3 3.3.1 Area of land rehabilitated or reforested with community support 3.3.2 Number of communities benefiting from community level interventions to promote sustainable forestry (briquetting, forest eco-system services, SLM practices)		**Indicator target 3.3.** 3.3.1 At least 200 ha of forest rehabilitated or reforested 3.3.2 At least 10 separate communities benefiting from sustainable forestry interventions, with at least 30% of grant recipients being women led initiatives At least 2 knowledge products will be produced setting out results and lessons learned from community level forest enterprise and income diversification activities	Project annual reports. Mid-term evaluation, final report Demonstration site reports Community Surveys;	UNDP Project team (M&E)	
	Indicator 3.4 3.4.1 Number of stakeholders benefiting from/with access to different awareness raising activities and materials in relevant language		**Indicator target 3.4** 3.4. At least 10,000 people benefit from project awareness raining activities and/or receive materials focused on changing behaviours to more sustainable forestry practices (of which 50% are women)	Project annual reports. Mid-term evaluation, final report Media reports Participant data in training and awareness raising	UNDP Project team (M&E)	

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

The alignment is set out below.

Project Objective(s)[58]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
To assist Armenia and Georgia in the implementation of an integrated transboundary climate-resilient wildfire management approach in order to improve climate resilience of South Caucasus mountain communities, livelihoods and ecosystems	1. Area (ha) of national forest cover benefiting from improved wildfire forecasting, preparedness and risk reduction capacity	1. Reduced exposure to climate-related hazards and threats 5. Increased ecosystem resilience in response to climate change and variability-induced stress	1.1 Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis 5.1 Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	$ 7,475,650
	2. Number of people (#) in targeted forest areas benefiting from reduced exposure to wildfire risk and more resilient and sustainable forest management	1. Reduced exposure to climate related hazards and threats 3. Strengthened awareness and ownership of climate risk reduction processes at local level 6. Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	1.1 Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis 3.1 Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses 6.1. Percentage of households and communities have more secure access to livelihood assets	
	3. Knowledge and capacity for improved wildfire management embedded in relevant public agencies and communities at regional, national and local level	2. Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events 3. Strengthened awareness and ownership of climate risk reduction processes at local level 7. Improved policies and regulations that promote	2.1 Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased 3.1 Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses 7.1 Climate change priorities are integrated into national development strategy	

[58] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

		and enforce resilience measures		
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Outcome 1: Strengthened regulatory and institutional capacity to identify, plan for and respond to climate-induced wildfire risk at both regional and national level.	**Indicator 1.1** 1.1 Number of legal and regulatory frameworks that are strengthened, including on the basis of common regional approaches	7. Improved integration of climate-resilience strategies into country development plans	7.1.1 No of policies introduced or adjusted to address climate change risks 7.1.2 No of targeted development strategies with incorporated climate change priorities enforced	*$1,728,000*
	Indicator 1.2 1.2.1. Agreement on institutional and funding mechanisms for regional wildfire coordination 1.2.2. Strengthened regional wildfire coordination mechanism developed between Armenia and Georgia 1.2.3. Number of institutional wildfire cooperation and coordination frameworks that are improved at national level	2. Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.2 No of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	
	Indicator 1.3 1.3.1 Number of regional training exercises undertaken for preparedness and response 1.3.2 Number of staff from targeted regional and national institutions trained in wildfire management best practice and climate risks 1.3.3 Number of local level multi-stakeholder training exercises undertaken	2. Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.1. No of staff trained to respond to, and mitigate impacts of climate related events (by gender) 2.1.2 No of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	
	Indicator 1.4 1.4.1 Number of different types of wildfire suppression equipment provided to fire response professionals and forest managers 1.4.2 Number of professionals equipped with equipment improving wildfire preparedness and response provided	2. Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.2 No of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	

Outcome 2. More effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information.	**Indicator 2.1** 2.1.1 Number of wildfire risk forecasting and modelling approaches developed and piloted	2. Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.2 No of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	*$1,042,400*
	Indicator 2.2. 2.2.1 Number of early warning system (EWS) products developed and piloted 2.2.2 Types of beneficiaries being able to access wildfire EWS information 2.2.3. Number of potential users able to access EWS	1.1 Risk and vulnerability assessments conducted and updated	1.1.2 No. of early warning systems (by scale) and no of beneficiaries covered	
	Indicator 2.3 2.3.1 Regional data protocol for wildfire risk classification and assessment in place 2.3.2 Number of data sets or databases aligned and integrated under a common data policy for improved analysis	2. Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.2 No of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	
	Indicator 2.4 2.4.1 Number of academic or private sector teams supported to develop, pilot and/or scale innovative wildfire monitoring and forecasting products	4. Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.1 No and type of development sector services modified to respond to new conditions resulting from climate variability and change (by sector and scale)	
Outcome 3: Increased community and ecosystem resilience to wildfire risk and broader climate change impacts.	**Indicator 3.1:** 3.3.1 Number of forest regions undergoing vulnerability assessment and prioritizing interventions for improved fire risk management, response and improved community sustainable forest management	1.Risk and vulnerability assessments conducted and updated	1.1.1 No of projects/programmes that conduct and update risk and vulnerability assessments (by sector and scale)	*$4,016,250*
	Indicator 3.2: 3.2.1 Range of interventions to improve fire risk reduction and response	2. Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	2.1.2 No of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	

	Indicator 3.3 3.3.1 Area of land rehabilitated or reforested with community support 3.3.2 Range of community level interventions to promote sustainable forestry (briquetting, forest eco-system services, SLM practices)	5. Vulnerable eco-system services and natural resource assets strengthened in response to climate change impacts, including variability 6. Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	5.1.1 No of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability – induced stress 6.1.1 No and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies 6.1.2 Type of income sources for households generated under climate change scenario	
	Indicator 3.4 3.4.1 Number of stakeholders directly benefiting from awareness raising activities 3.4.2 Number of stakeholders downloading or receiving wildfire awareness products in relevant language	3. Targeted population groups participating in adaptation and risk reduction awareness activities	No of news outlets in the local press and media that have covered the topic	

Alignment with Adaptation Fund Core Indicators

Adaptation Fund Core Indicators	Relevant Project indicators	Target
Number of beneficiaries (Direct and Indirect)	Project Objective Indicator 2. Number of people (#) in targeted forest areas benefiting from reduced exposure to wildfire risk and more resilient and sustainable forest management	800,000 (Direct and Indirect)
Number of Early Warning Systems	Project Outcome indicator 2.2.1 Number of early warning system (EWS) products developed and piloted	2
Assets produced, developed, improved, or strengthened	NA	NA
Increased income, or avoided decrease in income	NA	NA
Natural habitats protected or rehabilitated	Project Objective Indicator 1. Area (ha) of national forest cover benefiting from improved wildfire forecasting, preparedness and risk reduction capacity Project outcome indicator 3.3.1 At least 200 ha of forest rehabilitated or reforested	500,000 ha 200 ha

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

G.1. Detailed budget with budget notes.

Award ID	TBD			Project ID	**TBD**						
Project Title	Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction										
PIMS No.	6247										
Implementing Partner	UNDP										
Outcome/ Atlas Activity	**Responsible Party/ Implementing Agent**	**Fund ID**	**Donor Name**	**Atlas Budgetary Account Code**	**ATLAS Budget Description**	**Amount Year 1 (USD)**	**Amount Year 2 (USD)**	**Amount Year 3 (USD)**	**Amount Year 4 (USD)**	**Amount Year 5 (USD)**	**Total (USD)**	**Budget Notes #**
Outcome 1: Strengthened regulatory and institutional capacity to identify, plan for and respond to climate-induced wildfire risk at both regional and national level.	UNDP	62040	**AF**	71200	International consultant	25,000	25,000	25,000	0	0	75,000	1
				71300	Local consultant	20,000	40,000	20,000	5,000	20,000	105,000	2
				72100	Contractual Services - Companies	50,000	50,000	50,000	0	0	150,000	3
				71400	Contractual services (individual)	47,400	47,400	47,400	47,400	47,400	237,000	4
				71600	Travel	5,000	12,500	12,500	10,000	10,000	50,000	5
				75700	Training, Workshops and Conferences	10,000	25,000	25,000	20,000	20,000	100,000	6
				74200	Audio Visual & Print Prod Costs	4,000	4,000	4,000	4,000	4,000	20,000	7
				72200	Equipment and furniture		150,000	400,000	400,000	0	950,000	8
				72800	Information Technology Equipment and Furniture	12,000	1,000	1,000	1,000	1,000	16,000	9

				74500	Miscellaneous Expenses	5,000	5,000	5,000	5,000	5,000	25,000	10
					Total Outcome 1	**178,400**	**359,900**	**589,900**	**492,400**	**107,400**	**1,728,000**	11
Outcome 2: More effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information	UNDP	62040	**AF**	71200	International consultant	25,000	25,000	25,000	15,000	0	90,000	12
				71300	Local consultant	48,000	70,000	55,000	20,000	0	193,000	13
				72100	Contractual Services - Companies		150,000	150,000	0	0	300,000	14
				71400	Contractual services (individual)	47,400	47,400	47,400	47,400	47,400	237,000	15
				71600	Travel	1,000	1,000	1,000	1,000	0	4,000	16
				73100	Rental and Maintanance Premises	10,000	10,000	10,000	10,000	10,000	50,000	17
				75700	Training, Workshops and Conferences	11,000	4,000	4,000	4,000	0	23,000	18
				74200	Audio Visual&Print Prod Costs	0	5,000	5,000	5,000	3,000	18,000	19
				72200	Equipment and furniture	0	50,000	50,000	0	0	100,000	20
				72500	Supplies	1,480	1,480	1,480	1,480	1,480	7,400	21
				74500	Miscellaneous Expenses	5,000	5,000	5,000	5,000	0	20,000	22
					Total Outcome 2	**148,880**	**368,880**	**353,880**	**108,880**	**61,880**	**1,042,400**	
Outcome 3: Increased community and ecosystem resilience to wildfire risk and broader climate change impacts	UNDP	62040	**AF**	71200	International consultant	5,000	20,000	50,000	20,000	50,000	145,000	23
				71300	Local consultant	20,000	45,000	45,000	45,000	40,000	195,000	24
				72100	Contractual Services - Companies	20050	500,000	500,000	500,000	500,000	2,020,050	25

				71400	Contractual services (individual)	15,360	15,360	15,360	15,360	15,360	76,800	26
				71600	Travel	10,000	20,000	20,000	20,000	20,000	90,000	27
				72300	Materials and Goods	6,000	6,000	6,000	6,000	6,000	30,000	28
				73400	Rental and Maintanance - other equipment	3,000	3,000	3,000	3,000	3,000	15,000	29
				73100	Rental and Maintanance Premises	8,680	8,680	8,680	8,680	8,680	43,400	30
				75700	Training, Workshops and Conferences	5,000	20,000	20,000	20,000	20,000	85,000	31
				74200	Audio Visual&Print Prod Costs	1,000	5,000	5,000	5,000	5,000	21,000	32
				72200	Equipment and furniture	70000	300,000	300,000	300,000	300,000	1,270,000	33
				74500	Miscellaneous Expenses	5,000	5,000	5,000	5,000	5,000	25,000	34
					Total Outcome 3	**169,090**	**948,040**	**978,040**	**948,040**	**973,040**	**4,016,250**	
Project Execution Costs	**UNDP**	62040	**AF**	74596	Direct project cost	20,670	20,670	20,670	20,670	20,670	103,350	35
					Total project execution cost	**20,670**	**20,670**	**20,670**	**20,670**	**20,670**	**103,350**	
Total Project Costs						**517,040**	**1,697,490**	**1,942,490**	**1,569,990**	**1,162,990**	**6,890,000**	
					Programme management fee 8.5%						**585,650**	
					GRAND TOTAL						**7,475,650**	

Budget Notes:

Budget Notes #	Budget Notes
1	ICTA support to Workstream 1
2	Local consultant support to policy and institutional assesment (700 days in total average daily rate USD 150)
3	Needs assessment study, regulatory framework analysis and recommendations
4	50% salary for National Coordinator in Georgia, (2350 USD/month x 60 month), 50% Salary for the Project Manager (2350 USD/month x 60 months), 50% of 2 Fin/Admin Assistants X 1600 USD / month X 60
5	Travel support costs for fire response and policy training events
6	2 * International training exercises for fire suppression ($25000 per event), 4 * national training exercises on fire response ($10,000 per event), 4 * national workshops on fire risk management in policy ($2500 per event)
7	Knowledge management and learning materials production, publication of best institutional models for fire management systems and fire response practices - 1 output per year per country from year 2 onwards on fire management policy, institutional reform and fire response best practice ($2500 per output)
8	Procurement of firefighting tools and protective equipment for c.1000 EMS, forest agency and community fire responders
9	Budget line will cover purchase of 4 computers, all-in one printers, other IT equipment as well as office furniture
10	Miscellaneous Expenses related to the implementation of Outcome 1
12	ICTA support to Workstream 2
13	Local expert support for fire risk warning, data systems analysis, EWS development and CCTA (1286 days in total average daily rate USD 150)
14	Support in the development and piloting of new and innovative tech-based fire risk identification and forecasting technologies (e.g. remote sensing, big data mining, etc.) by the private sector/universities through the start-up acceleration programme (Climate Change Technology Accelerator); (6 X $50,000 av erage).
15	50% salary for National Coordinator in Georgia, (2350 USD/month x 60 month), 50% of Salary for the Project Manager (2350 USD/month x 60 months), 50% of 2 Fin/Admin Assistants X 1600 USD / month X 60
16	Local travel in Armenia, Georgia for project consultations
17	Cost will cover lease and Utility costs for 2 office X 416 per month X 60
18	Workstream 2 stakeholder workshops * 2 per year @ $2000, as well as Inception Workshop USD 3500 per country

19	Knowledge management and learning materials production - 1 output per year per country from year 2 onwards on early warning and fire risk prediction ($2500 per output)
20	Computer hardware, licenses for forest fire warning system, EWS development, remote sensing
21	Lines will cover monthly cost of offices supplies: stationery and cartridges etc with average monthly cost of USD 123
22	Miscellaneous Expenses related to implementation of Outcome 2
23	ICTA support for Workstream 3. Advisory on VRA, local planning approach, as well as midterm (year 3) and final evaluation of project
24	Local consultant support for site VRA and awareness raising among local communities, community planning and implementation across 6 sites, Gender Specialist, Safeguards Officer
25	Contracts for services to improve fire risk management (forest road rehabilitation and mineralisation (150km)X1255 USD per km, reservoir construction (20) X 15470 USD per unit, forest rehabilitation/restoration (200ha) X 4470 USD per ha - over 8 project sites including 3 years of maintenance, financial support to 8 project sites/forest enterprises ($66,000 on average per one forest enterprise/project site), ESMF implementation ($19,000/year)
26	100% of ARM Driver and 100% GEO Driver (640 USD / month X 60 X 2 drivers X 100%) Salary for Drivers and logistics support to the project (Monitoring visits, field works support and transportation to/from pilot territories of equipment, firefighting tools,etc.)
27	Travel to sites (car, T&S) to support VRA, local planning, enterprise selection, implementation
28	Cost will cover fuel costs of vehicle for Armenia and Georgia USD 250 X month X per country
29	Vehicle and other office equipment maintanance and Insurance costs USD 250 X per month
30	Cost will cover lease and Utility costs for 2 office X 362 per month X 60
31	Training and awareness raising events in local communities (3 per year @ $5k per event), as well as Meetings of project Regional Steering Committee and National Steering Committees USD 5000 per year
32	Knowledge management, learning and lessons learned materials production - 1 output per year per country from year 2 onwards on local fire planning ($2500 per output)
33	6 project sites * $200k procurement per site (fire fighting vehicles/ quadcycles (12), construction and forest management tractors (12), signs (1000), as well as 2 offroad (4X4 pickups) X USD 35000 will be procured for organization of field works and monitoring during implementation and will be further transferred to beneficiaries/stakeholders upon completion of project
34	Miscellaneous Expenses related to the implementation of Outcome 2
35	UNDP COs costs of support services for the project, detailed breakdown provided in Section G.2

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Project Funds	496,370	1,676,820	1,921,820	1,549,320	1,142,320	6,786,650
Project Execution Costs	20,670	20,670	20,670	20,670	20,670	103,350
Total project cost	517,040	1,697,490	1,942,490	1,569,990	1,162,990	6,890,000

Breakdown of the Project Execution Costs:

See section G.2 for a detailed breakdown.

G.2. DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES TO THE PROJECT

DESCRIPTION OF UNDP SUPPORT SERVICES FOR ARMENIA:

Support services	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1. Human Resources			
Identification and/or recruitment of project personnel -Project Manager (PM), Fin/Admin Assistant (FAA) and Driver (D)	In the first quarter of the project implementation	US$ 599.81*3 (PM,FAA, D)	US$1,799 UNDP will directly charge the project in accordance with the UPL
Local Personnel HR & Benefits Administration & Management	One- time fee, per staff at: the issuance of a contract, and- again at separation	US$ 205.66*6 (contract issuance and separation for PM & FAA &D)	US$ 1234 UNDP will directly charge the project in accordance with the UPL
Recurrent personnel management services: Local Payroll & Banking (35%) Performance evaluation (30%) Extension, promotion, entitlements (30%) Leave monitoring (5%)	Annual fee per employee, per calendar year	US$448.67*3*5 (PM&FAA&D for 5 years duration)	US$ 6,730 UNDP will directly charge the project in accordance with the UPL
Consultant recruitment Advertising (20%) Shortlisting &selection (40%) Contract issuance (40%)	Per IC process	US$234.26*50	US$ 11,713 UNDP will directly charge the project in accordance with the UPL
Total HR:			**US$ 21,476**
2. Finance			
Payment Process	Ongoing throughout implementation as applicable	38.49*750	US$**28,868** UNDP will directly charge the project in accordance with the UPL
Total Finance:			**US$28,868**
3. Procurement			
Procurement not involving CAP - below US$ 50,000	As per the work plan	217.35*20	US$ 4,347 UNDP will directly charge the project in accordance with the UPL
Procurement process involving CAP (and/or ITB, RFP, requirements) - above US$ 50,000)	As per the work plan	540.84*4	US$ 2,163 UNDP will directly charge the project in accordance with the UPL
Total Procurement:			**US$ 6,510**
4. Admin Support			
Travel request or authorization (40%) F10 settlement) (35%)	Ongoing throughout implementation as applicable	US$ 38.47*60 US$ 33.66*60	US$ 4,328 UNDP will directly charge the project in accordance with the UPL
Total Admin Support:			**US$ 4,328**
Total DPC			**USD 61,182**

DESCRIPTION OF UNDP SUPPORT SERVICES FOR GEORGIA

Support services	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1. Human Resources			
Identification and/or recruitment of project personnel -National Coordinator (NC), Fin/Admin Assistant (FAA) and Driver (D)	In the first quarter of the project implementation	US$ 599.81*3 (NC,FAA, D)	US$1,799 UNDP will directly charge the project in accordance with the UPL
Local Personnel HR & Benefits Administration & Management	One- time fee, per staff at: the issuance of a contract, and- again at separation	US$ 205.66*6 (contract issuance and separation for NC & FAA &D)	US$ 1234 UNDP will directly charge the project in accordance with the UPL
Recurrent personnel management services: Local Payroll & Banking (35%) Performance evaluation (30%) Extension, promotion, entitlements (30%) Leave monitoring (5%)	Annual fee per employee, per calendar year	US$448.67*3*5 (NC&FAA&D for 5 years duration)	US$ 6,730 UNDP will directly charge the project in accordance with the UPL
Consultant recruitment Advertising (20%) Shortlisting &selection (40%) Contract issuance (40%)	Per IC process	US$234.26*30	US$ 7,028 UNDP will directly charge the project in accordance with the UPL
Total HR:			**US$ 16,791**
2. Finance			
Payment Process	Ongoing throughout implementation as applicable	38.49*500	US$ **19,245** UNDP will directly charge the project in accordance with the UPL
Total Finance:			**US$ 19,245**
3. Procurement			
Procurement not involving CAP - below US$ 50,000	As per the work plan	217.35*10	US$ 2,174 UNDP will directly charge the project in accordance with the UPL
Procurement process involving CAP (and/or ITB, RFP, requirements) - above US$ 50,000)	As per the work plan	540.84*2	US$ 1,082 UNDP will directly charge the project in accordance with the UPL
Total Procurement:			**US$ 3,255**
4. Admin Support			
Travel request or authorization (40%) F10 settlement) (35%)	Ongoing throughout implementation as applicable	US$ 38.47*40 US$ 33.66*40	US$ 2,885 UNDP will directly charge the project in accordance with the UPL
Total Admin Support:			**US$ 2,885**
Total DPC			**USD 42,177**

Grand Total for Both Offices			**USD 103,359**

G.3. UNDP Fees for Support to the Adaptation Fund Project are described in Annex 2.

H. Include a disbursement schedule with time-bound milestones.

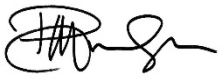
	Upon agreement signature (US$)	After Year 1 (US$)	After Year 2 (US$)	After Year 3 (US$)	After Year 4 (US$)	Total
Scheduled Date	June 2020	June 2021	June 2022	June 2023	June 2024	
Project Funds	517,040	1,697,490	1,942,490	1,569,990	1,162,990	**6,890,000**
Implementing Entity Fee	260,629	86,572	99,067	80,069	59,313	**585,650**
Total	777,669	1,784,062	2,041,557	1,650,059	1,222,303	**7,475,650**

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

A. Record of endorsement on behalf of the government[59] 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:

Republic of Armenia *Mr. Erik Grigoryan,* *Minister of Environment of the Republic of Armenia*	Date: 30 July 2019
Georgia *Ms. Nino Tandilashvili* *Deputy Minister,* *Ministry of environment protection and agriculture of Georgia*	Date: 30 July 2019

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

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 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.	
 Pradeep Kurukulasuriya Executive Coordinator & Director- Global Environmental Finance & Head, Natural Capital and the Environment Bureau for Policy and Programme Support United Nations Development Programme	
Date: *5 August, 2019*	Tel. and e-mail: pradeep.kurukulasuriya@undp.org
Project Contact Person: Natalia Olofinskaya	
Tel. And Email: +90 543 532 3046 / nataly.olofinskaya@undp.org	

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.

Annex 1: Letter of Endorsement

1.1. Republic of Armenia

REPUBLIC OF ARMENIA
MINISTER OF ENVIRONMENT

№ 1/08.2/11901

«30» « 07 » 2019

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

Subject: Endorsement for the full project proposal "Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction".

In my capacity as designated authority for the Adaptation Fund in the Republic of Armenia, I confirm that the above regional project 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 Armenia.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented and executed by the United Nations Development Programme in cooperation with the Ministry of Environment and the Ministry of Emergency Situations of the Republic of Armenia.

Sincerely,

Erik Grigoryan
Minister of Environment of the Republic of Armenia

ICD:K.Khachatryan
011818508

REPUBLIC OF ARMENIA
MINISTRY OF ENVIRONMENT

3 Government bld., Republic Sq., Yerevan, 0010, Armenia
(+374) 11 818-501 | Fax: (+374) 11 818-506

1.2. Georgia

საქართველო
GEORGIA

გარემოს დაცვისა და
სოფლის მეურნეობის
სამინისტრო

MINISTRY OF ENVIRONMENTAL
PROTECTION AND AGRICULTURE
OF GEORGIA

N 7523/01
30/07/2019

7523-01-2-201907301720

Letter of Endorsement by Government

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

Subject: Endorsement for project "Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction"

In my capacity as designated authority for the Adaptation Fund in Georgia, I confirm that the above regional project proposal "Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction" 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 country.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented and executed by United Nations Development Programme (UNDP) in cooperation with the Ministry of Environmental Protection and Agriculture of Georgia.

Annexes: 160 (One Hundred and Sixty) pages.

Sincerely,

Nino Tandilashvili,

Deputy Minister

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Annex 2: UNDP Fees for Support to Adaptation Fund Project

"Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction"

Category	Services Provided by UNDP	UNDP Fee (X%)
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in upstream policy dialogue related to a potential application to the AF. Verify soundness & potential eligibility of identified idea for AF.	$ 29,282
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Determination of execution modality and local capacity assessment of the national executing entity. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	$ 87,848
Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs. Verify technical reports and project conceptualization. Verify technical soundness, quality of preparation, and match with AF expectations. Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.	$ 117,130
Implementation	Technical support in preparing TORs and verifying expertise for technical positions. Provide technical and operational guidance project teams. Verification of technical validity / match with AF expectations of inception report. Provide technical information as needed to facilitate implementation of the project activities. Provide advisory services as required. Provide technical support, participation as necessary during project activities. Provide troubleshooting support if needed. Provide support and oversight missions as necessary. Provide technical monitoring, progress monitoring, validation and quality assurance throughout. Allocate and monitor Annual Spending Limits based on agreed work plans. Receipt, allocation and reporting to the AFB of financial resources. Oversight and monitoring of AF funds. Return unspent funds to AF.	$ 263,542
Evaluation and Reporting	Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting. Participate in briefing / debriefing. Verify technical validity / match with AF expectations of all evaluation and other reports Undertake technical analysis, validate results, and compile lessons. Disseminate technical findings	$ 87,848
Total		$ 585,650

Annex 3: Implementation schedule and Output-based Budget

3.1. Implementation Schedule

		Year 1				Year 2				Year 3				Year 4				Year 5			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Outcome 1:	**Strengthened policy, regulatory and institutional frameworks**																				
Output 1.1	Policy and regulatory frameworks are enhanced and aligned																				
Output 1.2	Institutional cooperation strengthened at regional, national and local levels																				
Output 1.3	Capacity for wildfire response enhanced at national and regional level																				
Output 1.4	Technical capabilities for wildfire response improved																				
Outcome 2	**Improved use of climate and wildfire risk information by decision makers**																				
Output 2.1	Strengthened wildfire risk monitoring and forecasting system																				
Output 2.2	Effective early warning system communications in place																				
Output 2.3	Harmonized protocols for data collection, storage and reporting																				
Output 2.4	Private and third sector innovation supported through the CCTA																				
Outcome 3	**Reducing wildfire risk and promoting forest eco-system adaptation at the local level**																				
Output 2.1	Wildfire risk reduction activities prioritised at the local level																				
Output 2.2	Integrated forest fire risk management measures implemented																				
Output 2.3	Community forest eco-system enterprises supported																				
Output 2.4	Public awareness campaigns organised																				

3.2. Budget distribution by Outputs

Outcome 1:	**Strengthened regulatory and institutional capacity to identify, plan for and respond to climate-induced wildfire risk at both regional and national level.**						
Output 1.1	Policy and regulatory frameworks are enhanced and aligned	$ 4,000	$ 57,000	$ 95,000	$ -	$ -	$ 156,000
Output 1.2	Institutional cooperation strengthened at regional, national and local levels	$ 34,400	$ 44,000	$ 70,000	$ -	$ -	$ 148,400
Output 1.3	Capacity for wildfire response enhanced at national and regional level	$ -	$ 30,000	$ 47,000	$ 492,400	$ 107,400	$ 676,800
Output 1.4	Technical capabilities for wildfire response improved	$ 140,000	$ 228,900	$ 377,900	$ -	$ -	$ 746,800
Subtotal		*$ 178,400*	*$ 359,900*	*$ 589,900*	*$ 492,400*	*$ 107,400*	***$ 1,728,000***
Outcome 2	**More effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information**						
Output 2.1	Strengthened wildfire risk monitoring and forecasting system	$ 48,880	$ 93,880	$ 88,880	$ -		$ 231,640
Output 2.2	Effective early warning system communications in place	$ -	$ 45,000	$ 45,000	$ 54,440	$ 30,940	$ 175,380
Output 2.3	Harmonized protocols for data collection, storage and reporting	$ -	$ 45,000	$ 45,000	$ 54,440	$ 30,940	$ 175,380
Output 2.4	Private and third sector innovation supported through the CCTA	$ 100,000	$ 185,000	$ 175,000	$ -		$ 460,000
Subtotal		*$ 148,880*	*$ 368,880*	*$ 353,880*	*$ 108,880*	*$ 61,880*	***$ 1,042,400***
Outcome 3	**Increased community and ecosystem resilience to wildfire risk and broader climate change impacts**						
Output 3.1	Wildfire risk reduction activities prioritised at the local level	$ 169,090	$ 40,000	$ -	$ -	$ -	$ 209,090
Output 3.2	Integrated forest fire risk management measures implemented	$ -	$ 635,000	$ 685,000	$ 665,000	$ 680,000	$ 2,665,000
Output 3.3	Community forest eco-system enterprises supported	$ -	$ 225,000	$ 245,000	$ 237,000	$ 242,000	$ 949,000
Output 3.4	Public awareness campaigns organised	$ -	$ 48,040	$ 48,040	$ 46,040	$ 51,040	$ 193,160
Subtotal		$ 169,090	$ 948,040	$ 978,040	$ 948,040	$ 973,040	***$ 4,016,250***
Execution cost		$ 20,670	$ 20,670	$ 20,670	$ 20,670	$ 20,670	$ 103,350
Total activities		**$ 517,040**	**$ 1,697,490**	**$ 1,942,490**	**$ 1,569,990**	**$ 1,162,990**	**$ 6,890,000**
Programme management fee							585,650
Grant total							**$ 7,475,650**

Annex 4: Georgia and Armenia vulnerability to climate change

Table 10: Impacts of climate change in the South Caucasus by sector[60]

Sector	Type of impact
Agriculture	Increased temperatures, changes in precipitation patterns and increased incidence of extreme weather events impact upon crops due. • In *Armenia*, Agriculture accounts for 62 percent of total land use, while 80 percent of crops require irrigation, due in part to desertification. Projected declines in summer precipitation and increases in temperature will increase the need for irrigation and contribute to increasing water scarcity. In recent decades, extreme weather events (e.g., drought, hot dry winds, hail and spring frosts) have become more frequent and extended, reducing crop yields and damaging livestock. From 2000 through 2005, Armenia suffered $107 million in economic losses to the agricultural sector due to drought, frost and floods, threatening rural livelihoods and food security. The Ararat Valley, an important region for agriculture, is also one of the hottest and driest in summer. Wheat, a key cereal crop, is projected to decline in this region by 6 to 8 percent in 2040 to 2050 due to rising temperatures and water stress. These conditions will also promote livestock and crop pests and diseases. Yields of alfalfa, apricot, grape and potato are projected to decline in all agricultural regions in 2040 to 2050. • In *Georgia*, while the contribution of agriculture to GDP declined over the past decade (currently at 9 percent), Georgia is still largely dependent on this climate-sensitive sector for employment and livelihoods. Over 50 percent of the population is employed in agriculture, concentrated in poor and rural communities. Climate dynamics already exacerbate soil erosion and damage crops through heavy precipitation events, flooding and land-and mudslides. Additionally, periodic droughts wreak havoc on yields; the severe drought of 2000 caused wheat yields to decline by 56 percent compared to the previous year. Changes in evaporation and runoff are projected to reduce maize and wheat yields by 5 percent by2050. Temperature increases will have varying impacts: higher altitudes will be able to support a wider range of crops and enjoy a longer growing season(as is the case for potential yield increases in corn, tomato and wheat in the Eastern mountain region);however, higher temperatures may translate into decreased yields in the rest of Georgia. Higher temperatures can also increase the spread of crop diseases, particularly for citrus crops. As climate change shifts agroclimatic zones to higher elevations, production can increase, but this also leads to increased deforestation and land degradation.
Energy	Impacts on hydropower (particularly in Georgia which is highly dependent) • In *Georgia*, over 80 percent of Georgia's electricity comes from hydropower, which is highly can vulnerable to climate variability and change. Hydropower generatio nis partially driven by glacier-fed rivers (Inguri and Rioni) originating in the Greater Caucasus Mountains, runoff from which is projected to decrease 13 percent by 2100. Periodic droughts also negatively impact hydropower generation –the 2000 drought reduced energy generation by 20 percent and caused power shortages throughout the country. Additional stress factors include extreme events, such as the landslide on the Georgia-Russia border that caused major damage to the critical North-South gas pipeline in 2014.
Ecosystems and Forests	Increasing temperatures, changes in precipitation patterns and the increased incidence of extreme weather events can result in ongoing and large-scale degradation of natural eco-systems and biodiversity, particularly in forest systems • In *Armenia, d*ue to variation in elevations and climatic zones, Armenia's ecosystems support rich biodiversity, with most species endemic or rare. Plant and animal species are likely to shift upwards in elevation due to climatic changes, altering both ecosystem structure, habitat biodiversity and ecosystem services. More than 15 percent of Armenia's higher plant species are in danger of extinction due to projected climate change. Semi-desert and desert areas are projected to expand by 30 percent, which will accelerate desertification. More frequent summer droughts and water stress will reduce the growth rate of trees and increase susceptibility to pests and diseases; this will also create conditions conducive to more frequent and intense wildfires, leading to an estimated 14,000 to 17,000 ha of forest loss by 2030. • In *Georgia*, unique ecosystems and biodiversity, including many rare and endemic species, are under threat from climate change. Georgia has the highest forest cover in South Caucasus, at almost 40 percent.

[60] Adapted from USAID Climate Change Country Briefs

	Rising temperatures have increased the spread of endemic diseases (such as bark beetle) and introduced new diseases, such as box-fungal disease, which is present in up to 60 percent of forests in some protected areas and national parks. Higher temperatures have also increased the risk of wildfires in some areas. Long-term changes could include a decline in current birch forests and a gradual conversion to more open-arid forest ecosystems such as spruce and pine.
Human Health	Increased temperatures, incidence of heatwaves can significantly impact upon human health • In *Armenia*, A malaria epidemic peaked in the Ararat Valley in 1998 with over 1,000 cases. While Armenia has been malaria-free since 2011, research suggests that malaria may increase in the future as climate conditions change, specifically in the country's warm temperate forests and dry semiarid and dry tropical climate zones. Over the last thirty years, the duration of heatwaves has significantly increased, most prominently at lower elevations. In the capital, Yerevan, average heatwave duration increased by about 40 days from 1981-2013. Heat stress can have a greater impact on the elderly and those with cardiovascular diseases and other chronic illnesses. it can also disproportionately harm the poor, who frequently lack air conditioning • In *Georgia*, the frequency of extreme daily temperatures and heat waves has increased, leading to immediate health concerns such as heat stroke and exacerbating existing health issues among people with cardiovascular or chronic respiratory diseases. Higher temperatures increase the incidence of vector- and waterborne diseases. For example, the number of cases of malaria in Georgia increased 30-fold from 1998–2002, and the incidence of diarrheal diseases in Adjara (vulnerable to flooding) rose 211 percent from 1990–2010.
Infrastructure	In avalanche-prone areas, abrupt terrain, steep slopes and arid land exposed to heavy rainfall events can result in landslides, flash floods and mudslides. • In *Armenia*, a significant number of settlements and roads, bridges, reservoirs and other infrastructure are in landslide-prone zones where heavy rains can oversaturate unstable ground, resulting in major landslides which have destroyed hundreds of buildings and vital infrastructure, including residential areas, roads, highways and railways. In 2004, landslides caused $43 million in damages. Between 2004 and 2007, mudflows damaged 200 settlements and 600 sites on main transportation routes. In 2009, there were damages of $11.5 to $13 million from landslides and $5.7 to $7.1 million from mudslides.
Tourism	Tourism, one of the fastest growing economic sectors in in the South Caucasus. • In *Georgia*, it contributes 23 percent to GDP. Tourism can be highly climate-dependent. In Georgia, shorter winter seasons and declining snow cover already affect popular alpine ski resorts such as Bakuriani and Gudauri. Popular hiking and trekking destinations in the Upper Svaneti frequently experience avalanches due to intense rainfall, while Adjara, a popular beach destination, suffers from mudslides and landslides that disrupt transport and other services.
Water Resources	Increased temperatures, rainfall variability and incidence of extreme events have a range of impacts • In *Armenia*, Glacial volume declined by 50 percent since the early 1900s. Higher temperatures will increase evaporation rates and reduce winter snowpack, reducing spring runoff and Armenia's already limited water resources. Aggregate river flow is projected to decrease by 11.9 percent by 2030 and 37.8 percent by 2100 compared to the 1961-1990 baseline period due to the combined effects of higher temperatures and reduced rainfall. Inflow to Lake Sevan, the largest freshwater lake in Armenia, is projected to decrease by more than 50 million m3 in 2030, by more than 110 million m3 in 2070 and by 190 million m3 in 2100 compared to the current baseline. As a result, the lake's surface level is expected to recede by 16 cm annually, threatening irrigated agriculture, municipal water supply and hydropower production. Warmer temperatures could lead to shifts in seasonal fish migration, including spawning and feeding areas for the lake's whitefish. • In *Georgia*, there are relatively rich water resources and the country is unlikely to face overall shortages under a changing climate, although changes in glacial melt and precipitation will affect water availability, while higher temperatures will increase water demand, particularly for irrigation. Flows of glacier-/snow-fed river basins such as Khrami-Debedand Alazaniare projected to decrease about 30and 55 percent respectively by 2100, while higher temperatures will alter the seasonality of river flows. For example, the Acharistskali River will see decreased March–August flows, limiting water for irrigation.

ANNEX 5: OVERVIEW OF PROJECT TERRITORIES - ARMENIA

This annex provides background information to the proposed project sites in Armenia

Site 1: Lori Region

In Lori, Hayantar SNCO (the forest agency) operates 7 forestry branches, managing 101,279 hectares of which approximately 86,000 are forested.

Forest agency branch	Total area, ha	Of which forest, ha
Gougark	16213	10496
Dsegh	15330	14505
Yeghegnut	14082	11826
Lalvar	26837	24339
Jiliza	15292	13851
Stepanavan	6665	5674
Tashir	6860	5105
Total	***101279***	***85799***

There are in addition 3 reserves representing approximately 7000 ha (in Gougark and Stepanavan).

Lori is located in the North of Armenia and borders on Georgia. The climate is relatively humid, with summers lasting from June – September and an average annual temperature of 7.4C. Snow cover lasts from November to March with up to 30cm of cover. Temperatures in winter can reach as low as -30C. Average precipitation is 586mm. The growing season lasts from April to October (approximately 180 days).

The landscapes are a mixture of forest and mountain meadow. Tree species are a mixture of beech, cypress, Georgian oak, and hornbeam, with some fir.

Initial discussions with the forest management agencies indicate significant opportunities for forest and landscape rehabilitation, in part to replace burnt forests (see figure below).

There are also significant procurement and capacity building opportunities, including

- Purchase of equipment and tools
- Development of signs for community awareness
- Training courses to prevent residue burning and for fire response
- Rehabilitation of fire access roads
- Purchase of tractor equipment for slopes and to support mineralization
- Natural barriers on small rivers to create ponds for water supply

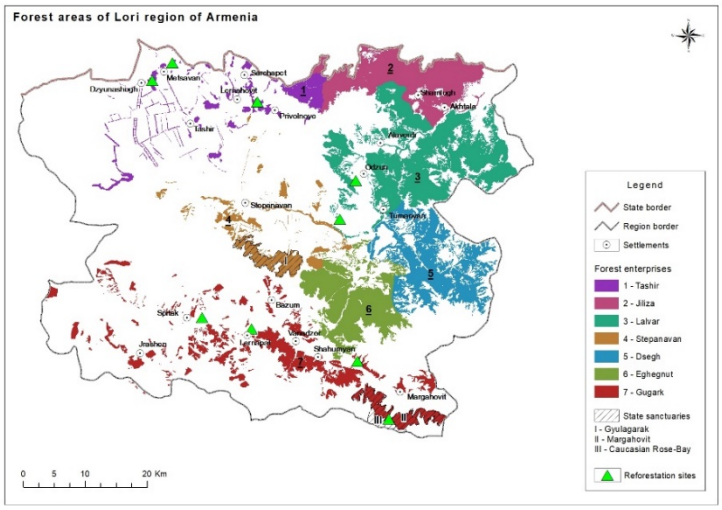


Figure 32: Forest areas of Lori Region and wildfire rehabilitation sites

Site 2: Kotayk region

The management of forests and forest lands in Kotayk province is implemented by "Hayantar" SNCO through the Hrazdan Forestry Branch. It manages a total area of 23,212 ha of which 15068 ha is forested. The pine forests of Bans (4 hectares) and Arzakan and Meghradzor (13,532 hectares) are located in the area.

The climate is varied but occupies the 7th and 8th climatic zones of Armenia. In the 7th zone (between 1400-2000m), the climate is moderately humid. Winters are long (November – April) with stable snow cover. Monthly precipitation is 60-100mm. Summers are relatively hot and humid, with mild autumns. In the 8th zone (1500-2000m) temperatures are colder, with a shorter vegetation period.

Overall, snow cover is maintained for 3-4 months, with an average air temperature of 9C, with maximum of 32C and minimum of 24C. Annual precipitation is c. 600mm with a vegetation period of 210 days.

The landscapes are mostly meadow and steppe vegetation. Lower oak trees dominate in natural forests, but there are also significant pine plantations.

There are a number of areas for potential forest regeneration and forest rehabilitation as indicated on the map. In addition, the local agency has identified the following priorities:

- Purchase of equipment and tools Hrazdan, Byureghavan, Arzakan, Bjni, Solak, Marmarik, Meghradzor
- Development of signs for community awareness raising
- Training courses to prevent residue burning and for fire response
- Rehabilitation of fire access roads
- Purchase of tractor equipment for slopes and to support mineralization
- Natural barriers on small rivers to create ponds for water supply

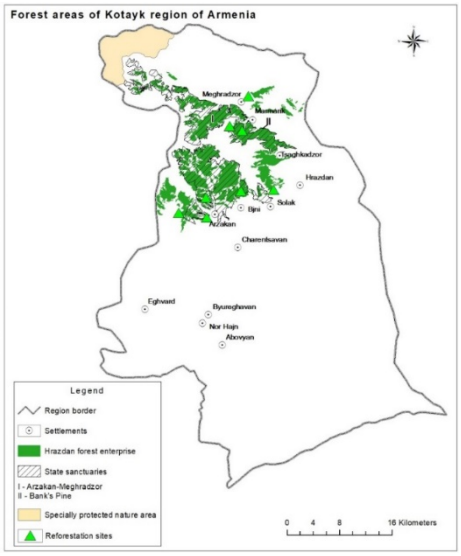


Figure 33: Forest areas of Kotayk Region and rehabilitation sites

Site 3a. Vayots Dzor Region

Forests are managed by Vayots Dzor Hayantar SNCO There is a single forestry branch responsible for a total area of 15,046 ha, of which 7,656 ha is forested. In the forested areas, there are Reserves at Yeghegnadzor (4,200 ha), Her-Heri (6,139 ha) and Jermuk (3865 ha).

The climate in Vayots Dzor is warm and dry. The average annual temperature ranges from 4.1C -11.8C depending on altitude. Summer average temperatures are in the region of 15-25C, while January temperatures range from -3C to -8C. Maximum temperatures (both hot and cold) can be extreme ranging from -35C in winter to 41C in summer. Precipitation in the lower slopes is about 400 mm per annum, increasing to 800mm in the higher mountain areas. Precipitation is highest in the spring, and lowest in late summer. Snow cover days range from 40-150 depending on altitude, with snow in lower regions from December to March, and in higher zones from September to April. Summers are long and warm in the lower ranges (approximately 5 months). Continental climates are the norm up to an altitude of 1500-1700m and temperate up to 2400m

The region is known for a high level of biodiversity. Forests are mainly eastern oak (at altitudes of 1500-2300m, with other tree types (maple, juniper, fruit trees) and some spruce.

The area has been exposed to forest fires including a major fire in 2017 (648.5 ha), which requires significant planting and rehabilitation work. A project has already been prepared. Other potential areas of intervention identified by Hyantar include

- Procurement of fire tools by the Khachik and Artavan communities

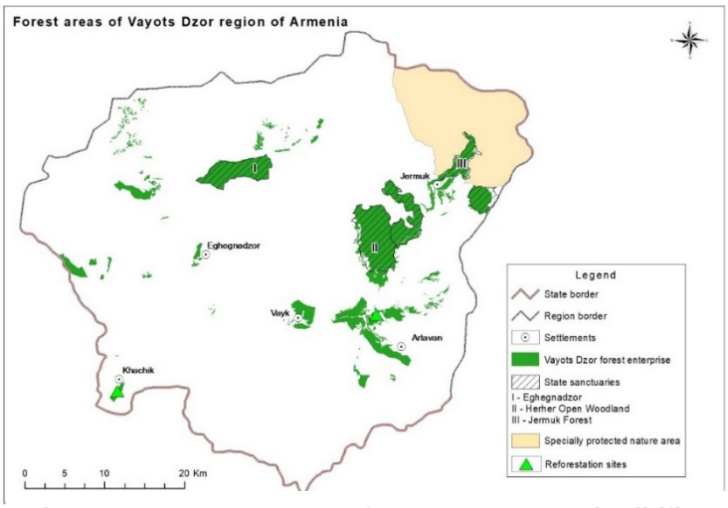


Figure 34: Forest areas of Vayots Dzor and wildfire rehabilitation sites

- Preparation of recreation fire areas and signage for community awareness
- Controlled burning of residues
- Training for fire response and management
- Construction of access roads
- Ploughs and forest management equipment to support mineralization and reforestation

Site 3b: Syunik Region

Forests in Syunik region are managed by Hayantar SNCO through 3 forest agencies (Kapan, Sisian, Syunik) with a total land area of 60,202 hectares, of which forest covers 49,990 ha. There are forest areas within the Goris Reserve (1850 ha). Zangezur Biosphere Reserve and Shikahogh Reserve are also located in Syunik region.

The climate is moderate with cold winters, warm springs and mild autumns. The first frosts begin in early October, and the last frosts are expected in the middle of March. Average annual precipitation is 600-700 mm. The average thickness of the snow cover is 5 cm, with a growing period of 208 days.

The forest belt starts at 550m and rises to 2600m above sea level. Up to 1400m the predominant species are various types of oak. Other species include hornbeam, chestnut, hawthorn.

There have been a number of fires that have degraded the forest resources. For example, Hayantar have identified an area from 2006 where rehabilitation works are required, and a project has been prepared. Additional support was identified in the following areas:

- Procurement of fire tools by the Goris, Khndzoresk and Shurnuk communities
- Preparation of recreation fire areas and signage for community awareness
- Controlled burning of residues
- Training for fire response and management
- Construction of access roads
- Ploughs and forest management equipment to support mineralization and reforestation
- Ponds with natural dams for firefighting

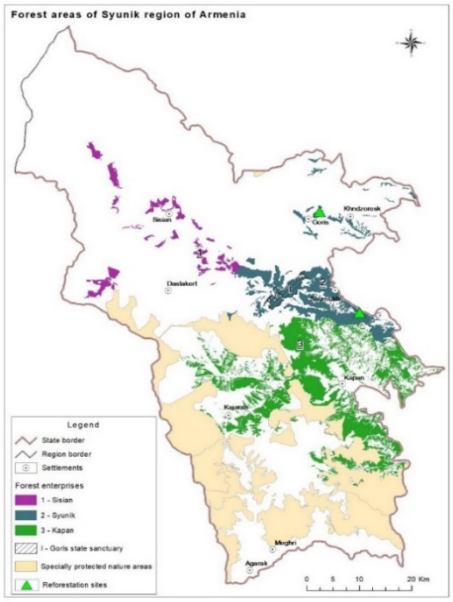


Figure 35: Forest areas of Syunik region and wildfire rehabilitation sites

ANNEX 6: PROJECT TERRITORY INFORMATION - GEORGIA

Site 1. Kakheti Region

Kakheti is an eastern border region of Georgia bounded by the Russian Federation to the north and Azerbaijan to the south. The total area of the region is 11,310 km2, or 17.5% of the entire territory of Georgia. According to the Geostat data of 1 January 2019, Kakheti has a population of 312.5 thousand people.[61] The region has 9 cities and 276 villages, and the administrative centre is Telavi. Kakheti has a total of 8 administrative entities.[62] The climate in Kakheti is mainly continental. The lowlands of Kakheti are characterized by low precipitation (400 mm), which

[61] Source: The National Statistics Office of Georgia, July 2019
[62] Kakheti Regional Development Strategy 2014-2021, Tbilisi 2013

gradually increases from the south and south-east towards the Caucasus Mountains, reaching 2000 mm per year. The landscape in Kakheti is diverse, from semi-desert to ice-covered mountains.
Approximately 11-12% of Georgia's forests are located in Kakheti region. More than 30% of Kakheti is covered by forest with 98% of these being mountainous forests. Total forest fund of in Kakheti region is 288 377 ha, out of which forests cover 269 409 ha. 28 410 ha are under long-term lease.[63]

The Kakheti Regional Forest Service consists of 51 employees, including a head of Service, 1 chief forester, 1 forest production engineer, 1 admin person, 15 foresters, 2 chief specialist, 2 analysts, 1 operator, 5 chiefs of units and 22 specialists.

The protected areas are generally managed by the Protected Areas Agency of Georgia, through its territorial PA administration. The Tusheti Protected Landscape (IUCN Category V protected area) managed by Akhmeta municipality self-government through Tusheti PL administration is the only locally managed forest in Georgia.

The target forest units[64]:

Region	Total Forest Fund area (ha)	Information on target forestry unit		
		Unit	Forest fund area (ha)	Area covered by forests (ha)
Kakheti region	288 435	***Kakheti regional Forestry Service:***		
		Akhmeta forestry unit	64,945	61,698
		Kvareli forestry unit	54,496	51,771
		Sagarejo forestry unit	42,598	39,616
		Telavi forestry unit		
		Gurjaani forestry unit		
		Lagodekhi-Dedoplistskaro-Signaghi forestry unit		
		Agency of Protected Areas:		
		Vashlovani protected areas administration	6,375.5	6,375.5
		Tusheti protected areas administration	18,154	18,154
		Akhmeta municipality:		
		Tusheti protected landscape administartion	5,029	5,029
Total			162,039	153,085

The Kakheti region is subject to significant wildfires. The emergency services report about the fires on the crop fields and grasslands states that there were 642 fires covering 3298.6 ha in 2017, 512 fires covering 10 485.3 ha in 2018, and 347 fires covering 645.5 ha in 2019 (including April). As for the forest fires, there were 97 cases of fires in 2017, covering 406.46 ha, 22 cases in 2018 (915.17 ha) and 37 cases in 2019 (140.22 ha).

38 % of Georgia's agricultural land is in the Kakheti region, where arable lands and pastures occupy the largest area. Kakheti ranks first in Georgia in this category of lands and is therefore a leading region in the production of cereals and livestock. Kakheti is a unique ancient vine-growing and wine-producing region. Kakheti ranks first in the area of vineyards (33,582 ha, around 65–70 % of all vineyards in Georgia), followed by Imereti and Shida Kartli. Kakheti has a long history of cereal production thanks to the fertility of land and diversity of cereal crops. The region is a leading wheat-producing region - in 2007, Kakheti had the largest crop of wheat - 62 thousand tons. Since 2006 Kakheti has become the third region in Georgia in terms of area under corn. [65]

Site 2. Samtskhe-Javakheti region

Samtskhe-Javakheti is a region in the South-East of Georgia. It includes three historical provinces – Samtskhe, Javakheti and Tori. The region borders with Adjara, Guria, Imereti, Shida Kartli, Kvemo Kartli, Armenia and Turkey. Its area is 6,421 m2. The regional centre is the city of Akhaltsikhe. The region comprises of five towns: Akhalkalaki,

[63] Source: NFA, July 2019
[64] Source: NFA, APA, July 2019
[65] Kakheti Regional Development Strategy 2014-2021, Tbilisi 2013

Akhaltsikhe, Borjomi, Vale, Ninotsminda, seven townlets - Bakuriani, Bakurianis Andeziti, Tsagveri, Akhaldaba, Adigeni, Abastumani, Aspindza, and 254 villages.[66]

According to the Georgian National Statistics Service, the total population of Samtskhe-Javakheti region was 154.1 thousand in January 2019.[67]

Climate in the region consists of the two climatic zones: Samtskhe – moderate dry subtropical mountain climate with the short winter with less snow and warm long summers. The Javakheti zone is characterized with the moderate dry climate, cold winter and long, cool summer. Precipitation is unevenly distributed in the region with minimum annual precipitation of 498 mm (at Khertvisi), and maximum – 1822 mm (at Arsiani gorge).[68]

The Samtskhe-Javakheti region is rich with forests. These forests play a role in supporting mineral water resources and resorts. The Samtskhe-Javakheti forest fund covers 130,164 ha, out of which 123,656 ha are covered by forests. There are 5 license holders (12 054 ha).

The Samtskhe-Javakheti Regional Forest Service consists of 44 employees: 1 head of the Service, 1 chief forester, 1 forest production engineer, 1 administrator, 13 foresters, 1 chief specialist, 2 analysts, 1 operator, 5 chiefs of units and 18 specialists.[69]

The protected areas are generally managed by the Protected Areas Agency of Georgia, through its territorial PA administration.

Target forest units[70]:

Region	Total Forest Fund area (ha)	Information on target forestry unit		
		Unit	Forest fund area (ha)	Area covered by forests (ha)
Samtskhe-Javakheti	133,509	***Samtskhe-Javakheti Forestry Service:***		
		Akhaltsikhe forestry unit	32,997	29,037
		Borjomi forestry unit	19,697	15,695
		Bakuriani forestry unit	26,291	24,714
		Adigeni forestry unit		
		Aspindza-Akhalkalaki forestry unit		
		Agency of Protected Areas:		
		Borjomi Kharagauli protected areas administration	76,365.46	76,365.46
		Javakheti protected areas administration	200.02	200.02
Total			155,550.48	146,011.48

The Samtskhe-Javakheti region is considered at high risk of wildfire due to both climatic and anthropogenic reasons. The region has seen significant reduction in the use of forest wind breaks since 1990 and there has been limited inventory work undertaken. The emergency services report about the fires on the crop fields and grasslands states that there were 231 fires covering 2211 ha in 2017, 81 fires covering 52.4 ha in 2018, and 71 fires covering 189.5 ha in 2019 (including April). As for the forest fires, there were 116 cases of fires in 2017, covering 1088.05 ha, 20 cases in 2018 (1.97 ha) and 3 cases in 2019 (0.02 ha).

Samtskhe-Javakheti is a strictly agrarian region where the share of agriculture in total value added is largest (32%). Most of the human resources are employed in agriculture. The region's agriculture is made up of family farms and commercial farms. Over 90% of production is accounted for by family farms. 73% of family farms produce

[66] Samtskhe-Javakheti Regional Development Strategy 2014-2021, Tbilisi 2013
[67] Source: The National Statistics Office of Georgia, July 2019
[68] http://samtskhe-javakheti.gov.ge/main.php?act=static&lang=geo&pid=1
[69] Source: NFA, July 2019
[70] Source: NFA, APA, July 2019

agricultural products for own use, and for the remaining 27%, agriculture is a source of income. More than half of agricultural land is pasture. Second largest type of agricultural land is arable land. The remaining area consists of mowing lands, uncultivated land and perennial plants. The main economic activity at the household level is related to agriculture and livestock (potato, cabbage, cereals, animal husbandry, cheese production, fish farming). The area is particularly well suited to resorts and tourism due to moderate humidity, good sunlight and a mixture of mountain and lowland clean air. [71]

Site 3. Shida Kartli region

The region of Shida Kartli lies in a middle section of lowland between the Greater and Lesser Caucasian mountain range in East Georgia. It occupies 9.2% of the country's territory. The region of Shida Kartli borders Mtskheta-Mtianeti to the east, Kvemo Kartli to the south-east, Samtskhe-Javakheti to the south-west and Racha-Lechkhumi/Kvemo-Svaneti to the north-west. The region shares its northern border with the Russian Federation. The Shida Kartli region includes nine administrative-territorial entities: 1 city - Tskhinvali and 8 municipalities – Gori, Kaspi, Kareli, Khashuri, Tigvi, Eredvi, Kurta and Javi.[72] According to the Geostat data of 1 January 2019, Shida Kartli region has a population of 257.3 thousand.[73]

The climate is moderately continental with moderately warm air temperature and moderate humidity providing suitable conditions for life and economic activity.

Forests occupy 46% of Shida Kartli region. Total forest fund of in Shida Kartli region is 124,832 ha, out of which forests cover 117,342 ha. 4,755 ha are under long-term lease (8 license holders).[74]

The Shida Kartli Regional Forest Service consists of 37 employees, including a head of Service, 1 chief forester, 1 forest production engineer, 1 admin person, 10 foresters, 1 chief specialist, 2 analysts, 1 operator, 4 chiefs of units and 15 specialists.

The target forestry units[75]:

Region	Total Forest Fund area (ha)	Information on target forestry unit		
Shida Kartli	115,325	Unit	Forest fund area (ha)	Area covered by forests (ha)
		Shida Kartli Regional Forestry Service: Kareli forestry unit Khashuri forestry unit Gori forestry unit Kaspi forestry unit	 23,697 26,473	 21,801 24,620
Total			50,170	46,421

The Shida Kartli region is subject to significant wildfires. The emergency services report about the fires on the crop fields and grasslands states that there were 129 fires covering 482,4 ha in 2017, 222 fires covering 326.4 ha in 2018, and 136 fires covering 250.2 ha in 2019 (including April). As for the forest fires, there were 30 cases of fires in 2017, covering 70.43 ha, 10 cases in 2018 (21.45 ha) and 7 cases in 2019 (19.05 ha).

In Shida Kartli 66,237 ha are used for agricultural purposes (95.4% of total lands), of which 74% are arable lands, 21% are perennial plantations and 5% - grasslands/pastures. Shida Kartli is a fruit-growing region of Georgia ranking first in a variety of fruit produced (apple, pear, plum, cherry, peach). Another priority area is the production of cereals - wheat and barley. The region ranks second in walnut production and fourth in grape production. Shida Kartli ranks second in terms of areas under vegetables (potatoes, beetroot, cabbage, carrots, onions, garlic, asparagus, pepper, aubergine, etc.). Livestock sector as the region does not play a leading role. [76]

[71] Samtskhe-Javakheti Regional Development Strategy 2014-2021, Tbilisi 2013
[72] Shida Kartli Regional Development Strategy 2014-2021, Tbilisi 2013
[73] Source: The National Statistics Office of Georgia, July 2019
[74] Source: NFA, July 2019
[75] Source: NFA, July 2019

[76] Shida Kartli Regional Development Strategy 2014-2021, Tbilisi 2013

ANNEX 7. EQUIPMENT NEEDS FOR FIREFIGHTING RESPONSE

Initial discussions have been undertaken with the relevant authorities in both Armenia and Georgia to establish the scope and scale of potential equipment needs to improve fire-fighting capacity response. In both countries, there are significant shortfalls in the availability of personal protective equipment, tools, vehicles and communications equipment to make the EMS and Forest agencies suitably equipped to deal with fire risk. There are different institutional roles and responsibilities (response in Georgia is the sole mandate of the EMS), whereas in Armenia, Hayantar forest agency plays a more active role. The following provides an initial needs assessment of investment requirements, towards which the project will make a partial contribution in priority project regions

Georgia

The EMS of Georgia provided the following initial needs assessment for wildfire response by region:

Table 11: Estimate of national wildfire response equipment needs in Georgia by region[77]

№	List of equipment	Region											
		Tbilisi	Imereti	Shida Kartli	Guria	Racha-Lechkhumi	Mtskheta-Mtianeti	Samegrelo-Upper Svaneti	Adjara AR	Kvemo Kartli	Kakheti	Samtskhe-Javakheti	Home
		2 level											
1	Fire-resistant uniform	210	120	40	30	40	30	100	90	60	80	40	50
2	Helmet	210	120	40	30	40	30	100	90	60	80	40	50
3	Protective glasses	210	120	40	30	40	30	100	90	60	80	40	50
4	Respirator	210	120	40	30	40	30	100	90	60	80	40	50
5	Gloves	210	120	40	30	40	30	100	90	60	80	40	50
6	Backpack	210	120	40	30	40	30	100	90	60	80	40	50
7	Individual flashlights	210	120	40	30	40	30	100	90	60	80	40	50
8	Rus shoes	210	120	40	30	40	30	100	90	60	80	40	50
9	Sleeping bag	210	120	40	30	40	30	100	90	60	80	40	50
10	Paralone	210	120	40	30	40	30	100	90	60	80	40	50
11	Fire-resistant cover	210	120	40	30	40	30	100	90	60	80	40	50
12	Hoe, rake	210	120	40	30	40	30	100	90	60	80	40	50
13	Petrol chainsaw (spare chain, guide bar, grinder, toolkit)	20	11	4	3	4	3	10	9	6	8	3	5
14	Petrol scythe with saw	20	11	4	3	4	3	10	9	6	8	3	5
15	Spade	210	120	40	30	40	30	100	90	60	80	40	50
16	Grass fire extinguisher fan	210	120	40	30	40	30	100	90	60	80	40	50
17	Grass fire extinguisher backpack	100	60	20	15	20	15	50	45	30	40	20	25
18	Big axe	20	10	4	3	4	3	10	9	6	8	3	5
19	GPS	20	11	4	3	4	3	10	9	6	8	3	5
20	Quadrocycle	1	1	1	1	1	1	1	1	1	1	1	1

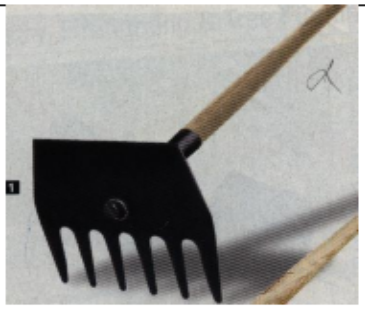
SOU: EMS Georgia

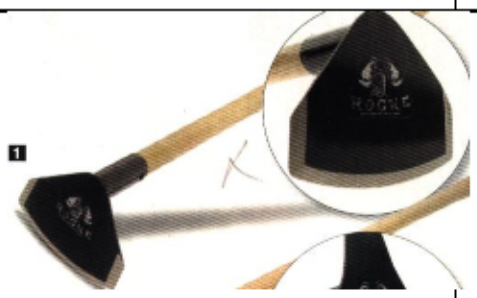
Armenia

In Armenia, the focus would be on capacitating the forest agencies and protected area (PA) staff. The following needs assessment was provided (based on a 2017 review). Support would be provided by the project to the specific regions identified for project engagement (particularly in terms of the provision of large items (fire trucks, vehicles), with smaller items provided at a national level on the basis of discussion with Hyantar for its 700 frontline staff.

[77] Initial technical needs assessment at a national-level based on discussions with EMS senior management May 2019

Item	Photo	Hayantar	PAs
Fire brigade mask: • Made of flame retardant Neoprene • Holes to allow air to pass through • Adjustable nose clip • Replaceable filter with exhalation valves		172	46
Wild land firefighting gloves: • Black cowhide thermo-leather • 4", 2-ply Nomex Spandex • Elastic snugger band on back • Leather hanger loops		200	100
Firefighting helmet: • Google retainer clips • Reflective strips • Adjustable Nomex chin strap • Underbrim shade • Velcro hook fastener		200	100
Headlamp • Maximum Beam Ranger: Xenon halogen bulb, 100 meters, standard bulb 30 meters. • Burn time: Xenon halogen bulb, 4 hours, standard bulb, 9 hours. • Power: 4AA batteries		200	100
Wild fire drip torch: • light weight drip torch • aluminum alloy with full-length handle • height: 14" closed 25-1/2" assembled • diameter: 6" • Capacity: 1-1/4' US gallons • Weight (empty): 5 lbs		20	10
Camelback: • Ideal for wildfire firefighters • Low profile Aero Form • Exterior fill port allows easy refill • Capacity: 3 liters • Dimensions: 16" x 9" x 1" • Color: black • Quick release shoulder straps		200	100

2-way radio (pair): • 5 watts for up to 18 miles range • 24/7, 22 channels • 121 privacy codes • Vibrate alert • 3 levels of eVOX for hands-free operation • Channel scan • 5 calls alert • Silent operation • Auto battery save • Keypad lock • Roger beep indicating all completion • Backlit display • Channel activity monitor • FCC license required for operation		86	23
BFG firefighting shovel: • Carbon steel blade is 10-7/8" long, 87/8' wide. • Sharpened on all edges. • 41 handle with solid shank.		86	23
Razor-back: • Pick Mattock Head • 19-1/4" overall head length, 3-1/2" wide blade width. • Handle 36" long.		86	23
Triangle hoe: • 5-1/2" head, • 1" rear pick • 6" metal ferrule to guard against over-strikes. • The tough tempered steel blade stands up to the toughest use. • 42" wood handle.		86	23
Rake: • Heavy duty rake and hoe for cleaning • Hoe edge is 9-3/4" wide • Six rake teeth are 3-1/2" long each • 4" handle		86	23

Collapsible backpack firefighting pump: • 5 Gallon water or 18.5 litters • Constructed with vinyl backing to repel water • Dimensions: 20"* 17" • Shoulder saver harness to distribute the weight • Hand-operated pump, 1/4"		86	23
Fire swatter flap: • For smothering fire in grass, straw and low weed • 12' wide * 15" long, fabric reinforced rubber flap • Handle with shank and cleat		200	100
Fire rake: • For raking fire lines to mineral soil, digging, rolling burning logs and cutting grass • Small brush or saplings. • 12' Angle iron frame holds four tempered steel cutting teeth • Tapered eye holds 5' wood handle.		86	23
Pulaski Axe: • Combination Group hoe/axe • Drop forged, carbon steel, 4lb. • Head prevent shipping and holds a sharp edge. • 3'L Hickory handle.		86	23

Collapsible water tank: • 5 Gallon water or 18.5 litters • Constructed with vinyl backing to repel water • Dimensions: 20"* 17" • Shoulder saver harness to distribute the weight • Hand-operated pump, 1/4"		19	19
Pick Up double Cabin which can hold a tank of 500 Liters at least		19	9
Forest Fire Truck – small size that can goes into the forest and holds 700 – 1000 Liters of Water		5	3
Uniform includes pants and Jacket		200	100

Typical unit costs for forest sector interventions (Hayantar – Armenia)

Type of activity/intervention	Unit	Total		
		volume	amount USD (based on Central Bank exchange rate as of 22.07.2019, 1USD = 476.48 AMD	USD Per unit
Rehabiltation of burnt areas (inclusing full work, materials and 3 year maintanance)	ha	***214.3***	***957,982***	***4470***
Forest transformation (planting) including 3 year maintanance	ha	***169***	***550,000***	***3254***
Forest rehabilitation through support to natural regeneration	ha	***2000***	***240,000***	***120***
Eqquiped off-road vehicles	unit	***3***	***85,000***	***28333***
Fire-fighting tools for forest enterpises	set (for 10 people)	***6***	***27,112***	***4519***
Fire-fighting (fire proof) out-wear for forest enterprises	set (for 10 people)	***6***	***35,259***	***5877***
Fire-fighting tools/equipmnet for local communities	set (for 7 people)	***24***	***108,446***	***4519***
Fire-fighting (fire proof) out-wear for local communities	set (for 7 people)	***24***	***99,077***	***4128***
Sign-boards (Fire-extinguisher)	piece	***180***	***9,445***	***52***
Signs forbidding the grass burning	piece	***135***	***7,084***	***52***
Renovation of fire-fighting roads	km	***90***	***113,331***	***1259***
Purchase of wheel tractor and associated equipment	unit	***4***	***265,279***	***66320***
Acquisition of caterpillar Tractor and associated equipment	unit	***2***	***85,225***	***42613***
Construction of small scale water reservouirs (evarage up to 2,000 m3)	unit	***18***	***283,328***	***15740***
Acquisition of Greyder machine (for hayantar)	unit	***1***	***110,813***	***110813***

ANNEX 8: CONSISTENCY OF THE PROJECT OUTCOMES WITH NATIONAL POLICIES, PLANS, STRATEGIES AND DEVELOPMNET GOALS OF ARMENIA AND GEORGIA

Armenia.

Strategies, policies and plans	Year enforced	Alignment
National strategies		
Armenia Development Strategy (ADS) 2014-2025	2014	The ADS is an overarching strategic document defining Armenia's strategic priorities for 2014-2025: i) growth of employment; ii) development of human capital; iii) improvement of social protection system; and iv) institutional modernization of the public administration and governance. Particular attention is paid to the issues directly affecting the development or being affected by development processes such as the disaster risks included induced by climate change (Article 7) and environmental protection (Article 25) highlighting the importance of risk and impact assessments, definition of the risk management mechanisms and implementation of relevant measures to protect the biodiversity, air, land and water resources. The priority risks considered by the Government as most challenging for the environment and environmental protection and those related to reducing natural hazard risk include issues, such as e.g.: • illegal forest logging resulting from higher gas prices • overexploitation of water resources due to rapid development of subsectors using underground water resources and as a result of climate change • increased desertification risk. One of the key measures highlighted in the ADS is the need for the development of "Law on Environmental Protection".It also envisages the revision and implementation of "Forest national program" with the aim of forest plantation and restoration in the forests and forests' lands in the republic, as well as improvement of quality indicators of the existing forests and founding new forests. Improvement of control mechanisms against illegal forest logging will be carried out in parallel with forest plantation and recovery activities. The ADS Chapter V is especially dedicated to the proportionate regional development paying particular focus to community capacity building, increasing the socioeconomic potential of the communities through effective regional and community development planning, targeted investments and improved governance. In this regard the **Project Outcomes 1-3** are fully in concordance with the country strategic development trends and will contribute to the achievement of ADS strategic priorities.
Environmental Protection and Natural Resource Use Management Strategy and Action Plan	2018	Chapter III(3) of the strategy is dedicated to the forest management, related problems and solutions to address the: inappropriate use of forest resources, anthropogenic and natural threats (forest fires, illegal logging, negative impact of climatological hazards) to forest ecosystem and biodiversity, continues degradation of forest covered areas leading to soil erosion in the surrounding areas, insufficient governance and forest management procedures. It concludes that the sustainable use of forests would be a source of additional revenue while at the same time creating favorable conditions for the employment and livelihoods of the surrounding communities. **Project Outcome 2** corresponds to the Activity 1 of the section "Biodiversity" of the Strategy implementation action plan which among other actions envisages improvement of the monitoring, forecasting and controlling systems.
National Disaster Risk Management (DRM) Strategy and Action Plan[78]	2017	Chapter IV. The goal and objectives of the strategy implementation defines the purpose and objectives of the DRM strategy as follows: "29. The aim of the strategy is to establish a disaster resilient country, reduce disaster risk and loss of human lives, livelihood and health, as well as economic, physical, social, cultural and environmental losses of people, organizations, communities and the country to ensure increased safety of individuals and the society and the sustainable development of the country 33. The priority actions and objectives of the strategy are as follows: 1) "Understanding disaster risk" – improve the disaster risk identification, assessment, analysis, monitoring and early warning continuously developing systems aimed at disaster risk reduction, as well as making risk sensitive effective decisions for the country's development. 2) "Strengthening the disaster risk management system" – ensure strengthening of the disaster risk management system through raising the effectiveness of management functions, targeted decentralization and continuous development of the players. 3) "Investments in disaster risk reduction" – incorporate disaster risk reduction functions and measures, and enhance transparency ensuring investments in disaster risk reduction sector and possibilities for implementation of innovative programmes.

[78] www.mes.am/files/docs/2204.doc

		4) "Building back better" – continuous strengthening of the country's capacities and opportunities for disaster preparedness, as well as disaster rapid response and more effective post disaster recovery. **Project Outcomes** are fully in line with the DRM strategy, its objectives and planned actions (see below) The DRM Strategy implementation plan of action envisages: Within the Action 1 - Improvement of legal and organizational frameworks of disaster risk management: - revision of legislation including for fire safety and local self-governance - development of concept for building disaster early warning system (**Project Outcomes 1,2**) Within the Action 2 – Institutional development of DRM (**Project Outcomes 2,3**) - establishment of detailed and accessible data base on hazard exposure, vulnerability, risk, disaster, damages and losses for decision making in disaster risk management - Continual update of disaster response plans, availability of agreed realistic action plans within medical, educational, special and critical infrastructure establishments (facilities) at all levels - Stockpiling of necessary rescue/relief material and technical resources in regions and communities. Within the Action 3 – Development of human resources (**Project Outcome 2**) - incorporation of disaster risk management topics into general and vocational education, and professional development programs Within the Action 4 - Strengthening of scientific and informational capacity (**Project Outcome 3**) - localisation of international methodology for multi-cluster initial rapid needs assessment (MIRA)[79] - introduction of common disaster risk management methodology at local level (LLRM)[80] - strengthening of information management capabilities at national, regional, and community levels - strengthening of emergency communication and public awareness capabilities - creation of disaster risk management readily available depository - localisation of international methodologies for rapid assessment of environmental emergencies and ecological situation (FEAT)[81] Within the Action 5 - Expansion of opportunities for implementation of investment projects in disaster risk management (**Project Outcome 3**) - increase of funding of DRR activities in communities - introduction of disaster risk insurance system Within the Action 6 - Development of DRM capacities (**Project Outcome 2,3**) - conducting disaster risk assessments in communities - Inclusion of disaster risk reduction activities in community development plans and budgets
Forestry Sector Improvement Concept, Strategy and the List of Events[82]	2017	It is about the forestry sector three-year reform in accordance to the set strategy and related list of events aimed at optimisation of forestry sector. Main strategic activities refer to the improvement of the forest related legal and institutional framework, education of staff, introduction of modern approaches in forest management (including forest protection), sustainable use of forests and establishment of unified information management system. The **Project Outcomes** sound as integral part of the Forest Sector envisaged reforms contributing to the improvement of forest management, particularly referring to forest protection measures.
RA Marzes' Development Strategies 2017-2025[83]	2017	Development strategies 2017-2025 of Armenia marzes contain special provisions dedicated to DRR and climate change adaptation referring also to forest/wildfire management (where relevant) presuming local level capacity building and community based measures. **Project Outcomes** are in full consent with the spirit and context of marzes' development strategies while referring to DRR and adaptation planning. More, the Project, introducing a comprehensive approach to forest fire management, may support the better understanding of local level risk management peculiarities, which may lead to the adjustment of development plans bringing new view and innovative thinking in relation to marz and community DRR measures and resilience building.
National Fire Management Policy, its Implementation Strategy and Action Plans in Forest Lands, Specially Protected Areas, Agricultural Lands and	2015	The document clearly highlights the anthropogenic and climatological risks as main causes of fires in the forests and other vegetated areas stimulating the implementation of actions addressing these risks. It envisages the risk reduction, mitigation and response actions along with improvement of the related legal and institutional framework. The document underline the complete lack of fire monitoring and early warning system. The **Project Outcomes 1-3** are in line with the Strategy implementation action plan presented in 6 sets of actions: • creation of monitoring and unified information and analytical system, introduction of rapid response mechanisms • improvement of legal base and clarification of institutional responsibilities • implementation of fire prevention measures • fire rapid response capacity building and ensuring the fire security of vegetation areas

[79] https://interagencystandingcommittee.org/iasc-transformative-agenda/documents-public/multi-clustersector-initial-rapid-assessment-mira-manual
[80] https://www.preventionweb.net/files/workspace/30411_attachment3llrmmanual.pdf
[81] https://reliefweb.int/report/world/flash-environmental-assessment-tool-feat
[82] http://www.irtek.am/views/act.aspx?aid=92963
[83] https://www.e-gov.am/protocols/item/768/

Settlements Plans in Forest Lands, Specially Protected Areas, Agricultural Lands and Settlements[84]		• firefighting and elimination of consequences • development of international cooperation in the field of wildfire management
Strategy of Sustainable Agricultural Development for 2010-2020[85]	2010	**Project Outcomes** coincide with Clauses 73(5) and 73(6) of the strategic priorities referring to the restoration and maintenance of forests, also prescribing introduction of disaster risk reduction and mitigation measures to protect the vegetation areas.
National Forest Policy and Strategy[86]	2004	It is aimed at the restoration of degraded forest ecosystems, forest sustainable use and further development of forest benefits. It focuses on three main strategic directions to ensure the: • long-term and scientifically proved sustainable management of forests • improved legal and institutional framework to support the sustainable forest management • introduction of forest sustainable management international standards, forest certification and evaluation quality criteria. Among the strategic priorities the Strategy considers climate change effects and strengthening of forest adaptation to climate change as a solution. There are also references to international agreements to which Armenia is a party, namely the Framework Convention of Climate Change, Biodiversity and Desertification. **Project Outcomes 2, 3** contribute to the implementation of section on Forest Protection of the Forest Strategy which underlines a need for the improvement of fire management capacities (technical, human resource and financial) including the community participation and capacity building.
Strategy and National Action Plan of the Republic of Armenia on Conservation, Protection, Reproduction and Use of Biological Diversity (BSAP)	2015	BSAP document summarizes and analyses the outcomes of biodiversity related activities implemented in the Republic of Armenia, frame main strategic directions and includes 245 actions aimed at improvement of legislative and institutional frameworks, biodiversity conservation and sustainable use. Among the national target the strategy defines the strategic direction on enhancement of biodiversity and ecosystem conservation and restoration of degraded habitat. Thus, Project O**utcome 3** contributes to biodiversity protection and ecosystem resilience through ecosystem restoration activities and reduction of direct pressure on biodiversity and habitats. The project activities will also contribute to Elimination of the main causes of biodiversity loss through regulation of intersectoral relations and public awareness raising.
Programs and plans		
Action Plan of the Government of the Republic of Armenia for 2019-2023[87]	2019	Envisages actions related to the EWS system improvement particularly related to the hydro-meteorological hazardous events (page 56). It refers to the forecasting and early warning capacity building of hydro-meteorological services in Armenia. There is also a big range of activities dedicated to the implementation of prevention, mitigation and adaptation measures corresponding to Government commitments towards the international agreements (page 75) to eliminate the negative consequences of climate change on infrastructures, agriculture and environment. **Project Outcomes 2, 3** correspond to the following actions of the Government plan: Action 66 – improvement of firefighting technical capacities of fire rescue units Action 67 – creation of community based volunteer response teams Action 68 – development and implementation of centralized early warning system Action 71 – improvement of hydro-meteorological hazardous events' forecasting, early warning and rapid response effectiveness Action 80 – strengthening of community resilience to disasters.
Armenia-United	2015	UNDAF's Outcome 7 of the Pillar IV (Environmental Sustainability and Resilience-Building) states:

[84] https://www.arlis.am/DocumentView.aspx?docID=95474
[85] https://www.arlis.am/DocumentView.aspx?DocID=63109
[86] http://www.irtek.am/views/act.aspx?aid=27497 , http://www.irtek.am/views/act.aspx?aid=27498
[87] https://www.gov.am/files/docs/3347.pdf

Nations Development Assistance Framework (UNDAF) 2016-2020[88]		”By 2020 Sustainable Development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation, and green economy are introduced and applied”. There are specific components among the outputs expected from the UN programmes referring to sustainable forest management and DRR: • Assist the country to strengthen the capacity to develop national action plan for the forest sector in green economy, national accountability system for the sustainable forest management • Support implementation of DRR policy framework and mainstreaming of disaster and climate risk management and resilience building principles and practices into the development agenda at national and local levels. **Project Outcomes** meet both the UN and the Government intentions related to forest sustainable management and mainstreaming the disaster and climate risk management into development agenda.
Intended Nationally Determined Contributions (INDC) of the Republic of Armenia under the UN Framework Convention on Climate Change (UNFCCC)[89]	2015	**Project Outcomes** are in full agreement with the provisions of Section 2 and 3 of the documents as provided below: Section 2 Mitigation of Climate Change of the document considers Land use and Forestry (afforestation, forest protection, carbon storage in soil) among the main sectors contributing to the limitation of GHG emissions growth: “Consider 20.1 percent as an optimal forest cover indicator of the territory of the Republic of Armenia according to the Armenia’s first National Communication to UNFCCC (1998) and government Decision No 1232 of 21 July 2005 “On the adoption of the National Forest Program of the Republic of Armenia.” To achieve that indicator by 2050 and consider the obtained organic carbon absorptions and accumulations in the INDC and expand the impact period up that measure till 2100. Section 3, Adaptation to Climate Change, provides: “The Republic of Armenia embraces the ecosystem approach for adapting to climate change. The approach is in harmony with the environmental policy of the country, can ensure synergy with other international environmental conventions and treaties, will lay the ground for inter-sectoral coordination, and will support establishment of cross-border cooperation and solidarity environment.”
Republican Target Program on the Improvement of Forest Security and the List of Complex Measures Aimed at Improvement of Forest Security in the Forest and Other Vegetation Covered Areas [90]	2013	This is a comprehensive document describing the situation and problems related to forest/wildfires, management gaps in the fire security framework, addressing the causes of forest/wildfires including induced by climate change and prescribing actions for the improvement of fire security in the forests and other vegetation covered areas. **Project Outcomes** are in line with the priority areas and actions provided in the Chapter III (10,11,12) of the Program: 10. In the area of forest/wildfire prevention (**Project Outcomes 1,2**) 1) Improvement of legal base referring to fire security rules, fire security control, involvement of volunteers, effective fire management, early warning and early response systems, fire monitoring, forest and protected areas management plans) 2) Implementation of reforms in education and public awareness through incorporating relevant knowledge into curricula of educational institutions, raising the awareness of the local self-governing bodies, community members and general public on the risks of forest/wildfires, their prevention, reduction and mitigation measures 11. In the area of forest fire risk reduction and rapid response (**Project Outcomes 1. 2**) 1) Building the capacity for fire prediction, monitoring and rapid response 2) Building the human resource capacity through improving the knowledge and skills of the staff involved 12. Improvement of forest fire combating capacities (**Project Outcomes 2, 3**) 1) Preparedness capacity building 2) Building the large scale forest fire response capacities
National Forest Program of the Republic of Armenia[91]	2005	The Program aimed at protection of forest ecosystems, restoration of degraded forest ecosystems, continues productive use of forest stocks and ensuring the implementation of the forest sustainable management strategy. The Program contains forest protection and defence measures accounting issues of biodiversity preservation, prevention and mitigation of negative consequences caused by disastrous hazards (forest fires included) and the climate change. **Project Outcomes 2, 3** are supporting the Action 5 on Forest Protection of the Program Plan of Action which possesses activities related to combating forest fires including fire prevention. It also includes activities for the strengthening of community and civil society role in addressing the forest fire threats through participation in fire prevention, mitigation and response activities.

[88] https://www.un.am/up/file/Armenia%20-%20UNDAF%202016-2020%20-%20ENG.pdf
[89] http://www.nature-ic.am/Content/Projects/14/Gov%20Decree_INDC_eng.pdf

[90] http://www.nature-ic.am/Content/Projects/14/Gov't%20Decision_563-A_29%20May%202013.pdf

[91] https://www.arlis.am/DocumentView.aspx?DocID=14277

Laws		
On Population Protection in Emergency Situations[92]	1998	Defines the bases and the arrangement of population protection in emergency situations (including prevention, mitigation and response measures), the rights and responsibilities of state and local authorities, enterprises, institutions, organizations, irrespective of the organizational-legal type, (henceforth enterprises, institutions and organizations) as well as officials and the citizens in this sphere. It considers along with direct human losses the entire scope of negative effects of possible disasters to human lives and wellbeing, including on natural resources, environment and agriculture.
On Fire Security[93]	2001	Defines the legislative, economical and organizational basis for ensuring the fire security in the Republic of Armenia. It regulates relations of the State bodies and local self-governing bodies of the Republic of Armenia, organizations, and citizens in fire security-ensuring sphere. The provisions of the Law refer to person, property, society and State protection from fires defining the responsibilities of the State and authorised bodies in fire prevention and suppression. No specific provisions available on nature / environment, forests or agricultural lands protection from fires apart from the point in the article 20 which highlights the issue of state control over the perseverance of the normative documents of fire security in forests.
On Rescue Service[94]	2005	Defines the main principles of Armenian Rescue Service performance in emergencies and civil defence underlining particularly its role in prevention and mitigation of emergencies, emergency response and elimination of consequences, recovery and rehabilitation, public awareness and education, coordination of response efforts.
On Local Self-Governance[95]	2002	Defines the notion of local self-governance, its bodies, performance principles, powers, also legal, economic, financial bases of their operations and the respective guarantees, regulates relations between the State authorities and local self-government bodies. The Law possesses special provisions on the responsibilities of self-governing bodies in the event of emergencies referring particularly to the protection of environment, households and community lands including of agricultural sector.
On Atmospheric Air Protection[96]	1994, revised in 2011	Defines the State responsibility on protecting atmospheric air by ensuring the maintenance of air purity of and improvement of its quality, reduction and prevention of chemical, physical, biological and other harmful influences on atmospheric air, regulation of public relations and strengthening of rule of law in this area. Further, in 14.09.2011 an amendment (supplement) was introduced in the Law adding a special paragraph to the Article 21 which banns burning of stubble, plant residues and dry vegetation areas, vegetation of pastures and meadow lands in agricultural, forest, forest neighbouring and specially protected areas of nature.
On Flora[97]	1999	Defines the State policy of the Republic of Armenia on scientifically motivated protection, maintenance, reproduction and use of natural flora. It also regulates the use of flora objects in agricultural and industrial purposes. Protection of flora objects from plant pests, diseases and natural catastrophes, integrity of plant species diversity and the security of water maintaining, soil protective, climate regulatory and recreational properties of the plant covering are among the objectives of the law.
On Fauna[98]	2000	Defines the State policy on protection, maintenance, reproduction and use of the wild species in the Republic of Armenia. It regulates the use of fauna objects in agricultural and industrial purposes. It also provides that during emergencies (epidemic diseases of the population, wild and domestic animals, menace for the development of the cattle breeding, danger of breaking the ecological balance) special measures on the regulation of certain animal species quantity will be undertaken by the decision of the Government of the Republic of Armenia.
On Energy[99]	2001	Regulates the relationships between the government bodies, legal entities of the energy sector operating under this Law, and consumers of electricity, thermal energy and natural gas in the Republic of Armenia. The Law draws the State policies in the energy sector stating particularly the environmental protection and efficient use of domestic and alternative energy sources, implementation of economic and legal mechanisms for that purpose.
Land Code[100]	2001	Defines the types of lands including agricultural lands' classification, provides regulations of land use, outlines the responsibilities of state authorities and land users in protection norms, describes rules for the use of lands contaminated as a consequence of techno-gene, epidemiological and other disasters, envisages measures for nature protection, sanitary-hygienic and other requirements for drafting and exploitation of buildings and constructions, protection of agricultural and other lands from micro-

[92] https://www.refworld.org/pdfid/5b2b7cd04.pdf
[93] http://www.parliament.am/legislation.php?sel=show&ID=1269&lang=eng
[94] http://www.parliament.am/legislation.php?sel=show&ID=2380&lang=arm
[95] http://www.nature-ic.am/Content/posts/3701/LocalSelf-GovernanceLaw.pdf
[96] http://www.nature-ic.am/Content/announcements/7247/Law_Amendment_Atmospheric_Air_Polution_eng.pdf
[97] https://www.ecolex.org/details/legislation/law-on-flora-1999-lex-faoc050260/

[98] http://www.endangeredearth.com/wp-content/uploads/es_laws/Armenia_Law_on_fauna.pdf
[99] http://www.minenergy.am/storage/files/news/news_5752620560951_210301HO148eng.pdf
[100] http://www.nature-ic.am/wp-content/uploads/2013/10/Land-Code.pdf

		parasitic and quarantine pests, and from other negative phenomena, also the implementation of measures on protection and use of natural monuments; preserves and green belts.
On Hydro-Meteorological Activities[101]	2001	Regulates the hydro-meteorological activities of the Republic of Armenia, determines the legal basis for hydro-meteorological activities (including agro-meteorological services) and aims to satisfy the needs of public, government officials, legal and physical entities in acquisition of information on hydro-meteorological phenomena and processes. The Law provides guidance for conducting of hydro-meteorological monitoring, provision of weather forecasts including on temperature and precipitation extremes, dissemination of information among interested parties and general public. Through the amendments introduced in 30.04.2008 the Article 1 on the Law's objectives was enriched with an additional point ensuring the hydro-meteorological security. The context of the Law was changed by describing new areas of concern and introducing new terms such as the: hazardous hydro-meteorological and helio-geophysical events, unfavourable hydro-meteorological events and hydro-meteorological security. Consequently the frame of hydro-meteorological activities was enlarged by the requirement to collect and disseminate the information on hydro-meteorological hazardous events and security.
On Ecological Education of Population[102]	2001	Regulates principles of the state policy, legal, organizational, financial and economic bases in the sphere of continuous ecological education of the population. It aimed at strengthening of ecological culture of the population, their correct and reasonable orientation in the sphere of nature protection and nature management, revealing of skills and formation of norms of behaviour directed on reasonable nature management and maintenance of the natural environment safe for people's health, orientation of ecological education in decision-making process on the matters of protection of the natural environment.
Water Code[103]	2002	Aimed at conservation of the national water reserve, the satisfaction of water needs of citizens and economy through effective management of useable water resources, securing ecological sustainability of the environment, as well as the provision of a legal basis to achieve the Code's objectives. Chapters 13 and 14 of the Code respectively on "Prevention and Eradication of Waters Harmful Impact" and "Water Systems Use and Maintenance in Emergency Situations" refer to prevention and mitigation of water caused hazards indicating particularly floods, mudflows and landslides, informing population on possible hazardous events, undertaking measures on water scarcity and droughts, ensuring water security in emergencies.
On Energy Saving and Renewable Energy[104]	2004	Defines the principles of the State policy on development of the energy saving and renewable energy and the mechanisms of the enforcement of those aimed apart from ensuring country's energetic security, independence, safety of energy systems also at the reduction of adverse impact of technological hazards on the environment and human health. Defining State priorities in this area the Law indicates as high priority the environmental protection and efficient (economic) usage of natural resources while implementing measures/activities aimed at the development of the energy saving and renewable energy.
Forest Code[105]	2005	Regulates relations connected with sustainable forest management - guarding, protection, rehabilitation, afforestation and rational use of forests and forest lands of the Republic of Armenia as well as with forest stock-taking, monitoring, control and forest lands. Forest Protection measures described as implementation of complex measures aimed at the prevention of forest destruction, drying, loss of useful properties of forests due to harmful organisms (pests and diseases) and the improvement of sanitary condition. Law also defines the Forest Guarding measures as implementation of complex measures against fires, unauthorized occupations, illegal loggings, grazing, pollution, waste dumping and other actions prohibited by legislation, which cause harm to forest biodiversity. The Law sets the responsibilities of forest owners as well as marz, self-governing authorities and the public on following the forest protection norms, taking preventive and response measures in combating forest fires, pests and diseases. Article 17 "Forest monitoring" of the Code provides the purpose of the monitoring stating that it shall be implemented for the assessment of the processes of quantitative and qualitative changes in the forests and forest lands, assessment and prediction of the negative impact of anthropogenic and natural factors, and for initiating measures for prevention or liquidation of negative phenomena. The data obtained in the result of the state monitoring of forests shall be used for sustainable forest management purposes. The Law does not possess any provision on risk identification and early warning.
On Specially Protected Areas of	2006	Provides legal basis for the natural development, recovery, conservation, reproduction and use of ecosystems in specially protected areas of nature. The Law sets the principles for SPAN management planning including protection, also for elaboration and implementation of SPAN specific regime. It does

[101] http://www.parliament.am/legislation.php?sel=show&ID=3250&lang=arm
[102] https://www.ecolex.org/details/legislation/law-on-ecological-education-of-the-population-2001-lex-faoc050264/
[103] http://www.parliament.am/law_docs/290602HO373eng.pdf?lang=eng

[104] http://policy.thinkbluedata.com/sites/default/files/Law%20of%20the%20Republic%20of%20Armenia%20on%20Energy%20Saving%20and%20Renewable%20Energy.doc
[105] http://www.nature-ic.am/wp-content/uploads/2013/10/Forest-Code-of-RA.pdf

Nature (SPAN)[106]		not provide any instruction on risk reduction or emergency action taking into consideration the peculiarities of SPAN regimes. Describing the principles of SPAN use the Law allows agricultural activities to produce ecologically clean products, prescribing authorized bodies to ensure the monitoring of such activities in terms of SPAN regime maintenance and protection.
On Hunting and Management of Hunting Areas[107]	2007	Sets rules for hunting and management of hunting areas including the list of species and seasons allowed for hunting. By the addition to Law introduced in 04.02.2010 the hunting with use of vegetation burning or smoke is prohibited and limitations set for hunting in specially protected areas of nature and agricultural lands.

Georgia.

Title of the strategy, plan or law	Year enforced	Alignment of Project
National Strategies		
National Strategy on Disaster Risk Reduction 2017-2020 and Action Plan	2017	The document is a national strategy on establishment of unified system for disaster risk reduction, preparedness for disasters on national and local levels and improvement of response capacities, and increased response effectiveness on possible threats. The document aims at development of a unified, flexible and effective system, which will ensure reduction of risks (among others forest and wildfires) caused by natural and anthropogenic factors, through joint efforts of all related institutions. The Project Outcomes 1-3 are aligned with and support the National Strategy on Disaster Risk Reduction 2017-2020 and Action Plan through Strengthening regulatory and institutional capacity, effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information, as well as Increased community and ecosystem resilience.
National Forest Concept of Georgia	2013	The National Forest Concept for Georgia defines the relationship of the State with forests, taking into account the main ecosystem services provided by forests and their values. The Concept applies to all forests of Georgia irrespective of their ownership and form of management. The concept serves as a basis for the development and improvement of the forestry sector related legislation, institutional set-up and other policy documents The concept states, that climate change will affect Georgia's forests severely. Doing nothing, or reacting to events as they occur, would put large areas of forest at risk of catastrophic degradation. This will lead to a large reduction in the quantity and quality of the goods and services of the forests on which many people in the country depend. The Project Outcomes 1-3 are fully aligned with the National Forest Concept of Georgia.
The second National Biodiversity Strategy and Action Plan of Georgia 2014-2020 (NBSAP)	2014	NBSAP-2 (2014-2020) includes an overview of Georgia's biodiversity followed by the vision and the overall national targets for safeguarding Georgia's biodiversity. Following the thematic chapters describing Georgia's biodiversity, the strategy and actions are outlined for Georgia NBSAP recognizes forest fires as significant threat to forest ecosystems and protected areas. It is underlined that even though some efforts has been made to strengthen national fire management capacities, existing early warning and fire management systems are not effective. The document outlines urgent need in measures to protect forest from fires in order to achieve more sustainable forest management. The Project Outcomes are fully aligned with the second National Biodiversity Strategy and Action Plan of Georgia 2014-2020.
The Socio-Economic Development Strategy for Georgia - "Georgia 2014-2020	2014	The strategy helps Government of Georgia's in creating foundations for long-term inclusive economic growth and improving the welfare of the population. The goal of the Strategy is to identify the main factors hindering inclusive economic growth in Georgia and define relevant priority tasks for their neutralization. The Strategy defines priorities for relevant ministries, which will be included in action plans and other relevant documents together with relevant costs, responsible bodies and monitoring mechanisms. The strategy aligns with the proposed project as follows: The protection of forests and the introduction rational practices for their exploitation will significantly improve the population's socio-economic standing, particularly as the development of agriculture,

[106] http://www.parliament.am/legislation.php?sel=show&ID=2781&lang=arm
[107] http://www.parliament.am/legislation.php?sel=show&ID=3770&lang=arm

		hydro-electric power generation, tourism and other sectors of the economy is directly linked to the health of the country's forest ecosystems. The introduction of modern models of forest management and innovative technologies will reduce the negative consequences of forest degradation and will increase economic benefits through the improvement of forest ecosystem services; It will be necessary to attract environmental investments from international funds of UN Framework Convention on Climate Change (Green Climate Fund, Global Environment Protection Fund, etc.) in order to meet the requirements of the Convention; this will facilitate the process of introducing energy-saving, environmentally friendly modern technologies in Georgia; and, The environmental impact and negative impact of global warming on the country's economy must also be taken into consideration during the planning of infrastructure development. The Project Outcomes 2 and 3 are fully aligned with the countries Socio-Economic Development strategy - more effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information, and increased community and ecosystem resilience to wildfire risk and broader climate change impacts.
Rural development strategy of Georgia 2017-2020	2017	According to Chapter 10 (Agriculture and Rural Development) of the Association Agreement between Georgia and the EU signed on June 27, 2014, Georgia has an obligation to adopt an agriculture and rural development policy that is compliant with EU policy and European best practices. Chapter 1.5 of the strategy indicates that climate change and its projected adverse effect on ecosystems and the economy is a serious threat for Georgia in the context of sustainable development. Extreme climate events have increased significantly manifesting in floods and landslides, and droughts are becoming more frequent in western Georgia. These have negatively affected agricultural development, which is the main source of income for the rural population. Agro ecosystems are the economic basis for agriculture, and the impact of climate change is likely to have serious implications for the development of agriculture and its productivity. Climate change-related issues should be considered in regional and municipal policy documents with due consideration to the regional and municipal peculiarities. Raising climate change awareness issues among local authorities and the local population, as well as how to mitigate the negative effects of climate change is also important. Long-term vision: Ensuring the constant improvement of the quality of life, and the social conditions of the rural population, based on a combination of increased economic opportunities, more accessible social benefits, a rich cultural life, environmental protection and the sustainable management of natural resources. The Project Outcome 3 is fully aligned with the Rural Development Strategy - increased community and ecosystem resilience to wildfire risk and broader climate change impacts.
Strategy for Agricultural Development in Georgia 2015-2020	2015	The aim of the Strategy for Agricultural Development is creation of an environment that will increase competitiveness in agri-food sector, promote stable growth of high-quality agricultural production, ensure food safety and security, and eliminate rural poverty through sustainable development of agriculture and rural areas. The strategy describes climate change, environment and biodiversity as one of the strategic directions and promoting climate smart agriculture (CSA) practice as one of the measures, namely: It is important to promote Climate Smart Agriculture (CSA) approach that simultaneously addresses three intertwined challenges: ensuring food security through increased productivity and income, adapting to climate change and contributing to mitigation of climate change; Capacity of the MEPA staff and municipal information-consultation centres will be strengthened through training program on climate-smart agriculture approach and technologies; Assessment of the impact of climate change on agriculture and creation of an information database to collect data on negative effects of climatic change and natural disasters; A system for agro climatic monitoring, analysis, results communication and other data dissemination will be put in practice; and, Elaboration of a policy document for prevention and management of fires occurring in nature. Note: based on N5 above, the Emergency Management Plan of the Ministry of Environment Protection and Agriculture is being elaborated currently. The Project Outcomes 2 and 3 are fully aligned with the Strategy of Agricultural Development - more effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information, and Increased community and ecosystem resilience to wildfire risk and broader climate change impacts.
National plans		
The Second National Action	2014	The future vision of the NAP to combat desertification at the national level can be defined as necessity of awareness by stakeholders and public to protect and sustainable use of the land

Programme to Combat Desertification 2014-2022 (NAP)		resources, and to integrate Sustainable Land Management (SLM) technologies in the national wide economic development and to ensure welfare of population. The national objectives for 2020-2022 are as follows: By 2020, at least 40% of decision makers and 30% of the population will be informed about the issues of desertification/ land degradation and drought and their relevance with biodiversity and climate change; By 2020, 50% of community based organizations and scientific institutions will aware the threats of desertification/land degradation/ drought and carry out activities in the frames of their own initiatives; By 2020, the evaluation will be carried out on interaction between the biophysical, social and economic factors; and, By 2020-2022 the activities set by Capacity Building strategy will be realised. The Project Outcomes 2 and 3 are fully aligned with the NAP - enhanced use of climate information, and increased community and ecosystem resilience to wildfire risk and broader climate change impacts.
The Third National Environmental Action Programme for Georgia – NEAP 3 (2018-2021)	2018	The NEAP-3 has been developed in accordance with the provisions of the Law on Environmental Protection, with a particular emphasis on the challenges brought in by the process of EU approximation. The NEAP-3 is influenced by and reflects the views of three major policy trends: The EU - Georgia Association Agreement; UN Sustainable Development Goals and the international treaties Georgia is party to; The National Policies and Strategic framework for Environmental Protection and Management. Chapter 10. Climate Change: One of the main objectives of the Government of Georgia is to improve the country's preparedness and adaptive capacity by developing climate resilient practices that reduce the vulnerability of highly exposed communities. In this regard, the climate-related risks and adaption measures are initiated to integrate in the national key strategy and program papers. Goal: to achieve a reduction of GHG emissions and ensure the security of the population of Georgia through the implementation of mitigation and adaptation measures. Target 1: Creation of prerequisites for greenhouse gas emission reduction. Target 2: Increase the adaptive capacity of the country. Target 3: Implementation of the reporting obligations under the UNFCCC. Chapter 11. Natural Hazard Risk Management: It is necessary to improve the entire risk management cycle along with the development of capacities to respond effectively to emergency situations. Disaster risk reduction gradually evolved as a priority for the government and there has been progress in addressing disaster risk issues at the sectorial level. The reactive approach of disaster response should be moved to a more proactive disaster risk reduction approach. There is a need to develop capacities for reducing existing risks, avoiding new risks, and improving preparedness for efficient responses to disasters. Goal: To avoid the loss of lives and reduce the negative impact on human health and ecosystems, as well as to minimize economic losses. Target 1: Improvement of hazard identification, risk assessment/analysis, prevention and monitoring systems. The Project Outcomes 1-3 are fully aligned with the NEAP 3 - strengthening regulatory and institutional capacity, effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information, as well as Increased community and ecosystem resilience.
National plan on Civil Security	2015	The plan has been approved by Georgian Government based on the requirement of the law on the civil security. The plan is a key manual for management of emergency situations, regulating activities of different administrative units in the field of civil security. The plan defines a) measures to be taken in order to protect population and territories from emergency situations, volume of such actions, responsible units and existing resources; and b) rules for undertaking prevention, preparedness, response and restoration actions. Extinguishing of forest fires is one of the directions of the plan. Plan defines that the leading institution for emergency response actions is the Emergency Service, while all other institutions are supporting institutions. The Project Outcomes are fully aligned with the National plan on civil security.

Intended Nnationally Determined Contribution (INDC) of Georgia	2015	Georgia is fully committed to the UNFCCC negotiation process with a view to adopting a global legally binding agreement at the Paris Conference in December 2015 applicable to all Parties in line with the below 2°C objective. Georgia plans to unconditionally reduce its GHG emissions by 15% below the business as usual scenario (BAU) for the year 2030. This is equal to reduction in emission intensity per unit of GDP by approximately 34% from 2013 to 2030. The 15% reduction target will be increased up to 25% in a conditional manner, subject to a global agreement addressing the importance of technical cooperation, access to low-cost financial resources and technology transfer. This is equal to reduction of emission intensity per unit of GDP by approximately 43% from 2013 to 2030. The 25% reduction below BAU scenario would also ensure that Georgian GHG emissions by 2030 will stay by 40% below the 1990 levels. Georgia will support its mitigation target with comprehensive national climate change policy. The first step will be the finalization of the LEDS. Georgia plans to develop an action plan “climate 2021-2030” (intended to be finalized in 2018) which will define the legal instruments, activities, methods and other relevant issues. Adaptation: The main objective of the Government of Georgia is to improve country’s preparedness and adaptive capacity by developing climate resilient practices that reduce vulnerability of highly exposed communities. In this regard, Georgia takes steps to integrate climate risk and resilience into core development planning and implementation. The implementation of adaptation actions for the period 2021 – 2030 requires the continuous development and strengthening of Georgia’s capacities, in particular: (a) national capacity to develop adaptation strategies; (b) policy makers capacity for climate change adaptation planning; (c) capacity of communities to reduce their vulnerability to adverse impacts of future climate hazards; (d) capacity of national health system institutions, to respond to and manage long-term climate change-sensitive health risks. For the adaptation of agricultural sector to the expected climate change, wide range of measures is planned. Those include, but are not limited to the following: (a) research and development of emergency response plans for agriculture dealing with droughts, floods, etc; (b) Introduction of innovative irrigation management and water application techniques; (c) implementation of various site specific anti-erosion measures; (d) establishment of information centers for farmers that provides guidance on adaptive management of agriculture; etc. Climate change adverse impacts pose severe threats to Georgia’s forests. Rising temperatures, changes in precipitation patterns, reduced water availability, increased frequency of forest fires, as well as pests and disease outbreaks have reduced carbon sequestration ability of forests. The Georgian Government prioritizes three options for climate change mitigation activities in forestry sector: (a) establish Sustainable Forest Management (SFM) practices; (b) conduct afforestation/reforestation and assist natural regeneration; and (c) expand the protected area. The Project Outcomes 1-3 are fully aligned with the INDC - strengthening regulatory and institutional capacity, effective data management and decision making around forest wildfire risk reduction and response, and enhanced use of climate information, as well as Increased community and ecosystem resilience.
National Plan for Agriculture Sector Adaptation to Climate Change (AgriNAP)	2017	The document includes comprehensive analysis of agricultural sector vulnerability and adaptation to the Climate Change. Vision 2030: Climate-smart agriculture is practiced in Georgia, ensuring the country’s food security, poverty elimination in the rural areas and sustainability of the agro-ecosystem services through introduction of the highly effective production methods and management of the climate change-associated risks. Mandate: National Adaptation Plan of Georgia’s agriculture sector to Climate Change (AgriNAP) should become the integral part of Agriculture Development Plan and assist the government in implementation of the agriculture strategy, with due regard of the climate change risks. The priorities of the AgriNAP are based on the key strategic directions of the strategy for agriculture development of 2015-2020 (see above). The document includes the chapters on Climate Change impacts and adaptations measures for: wheat production, maize production in Zugdidi, potato production in certain regions, tangerine production in Ajara region, hazelnut production, pastures and hey meadows, livestock farming. The Project Outcomes 2 and 3 are fully aligned with the AgriNAP - enhanced use of climate information, and increased community and ecosystem resilience to wildfire risk and broader climate change impacts.

Regional strategies		
Regional Development Strategies 2014-2021 Mtskheta-Mtianeti RDS is valid for the period 2015-2021	2013	The Regional Development Strategies have been elaborated by the respective regions in close cooperation with the municipalities within the regions. The strategies provide assessment of each region as well as sectoral analysis of the regions along with the SWOT analysis, and set development goals and objectives. There are 9 regions and accordingly, 9 regional development strategies. All of the strategies are approved by Georgian Government. The summary of the alignment of the RDSs with the planned project is as follows: The RDSs define natural disasters as one of the risks for each respective region. One of the issues described in the strategies are absence of effective management systems for addressing natural disasters. In the general and sectoral SWOT analysis of each region, the forest fires, natural disasters and limited capacity for fire prevention and liquidation are described as the threats; The strategies define forest fires ad one of the causes for forest degradation; The strategies provide chapters on management of natural disasters in respective regions; The strategies provide information on existence and capacity of the emergency management services under the regional Governor's office, as well as fire-rescue services in the respective municipalities, along with their technical capacity (the data are from 2014 and haven't been updated); The strategies define the strategic goals related to reduction of natural disasters, as well as elaboration and implementation of climate change mitigation and adaptation measures; Project Outcomes are fully aligned with the Regional Development Strategies in the context of DRM. The regional development strategies identify the existing gaps and needs, where the project support would have immense importance.
Laws		
The Georgian Law on Environmental Protection	1996	The Law on Environmental Protection regulates the relationships of the state institutions and the physical and legal entities in the field of environment protection and nature use. The main objectives of the law are: a) define norms and principles in the field of environmental protection; b) protect the main human rights as set by Georgian Constitution relevant to environmental protection – to provide healthy living environment and use of the natural and cultural environment; c) ensure by State the environmental protection and sustainable use of natural resources, safe environment for human health relevant to the ecological and economic interests of the society and taking into consideration the interests of current and future generation; d) support protection of biological diversity, maintenance the country-specific flora and fauna rare, endemic and endangered species, protection of marine environment and ensure ecological balance; e) maintain and preserve self-sustaining landscapes and ecosystems; f) ensure legal solution of environmental problems globally as well as regionally; g) ensure development of the country in sustainable conditions. The law underlines the impacts of Climate Change and acknowledge the significance of GHG emissions and stress the need to implement mitigation measures. The law also defines that the state institutions, as well as legal entities and physical persons have the responsibility towards the environmental challenges. The project will have a permit management system to ensure that all activities have the required permits in place as may be required by Law
Georgian Law on Civil Security	2014	The law aims to protect the population and land from natural and man-made emergency situations and is a major law for disaster management in Georgia. The law defines complex of the protection and security measures, which includes prevention of the emergency situation and reduction of its results, and therefore, reduced risks of disasters. The law defines the primary emergency actions and the competences of different institutions in the context of prevention, assessment and mitigation of emergency situations. Further, the law provides information on categories of the emergency situations – local and national emergency situations as well as the provisions on the unified management system.
Georgian law on the rule of planning and coordination of the national security policy	2015	The law was elaborated for the purposes of legal regulation of national security field. Paragraph 20 of the law defined all the issues related to management of critical situations in the fields of the national security and national interests. According to the law, critical situation exists when a situation threatens the national interests of Georgia and when the political decision from the Prime-Minister is necessary. Further, the law defines the responsibilities on elaboration of the national conceptual documents related to critical situations, and as one of the strategic direction defines planning necessary actions for avoiding threats, risks and severity of the critical situations.

		The law affects the project as it aims at identification, assessment, avoiding and suppression of the existing threats, risks and challenges, as well as coordination of the process and definition of responsibilities of different institutions.
Law on agricultural lands Georgia's Law on Soil Protection	2019 1994	The law regulates the ownership rights over the agricultural lands. The law provides definition of the agricultural land – pasture, mowing area, arable land or homestead land, used for agricultural purposes. Such land can include the constructions on it. The law defines that the land can be owned by the state, autonomous republic, municipality, physical persons (citizens of Georgia, as well as foreigners), and legal entities (public, private). The law sets the objectives for soil protection: a) To ensure the soil integrity, fertility growth and maintenance; b) Determine the land users, land owners and state responsibility in order to create the conditions for soil conservation and environmentally friendly production; c) Prevent the negative consequences of the use of soil fertility growth products, which endanger the soil itself, human health, flora and fauna; d) Ensure the protection of subalpine and alpine meadows by preservation of endemic vegetation and soil in the highlands; e) Facilitate the coordination of activities in the field of reclamation in order to obtain high and stable yields on ameliorated lands. The law is aligned with the project as it defines obligations and responsibilities of land users and the State regarding provision of soil protection conditions and ecologically safe activities. The law restricts activities that could affect soil resources or quality.
Law of water of Georgia	1997	The law recognizes the importance of water for living of population, flora, fauna, as well as for economic development of the country. The law regulates the relations between state and non-state actors in the context of water protection, as well as the issues related to water protection, use and restoration. The law is aligned with the project as it sets the rule for the use of water from special state objects for ensuring state border protection, fire response needs, for avoiding natural disasters and for implementation of liquidation actions.
Waste management code of Georgia	2014	The code creates legal basis related to waste management in the country. It serves to enabling implementation of action that supports waste prevention and recycling, as well as processing of waste in a way that is safe for the environment. The objectives of the code are protection of the environment and human health. The law lists principles of the waste management, among others are not to cause risks for water, air, soil, flora and fauna, and to avoid negative impact to the country, including protected areas and cultural heritage sites. The code provides special provisions on hazardous wastes and their management. The law affects the project in the context of waste generation and management during implementation of specific activities.
Law on Atmospheric Air Protection of Georgia	1999	The law regulates protection of the air from negative anthropogenic impact. Article 53 of the law (Article 53. Climate Protection form Global Changes) states that, for protect climate from Global Changes, it is obligated to keep norms on greenhouse gas emissions and to carry out the activities for their reduction. The liabilities towards the United Nations Framework Convention on Climate Change on elaboration and implementation of the National Climate Change Program and Action Plan is coordinated by the MEPA, and climate change monitoring, analysis, forecasting and scientific-research activities is implementing by the National Environmental Agency (NEA) within the MEPA. The project is aligned with the law, as in case of emissions there is a need for development of a project on emission including the sources of the emission. The MEPA is responsible for revision and approval of the project.
Organic law Local Self-Governance Code of Georgia	2014	The code does not provide specific provision related to involvement of the local self-governments – municipalities in prevention and/or firefighting activities. The project is aligned with the Code in a way that the code states that for liquidation of the results caused by natural or other types of disasters, wars, epidemics and other emergency situations, as well as for other related actions the municipality shall allocate special transfer. Special transfer means financial support provided by and distributed among state budget, the budget of the autonomous republic and local self-governmental budgets.

		The municipality shall allocate transfer only if it serves the goals of the municipality's own responsibilities, prescribed in Georgian legislation.
Forest Code	1999	The code regulates the legal relationships related to protection, restoration and use of forest and forest resources. The Code defines the following main goals: protection of human rights and law enforcement; forest tender and restoration; environment conservation and protection; defining the rights and obligations of forest users; meeting the demand of the population on forest resources but within existing resources; as well as defining the main principles of forest management in Georgia. The projects aligns with the Code as it sets the framework for the disaster response in the forests. Note: The draft Forest Code has been adopted with the I reading of the Parliament.
The Rule on forest Tending and Reforestation	2010	The project is aligned with the Rule, as: - The rule provides information on fire related terminology, such as types of fires, mineralized zones etc. - The rule identifies measures for forest tending, which among others include fire prevention activities. - The rule sets the general rules related to forest fires and prevention actions. - The rule defines measures for eradication of fire and its results, namely that the forest management authority supports the key firefighting institutions in the firefighting activities.
The Law on Licences and Permits	2005	The law regulates activities that may result in increased hazard to human life or health. The law defines a list of activities that require licences and permits, and sets out the rules for issuing, amending and abolishing licences and permits. The objective and main principles in the regulation of activities or operations via licences or permits are as follows: Security and protection of human health. Security and protection of the living and cultural environment for people. Protection of state and public interests. The project is aligned with the law in a way that the planned sub-projects may fall in the list of the activities of the law that require license or permit.
The Law on Wildlife	1996	The law regulates legal relations related to protection of the wildlife and protection and restoration of their habitats, maintenance of species diversity and genetic resources, as well as the use of wildlife objects. The law mandates the MEPA to protect wildlife through the issuance of hunting permits and licenses, the declaration of hunting areas, the control of poaching etc. The law affects the projects in case the activities are planned to be organized in the area with the rich biodiversity, or a habitat of important species (national or international importance).
The Law on Red List and Red Book	2003	The law establishes the legal basis for protecting rare and endangered species, including the development of a Red List and Red Data Book of Georgia (RDBG). This law is related to Georgia's commitment to the Convention on International Trade of the Endangered Species of Wild Fauna and Flora, dated 3 March 1973. The Red List of Georgia was approved by the Presidential Decree on "Approving the Red List of Georgia", No 303, dated 2 May 2006. The law affects the projects in case the activities are planned to be organized in the area with the rich biodiversity, or a habitat of important species (national or international importance).

Annex 9. Environmental and Social Management Framework

INCREASED CLIMATE RESILIENCE OF SOUTH CAUCASUS MOUNTAIN COMMUNITIES AND ECOSYSTEMS THROUGH WILDFIRE RISK REDUCTION

Submitted in a separate file

Annex 10. Record of Stakeholder Consultations for Development of Project Proposal to Adaptation Fund

The preparation of the AF proposal "**Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction**" was carried out in consultation with stakeholders, drawing on the expertise of International and National experts, National government

stakeholders, as well as a variety of other actors including state-level unions, private sector representative and community members in targeted project areas.

Two missions of the international consultant on climate change project development, Matthew Savage, took place to both Armenia and Georgia with the participation of UNDP Regional Technical Advisor, and UNDP Environment Portfolio staff, to meet with key stakeholders. A record of the stakeholder consultations, with dates and participants is provided below. During these missions there were intensive consultations with variety of stakeholders to get insights for project activities and outputs. During the second mission visits were made to two regions in each country to meet with local stakeholders in four separate areas. Stakeholders included Forest Enterprises, Protected Area Agencies, local EMS services, local government officials and community representatives.

Finally, in order to validate the technical aspects of the project design, further local regional experts undertook consultations with national and local level stakeholders in both Armenia and Georgia to:

- Carry out field investigations to generate new data in support of the project;
- Identify and meet with project stakeholders to acquire site specific data;
- Acquire existing current and historical data from institutions;
- Identify gaps from local stakeholders in the information required to deliver the project.

Table 12: Institutions and groups consulted during project preparation

Armenia	Georgia
• Aparan community • Aparan Forest Enterprise • Aragatsotn rescue service • Armenia Hydromet • Armenian Rescue Service • Armenia Climate Change Center • Dilijan National Park Administration • FAO Armenia Representative Office • GIZ Armenia Representative Office • Gugark Forest Enterprise • Kotayk Emergency Services • Lori rescue service • Ministry of Emergency Situation s • Ministry of Nature Protection • Razdan Forest Enterprise • State Forest Committee • State Forest Monitoring Center • Tavush rescue Service • UNDP programme teams • Municipality of Vayq (Vayots Dzor Region) • Vayots Dzor Forest Enterprise • WWF Armenia • Vanadzor Municiplaity • Agrarian State University (Vanadzor branch)	• Agency of Protected Areas (APA) • Akhmeta municipality and local forestry service • Caucasus Nature Fund (CNF) • CENN (NGO) • Centre for Biodiversity Research & Conservation – NACRES (NGO) • Emergency Management Service of Georgia • Environmental Information and Education Center (EIEC) • Geo Outlook (NGO) • GIZ Georgia representative office • Global Forest Watch • Green Alternative (NGO) • Ministry of Internal Affairs, 112 emergency service • Ministry of Environment Protection and Agriculture (MEPA) • National Forestry Agency • PPRD East project team • Regional Environmental Center (REC) • Tianeti municipality and local forestry service • IUCN • UNDP programme teams • World Bank • WWF

In addition, two multi-stakeholder workshops were held in Tbilisi and Yerevan for policy makers, NGOs and academics with more than 30 attendees in total.

The following sets out attendees at the Tbilisi event held on February 26-2019.

N	Person/Position	Organization
1	Giorgi Ghibradze, Director	Emergency Management Service, Rescue and firefighting agency
2	Darejan Kapanadze, Senior Environmental Specialist	World Bank
3	Giorgi Kolbin, Senior Advisor on Forestry	GIZ

4	Nino Tandilashvili, Deputy Minister	Ministry of Environment Protection and Agriculture
5	Iuri Nozadze, Deputy Minister	Ministry of Environment Protection and Agriculture
6	Khatia Tsilosani, Deputy Minister	Ministry of Environment Protection and Agriculture
7	Nino Tkhilava, Head of International Relations and Environmental Policy Department	Ministry of Environment Protection and Agriculture
8	Karlo Amirgulashvili, Head of Biodiversity and forest policy department	Ministry of Environment Protection and Agriculture
9	Kakha Mdivani, Head of Climate Change Division	Ministry of Environment Protection and Agriculture
10	Maia Tskhvaradze, Chief Specialist at Climate Change Division	Ministry of Environment Protection and Agriculture
11	Natia Iordanishvili, Deputy Head	National Forestry Agency (NFA)
12	Nata Sultanishvili, Head of Planning and Development Division	Agency of Protected Areas (APA)
13	Tamar Aladashvili, Director	Environmental Information and Education Center (EIEC)
14	Natia Pirashvili, Head of analysis and project management office	Ministry of internal affairs, 112 emergency service
15	Khatuna Gogaladze, Program Director	GEO Outlook
16	Nino Malashkhia, Environmental Specialist	GEO Outlook
17	Kakha Mamuladze, contact person in Georgia	PPRD EU funded project
18	Kakhaber Artsivadze	NACRES
19	Sophiko Akhobadze	Regional Environmental Center (REC)
20	Katerina Nakashidze	Global Forest Watch
21	Akaki Chalatashvili	WWF CauPo
22	Irakli Macharashvili	Green Alternative
23	Vakhtang Chitishvili	CENN
24	Rezo Getiashvili	CENN
25	Ekaterine Kakabadze	GFA Georgia
26	Tea Barbakadze	CNF

The following sets out attendees at the second stakeholder consultation workshop held July 24th 2019 in Yerevan

Hovhannes Yemishyan	Deputy Head of Armenian Rescue Service of the Ministry of Emergency Situations
Vardan Meliqyan	Deputy Minister of Environment (MoE)
Samvel Sahakyan	Acting Head of the State Forest Committee, MoE
Areg Karapetyan	Director of “Hayantar” State Non-commercial Organization (SNCO)
Eva Danielyan	Chief Specialist, “Forest Monitoring center center” SNCO
Valentina Grigoryan	Head of Unit, State Hydrometeorological Service,
Ruben Petrosyan	Adviser to “Hayantar” State Non-commercial Organization
Aghasi Mnatsyan	Expert, Integrated Biodiversity Management in South Caucasus Project, GIZ
Artur Alaverdyan	Project Officer, WWF Armenia
Andranik Ghulijanyan	Adviser, «Zikatar Environmental Center» SNCO

Ruben Vardanyan	Expert of environmental safeguard
Ashot Sargsyan	Senior Consultant on DRM
Gayane Nasoyan	Assistant Representative in Armenia, FAO
Armen Martirosyan	Head of Sustainable Growth and Resilience Portfolio, UNDP in Armenia
Georgi Arzumanyan	Programme Policy Adviser on Environmental Governance, UNDP in Armenia
Tatevik Koloyan	Programme Officer, Sustainable Growth and Resilience Portfolio
Armen Chilingaryan	DRR Programme Coordinator, UNDP in Armenia
Gohar Hovhannisyan	Project Team Leader, Support to National Adaptation Planning
Diana Harutyunyan	Climate Change Programme Coordinator, UNDP in Armenia
Hovhannes Ghazaryan	GEF Small Grant Programme Coordinator in Armenia

Three large scale community level consultation events were also held at potential project sites as set out below:

Table 13: Examples of community consultations conducted during the project development and validation:

Date	**Community**	**Number of people attended**
15th April 2019	Aparan (Armenia) – EMS, local administration, forest agency, community members	20
17th April 2019	Vanadzor (Armenia) - Farmers, foresters, community heads, EMS, local administration	40
17th July 2019	Yeghegnadzor (Vayots Dzor region, Armenia) – local administration, forest agency, NGO, community members	18

Inclusion of vulnerable and marginalised groups

Community level consultations were aimed at a board range of community representation, including not only local authorities, but also vulnerable farmers, foresters and village/community representatives. The community consultations included a number of community representatives (farmers, community leaders) as well as a number of women representatives (approximately 20% of those represented, despite forestry being a primarily male dominated industry in Georgia and Armenia. Farmers and community level representatives were asked to detail their existing concerns and vulnerabilities in relation to forestry degradation and wildfire.

Key messages from community level consultation:

The following were the key messages from the consultation in local communities, which were well aligned across the two countries:

Climate risk

- All communities confirmed changes in the climate, with hotter summers and lower and shorter levels of snow cover, resulting in fires earlier in the spring, and greater risk in the autumn. There was anecdotal evidence of increasing size and frequency of wildfires as a result;

Causes of fire

- Most forest wildfires were assumed to be caused by human intervention, normally a combination of burning of fields and agricultural residue, with irresponsible forest users (tourists, hunters) a lesser risk. Natural causes were relatively rare;

Fire risk reduction

- There was strong recognition of challenges in changing behavior among farmers and forest users in terms of fire risk due to entrenched cultural beliefs and practices;
- There is little enforcement of existing legislation and limited ranger resources to police the forested areas in a comprehensive way;
- Resources to maintain forests from a fire risk perspective were limited, and budgets were insufficient to mineralize roads and fire breaks, and maintain water infrastructure in the forest areas;
- There is a lack of zoning and authorized areas for fire use (e.g. barbeque) in forested areas, and signage is old and incomplete;
- Firewood removal processes exist (including distribution for socially deprived households), however these are often poorly managed, and combustible material accumulates in forests
- Many forest areas are suffering from pests and diseases, causing some trees to die and the wood to dry and become more combustible;
- Communities have little commercial incentive to manage the forest sustainably, although there is increasing tourism, and increasing interest in commercialization of forest products;

Fire identification

- There are no technological or systematic structures for identifying fires as they break out, and emergency services are reliant on forest ranges and public;
- Communities considered that they were well placed to identify fires when they started, and the processes for informing emergency services and forest department were well established;

Fire response

- Communities recognized the challenges to reaching fires in steep mountain areas, particularly where access roads were not available, and where extreme off-road vehicles were not in use;
- Natural fires tend to be in more remote areas, while man made fires are usually easier to access and closer to roads;
- Water access in mountain areas is an issue, and networks of water stations and reservoirs are underdeveloped and poorly maintained;
- Communities were ready to provide support to emergency services and forest department to suppress larger scale fires, and often provided informal support where this was required;
- Informal community groups do operate, but without formal agreement or training, and EMS take the lead, supported by forest agencies;
- Better fire access roads are important, but these create risks of illegal logging and require good barriers, control and oversight;
- Forest agencies and emergency services suffer from low wages and morale, which in turn can create retention problems and high turnover;
- Centralised plans exist for institutional cooperation between EMS and forest agencies, but these aren't always effective at the local level, where response is often more ad-hoc;
- There are only limited opportunities for proper fire drills and training at a multi-agency level with most preparation being limited to small scale practice

Inclusion of community findings in project

The discussions with the communities were incorporated into the project design in the following ways in Component 3:

- Providing opportunities for greater community engagement through the formation of voluntary response brigades and providing training and drill exercise opportunities (Output 1.3)

- A commitment to detailed community level vulnerability assessment and participatory planning in Output 3.1 to support the identification of fire risk reduction (3.2) and community engagement activities (3.3)
- Improving technical fire identification and response capabilities in line with community identification of key challenges in Output 3.2, including a focus on improving access (e.g. forest roads), water availability (e.g. forest reservoirs)
- A focus on fire risk reduction in Output 3.3 in line with community identification of challenges and opportunities, including addressing anthropogenic risk (e.g. trainings for farmers, signage for forest users, improving community involvement and engagement by providing incentives for better forest management

Photos of consultations

Meeting in Vanadzor Agrarian University (Lori region) – 17th of April,2019

Stakeholder Consultation Workshop in Yerevan -16th of April

Meeting in Aparan (Aragatsotn region) -15th of April

Meetin in Razdan (Kotayk) – 15th of April

Meeting in Yeghegnadzor (Vayots Dzor region)

Meeting in Akhmeta municipality, Georgia, 20th April, 2019

Stakeholders in local community meetings in Armenia and Georgia

#	Name / Family Name	Organization/Position
List of stakeholders in Kotayk region, Armenia (Meeting in Razdan City)		
1.	Stepan Margaryan	Director, “Razdan Forest Enterprise” SNCO[108]
2.	Khachik Melkonyan	Forest Engineer, “Razdan Forest Enterprise” SNCO
3.	Khachatur Khachatryan	Forester, “Razdan Forest Enterprise” SNCO
4.	Aram Muradyan	Forester, “Razdan Forest Enterprise” SNCO
3.	Rafael Grioryan	Head, Qaxsi Community Administration
4.	Armen Amirjanyan	Head of Kotayk Regional Rescue Department, Ministry of Emergency Situation
5.	Narek Harutyunyan	Deputy Head, Meghradzor Community Administration
6.	Ruben Petrosyan	Adviser to the State Forest Committee, Ministry of Environment
7.	Vardan Melikyan	Task Leader, UNDP Wildfire Management Project
8.	Ashot Sargsyan	DRM National Expert
List of stakeholders in Aragatsotn region, Armenia (Meeting in Aparan City)		
1.	Vram Abrahamyan	Director, “Aragatsotn Forest Enterprise” SNCO
2.	Hrachik Araqelyan	Forester, “Aragatsotn Forest Enterprise” SNCO
3.	Vardges Sargsyan	Forester, “Aragatsotn Forest Enterprise” SNCO
4.	Hrayr Ghukasyan	Forester, “Aragatsotn Forest Enterprise” SNCO
5.	Gnel Adamyan	Ranger, Aragats Branch of “Aragatsotn Forest Enterprise” SNCO
6.	Andranik Ghazaryan	Chief Forester, “Aragatsotn Forest Enterprise” SNCO
7.	Hrayr Darbinyan	Head of Aragatsotn Regional Rescue Department, Ministry of Emergency Situation
8.	Gagik Simonyan	Chief Specialist, Aparan Municipality
9.	Hayk Arshakyan	Commander, Aparan Fire-fighting Rescue Group
10.	Robert Galstyan	Aparan Municipality
11.	Karen Harutyunyan	Head, Kayq Administrative District
12.	Vigen Harutyunyan	Chief Inspector, Emergency Management Center, Aragatsotn Regional Rescue Department
13.	Vardan Melikyan	Task Leader, UNDP Wildfire Management Project
14.	Ashot Sargsyan	DRM National Expert
List of Stakeholders in Lori region, Armenia (Meeting in Vanadzor City)		
1.	Samvel Mkhitaryan	Forester, Eghegnut Branch of “Gugark Forest Enterprise” SNCO
2.	Levon Mkhitaryan	Forester, “Gugark Forest Enterprise” SNCO
3.	Rafik Aghababyan	Gugark Forest Enterprise” SNCO
4.	Tigran Antonyan	Gugark Forest Enterprise” SNCO
5.	Kare Sargsyan	Leading Specialist, Shahumyan Community Administration
6.	Arayik Gevorgyan	Head, Antaramut Community Administration
7.	Taron Serobyan	Lernapat Community Representative
8.	Serj Ghambaryan	Ranger, Eghegnut Branch of “Gugark Forest Enterprise” SNCO
9.	Gagik Ghazakhecyan	Ranger, Eghegnut Branch of “Gugark Forest Enterprise” SNCO
10.	Gagik Andreasyan	Forester, Vanadzor Branch of “Gugark Forest Enterprise” SNCO
11.	Gagik Mkhitaryan	Forester, Spitak Branch of “Gugark Forest Enterprise” SNCO
12.	Vahe Dokhoyan	Ranger, Eghegnut Branch of “Gugark Forest Enterprise” SNCO
13.	Apres Voskanyan	Lernarot Community Administration
14.	Suren Kostanyan	Vahagni Community Administration
15.	Ashot Ghazaryan	Debed Community Administration
16.	Sayad Mnatsakanyan	Arjut Community Administration
17.	Artak Simonyan	Gugark Fire -fighting Group
18.	Suren Gharabekyan	Ranger, “Gugark Forest Enterprise” SNCO
19.	Artashes Mkhitaryan	Ranger, “Gugark Forest Enterprise” SNCO
20	Armen Danamashyan	Deputy Head, Lori Regional Rescue Department, Ministry of Emergency Situation
21.	Ruben Petrosyan	Adviser to the State Forest Committee, Ministry of Environment
22.	Ruben Vardanyan	Independent Consultant on Environmental and Social Safeguards
List of Stakeholders in Kakheti region, Georgia (Meeting in Akhmeta)		
1.	Gela Jugashvili	Head of town Akhmeta territorial unit
2.	Shorena Kipshidze	Akhmeta municipality supervision unit
3.	Temur Ivanishvili	Emergency Service, Akhmeta municipality
4.	Ilia Datunashhvili	Akhmeta forestry unit
5.	Giorgi Bakuridze	Tusheti Protected Areas Administration
6.	Irakli Aptarauli	Tusheti Protected Landscape Administration
7.	Koba Shabalaidze	Tusheti Protected Landscape Administration

[108] SNCO – State Non-commercial Organization

The Second Stakeholder Consultation Meeting

AF project proposal "Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction (Armenia, Georgia)"

Yerevan, UN Conference Hall, 24-July 2019, 14:00-17:30

AGENDA

14:00 - 14.10	Opening Remarks: Project objective and preparatory process	Armen Martirosyan, UNDP Sustainable Growth and Resilience (SGR) Portfolio Coordinator
14:10 – 14:25	Project background	Georgi Arzumanyan, Programme Policy Adviser, UNDP SGR portfolio
14:25 – 15:00	Project scope, main outcomes and overview of activities	Georgi Arzumanyan, Programme Policy Adviser, UNDP SGR portfolio
15:00 – 15:20	**Coffee Break**	
15:20 - 15:50	Questions and Answers Session	Moderator Armen Martirosyan
15:50 – 17:15	Discussion of the proposal: main comments, recommendations/suggestions	Moderator Armen Martirosyan
17:15 - 17.30	Wrap-up discussion: summary of the meeting and future steps	Georgi Arzumanyan, Programme Policy Adviser, UNDP SGR portfolio

Meeting notes:

20 representatives from relevant Governmental and development organizations (including Deputy Minister of Environment, Chair of the State Forest Committee, Deputy Head of Armenian Rescue Service, Director of Hayantar, GIZ, etc.) attended the second Stakeholder Consultation Meeting to review final draft document and provide final recommendations.

Participants welcomed designed project scope and strategy, stressed the importance of systemic approach applied in the project (from policy and regulatory measures to local level adaptation and CB), while emphasized one more time the priority of prevention measures in forest enterprises and community level interventions to reduce risk of hazards.

The importance of the third component in terms of establishing/promoting alternatives and incentive mechanisms for local communities was stressed. The necessity of setup enabling legal and operational environment for introduction in Armenia of "community-based volunteer groups" was mentioned almost by all stakeholders.

There is one conceptual recommendation to be considered, namely piloting/testing a kind of "cluster approach/model" for firefighting. It means establishment of specific fully equipped and trained units (people from community, forest agencies, rescue service, etc.) for early response. It is envisaged to consider area's accessibility and mobility factors in setting up units (with geographical peculiarities in mind). All the machinery, equipment, other tools, etc. will be concentrated in Cluster area and will react/response to the fire upon first call in the most efficient and quick mode.

Annex 11. Gender Assessment and Action Plan

Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction

I. Introduction

This gender assessment aims to provide an overview of the gender situation in Armenia and Georgia, with a specific focus on the resilience of mountain communities and forest ecosystems to climate-induced hazards, and in particular to the increasing risk of forest wildfire in mountainous regions of the Southern Caucasus; to identify gender issues that are relevant to the project, and to examine potential gender mainstreaming opportunities. The assessment was based upon available data from studies conducted by the Governments of Armenia and Georgia, Statistical Committee of the Republic of Armenia, National Statistics Office of Georgia, donor agencies, NGOs, development banks[109].

The principle of equality between women and men is widely reflected throughout the legislation of both countries Republic of Armenia and Georgia. While the legal framework for gender equality and women's rights is relatively strong, its practical implementation — given the prevalence/maintenance of traditional patriarchal stereotypes — needs strengthening.

Thus, the situation in the field of gender equality and protection of women's rights in Armenia and Georgia is controversial. On the one hand, women and men have equal rights, women are recognized as important actors of socio-economic development. On the other hand, women face many obstacles in terms of economic opportunities and active participation in political and public life, especially at the decision-making level.

According to the discourse prevailing in Georgia, doing housework is considered a woman's duty. Being chained to a domestic field makes women more vulnerable to negative impacts caused by climate change and natural disasters[110]

In Armenia women remain significantly underrepresented in public decision-making, while discriminatory gender stereotypes in the family and in society continue to hinder equality (D.Mijatović, 2018) and undermining women's social status and their educational and professional careers (CEDAW/C/ARM/CO/5-6).

In both countries the adoption of important strategic documents on Gender Equality and Climate Change/Disaster risk reduction can be mentioned. At the same time, despite the existing progress in the mentioned fields, a weak link between domains was identified, these being parallel. The lack of information, experience, and resources is considered as a significant barrier for the key actors working on climate change issues to mainstream gender aspect in their ongoing activities. The lack of gender disaggregated data in the field of forest eco-system, biodiversity in relation with climate change represent a significant challenge for countries' development.

II. Gender inequality and social inclusion in Armenia and Georgia

During the last years, Gender equality and women's human rights promotion in Armenia and Georgia has seen progress and challenges. In line with its international commitments, Georgia and Armenia have made significant strides in adopting legislative and policy reforms to foster gender equality and to combat violence against women.

According to Human Development Indices and Indicators[111], Armenia's HDI value for 2017 is 0.755— which put the country in the high human development category—positioning it at 83 out of 189 countries and territories. Between 1990 and 2017, Armenia's HDI value increased from 0.631 to 0.755, an increase of 19.7 percent. Georgia's Human Development Index for 2017 was 0.780, which put the country in the high human

[109] Armenia: World Bank, Armenia Country Gender Assessment, 2016; Women and Men in Armenia, 2017; Report of the Commissioner for human rights of the Council of Europe Dunja Mijatović following her visit to Armenia in September 2018; Committee on the Elimination of Discrimination against Women Concluding observations on the combined fifth and sixth periodic reports of Armenia, 2016. CEDAW/C/ARM/CO/5-6; UNFPA, Men and Gender equality in Armenia (2016).; Republic of Armenia. Review of the Implementation of the Beijing Declaration and Platform for Action Beijing+25 (2019) etc.
Georgia: GEORGIA. National-level Review of the Implementation of the Beijing Declaration and Platform for Action Beijing +25 (2019); GENDER EQUALITY IN GEORGIA: BARRIERS AND RECOMMENDATIONS. Vol.1. USAID, UNDP, 2018; Women and Men in Georgia 2018; UNWomen, Gender assessment of agricultural and local development systems in Georgia (2018); UNWomen, Women's economic inactivity and engagement in the informal sector (2018) etc.

[110] Women's Fund, Situational analysis and recommendations on environmental justice and women's rights in Georgia, 2019

[111] Human Development Indices and Indicators: 2018 Statistical Update. Briefing note for countries on the 2018 Statistical Update. Armenia http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ARM.pdf

development category—positioning it at 70 out of 189 countries and territories[112]. Through the years, several indices have developed to quantify the concept of gender inequality. UNDP uses the Gender Inequality Index (GII) and Gender Development Index (GDI).[113]

The 2017 female HDI value for Armenia is 0.740 in contrast with 0.764 for males, resulting in a GDI value of 0.969, placing it into Group 2. In comparison, GDI values for Georgia is 0.975 respectively. Out of 164 countries, Armenia and Georgia rank based on GDI in 2017 is given below[114]:

	Life expectancy at birth		Expected years of schooling		Mean years of schooling		GNI per capita		HDI values		F-M ratio
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	GDI value
Armenia	77.8	71.4	13.4	12.6	11.7	11.7	6,358	12,281	0.740	0.764	0.969
Georgia	77.6	69.2	15.3	14.8	12.8	12.8	6,177	12,481	0.766	0.786	0.975
Europe& Central Asia	77.0	69.7	13.9	14.2	9.9	10.6	10,413	20,529	0.751	0.785	0.956
High HDI	78.2	74.0	14.3	13.9	8.0	8.6	10,945	18,948	0.740	0.773	0.957

At the same time, Armenia has a GII value of 0.262, ranking it 55 out of 160 countries in the 2017 index. In comparison, Georgia is ranked at 78 respectively on this index.

The Global Gender Gap Index (GGGI) of the World Economic Forum examines the gap between men and women in four categories: economic participation and opportunity, educational attainment, health and survival; and political empowerment.[115] Out of 149 countries, Armenia and Georgia's ranks based on GGGI in 2018 are given below:

	Armenia		**Georgia**	
Description	**Score**	**Rank**	**Score**	**Rank**
Economic participation and opportunity	0.675	73	0.654	85
Educational attainment	1.000	35	0.996	60
Health and survival	0.939	148	0.967	123
Political empowerment	0.099	115	0.093	119
Global Index	0.678	98	0.677	99

* *Imparity = 0.00; Parity = 1.00. Source: The Global Gender Gap Report 2018*

Thus, both countries Armenia and Georgia have better positions at educational attainment. At the same time, the lowest positions are at women's political empowerment and health and survival.

Poverty: In 2016 the rate of economic growth in Armenia increased by only 0.2 percentage points. Such a modest growth is not enough to reduce poverty in the country[116]. With an estimated per-capita GDP of USD 3 830, Armenia is classified as a lower middle income country (World Bank, 2016). Agriculture in Armenia is still the primary driver of growth, along with a modest contribution from industry and services[117].

In 2016 the poverty rate of female-headed households was higher than poverty rate of male-headed households (33.4% versus 28.0%). Female-headed households in 2016 comprised 30% and 27% of the poor population and the total population, respectively. Female-headed households with children up to 6 years have higher risk of poverty (1.4 times higher) compared to the national average. The risk of poverty for such families in urban communities was lower than in rural communities (39.8% and 48.4%, respectively). Over the considered period, female-headed households, similar in all other characteristics, had lower welfare than male-headed ones (6.0% and 3.7%, respectively)[118].

Georgia has been recently upgraded by the WB to an upper middle-income status, ranking 70 on the Human Development Index (UNDP, 2018). However, despite of observed economic growth, a substantial part of the population is still living in poverty. According to the World Bank study (WB, 2016) 32 percent of population is

[112] https://countryeconomy.com/hdi/georgia
[113] United Nations Development Programme. Human Development Report. http://hdr.undp.org/en/content/table-4-gender-inequality-index.
[114] http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ARM.pdf
[115] World Economic Forum. The Global Gender Gap Report 2018. http://www3.weforum.org/docs/WEF_GGGR_
[116] https://www.armstat.am/file/article/poverty_2017_english_2.pdf p.36
[117] http://www.fao.org/3/a-i6737e.pdf
[118] https://www.armstat.am/file/article/poverty_2017_english_2.pdf

estimated to be below the poverty line, i.e. spending 2.5 or less USD a day and only 7 percent of population is considered as being middle class, consuming 10USD or more a day. Households headed by women, big size families and families with children under 15 are particularly vulnerable to poverty. There are also regional disparities in poverty rates. Besides an individual poverty the poverty of community exacerbates the situation.

Poor may not lose more material property in amount, but the loss is significantly more proportionally to their assets. Poorer live in sub-standard houses, that are more prone to the effects of disaster. Poverty, exacerbated by effects of disaster pushes population abroad. Migration affects both countries.

Health: In Armenia, for every 100,000 live births, 25 women die from pregnancy related causes; and the adolescent birth rate is 23.2 births per 1,000 women of ages 15-19. In Georgia, for every 100,000 live births, 36 women die from pregnancy related causes; and the adolescent birth rate is 45.9 births per 1,000 women of ages 15-19 (highest than in Europe- 25.5). Thus, the maternal mortality ratio and the adolescent birth rate in Georgia is higher than in Armenia and Europe&Central Asia.

In 2018, fertility rate for Armenia was 1.6 children per woman. Over the last 4 years, fertility rate of Armenia was declining at a moderating rate to shrink from 1.62 children per woman in 2015 to 1.6 children per woman in 2018.[119] In 2018, fertility rate for Georgia was 1.98 children per woman. Fertility rate of Georgia fell gradually from 2 children per woman in 2015 to 1.98 children per woman in 2018.[120]

In Armenia and in Georgia, the risk of premature death between 30-70 years is twice as high among men as compared to women (2016)[121]. At the same time, women are more affected by obesity, diabetes. Harmful use of alcohol, tobacco use are higher risk factors for men.

Education: According to GII, In Armenia, 96.9 percent of adult women have reached at least a secondary level of education compared to 97.6 percent of their male counterparts. In Georgia, 95.1 percent of adult women have reached at least a secondary level of education compared to 96.0 percent of their male counterparts.

Despite of the progress in education, different studies stress attention on following problems in both countries: persistence of patriarchal stereotypes in the books, didactical materials, segregation by sex of the segregation of specialties and objects, the girls being more oriented towards socio-human sciences, and the boys - the real ones etc.

Political participation: Women empowerment remains a critical development issue in Armenia. Women comprise 52.2% of population in Armenia and 56% of those with higher education. However, their representation in decision-making at all levels remains low: 24.2% in the Parliament, less than 10% in the local governance. There only 1 mayor in 48 urban communities, and only 6 female mayors in rural communities.[122] Despite of existing gender-sensitive quotas, the progress is slow.

In Georgia, comprising 52.3 percent of population, 16.0 percent of parliamentary seats are held by women [123] and 13.4% of local councils (Sakrebulos)[124]. Several attempts of initiative groups outside and inside the Parliament to introduce gender quota in Parliament did not succeed.

While political underrepresentation of women and lack of their economic empowerment compounded by persisting vertical and horizontal segregation in the labor market as well as existing gender imbalance in a number of other spheres are serious problems, which reflect at the same time gender-based discrimination the root causes of which have yet to be eliminated.[125]

Labour force: According to GII (2017), In Armenia female participation in the labour market is 51.4 percent compared to 70.6 for men[126]. In Georgia, female participation in the labour market is 57.9 percent compared to 78.8 for men. In both countries women have a limited access to labour market.

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[119] https://knoema.com/atlas/Armenia/topics/Demographics/Fertility/Fertility-rate
[120] https://knoema.com/atlas/Georgia/topics/Demographics/Fertility/Fertility-rate
[121] https://www.who.int/nmh/countries/arm_en.pdf?ua=1
[122] UNDP Office data, 2018
[123] http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ARM.pdf
[124] [124] http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/ARM.pdf; https://www.undp.org/content/dam/georgia/docs/publications/DG/UNDP_GE_DG_Gender_Equality_in_Georgia_VOL1_ENG.pdf
[125] UNFPA, Men and Gender equality in Armenia. Report on sociological survey findings. Yerevan, 2016, p.15-16
[126] Total of 79.6% of employers and 54.4% of self-employed are men, while the women are the majority among those working with no remuneration as their engagement is twice higher than men's; 47.0% of economically not active women are housewives or 98.5% of

In Georgia, women are not only busier in doing household tasks than men, but on average, women engage in agricultural work with 80 days per year more than men (UN Women, 2016). Context-specific social and cultural barriers and unpaid work prevent women from going beyond subsistence farming to active, income generating involvement in an agricultural business. Many women also work in the informal sector. Farm work undertaken by women includes managing crops and livestock, dairy production, and processing. On top of that, women do multiple household tasks that increase the gap even more. However, this work often goes unrecognized and is undervalued because it is not remunerated.[127] The data clearly suggests that the primary cause of women's economic inactivity is the gendered division of labor within society and that women carry out the majority of unpaid care work [128]

According to the official statistics, in Armenia the unemployment rate for economically active women is 1.6 times higher than for men. Employed women frequently occupy low-paid or low-level positions within the labour market; women usually occupy informal market. Underlying gender causes and implications of the mentioned issues need to be studied in-depth to ensure most gender targeted and evidence-based interventions to maximize its benefit equitably for women and men and avoid gender-negative effects of otherwise gender-blind interventions[129]. In 2016, 47% of women aged between 15-75 had no job and did not look for a job, mainly being engaged in household's unpaid activity.[130]

We can conclude that Armenia and Georgia still have significant differences between employment earnings among women and men, compared to the average across countries in Europe. Occupations are strongly segregated by gender, with a much higher share of men in stereotypically male professions, such as engineering, construction, energy, transport and communications, gas, and water supply. Female workers in Armenia and Georgia tend to dominate professions such as agricultural work, sales, and customer service, which usually pay the lowest salaries. Even in better-paid professions, most employed women do not work full-time because of the demand on their time for home-care and other unpaid household responsibilities. And, even if an Armenian and Georgian woman is more educated than a man, she will more earn less than he does. Many women also work in the informal sector and in unpaid subsistence farm work.

Access to resources: In Armenia, women and men have the same rights to own and access land and manage non-land assets, under the Constitution (art.31) and the Civil Code (art.167). Customary and religious laws are not considered valid sources of law under the constitution, in regard to land rights or any other matter[131]. Women's property rights are not affected by marriage. Spouses have equal property rights, and any property purchased during the marriage is owned jointly. Any property that the wife owns before marriage remains hers alone, as does any property that she is given or inherited once she is married (Civil Code, art.201).

According to official statistics, in 2016 in Armenia the composition of agricultural holdings by gender of the household head was the following: women – 25% and men – 75%[132]. In Georgia very few respondents are involved in cooperatives, and women constitute only 25% of the membership base[133].

There are no legal barriers preventing women from obtaining access to credit, loans are de facto less accessible to women as many do not possess land or property to serve as collateral. In Georgia, women are more often co-owners of property than outright owners, and property is generally registered under men's names. Women more frequently obtain microfinance loans, which do not require substantial collateral. Significantly, microfinance institutions offer comparatively expensive credit.[134]

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those engaged in housekeeping are women, meanwhile; 15.7% of the labour resource of the Republic of Armenia or 31.3% of those employed are engaged in agriculture, among which women constitute 52.9%, which makes them even more significant players in agriculture development, while in the conditions of non-formal employment they are deprived of social guarantees. https://www.unece.org/fileadmin/DAM/Gender/Beijing_20/Armenia.pdf

[127] Georgia. National-level Review of the Implementation of the Beijing Declaration and Platform for Action Beijing +25 (2019)

[128] UNWomen, WOMEN'S ECONOMIC INACTIVITY AND ENGAGEMENT IN THE INFORMAL SECTOR IN GEORGIA, 2018 http://georgia.unwomen.org/en/digital-library/publications/2018/12/womens-economic-inactivity-and-engagement-in-the-informal-sector-in-georgia

[129] Gender Equality Strategy UNDP Armenia Country Office 2016-2020

[130] https://www.armstat.am/ru/?nid=82&id=1976

[131] International Bank for Reconstruction and Development / World Bank (2011), p.56

[132] AGRICULTURAL CENSUS, 2014

[133] The Gender Assessment of Agriculture and Local Development Systems in Georgia (2018). http://www2.unwomen.org/-/media/field%20office%20georgia/attachments/publications/2018/agri%20and%20local%20dev%20georgia.pdf?la=ka&vs=0

[134] https://www.unece.org/fileadmin/DAM/Gender/Beijing_20/Georgia.pdf

Gender-based Violence: Both countries adopted Domestic Violence Law. In the 2006 Law on the Elimination of Domestic Violence, Protection and Assistance of the Victims of Domestic Violence was adopted in Georgia. This law was later substantially amended in 2009.

In December 2017, the Law on prevention of violence within the family, protection of victims of violence within the family and restoration of peace in the family was adopted in Armenia[135]. At the same time, domestic violence remains a prevalent problem for Armenian society. Between 2010-2017, at least 50 women were killed by their partners or ex-partners, often on the grounds of "male jealousy".[136] These crimes were not properly punished, and were justified even on the level of court judgements. The number of known cases of DV is increasing, breaking the silence around these normalized crimes.

The UNWomen Study (2018) findings indicate that women and men in Georgia show a high degree of tolerance and acceptance towards the use of physical violence against women in relationships, and they also share inequitable views on sex and sexual violence. Of those surveyed, almost one quarter of women (22 per cent) and one third of men (31 per cent) believe that wife-beating is justified under certain circumstances. Moreover, almost one quarter of all women (23 per cent) and nearly half of all men (42 per cent) believe that a wife should obey her husband even if she disagrees.[137]

At the same time, despite of existing Domestic Violence Law in both countries, implementation of different programs to prevent and combat DV, states should ensure continuous activities related to prevention, awareness raising, the establishment of a national referral mechanism, development of services addressed to DV victims, the establishment of a system for data collection, making legislation and state policy documents in compliance with the international standards etc.

III. Mechanisms to address gender inequality in Armenia and Georgia - legal and administrative framework

The principle of equality between sexes is enshrined in the Armenian Constitution and is reflected in the national legislation. The Armenian Government has been taking certain steps to harmonize national policies with the gender equality principle and with international requirements in that field. Of great significance for gender policy implementation was adoption of the Law of the Republic of Armenia on ensuring women and men equal rights and equal opportunities (2013)[138]. Currently, Armenia does not have a national gender strategy or action plan. At present, the Armenian Government is in the process of preparation of the Gender Action Plan for subsequent years.

Since 2018-2019 the Government of Armenia has commenced a reinforcement/establishment of a series of mechanisms aimed at ensuring gender equality, such as reorganization of the Council on Equal Rights and Opportunities for Women and Men, reestablishment of the Gender Thematic Group, establishment of the Council on Preventing and Combating Violence against Women and Domestic Violence (2018). All these efforts notwithstanding, findings of a number of studies as well as values of relevant indices regarding the gender situation in Armenia have time and again demonstrated that the advancement and progress of women and the attainment of gender equality are impeded by widespread negative gender stereotypes and that some traditional practices harmful to women (primarily gender-based violence (GBV), son preference and sex selective abortions) are still prevalent in the society[139].

The Constitution of Georgia upholds the principle of equal rights for men and women (art. 14). A Gender Equality Law was passed in 2010. In 2014 Parliament of Georgia adopted Law on Elimination of All Forms of

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[135]At the same time, according to NGOs representatives, the cases of violence in Armenia are growing yearly and the adoption of the law did not serve as a restraining mechanism, contributing to Enduring Stereotypes https://www.evnreport.com/raw-unfiltered/domestic-violence-an-imperfect-law-and-enduring-stereotypes

[136] https://www.opendemocracy.net/en/odr/paradox-of-armenia-s-domestic-violence-law/

[137] At the same time, there has been a significant increase in the percentage of women who have reported to the police an act of violence committed by an intimate partner: 18 % in 2017, compared to 1.5 % in 2009. Also, the percentage of women who believe that DV is a private matter and that no one should interfere has decreased from 78 % in 2009 to 33 % in 2017.

http://georgia.unwomen.org/en/news/stories/2018/03/one-in-seven-women-in-georgia-experiences-domestic-violence-new-national-study-finds

[138] In the last five years, along with the legislative reforms, Programs aimed at strengthening the gender policy were carried out. Specifically, the 2011-2015 Strategic Program on Gender Policy and the 2011-2015 National Program on Fighting against Gender-Based Violence were of utmost significance for the RA Government. The Decree N197-L of the Government (February 28, 2019) adopted the 2019-2021 National Action Plan for the implementation of UN SC Resolution 1325 on Women, Peace and Security.

[139] Men and Gender equality in Armenia. Report on sociological survey findings. UNFPA, Yerevan, 2016, p.14

Discrimination, which includes the prohibition of discrimination based on sex, on sexual orientation and gender identity. The 2018-2020 National Action Plan of Georgia for Implementation of the UN Security Council Resolutions on Women, Peace and Security was approved by N173 Decree of the Government of Georgia on April 10, 2018 and represents third action plan since 2011.

In an effort to meet its international commitments, Georgia has strengthened its national institutional framework to monitor and advance women's equality. Georgia's national machinery for gender equality consists of three key bodies: Gender Equality Council of the Parliament; Inter-Agency Commission on Gender Equality, Violence against Women and Domestic Violence Issues[140]; and Gender Department of the Public Defender's Office.

In the context of current project, the development and exchange of good practices between both countries can contribute to gender mainstreaming in policy but also in strategic actions. Involvement of women in the project activities will contribute to their socio-economic empowerment. Strengthening stakeholders' capacities in mainstreaming gender in documents and actions will lead to efficient policy.

In January 2018 Armenia signed the Council of Europe Convention on Preventing and Combatting Violence against Women and Domestic Violence (Istanbul Convention). In May 2017 Georgia ratified the Council of Europe Convention on Preventing and Combating Violence against Women and Domestic Violence. Based on international commitments under the Istanbul Convention the states have planned measures to prevent and combat violence against women and girls. Georgian experience in the field may be useful for Armenia.

IV. Gender and social inclusion in the context of climate resilience of communities and ecosystems through wildfire risk reduction

According to evidence based data[141], women are more vulnerable to natural hazards than men. Their vulnerability is especially high in women-headed and one-member households. In Georgia and Armenia, women's vulnerability is conditioned by several factors: occupational segregation of women; poverty is more widely spread among women; although women's life expectancy exceeds men's, women have in general more health related problems than men; women are poorly represented at all levels and fields of consultations and decision-making. Social norms and patriarchy continue to place barriers to economic participation by women, causing both a misallocation and underutilization of women's human capital. Human capital comprises of labour power, health and nutrition status, skills and knowledge of an individual. On all these constituent parts, women fare poorer than men.

Environmental issues, climate change and DRR are often considered as a men's field, which in turn challenges engagement of women and limits them to access the field[142]. Thus, women are still at a considerable disadvantage in most spheres of public, political, and economic life, their potential is underappreciated and limited to family responsibility and at times they are not a part of the decision-making processes in Armenia and Georgia. Due to the women underrepresentation between landowners and entrepreneurships, women remain economically dependent on men, which limits their potential and presents a significant risk in the context of Climate Change.

Men are more risk tolerant than women, hence less prone to take self-protective actions. Men often label evacuation calls as panic and do not react. Besides, acting according to stereotypical gender roles men may decide not to evacuate to safeguard property. On the other hand, women are more ready to respond to risk, but lack of social power deters them to mobilize family to respond, they also may be slow to react according to instructions until securing family members.

Response to disasters: Effectiveness of response in a great deal depends on a well-planned emergency behaviour, preparedness and social cohesion of community. Therefore, outlined below features should be reflected in emergency planning. Timely evacuation is a challenging issue for small children, seniors and persons with disabilities, especially with problems of moving and of persons with poor health. People

[140] In light of the creation of the Inter-Agency Commission on Gender Equality, Violence against Women and Domestic Violence in Georgia, the articles detailing the national machinery on gender equality should be revised to reflect any de facto changes in mandate, as well as to amplify the competence of the Gender Equality Council, which should be mandated to review and evaluate gender impact assessments on all proposed legislation
https://www.undp.org/content/dam/georgia/docs/publications/DG/UNDP_GE_DG_Gender_Equality_in_Georgia_VOL1_ENG.pdf

[141] General Recommendation No. 37 on Gender-related dimensions of disaster risk reduction in the context of climate change. CEDAW/C/GC/37

[142] Women's Fund in Georgia, SITUATIONAL ANALYSIS AND RECOMMENDATIONS ON ENVIRONMENTAL JUSTICE AND WOMEN'S RIGHTS IN GEORGIA (2019) https://www.womenfundgeorgia.org/Files/WF-Final-Report_ENG.pdf?fbclid=IwAR1987oShEvUMehpOVKp4NhoNd75_0lliNvupq0ydiFESM3nFcWen7VGwxE

dependent on health services for survival (dialyses, cancer treatment) are faced with life threatening circumstances in disaster.[143]

Finally, based on countries' challenges analysis and international standards[144], the following priorities in the context of project proposal can be mentioned: promotion of a clear understanding and tools to ensure gender equality and promote women's empowerment at local level; mainstream gender into policies related to forest eco-system management and wildfire risk/climate change; importance of women's economic empowerment (with new opportunities in the fields traditionally addressed to men – forest, new technology in agriculture etc.); capacity building on gender issues of national and local governance; contribution to gender disaggregated statistical data; using gender transformative approach to contribute of patriarchal stereotypes' elimination and others.[145]

V. Gender analysis and recommendations

Gender analysis. The analysis above shows that in order to set up effective national and community based early warning systems, climate-informed planning and improved resilience, gender consideration need to be integrated into the project implementation. The existing gender inequality factors (e.g. limited engagement of women in planning and decision making) and traditional distribution of gender roles in families and communities call for tailoring and targeting of the project solutions to outreach beneficiaries of both genders equally. Based on the analysis of the gender aspects of vulnerability to climate-induced natural disasters a number of recommendations for the proposed project have been elaborated. These recommendations and the following Gender Action Plan are aimed at ensuring that the project:

- *narrows gender inequality; avoid any risks of adverse gender impacts;*
- *addresses the needs and constraints of women, girls, men, and boys;*
- *ensure equal opportunity to access resources;*
- *ensure women's participation, promotes their leadership capacities; and*
- *ensure women are included as planners, co–implementers and agents of change.*

The gender analysis undertaken at the onset and design of this project acts as an entry point for gender mainstreaming throughout implementation. In addition, two multi-stakeholder workshops were held in Tbilisi and Yerevan for policy makers, NGOs and academics with more than 30 attendees in total. Two large scale community level consultation events were also held at potential project sites (16-17 April, 2019, Armenia). Results from the consultations are detailed in the Stakeholder engagement section and in Gender Action Plan.

The gender analysis, through stakeholder engagement and consultation enabled:

- Engagement, development and input into the design of the "Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction" Project and the approach moving forward;
- Demonstration of the need for gender-disaggregated data and indicators to establish a baseline in which to measure improvements and identify areas of focus; and
- Establishment of recommendations to incorporate into the Gender Action Plan.

Project design and implementation. Addressing gender dimensions within the project design and implementation, this proposal works to identify and integrate interventions to provide gender responsive and transformative results.

The project design and implementation will take into consideration the following gender implications:

- Specific strategies to include / target female-headed households;
- Differing conservation incentives faced by women;
- Identification of gaps in gender equality through the use of sex-disaggregated data enabling

[143] As important precondition should be mentioned Georgia and Armenia active involvement in "Women, Peace and Security" Agenda, which provides for the promotion of women in decision-making positions, but also in population security activities. Respectively, states can contribute to the resilience of the population through the active involvement of women in activities related to disaster risk reduction, post-disaster management and climate change mitigation and adaptation strategies, so they can be agents of change. For example, women's involvement at decision-making level, rescue teams, self-help groups, etc.

[144] General Recommendation No. 37 on Gender-related dimensions of disaster risk reduction in the context of climate change. CEDAW/C/GC/37

[145] The impact of the all above mentioned vulnerabilities is revealed at all phases of disaster management cycle, i.e. at prevention and protection, response, impact and coping. The purpose of the gender mainstreaming throughout various phases of disaster management is to empower women and see them as capable agents of change, who can manage crisis, deal with its aftermath, and take on leadership roles in the family and community. Women play important economic and community roles that help in reconstruction and resilience building.

development of a gender action plan to close those gaps, devoting resources and expertise for implementing such strategies, monitoring the results of implementation, and holding individuals and institutions accountable for outcomes that promote gender equality.

- Advocacy and awareness is adjusted to most effectively reflect gender-specific differences/ issues. Strategies used in the project are then tailored, taking into account such differences;
- Inclusion of a Gender Specialist position / provision of advice within the project to implement gender related activities.

During project implementation, qualitative assessments will be conducted on the gender-specific benefits that can be directly associated to the project. This will be incorporated in the annual Project Implementation Report, Mid-Term Report, and Terminal Evaluation. Indicators to quantify the achievement of project objectives in relation to gender equality will include number of men and women who had access to affordable solutions, involved in decision making, employed from the jobs created by the project, training opportunities, knowledge management and information dissemination; gender-sensitive documents. At least 30% of participants in consultation or training activities will be women.

Stakeholder engagement. Consultations with policy makers, NGOs and academics took place on the in Erevan and Tbilisi. Two large scale community level consultation events were also held at potential project sites (16-17 April, 2019, Armenia). An additional annex to this proposal shows the full results from the stakeholder engagement, which details the specific issues and difficulties that women face in responding to the Climate Change/DRR and wildfire risk and how this is related to women's security. The involvement of women's organizations in the project design, aided in identifying relevant gender issues within the country's social context, and implementing and monitoring the gender aspects of the project.

Specific issues raised include:

- Support for training and educational activities which may include activities related to climate resilience and wildfire risk reduction, forest management, agriculture, leadership, business, finance, entrepreneurship and decision-making, thereby enabling empowerment and involvement (or increased involvement) of women to participate with confidence in community meetings
- Inclusion of a Gender Specialist position / provision of advice within the project to implement gender related activities

Monitoring and evaluation. Through onset analysis, data has been collated to establish a baseline. This data shall be monitored against throughout implementation and evaluation.

The analysis identified the differences between men and women within at-risk populations. In order to monitor and evaluate progress of the project, the following indicators can be measured:

Quantitative outcomes:

- Female-headed households as beneficiaries;
- Increased women's participation at decision making at local level;
- Improvements in health and well-being;
- Improved livelihoods;
- Business development services component targeting rural women entrepreneur groups.

Qualitative outcomes:

- Opportunities to generate additional income. Women are more likely to respond to incentives that address their family's basic needs, such as better health and nutrition, linking to climate resilience and wildfire risk reduction;
- Contribution to improved self-esteem and empowerment of women in the community;
- Expanded involvement in public and project decision-making as a result of initiation of women into active participation in income generating activities;
- Support for training and educational activities which may include activities related to climate resilience and wildfire risk reduction, forest management, agriculture, leadership, business, finance, entrepreneurship and decision-making, thereby enabling empowerment and involvement (or increased involvement) of women to participate with confidence in community meetings;
- Effectiveness of awareness raising.

VI. Proposed Gender Action Plan

This Gender Action plan provides suggested entry points for gender-responsive actions to be taken under each of the Activity areas of the project. In addition, specific indicators are also proposed to measure and track progress on these actions at the activity level. This can be incorporated into the detailed M&E plan which will be developed at the start of implementation, and provides concrete recommendations on how to ensure gender (including disaggregated data) continues to be collected and measured throughout implementation.

Project Outputs and activities	Gender mainstreaming actions	Indicator and Targets	Responsible Institutions	Timeline	Budget ($US)
Component 1. Strengthening regulation, institutional frameworks and capacity					
Output 1.1. Policy and regulatory frameworks are strengthened and aligned					
Activity 1.1.1: Regional guidance on wildfire risk reduction and CC adaptation will be developed	- Gender analysis of guidance - Mainstreaming gender into guidance - Pre-test and adopt the guidance	Guidance that includes gender considerations adopted and used (review by gender advisor) *Nr. of users (visited web-site and used guidance)*	Project Management Unit (PMU)	1st Year	$3,000
Activity 1.1.2: National Forest Management Plans, DRR documents and forest community development plans will be revised to incorporate resilience measures	- Gender analysis of Forest Management Plans, DRR documents and forest community development plans - Mainstreaming gender into documents - Pre-test and adopt the documents	National Forest Management Plans, DRR documents and forest community development plans, that includes gender considerations, adopted and used (review by gender advisor) *Nr. of engendered documents, adopted* *Ratio of women in stakeholder consultations.* *At least 30% participants of consultations are women*	Project Management Unit (PMU)	1st Year	$7,000
Activity 1.1.3: Regulations to facilitate the functioning of voluntary community level response and rescue teams will be enabled	- Gender analysis of Regulations - Mainstreaming gender into Regulations - Pre-test and adopt the regulations	Regulations to facilitate the functioning of voluntary community level response and rescue teams, that includes gender considerations, adopted and used (review by gender advisor) *Nr. of engendered documents, adopted*	Project Management Unit (PMU)	1st Year	$7,000
	A series of training workshops on gender mainstreaming for DRR practitioners and policy makers (based on the UNDP training manual on gender mainstreaming in disaster preparedness and response) Review of the new policies and guidance documents by the gender advisor to identify gender gaps and mainstreaming opportunities	Gender considerations are reflected in policy documents and technical guidance (review by gender advisor) Decision makers and practitioners are trained on gender mainstreaming in DRR based on UNDP training manual (number of women and men disaggregared) Number of women in planning teams and consultation groups (at least 30%)	Project Management Unit (PMU)	2, 3, 4 Years	

Project Outputs and activities	Gender mainstreaming actions	Indicator and Targets	Responsible Institutions	Timeline	Budget ($US)
Output 1.2. Institutional cooperation improved at regional, national and local levels					
Activity 1.2.1: Support to existing national interagency bodies, such as the Inter-Governmental Task Force on DRR	- Encourage the national interagency bodies to delegate women as representatives to Inter-Governmental Task Force on DRR and other structures - Support women's NGOs participation - Support the interlinkage between Inter-Governmental Task Force on DRR and other structures and National Machinery on GE	The Inter-Governmental Task Force on DRR, included men and women (at least 30% women) and adopted gender sensitive decisions/ measures The representative of National Machinery on GE involved in Inter-Governmental Task Force on DRR and other structures sessions *Nr. of women and men involved in the structures* *Nr. of gender sensitive decisions adopted*	Project Management Unit (PMU)	During project implementation	0
Activity 1.2.2: The project will work with responsible agencies and DRR Platforms to provide recommendations for improvement, together with an assessment of resource allocation implications	- Support the agencies to use the gender responsive budgeting methodology (6 workshops on GRB with relevant persons)	The responsible agencies and DRR Platforms trained on GRB and assessed of resource allocation implications using gender responsive budgeting methodology *Nr. of trained persons (women and men)* *Nr. of gender sensitive decisions adopted*	Project Management Unit (PMU)	1st Year	$9,000
Output 1.3. Capacity for wildfire response increased at national and regional level					
Activity 1.3.1: Undertake a review of capacity development needs for key institutions involved in wildfire management and response at regional, national and local levels.	- Include the gender indicators in the review of capacity development	A review of capacity development needs for key institutions involved in wildfire management and response at regional, national and local levels includes gender considerations.	Project Management Unit (PMU)	1st Year	$6,000
Activity 1.3.2: Training for policy officials in key institutions (emergency services, forest management, local government) on emergency issues	- Include sessions on GE in training curriculum/agenda - Elaborate of training materials	Policy officials in key institutions (emergency services, forest management, local government) trained on gender issues and use the knowledge *Nr. of trained persons (women and men)* *Nr. of gender sensitive decisions adopted*	Project Management Unit (PMU)	1st and 2nd Years	$8,000
Component 2. Improving climate and wildfire risk assessment and decision making at the regional level					
Output 2.1. Strengthen wildfire risk monitoring and forecasting					

Project Outputs and activities	Gender mainstreaming actions	Indicator and Targets	Responsible Institutions	Timeline	Budget ($US)
Activity 2.1.1: Support harmonization and improvement the management of climate and wildfire risk data	- Include 6 sessions on sex/gender disaggregated data in general training agenda on monitoring - Elaborate of training materials	Specialists in key institutions (emergency services, forest management, local government) trained on monitoring with sex/gender disaggregated data and use the knowledge *Nr. of trained persons (women and men) / Ratio of women's participation* *Nr. of sex/gender disaggregated data used in monitoring system*	Project Management Unit (PMU)	1st and 2nd Years	$11,000
Activity 2.1.2: Support understanding interlinkages between wildfire risk, socio-economic development and gender issues	- Include 6 sessions on sex/gender disaggregated data in general training agenda on monitoring - Elaborate of training materials	Decision makers trained to communicate risk information based on gender evidence data to relevant stakeholders and allocate resources appropriately *Nr. of trained persons (women and men)* *Nr. of sex/gender disaggregated data used in monitoring system*	Project Management Unit (PMU)	2nd Year	$11,000
Output 2.2. Improve effectiveness of early warning system communications					
Activity 2.2.1: Support to incorporate gender issues into EWS communications	- Include 6 sessions on gender sensitive communication in EWS training agenda - Elaborate of training materials	Key institutional stakeholders (local emergency response teams, forest managers) trained on gender sensitive communication and used the knowledge and materials *Nr. of trained persons (women and men) / Ratio of women* *Nr. of gender sensitive materials published and disseminated*	Project Management Unit (PMU)	2nd and 3 Years	$8,000
Activity 2.2.2: Support elaboration and implementation of Communication Strategy	- Incorporate gender perspective into all materials and activities under Communication Strategy	*Nr of participants in the activities (gender disaggregated)* *Ratio of gender sensitive materials published and disseminated* Best practices in the field gender sensitive	Project Management Unit (PMU)	1st Year	$361,000
Output 2.3. Create harmonised protocols for data collection, storage and reporting					
Activity 2.3.1: Support the standardization and integration of key data sets with a view to improving the quality of	- Mapping of relevant data sources in key ministries and other agencies through gender lenses - Harmonize classification and reporting		Project Management Unit (PMU)	2nd and 3 Years	$4,000

Project Outputs and activities	Gender mainstreaming actions	Indicator and Targets	Responsible Institutions	Timeline	Budget ($US)
wildfire risk assessment, forecasting and reporting	frameworks for wildfires and other climate induced hazards (e.g. threat level, impacts, economic costs), taking into consideration gender issues - Identify key relevant gender sensitive data	Report of mapping of relevant data sources in key ministries and other agencies through gender lenses (reviewed by gender advisor) Key relevant gender sensitive data elaborated and used			
Output 2.4. Encourage private and third sector innovation through the CCTA					
Activity 2.4.1: Support the development and scaling of innovative approaches to wildfire risk reduction and response through the Climate Change Technology Accelerator (CCTA).	- Encourage private companies, universities and research institutions to involve women in the innovation through the CCTA - Include 6 sessions on GE in relation with DRR/ wildfire risk reduction and CC adaptation training agenda - Elaborate of informative materials with best practices of women participation	Private companies, universities and research institutions involved women in the innovation through the CCTA *Nr. of trained persons (women and men)* *Ratio of women and men involved in the actions*	Project Management Unit (PMU)	2nd and 3 Years	$9,000
Component 3. Reducing wildfire risk and promoting forest eco-system adaptation at the local level					
Output 3.1. Prioritise wildfire risk reduction activities at the local level					
Activity 3.1.1: Support in-depth participatory consultation to develop a detailed profile of wildfire risk and wider climate vulnerability	- Encourage women's involvement in consultation process - Contribute to incorporate the gender issues into profile of wildfire risk and wider climate vulnerability (based on gender transformative approach)	Ratio of women and men involved in consultation process (At least 30% participants of consultations are women) Profile of wildfire risk and wider climate vulnerability incorporated gender aspects	Project Management Unit (PMU)	2nd Year	$3,000
Output 3.2. Improving wildfire preparedness and response capacity					
Activity 3.2.1: Support and co-finance the implementation of a number of best practice measures to enhance fire risk reduction and preparedness	- Identify and encourage women participation in rescue teams, self-support groups - Organise 10 informative sessions	*Nr. of best practices with women's participation supported by the project* *(At least 30% participants are women)*	Project Management Unit (PMU)	2nd and 3 Years	$509,000

Project Outputs and activities	Gender mainstreaming actions	Indicator and Targets	Responsible Institutions	Timeline	Budget ($US)
Output 3.3. Promoting resilience in forest eco-systems and communities					
Activity 3.3.1: Support selected communities to identify and prioritise economic resilience activities	- Encourage women's participation as farmers in forest eco-systems initiatives. To train women how to address the project proposal, project management (6 sessions). To encourage participation of women NGOs in social projects (as leaders) at local level.	*Ratio of women participants as farmers in forest eco-systems initiatives.* *At least 30% of participants are women* *Nr. of women NGOs involved in social projects (as leaders)* *Projects implemented by women at local level.* (at least 30% of beneficiaries are women)	Project Management Unit (PMU)	Year 2,3 and 4	$9,000
					Financial support of economic resilience activities - $500,000
	To encourage women's participation in community-based trainings on Income generation opportunities/ new businesses; how to access the funds	Ratio of women and men participation in community-based trainings on Income generation opportunities in forest ecosystem etc. (at least 30% of beneficiaries are women) Ratio of women and men accessed the funds (at least 30% of beneficiaries are women)	Project Management Unit (PMU)	Year 2,3 and 4	
	Ensure that women and vulnerable group members (elderly, bread-maker women, people living under poverty line, ethnic minorities, IDPs, etc.) can equally benefit from livelihoods and employment opportunities facilitated by the project. e.g. engage women in local employment guarantee schemes, including women representing disadvantaged groups (elderly, bread-makers, ethnic minorities, IDPs, etc.)	Ratio of women and men beneficiaries (at least 30% of beneficiaries are women)	Project Management Unit (PMU)	Year 2,3 and 4	
Output 3.4. Enhanced knowledge and learning on managing wildfire risk					
Activity 3.4.1: Support local stakeholders to build capacity and awareness around key forest fire management issues, as well as	- 6 Seminars for key stakeholders (agriculturalists, forest managers, emergency services, local authorities) to promote awareness of best practices taking into consideration gender issues	Gender considerations are reflected in policy documents and local initiates *Nr. of engendered documents* *Ratio of women and men involved in the seminars (at least 30% of beneficiaries are women)*	Project Management Unit (PMU)	Year 2,3 and 4	$9,000

Project Outputs and activities	Gender mainstreaming actions	Indicator and Targets	Responsible Institutions	Timeline	Budget ($US)
on broader climate resilient livelihoods and forest adaptation					
Total					**1,474,000**
Effective project management					
Staffing	Ensure that staff of the project composed of at least 30% of women	30% percent of women in the staff	Project Management Unit (PMU)	Year 1-7	
Capacity building and training	Training of staff members of the project on gender mainstreaming and social vulnerability approach	Staff members completed training in gender mainstreaming and social vulnerability approach	Project Management Unit (PMU)	Year 1	
Stakeholder consultations and participatory decision making	Make sure that women are adequately represented in the project TAWGs. Secure participation of the project Gender Advisor in all TAWGs.	Gender Advisor is a member of all TAWGs. Gender mainstreamed in the TAWGs discussions. Balanced representation of women and men in TAWGs.	Project Management Unit (PMU)	Years 1-7	
Monitoring and Evaluation	Make sure that gender statistics are included in all reports	At least 30% of beneficiaries – women	Project Management Unit (PMU)	Years 1-7	

Annex 12. Acronyms

AF	Adaptation Fund
BCR	Benefit Cost Ratio
CO	Country Office
DRR	Disaster risk reduction
ESP	Environmental and Social Principles
EU	European Union
FAO	Food and Agriculture Organisation
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
Ha	Hectare
IRR	Internal Rate of Return
M&E	Monitoring and Evaluation
MTE	Mid-term evaluation
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NPD	National Project Director
PA	Project Assistant
PAC	Project Appraisal Committee
PB	Project Board
PM	Project Manager
POPP	Programme and Operational Policies and Procedures
PPR	Project Performance Reports
PSC	Project Steering Committee
SES	Social and Environmental Standards
SNCO	State Non-commercial Organisation
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
VCA	Vulnerability and Capacity Assessment