ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Pre-Concept for a Regional Project

Countries/Region: South Caucasus: Armenia, Georgia
Project Title: Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction in Armenia and Georgia
Thematic focal area: Disaster risk reduction, Food security and early warning systems
Implementing Entity: United Nations Development Program (UNDP)
Executing Entities: UNDP, Ministry of Nature Protection of Armenia, Ministry of Environment Protection and Agriculture of Georgia
AF Project ID: EAP/MIE/DRR/2018/PPC/1

IE Project ID:
Requested Financing from Adaptation Fund (US Dollars): **4,990,000**
Reviewer and contact person: Cristina Dengel
Co-reviewer(s): Steffen Brandstrup Hansen
IE Contact Person(s): Adriana Dinu (UNDP)

Review Criteria	Questions	Comments	UNDP response
Country Eligibility	1. Are all of the participating countries party to the Kyoto Protocol?	Yes	
	2. Are all of the participating countries developing countries particularly vulnerable to the adverse effects of climate change?	Yes, the participating countries are developing countries. Armenia and Georgia are impacted by challenges posed by natural hazards such as wildfires, intensified windstorm, continued hot temperatures and aridification of ecosystems that affect significantly the frequency and intensity of fires, the spread as well as the type of fires.	

Project Eligibility	1. Have the designated government authorities for the Adaptation Fund from each of the participating countries endorsed the project/programme?	Yes.	
	2. Has the pre-concept provided necessary information on the problem the proposed project/programme is aiming to solve, including both the regional and the country perspective?	It has partly done so. The overall issue is described adequately, that is to assist the two countries 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 by enhancing the existing capacities to manage fire risk at local, national and regional levels and strengthen institutional collaboration and transboundary cooperation frameworks. The activities seem to focus more on the national level, with regional ones mentioned as part of the institutional strengthening and knowledge exchange and learning part of the project without a regional body to oversee such proposed activities. At concept stage, more detailed focus on the regional approach is recommended. **CR1**: Please strengthen the regional set of activities, particularly as related	**CR1:** The project will ensure capacity development based on the same principles

		to the regional institutional strengthening. Consider the inclusion of a regional committee composed of experts from both countries to oversee the activities designed to strengthen the regional institutional strengthening and the design of common modelling tools. It may be beneficial to consider the relevant projects, such as the following GEF projects which will address similar issues, in order to avoid duplication and capture potential synergies: Upscaling of Global Forest Watch in Caucasus Region (GEF/UNDP) which covers the forest areas of both Armenia, Georgia and Azerbajian, and Advancing IWRM Across the Kura Basin through Implementation of the Transboundary agreed Actions and National Plans (GEF IW) which covers a large part of the Kura Aras River basin and will address the priority needs in the ministerial endorsed Strategic Action Plan (SAP). The synergies would be as follows: GEF/UNDP project: appropriate synergies may help inform and thereby facilitate improved strategic engagement models on both the regional, national and local levels GEF IW: while this project covers only Azerbaijan and Georgia, Armenia may align their national planning according to the SAP priorities.	in both countries and promote the sense of ownership of both national and cross-border solutions. The country level interventions will be enhanced by regional technical assistance, regional trainings and exchange. The project will develop a common regional roadmap for harmonized implementation of wildfire management policy framework. The project will also support the harmonization of legal, institutional and regulatory protocols between countries for more effective regional governance of disaster risks and natural resources for strengthened social and environmental security in line with 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”. Regional guidance on wildfire risk reduction and CC adaptation will be developed. The effectiveness of current institutional framework in each country will be assessed, roles and responsibilities of relevant entities, as well as coordination and operational mechanisms at regional, national and local levels will be clearly defined. Project will facilitate cross-border cooperation through support to Regional Advisory Council that will be established as an advisory body to provide technical and operational guidance to decision makers for the coordination of wildfire management activities, overseeing and ensuring the project’s consistency and synergy with the

			other ongoing development processes in the region. It will be composed of sector related experts from line ministries and state agencies, academia, civil society organizations and other relevant stakeholders and will serve as an advisory group providing technical and operational guidance to decision makers for the coordination of wildfire management activities, overseeing and ensuring the project's consistency and synergy with the other ongoing development processes in the region. The regional approach will serve to implement South-South Cooperation solutions drawing particularly on country's positive experience and work with existing regional platforms to provide articulated and coordinated support to climate and disaster risk management. (Please see the revised text on the page 4 of the pre-concept document). **CR2:** At the design stage the project will take into consideration all ongoing, planned and past initiatives and projects in the subject area both, at the national and regional levels, including upcoming UNEP-GEF proposal on "Upscaling of Global Forest Watch in Caucasus Region". Regular consultations with those project teams will be held at the implementation stage to ensure synergy and complementarity in actions, experience exchange and lessons learnt for greater results (Please see page 5 of the pre-concept document).
		CR2: Please take into consideration other relevant projects, such as the GEF-funded interventions mentioned above, in the design of this project.	

	3. Have the project/programme objectives, components and financing been clearly explained?	Yes, however taking into account the comment under CR1, provide more details on the regional approach, particularly under Component 1 and 2. **CR3**: Please provide more details under component 1 about actual activities planned to strengthen the regional framework.	**CR3:** Please see the revised text in the pre-concept document (page 4)
	4. Has the project/programme been justified in terms of how: - it supports concrete adaptation actions? - it builds added value through the regional approach? - it promotes new and innovative solutions to climate change adaptation? - it is cost-effective? - it is consistent with applicable strategies and plans? - it incorporates learning and knowledge management? - it will be developed through a consultative process with particular reference to vulnerable groups, including gender considerations,	<u>Concrete adaptations</u>: The project aims at strengthening the institutional capacity, wildfire management systems and climate information to incorporate climate change risk and adaptation strategies in order to improve the resilience of the South Caucasus mountain communities and their livelihoods. At concept stage, please further elaborate how the project will support the delivery of climate knowledge to the selected mountain communities (frequency of trainings and learning events and of exchange visits, tools and materials to be developed and selection of community representatives). <u>Regional approach</u>: Partly, please see CR1 and CR2. The regional approach for the pre-concept needs to be strengthened to provide an added value of a regional approach in the revised pre-concept.	

	in compliance with the Environmental and Social Policy of the Adaptation Fund? - it will take into account sustainability?	<u>New and innovative solutions</u>: The project entails innovative deliverables such as: i) common modelling tools for risk and vulnerability assessment wildfire risk monitoring and forecasting, ii) climate information and EWS products tailored to sectorial needs, iii) common SOPs on information collection, storage and dissemination and iv) demonstration of a sustainable Climate Change Technology Accelerator (CCTA). **CR4**: Please provide a short description of what type technologies the envisioned CCTA will foster and the anticipated links to markets. Further, please explain how the project intends to utilize lessons learned from Europe (e.g. Spain, Portugal) within wildfire prevention and prioritization of hard infrastructure needs as part of an effective regional response mechanism. <u>Cost-effectiveness</u>: The proposed initiative should be cost-effective as it entails the development of modelling tools for risk and climate information as well as the demonstration of a CCTA. However, overall cost-effectiveness can only be assessed when a more detailed description of activities is provided, particularly referring to the sustainability of such a technology	**CR4:** There are different set of technological solutions available: (i) new technologies and innovative approaches for landscape rehabilitation/restoration; (ii) remote sensing technologies for data gathering, hazard identification, early warning and monitoring (e.g. portable fire detectors - a system of sensors that quickly pass the information about emergency situations in forests. Sensors, are developed in Hi-Tech Gateway, located in forest and may prevent illegal logging as well); (iii) risk modelling and management monitoring (a special software for Wildfire behavior prediction based on real-time data to assess the risk, fire distribution model and define optimized plan for fire response). Partnership will be established with the European Forest Institute and the Global Fire Monitoring Center to capture and analyze lessons from the recent fire cases

		accelerator. Furthermore, it remains unclear to what extent the project will build on and leverage existing and planned activities, thereby enhancing impact and sustainability and reducing cost. **CR5**: Please confirm that it is indeed the intent to leverage an existing baseline for the envisioned activities under component 3 when possible. By concept stage, please provide additional information on how this will be done. Furthermore, at concept stage please improve the current baseline description and describe if e.g. International Finance Institutions are engaged in wildfire risk reduction investments across the region and to what extent this baseline can help support the goals of this project <u>Consistency with strategy and plans</u>: Yes, consistency with plans and strategies at national level is documented under "Social-economic Development Strategy of Georgia 2020" and "Armenian development Strategy for 2014-2025". <u>Learning and knowledge management</u>: Yes, specific resources have been allocated for activities related to regional and national trainings and lessons learned and visits between	in Mediterranean region and number of other European countries. This will be important to understand major management drawbacks and institutional gaps, to document on-the-ground practices of hazard management and response mechanisms. **CR5:** Yes, it is. The project will be closely built on existing baseline programmes, especially considering activities, addressing climate induced hazards. The bulk of the project financing will be directed to complex measures for increasing resilience of ecosystems and communities in alignment with adaptation needs. Thus, an appraisal of short-listed adaptation options will be carried out to determine performance in terms of mitigation of damages and economic efficiency. A detailed assessment of the project's cost-effectiveness will be undertaken as part of the full project's development.

		participating government and communities. Consultative process: Yes. There is reference to the consultative process at pre-concept stage taken place between national and local government institutions, academia and technical agencies. **CR6**: At full concept stage please provide more details on the inclusion of women and vulnerable groups, stating clearly how they will benefit from the project activities. Sustainability: sustainability is attributed to the Innovative Climate Change Technology Accelerator (CCTA) which could benefit the entire region and could maybe be scaled up in other parts of the world. **CR7**: Thoughts should be given to sustainability of activities. At the	**CR6:** At the national level, gender aspects will be mainstreamed into adaptation strategies under Outcome 1. Gender issues will be addressed by promoting full and equitable participation of women, as well as vulnerable groups through their involvement in the planning and implementation of adaptation measures, as well as capacity building activities under Component 1 and 3. The project will draw upon the existing gender indicators adopted by the government while encouraging women's participation in the project. Specifically, at least 30% of village committees members will be women. Besides, women and youth are expected to directly benefit from temporary employment, and indirectly from the reduced costs and/or increased household incomes as a result of implemented adaptation measures and improved ecosystem services. **CR7:** The project's arrangements are based on existing Governmental institutional systems and flow of funds

		concept stage, the project would benefit from including a sustainability strategy. Please explain how the project intends to link national project activities to national budgets and how linkages to other regional initiatives and platforms will be created.	aiming to improve the effectiveness of existing budgetary allocations. Thus, the project will complement ongoing work of the participating countries by building on synergies and strengthening existing mechanisms and capacities for integrated risk management. These mechanisms and capacities will be embedded in local, provincial and national institutions through updated decrees, executive orders, agreements, and development plans related to budgetary processes. List of risk reduction, data management and monitoring measures, as part of national DRM strategies and action plans will be funded through regular budget and thematic interventions under mid-term budget expenditure framework. For the local level DRM and adaptation measures, one-time expenditure on the ground is aimed at demonstrating good practices with community participation, the benefits of which are expected to catalyze its expansion later on. Thus, communities will provide co-funding (financial and in-kind contributions) from local budget for implementation and post-project maintenance of structural and non-structural interventions. This will be ensured through introduction of priority DRM and adaptation measures into multi-year community development plans and their approval by community councils. During the implementation, cooperation within the existing regional processes and platforms will be strengthened and

		CR8: As a suggestion, you might want to think of partnerships with the private sector in the development and operation of the CCTA to ensure sustainability.	institutionalized, where deemed necessary, through formal partnership agreements to leverage additional resources, knowledge and experience in order to: (i) implement commitments under Plan of action for Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Central Asia and South Caucasus Region; (ii) get access to tools and expertise on capacity building in wildland fire management and wildfire DRR under umbrella of Global Wildland Fire Network (GWFN) and the Global Fire Monitoring Center; (iii) ensure continuous and effective information exchange between two counties before, during and after disasters through the Virtual On-Site Operations Coordination Centre1. **CR8:** CCTA is to establish a sustainable mechanism for the promotion of innovations and replication of technological solutions in Climate Change adaptation activities related to /climate change/DRR/forestry sector. The project will search for synergy between ongoing local and international initiatives targeted to climate change and CCTA. The aim is to create a pipeline of impact-oriented start-ups targeting climate change adaptation issues and give them access to

[1] Virtual On-Site Operations Coordination Centre[1] - a web-based information management tool developed by the Field Coordination Support Section the United Nations Office for the Coordination of Humanitarian Affairs (OCHA).

			international Climate Change networks, accelerators and initiatives such as Climate-KIC EU funded accelerator (https://www.climate-kic.org).As the core mission of the Accelerator is to scale-up its ventures, as well as their impact at national and international levels, the accelerator will create a foundation for working with impact investors and venture philanthropists, as well as donors interested in the approach – i.e. will help Impact Ventures get ready for financing, including from the Impact Investment Fund. It will bring together the private sector and development agencies to exit solutions and startups that both: are targeting the development of a specific sector (climate change, forestry, etc.) and have a sustainable business model that can be further scaled. Thus, CCTA is an excellent way of making a socially responsible investment, working in partnership with the local communities and promoting environmental protection and sustainability through storing emphasis on private sector engagement.

	5. Does the pre-concept briefly explain which organizations would be involved in the proposed regional project/programme at the regional and national/sub-national level, and how coordination would be arranged? Does it explain how national institutions, and when possible, national implementing entities (NIEs) would be involved as partners in the project?	Yes. The pre-concept offers sufficient details about the organizations to be involved at the national and regional level. As a suggestion, at concept stage, it would be useful to include the local institutions that would be involved as well.	
Resource Availability	6. Is the requested project / programme funding within the funding windows of the pilot programme for regional projects/programmes?	Yes.	
	7. Are the administrative costs (Implementing Entity Management Fee and Project/ Programme Execution Costs) at or below 20 per cent of the total project/programme budget?	Not clear. The administrative costs are estimated at 16% of the total finance requested. However, the Secretariat would like to recall OPG/Annex 7 with the following guidance: *"In the exceptional case when implementing entities are requested by governments to* *provide all or part of the execution services related to the project they seek to implement, the* *Adaptation Fund Board (the Board)*	

		had decided (decision B.17/17.f) to cap execution costs for projects/programmes implemented and executed by the same entity at 1.5% of the project/programme cost"	
		CR9: Please clarify where among the different components will the UNDP provide execution services, in what amount, as well as the reason for this. After this information is provided, it will be reassessed whether that would be in line with the spirit of the guidance in the OPG/Annex 7.	**CR9:** This regional project will be executed directly by UNDP under the DIM modality. In recognition of the Adaptation Fund policy (decision B.17/17.f), we have reduced the execution costs (project management costs) to 1.5% of the project costs in the pre-concept. However, we would like the Adaptation Fund Secretariat and Board to take into consideration the regional nature of this project. This regional project will require an additional level of coordination and management and a more complex oversight structure. UNDP oversight and execution functions are very different and independent to each other in order to ensure adequate quality assurance. The current allocation for administrative costs (10% of the total finance) is inadequate to cover adequate oversight and execution functions in particular in the context of the regional project. We would therefore kindly ask the Adaptation Fund for a possibility to conduct consultations and revise the allocation for UNDP administrative costs during the further project development (at concept and/or full proposal phase) with the understanding that the total allocation for "administrative costs" (covering both IE

			fees and PMC) will not exceed 20% of the project costs.
Eligibility of IE	8. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes.	

Technical Summary	The objective of the project is to increase the resilience of South Caucasus mountain communities and forest ecosystems to climate induced hazards through the implementation of an integrated transboundary climate-resilient wildfire management approach and capacity building. The initial review finds that while the planned activities are described relatively clearly, further details for implementing those at the regional level were not. Furthermore, synergies with already existing regional projects should be explored. The following comments should be addressed: **CR1**: Please strengthen the regional set of activities, particularly as related to the regional institutional strengthening. Consider the inclusion of a regional committee composed of experts from both countries to oversee the activities designed to strengthen the regional institutional strengthening and the design of common modelling tools **CR2**: Consider creating synergies with the described GEF projects **CR3**: Please provide more details under component 1 about actual activities planned to strengthen the regional framework. **CR4**: Please provide a short description of what type technologies the envisioned CCTA will foster and the anticipated links to markets. Further, please explain how the project intends to utilize lessons learned from Europe (e.g. Spain, Portugal) within wildfire prevention and prioritization of hard infrastructure needs as part of an effective regional response mechanism **CR5**: Please confirm that it is indeed the intent to leverage an existing baseline for the envisioned activities under component 3 when possible. By concept stage, please provide additional information on how this will be done. Furthermore, at concept stage please improve the current baseline description and describe if e.g. International Finance Institutions are engaged in wildfire risk reduction investments across the region and to what extent this

	baseline can help support the goals of this project **CR6**: At full concept stage please provide more details on the inclusion of women and vulnerable groups, stating clearly how they will benefit from the project activities. **CR7**: Thoughts should be given to sustainability of activities. At the concept stage, the project would benefit from including a sustainability strategy. Please explain how the project intends to link national project activities to national budgets and how linkages to other regional initiatives and platforms will be created. **CR8**: As a suggestion, you might want to think of partnerships with the private sector in the development and operation of the CCTA to ensure sustainability **CR9**: Please provide further detail on the execution arrangements between the different executing partners.
Date:	August 15, 2018

ADAPTATION FUND

PRE-CONCEPT FOR A REGIONAL PROJECT/PROGRAMME

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Increased climate resilience of South Caucasus mountain communities and ecosystems through wildfire risk reduction
Countries:	Armenia, Georgia
Thematic Focal Area[1]:	Disaster risk reduction and early warning systems
Type of Implementing Entity:	MIE
Implementing Entity:	United Nations Development Programme (UNDP)
Executing Entities:	UNDP, Ministry of Nature Protection of Armenia, Ministry of Environment Protection and Agriculture of Georgia
Amount of Financing Requested:	4,990,000 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

The forest biome of South Caucasus, with greater part of mountain forests in Armenia and Georgia, covers around 20 percent of the Caucasus Ecoregion and listed by WWF as a global conservation priority with extremely rich biodiversity. These forests are important source of livelihoods for mountain communities in Armenia and Georgia. Forest degradation and reduced forest integrity result in biodiversity losses, losses of livelihoods and in reduced resilience of forest ecosystems to the impacts of climate change. Changes in regional temperature and precipitation regimes, including shifts in the frequency and intensity of extreme climate-related events affect forest ecosystems, population health, livelihoods, local economies and natural resource availability across national borders. Over the past years, climate extremes have played an important role in an increased occurrence of wildfires, which were uncommon a few decades ago. The mountain forests of South Caucasus, where fires were not an intrinsic factor for many years, are currently much more vulnerable and sensitive.

In Armenia, an increase in the number of wildfires has been observed over the past decade as a result of prevailing drought conditions and continued hot temperatures and have caused extensive damage to mountain ecosystems. For instance, in 2010 and 2011, the number of forest fires grew rapidly from an average of under ten fires in the previous years to over 50 forest fire cases in both 2010 and 2011 burning over 1 300 hectares of forest lands. In the same years, the number of grassland fires grew five-fold compared to the average of the previous six years, reaching over 2 700 grassland fire cases in both 2010 and 2011[2]. Fires mainly happen from July to September when the major heat waves are observed. Over the period of 1980-2012, the number of heat waves increased by 40% compared to 1948-1980. There is clear indication that the number of fires and the burned areas could grow due to accumulation of dry material in forests and due to climate-driven pest outbreaks. In total, 294 cases of forest and wildfire were registered in 2009-2015, covering the area of 3078,4 hectares (ha). Recently, in July-August 2017, around 3,000 ha of valuable juniper's forest ecosystems were fully destroyed by wildfire in the Khosrov State Reserve in Ararat region, while 54 other forest fire cases were registered across the country in 2016-2017 damaging more than 600 ha of forests.

Under the observed and projected changes in Armenia's climate, further climate aridification is sought as the key factor to impact Armenian forest ecosystems. Temperatures are expected to increase in Armenia by over 5 degrees in spring and summer months by the end of the century, while summer precipitation is projected to fall considerably (see Annex 1). This can lead to significant water stress in Armenia's forests hindering growth rates, forest regeneration and tree establishment, as well as decreasing forest vitality making trees more susceptible to pests and pathogens. In addition to these direct impacts of the drying climate on the forests, climate aridification creates conditions for more frequent and more intense wildfires. As a result, vulnerability of Armenia's forest to climate change will increase considerably by 2030: possible losses of forested areas due to forest fires are assessed at 1200-1300 ha, leading to reduction of carbon accumulation by 650-700 ton annually[3].

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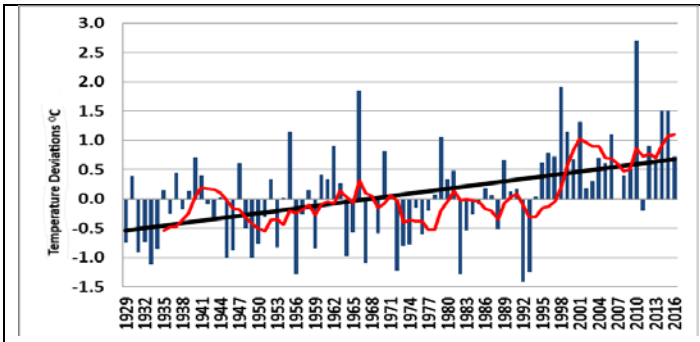
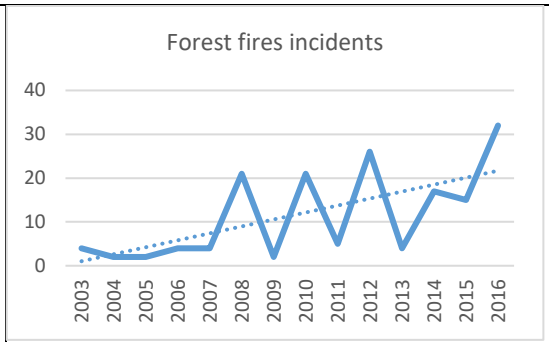
[1] Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance.

[2] Building Wildfire Management Capacities to Enhance Adaptation of the Vulnerable Mountain Forests of Armenia - Lessons from Recent Experience. (2012). "Adaptation to Climate Change Impacts in Mountain Forest Ecosystems of Armenia" UNDP/GEF/00051202 project.

[3] Second National Communication to UNFCCC. Republic of Armenia. 2010.





Under changing climate conditions, the rapidly changing fire regimes can become a major factor affecting natural ecosystems and leading to loss of species, biodiversity and local livelihoods. According to TNC, without adaptation measures by 2030, 14-17.5 thousand ha of forest (5-6% of total cover) would be lost.

In Georgia, according to the official statistics, before 2005 forest fires were relatively rare and small in scale. In the last decade, starting from 2008 forest fires became more frequent and intensive with 300 registered cases. National Forestry Agency of Georgia reports 72 cases of forest fires in 2015, the highest annual occurrence of forest fires over the past decade. 2017 is noteworthy for a series of forest fires in Borjomi district with the largest burned area, affecting over 100 ha according to the preliminary estimation. About 29 cases of forest fires affecting 273 hectares were registered in the other Eastern regions of Georgia. The strongest impact of forest fires in 2017 has been in the region of Samskhe-Javakheti (13 cases with 1,010 hectares burned). Western regions were relatively less affected with total 11 cases. In total, 4000 ha have been damaged during the period of last 10 years. Around 400,000 hectares of forests are at risk of wildfires, with the highest risk faced by coniferous forests of Samtskhe-Javakheti region.

According to Georgia's Third National Communication to the UNFCCC, in the Black Sea Coast (Ajara Autonomous Republic) the average temperature is projected to increase by 1.5 °C by 2050 and by 4.2 °C by the end of the century. The number of hot days and tropical nights has been increasing dramatically resulting in favorable conditions for greater pest outbreaks in Adjara forests, which cause massive drying of trees. A 10% decrease in precipitation is projected by the end of the century. Thus, the risks of wildfires and diseases will increase in the forests of Western Georgia. In the Central Georgia, forest ecosystems in Borjomi-Bakuriani have been facing problems intensified by climate changes since 1960s. Temperature in the region increased by 10ºC in summer; maximum speed of wind in summers has also increased by 3 m/s. Annual regime of precipitation has been changing. Spring precipitation decreased by 3 %, summer precipitation fell by 14 %. Drought conditions have been increasing. In general, the climate change impacts on forests have been intensifying in all regions of Georgia, with the growing risk of climate-induced wildfires among the key abiotic disorders in South Caucasus forests.

Climate change in the South Caucasus eco-region (see Annex 1) is a transnational challenge, thus further regional cooperation would be an important step for adaptation planning and building climate resilience in the region. The suggested regional approach will allow building cooperation between the two countries on hydro-meteorological data management, harmonizing hazard assessment methodologies, monitoring and forecasting of wildfires and other climate-induced disasters, 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 will be strengthened. Finally, the regional project will facilitate sharing of lessons on ecosystem-based climate change adaptation with involvement of local communities.

Project / Programme Objectives:

The project will increase the resilience of mountain communities and forest ecosystems on which they depend to climate induced hazards through sustainable fire management practices and capacity building. As a result, the project will enhance protection of South Caucasus rich forest biodiversity, enhance carbon sinks, and improve population safety and livelihoods. The objective of the project is 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. The project will achieve this by enhancing the existing capacities to manage fire risk at local, national and regional levels based on enhanced regulations, climate risk knowledge and information, and strengthened institutional collaboration and transboundary cooperation frameworks. ***As a result, the Adaptation Fund project will improve the resilience of 600,000 ha of mountain ecosystems and of 800,000 people in two countries.***

Project / Programme Components and Financing:

Project Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)
1. Enabling policy, regulatory and institutional framework	1. Strengthened institutional capacity, wildfire management systems and adaptation planning to reduce climate-induced wildfire risks and associated socio-economic and environmental losses	1.1. Policy and regulatory framework for wildfire management strengthened to incorporate climate change risks and adaptation strategies (including SOPs, local emergency plans, regulations on voluntary community-based firefighting teams, mainstreaming adaptation strategies into forest management, community development and National Response Plans). 1.2. Institutional capacities are assessed and strengthened at the regional, national and local levels in both countries for an early detecting and efficient cooperative response to climate induced wildfire hazards. 1.3. A system for regular wildfire management trainings is in place and trainings all relevant agencies are conducted, including multi-stakeholder extended drill(s). 1.4. Firefighting capacities of forest and protected area staff, regional emergency units and relevant community voluntary firefighting groups are strengthened through provision of equipment, including but not limited to special machinery, hand tools and personal protective equipment.	Armenia, Georgia	572,328
2. Early Warning and risk information systems	2. Improved climate and risk informed decision making, and enhanced use of climate information.	2.1.1 Common modelling tools (including remote sensing-based) for risk and vulnerability assessment, wildfire risk monitoring and forecasting. 2.1.2 Climate information and EWS products complemented and developed with ICT protocols and tailored to sectorial and local needs. 2.1.3 Set of common SOPs on information collection, storage and dissemination, as well as internal reporting standards on climate induced hazards developed. 2.1.4 Demonstration of Climate Change Technology Accelerator	Armenia, Georgia	598,027
3. Local level adaptation measures	3. Increased community and ecosystem resilience to climate change and climate variability-induced risks	3.1. In-depth community vulnerability profiling, participatory scoping and implementation of prioritised local adaptation measures accompanied with the public awareness campaigns on climate resilient local development. 3.2. Enhanced resilience of mountain forest ecosystems through ecosystem restoration (reforestation, forest pasture management) and integrated mountain forest fire management measures (forest thinning and "fuel" removal, pest control, construction of fire breaks and prescribed burning). 3.3. Enhanced knowledge and learning on climate resilient livelihoods, forest and wildfire management through regional and national trainings and lessons learnt events, exchange site visits between participating government and community representatives.	Armenia, Georgia	3,360,756
4. Project/Programme Execution cost				67,967
5. Total Project/Programme Cost				4,599,078
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				390,922
Amount of Financing Requested				4,990,000

Project Duration: *Four years, 48 months*

PART II: PROJECT / PROGRAMME JUSTIFICATION

South Caucasus ecosystems are highly vulnerable to climate change due to an increasing exposure to climate-induced wildfires and the lack of adaptive capacities that are limited by a number barriers and systemic gaps, including: i) weak regulatory framework, fragmented competencies and conflicting institutional responsibilities hamper an adequate assessment and mainstreaming of climate risks in national policies and planning; (ii) institutional and individual capacities of the responsible entities are constrained by limited technical knowledge, preventing the application of suitable adaptation and wildfire risk reduction approaches in mountainous terrain (iii) inadequate monitoring, forecasting and early warning system, and limited capacities to generate, coordinate and disseminate climate and early warning information;(iv) weak technical and operational capacities for efficient fire prevention and on-the-ground adaptation measures to secure resilience of communities and ecosystems; (v) insufficient regional cooperation and data/information exchange between two countries; (vi) information and knowledge gaps to understand and address the risks of wildfires at local level.

Three project components are designed to address the above-mentioned barriers:

Component 1. Enabling policy, regulatory and institutional framework: Forest Management Plans, DRR documents, community development plans will be revised to incorporate climate induced fire risks and adaptation measures. The policy documents on wildfires elaborated within the scope of ENVSEC[4] wildfire management project in Armenia and Georgia will be reviewed and updated, as needed, the adoption process in Georgia will be facilitated. The project will develop a common regional roadmap for harmonized implementation of wildfire management policy framework. The project will also support the harmonization of legal, institutional and regulatory protocols within and between countries for more effective regional governance of disaster risks and natural resources for strengthened social and environmental security in line with 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". Regional guidance on wildfire risk reduction and CC adaptation will be developed.
The effectiveness of current institutional framework in each country will be assessed, roles and responsibilities of relevant entities, as well as coordination and operational mechanisms at regional, national and local levels will be clearly defined. Project will facilitate cross-border cooperation through support to Regional Advisory Council that will be established as an advisory body to provide technical and operational guidance to decision makers for the coordination of wildfire management activities, overseeing and ensuring the project's consistency and synergy with the other ongoing development processes in the region. In addition, national interagency bodies, such as the Inter-Governmental Task Force on DRR, DRR National Platforms, will be supported to enhance internal coordination on fire prevention, monitoring and early warning, building on best international practice. Enabling environment for setting-up and operation of community rescue teams will be created. 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 trainings based on the packages developed with support of Global Fire Monitoring Center under the umbrella of ENVSEC project. Fire prevention and fire-fighting capacities will be further strengthened through the provision of monitoring equipment, special machinery, hand tools and personal protective equipment.

Component 2. Early Warning and risk information systems: This component will address gaps in harmonized data management and information exchange regarding climate change induced hazards and risks. The project will review existing fire forecasting and early warning systems. An advanced regional EWS and innovative climate information products and services for enhanced wildfire preparedness in high-risk and vulnerable areas will be developed (e.g. enhanced observation networks, data-base management and GIS mapping based on remote-sensing technologies and modelling, generation and dissemination of warnings and information). The project will work with different sectors on the improvement of data collection, analysis, sharing and coordination through enhanced ICT protocols, standard operating procedures and wildfire risk information platforms. This will result in enhanced harmonized hazard, risk and vulnerability assessments and mapping, climate scenario modelling and short and long-term projections for decision-making, planning and wildfire risk management.

Component 3. Local level adaptation measures: This component will focus on the implementation of concrete adaptation actions that will increase adaptive capacity and resilience of communities and ecosystems in selected project areas. With the new tools developed and applied under Component 2, the project will carry out vulnerability analysis in targeted communities and ecosystems to define priority adaptation measures. These will include non-

[4] ENVSEC – Environment and Security Initiative is a partnership of five international organizations – the Organization for Security and Co-operation in Europe, United Nations Development Programme, United Nations Environment Programme, United Nations Economic Commission for Europe, and Regional Environmental Centre for Central and Eastern Europe – with specialized, but complementary mandates and expertise, that provides an integrated response to environment and security challenges.

structural activities targeted to conservation and restoration of forest ecosystems. Reforestation/forest rehabilitation at 10,000 hectares in fragmented areas, infilling and planting of multiple species to minimize damage posed by specific threats and other agro-forestry measures are planned. Integrated fire management measures will be implemented, including but not limited to: forest thinning and dry wood removal to make stand more resistant to fire impact, possible construction of fire breaks and prescribed burning, environmentally sound pest control measures. Proposed activities also aimed at capturing, analyzing and disseminating knowledge, lessons and best practices at national and regional level in a systemic way through regional trainings and events, and a range of knowledge products tailored to different user groups.

The **project strategy** is based on fostering transboundary, inter-sectoral, national-local coordination and regional information sharing for improved climate information services and climate risk management. The regional approach will enable a more consistent and effective technical assistance, harmonization and coordination of hydrometeorological information management techniques, early warning technologies and protocols, as well as promoting an economy of scale for the application and replication of adaptation solutions responding to similar climate induced risks. The project will complement ongoing work of the participating countries by building on synergies and strengthening existing mechanisms and capacities for integrated risk management. The project will ensure capacity development based on the same principles in both countries and promote the sense of local ownership of both national and cross-border solution that will increase confidence within and between states. Strengthened capacities for integrated transboundary risk management will be embedded in local, municipal, provincial and national institutions through decrees, executive orders, agreements and development plans and related budgetary processes.

Long-term ***social and economic benefits*** for the local communities will include enhanced and resilient livelihoods, continued flow of ecosystem services, enhanced opportunities for agro- and eco-tourism activities, timber and non-timber product use, and direct employment in ecosystem restoration initiatives. In line with the Adaptation Fund's Gender Policy, the project will conduct an initial gender assessment during the full proposal development. Gender issues will be addressed by promoting full and equitable participation of women and youth in community organizations associated with the project through their involvement in the planning and implementation of adaptation measures, as well as capacity building activities. ***Environmental benefits*** are inherent in the EbA approach proposed in the project, an increased resilience of unique mountain forests, protection of rare and endemic biodiversity and maintenance of essential ecosystem services. Ecosystem restoration is increasingly recognized as being a more cost-effective approach to building long-term resilience to climate change impacts, than hard engineering. The proposed project will catalyse scaled application of these ecosystem-based adaptation (EbA) approaches.

Application of ***innovative digital tools***, including remote-sensing technologies for ecosystem vulnerability assessment, wildfire real-time monitoring and forecasting is a comparatively new measure for climate induced hazard identification and preparedness in South Caucasus countries. An Innovative Climate Change Technology Accelerator (CCTA) will be introduced as a sustainable mechanism for the promotion of innovations and replication of technological solutions in climate change adaptation related to forestry sector. CCTA will assist start-up teams, innovators, scientists, engineers, researchers and entrepreneurs in moving their products to the market, create new ventures, and promote innovation in both countries. It will bring together the private sector and development agencies to exit solutions, which are targeting the development of a specific sector (climate change, forestry, etc.) and have a sustainable business model that can be further scaled.

Environmental sustainability and disaster risk reduction are key elements of the countries' sustainable development strategies documented in the "Social-economic Development Strategy of Georgia "Georgia 2020", and Armenian Development Strategy for 2014-2025. The risks imposed by climate change on the mountain forest ecosystems are prioritized in the Ecoregion Conservation Plan for the Caucasus[5], as well as in the first Nationally Determined Contributions (NDCs) of Armenia and Georgia under the Paris Agreement. The project approach is also aligned with the Sendai Framework for Disaster Risk Reduction.

The project will facilitate knowledge exchange and learning among the participating countries through joint meetings and visits, including scientific meetings and training courses. This knowledge can be further shared through South-South Cooperation within the Eastern European Region and beyond. Methodologies, guidelines, scenarios and protocols generated, and adaptation solutions piloted in the two countries will be documented, published and made available for further dissemination.

[5] Available at: http://wwf.panda.org/?205437/ecoregion-conservation-plan-for-the-caucasus-revised

The project will comply with the national technical codes and standards and with the Environmental and Social Policy of the Adaptation Fund. The thorough risk analysis and Social and Environmental Safeguards screening will be conducted during the project development.

There is no on-going regional program that brings these countries together to address risks of wildfires and promote joint approaches to climate risk management and ecosystem-based adaptation. In order to achieve greater resource efficiency the project will seek synergies with the on-going and planned national projects to help inform and thereby facilitate improved strategic engagement models on the regional, national and local levels and draw experience and lessons from completed regional and national projects, including: "Wildfire Disaster Risk Reduction in the South Caucasus" under ENVSEC initiative, "Adaptation to Climate Change Impacts in Mountain Forest Ecosystems of Armenia" (UNDP-GEF), "Addressing Climate Change Impact through Enhanced Capacity for Wildfires Management in Armenia" (UNDP-Russian TF), "Prevention, Preparedness and Response to Natural and Man-made Disasters in Eastern Partnership Countries" (EU, PPRD East phase I and II), "Advancing IWRM Across the Kura Basin through Implementation of the Transboundary agreed Actions and National Plans" (UNDP-GEF), etc. In terms of empowering decision makers and civil society with information and technologies to reduce disaster and deforestation risks, to restore and conserve forest ecosystem by developing user-friendly innovative tools for information sharing and on-the-fly analysis, the project will partner with an upcoming UNEP-GEF activities under "Upscaling of Global Forest Watch in Caucasus Region" project.
Key representatives of national and local government institutions, academia and technical agencies in charge of environment, disaster risk management and climate change adaptation were consulted during the elaboration of the pre-concept note.

PART III: IMPLEMENTATION ARRANGEMENTS

The project will be implemented by UNDP through the Direct Implementation Modality, thus UNDP, as Implementing and Executing Agency, will provide technical assistance and oversight. The leading national partners of the project are the Ministry of Nature Protection and the Ministry of Emergency Situations of Armenia, and the Ministry of Environment Protection and Agriculture and the Emergency Management Service of Georgia. The project regional activities will be supported by the UNDP Country Office in Yerevan, while national activities will be implemented through UNDP Country Offices in both Armenia and Georgia in partnership with relevant national institutions. UNDP Regional Hub for Europe and CIS will provide Project Assurance, monitoring and troubleshooting. A Regional Steering Committee (RSC) and two National Steering Committees in Armenia and Georgia will be established and will meet at least annually during the implementation to ensure consistency with the project objectives, effective regional coordination and consensus.

ART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[6]

Mr. Erik Grigoryan, Minister of Nature Protection of the Republic of Armenia	Date*: 06.08.2018*
Ms. Nino Tandilashvili, Deputy Minister of Environment Protection and Agriculture of the Republic of Georgia	Date*: 17.08.2018*

B. Implementing Entity certification

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 (including National Communications to UNFCCC, disaster risk reduction strategies, Ecoregional Conservation Plan, etc.) 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.

5 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.

Adriana Dinu
Director, Sustainable Development (Environment) a.i.
Executive Coordinator, Global Environmental Finance
Bureau for Policy and Programme Support
United Nations Development Programme

Date: *August 6th, 2018*	Tel. and email: adriana.dinu@undp.org + 1 (212) 9065143
Project Contact Person: Natalia Olofinskaya, Regional Technical Advisor, UNDP IRH	
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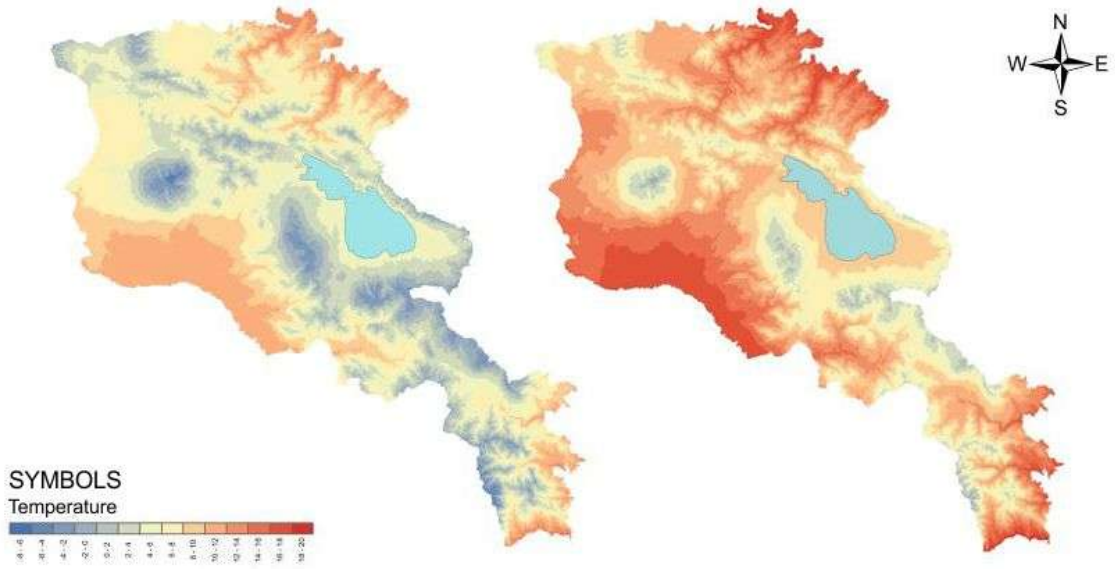
Annex 1.

Climate Change Context in South Caucasus Countries

It is evident that humans are contributing to wildfires by creating fire-prone conditions in natural ecosystems, importantly by igniting fires as well as by failing to implement efficient and effective forest management and fire prevention measures to mitigate anthropogenic factors. However, significant increase in the number of wildfires has been observed in Armenia and Georgia over the past decade following prevailing drought conditions, intensified windstorms, continued hot temperatures and aridization of ecosystems that affect significantly the frequency and intensity of fires, the spread of fires as well as the type of fires. It is not simply changes in annual temperature and precipitation that are important but change in precipitation and temperature extremes. Regional Climate Change Impact Study for South Caucasus Region (ENVSEC/UNDP, 2011) based on future projections (2020-2050) for two extreme climate indices (SU25 and TR20) revealed increase in both indices, thus the periods of warm days and nights will become longer in both Armenia and Georgia.

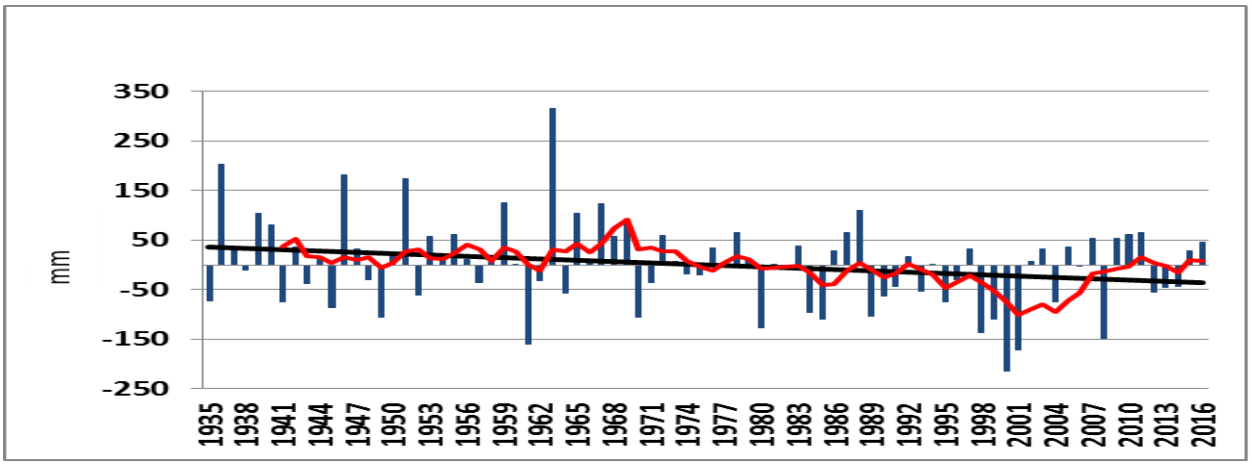
Armenia: Climate change in Armenia is assessed using the CCSM4 model in accordance with the IPCC recommended RCP8.5 and RCP6.0 scenarios for CO2 emissions. Therefore, as per the RCP6.0 scenario (equivalent to the SRES B2 scenario) CO2 concentration will be 670ppm by 2100 and it will be 936ppm according to the RCP8.5 scenario (equivalent to the SRES A2 scenario). Future change forecasts for ambient air temperature and rainfall have been developed up until 2100. The results indicate that the temperature will continue to increase in all seasons of the year (see table 5-2). However, according to the RCP8.5 scenario, starting from the mid-21th century (2041-2100) the temperature will rise at a more rapid rate. According to the RCP8.5 scenario, it is very likely that, by 2100, the average annual temperature in Armenia will be 10.2^{0}C, which exceeds the baseline (1961-1990) by 4.7 0C. Figure below presents spatial distribution maps for annual mean temperature for the 1961-1990 baseline, and projections for 2071-2100. It is expected that, by 2100, temperatures will increase in most regions of Armenia.



According to the National Communications to the UNFCCC, there are clear trends of further aridization for the major part of country as changes in annual ambient temperature and precipitation have been clearly recorded for various time periods. In accordance to the Third National Communication, in the period of 1929-1996, the annual mean temperature increased by 0.4^{O}C; in 1929-2007 by 0.85^{O}C, while between 1929-2012 already by 1.03^{O}C.

Temperature	Observation period													
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Deviation of annual average temperature from norm of 1961-1990, ^{0}C	0.3	0.7	0.6	5.5	0.2	0.5	0.6	2.7	-0.2	0.9	0.6	1.5	1.5	0.8

The comparison of changes in the assessment of precipitation demonstrates continues decline. Observations shows that in 1935-2012 it was close to 10% decline. Increase in the number of fire events coincide with decrease of precipitation in the period of 2007-2014.



Deviation of annual average precipitation in the territory of Armenia from the average of 1961-1990.

Many climatic factors such as changes in temperature and precipitation or more frequent heat waves and droughts, as well as the rising atmospheric CO2 concentration itself, will affect tree eco-physiology and tree growth under climate change. Wind storms, wildfires and heavy rains are other abiotic factors, which can become more frequent and intense under changing climate conditions with consequent significant effects on forests. Additionally, biotic factors, such as forest pests, will also be affected by the new conditions. Pest species may benefit from both the new climate as well as the weakened condition of trees under climatic stresses leading to more frequent pest outbreaks and potential spread of pest species to new areas. Thus, mass generation of pests and deceases with consequent accumulation of more dry materials creates preconditions for intensification of fire hazards[7]. The complex interplay of the direct and indirect stress factors can make the impacts of climate change on forests both more severe as well as more difficult to predict.

As a result, the vulnerability of Armenia's forest to climate change will increase considerably by 2030: possible losses of forested areas due to forest fires are assessed to stand at 1200-1300 ha, leading to reduction of carbon accumulation by 650-700 ton annually[8]. Moreover, as stated in the Third National Communication (TNC), without adaptation measures by 2030, 14-17.5 thousand ha of forest (5-6% of total cover) would be lost.

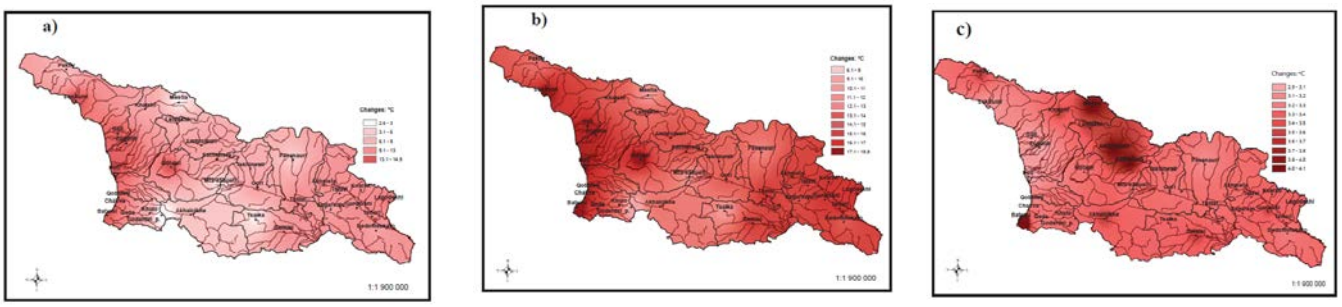
Georgia: The latest studies of climate patterns in **Georgia** show changes of major parameters – mean and extreme air temperature, relative humidity, moisture regime, average annual precipitation – which clearly indicate an overall trend of changing climate in the region[9]. Current climate change was assessed based on observations of 33 stations of hydro meteorological network of Georgia, in the period of 1961-2010, while the forecast scenarios for 2021-2050 and 2071-2100 were developed using regional climate model RegCM454. The following climate parameters were examined: mean annual temperature, total annual precipitation, average wind speed and relative humidity, as well as extreme climate indexes (SU25, TR20, ID0, FD0, Rx1day, Rx5day, R50mm, R90mm,

[7] Third National Communication to UNFCCC. Republic of Armenia. 2015.

[8] Second National Communication to UNFCCC. Republic of Armenia. 2010.

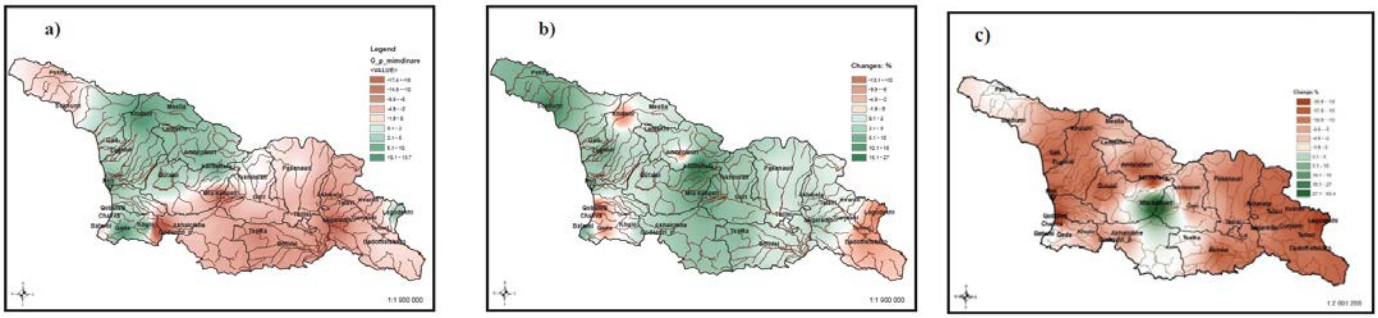
[9] Climate change in the South Caucasus. (2012). Zoi Environment Network

CCD and CWD55). Average values calculated in each period for different climate parameters were compared, and the trend (increase, decrease) and the nature of territorial distribution were identified. **Average annual air temperature** - had just increasing trend on the whole territory of Georgia during current 50 years (1961-2010). Between two periods of time (1961-1985; 1986-2010) this parameter most of all has increased in Dedoplistskaro (0.7 0C). In the same period maximal increase in West Georgia made 0.6 0C (Poti). Relatively small, but important trend of warming was revealed in Mtskheta-Mtianeti and Kakheti Regions. According to forecasts, Sachkhere will be mostly warmed (2.1 0C), followed by Ajara coastal zone and the Goderdzi Pass. The lowest increase (0.9 0C) is expected in Poti and Pasanauri. The biggest increase of temperature by 2071-2100 is expected in Batumi – up to 4.2 0C and the temperature will rise by 3.7 0C in Sachkhere, Ambrolauri and Mestia. On all other territories increase is lower, however more than 3^0C.



Change of average annual temperature: a) Increment between the periods of 1961-1985 and 1986-2010; b) 1986-2010 and 2021-2050; c) 1986-2010 and 2071-2050.

Total Annual Precipitation – between two periods (1961-1985; 1986-2010) increased in low mountain zone of Svaneti and mountain areas of Ajara (up to 14%). In general precipitation has increased in West Georgia, besides some exceptions (significant decrease was in eastern part of mountain area of Ajara, (Goderdzi Pass -17%), and decreased in Meskheti (-6%), central part of Likhi Range (Mta-Sabueti -8%), Javakheti and Kvemo Kartli. In East Georgia - in Pasanauri and Lagodekhi precipitation got increased by 2% and 8% respectively. Sustainable trends of the increase of precipitation are basically observed in West Georgia, especially in its mountain areas. This trend will be increased until 2050, and after that the decrease will be started, except for some areas (Batumi, Pskhu and Mta taSabueti). In East Georgia decreasing trend is changed to increase and by 2050 the growth of precipitation on the average by 3, 4% is expected; However, Lagodekhi is still an exception and the precipitation decrease by 6.3% is predicted. Significant decrease of precipitation is expected by 2100 on whole territory of Georgia, mostly in Samegrelo, Kvemo Kartli and Kakheti (22%). Central part of Likhi Range, where total annual precipitation is being increased by 93% is an exception in this period.



Maps of total annual precipitation change between the periods of: a) 1961-1985 and 1986-2010; b) 1986-2010 and 2021-2050; c) 1986-2010 and 2071-2100

In accordance with the Georgia's Third National Communication to UNFCCC, the number of hot days will increase on the territory of Georgia in summer and autumn and consequently annually as well. On the majority of stations this is proved by sustainable trends. By the end of the century, the average annual number of hot days will be by 50 days higher on all stations. The exception is Ambrolauri, where this value is increased by 110 days in the period of 2071-2100.

Analysis of current and expected scenarios of climate change are important for assessing vulnerability of forest ecosystem to climate change. The results of current and projected changes in factors impacting forest ecosystems in three regions (Ajara, Upper Svaneti and Borjomi – Bakuriani) demonstrated positive dynamics of mass

propagation of pests and increased dynamics of fire-damaged and burned areas in Borjomi-Bakuriani forests in particular. The forecast of climate change on Adjara territory showed that by the end of first half of this century the temperature could rise by 1.5 °C and to the end of the century the increase by 4.2 °C is expected. Besides the number of hot days and tropical nights has been increasing dramatically that provides favorable conditions for intensification of pest diseases in Adjara forests. As for precipitation, after small increase (1%) a 10% decrease is possible by the end of century. Based on which it is assumed that risks of wildfires and diseases will increase in the forests of Adjara as well, while the process of disappearing of subalpine forests and moving down of their upper boarder will be reduced.