Funding Proposal

SAP014: Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation

Armenia | Food and Agriculture Organization of the United Nations (FAO) | Decision B.26/02

21 August 2020

GREEN CLIMATE FUND

Simplified Approval Process
Funding Proposal

Project/Programme title:	*Forest resilience of Armenia, enhancing adaptation and rural green growth via mitigation.*
Country(ies):	*ARMENIA.*
National Designated Authority(ies):	*Ministry of Environment*
Accredited Entity:	*Food and Agriculture Organization of the United Nations*
Date of first submission:	*2019/3/08*
Date of current submission/ version number	*2020/3/13 V.006*
If available, indicate GCF code:	*This code is assigned to each project upon first submission of a Concept Note or Funding Proposal and remains the same throughout the proposal review process. If you have submitted this project/programme previously please indicate the GCF code here.*

GREEN CLIMATE FUND

A. PROJECT/PROGRAMME SUMMARY			
A.1. Has this FP been submitted as a SAP CN before?			Yes ☒ No ☐
A.2. Is the Environmental and Social Safeguards Category C or I-3?			Yes ☒ No ☐
A.3. Project or programme	☒ Project ☐ Programme	**A.4. Public or private sector**	☒ Public sector ☐ Private sector
A.5. Result area(s)	*Indicate the result areas for the project/programme.* Mitigation: Reduced emissions from: ☐ Energy access and power generation ☐ Low emission transport ☒ Buildings, cities and industries and appliances ☒ Forestry and land use Adaptation: Increased resilience of: ☐ Most vulnerable people and communities, including women and girls ☐ Health and well-being, and food and water security ☐ Infrastructure and built environment ☒ Ecosystem and ecosystem services		
A.6. Total investment (GCF + co-finance)	18,704,703 (million USD)	**A.7. Total GCF funding requested**	10 (million USD)
A.8. Type of financial instrument requested for the GCF funding	*Mark all that apply.* ☒ Grant ☐ Loan[1] ☐ Equity ☐ Guarantees ☐ Others:		
A.9. Division of GCF funding by thematic funding window (if applicable)	____7,451,630__USD or __74.5__ % Mitigation ____2,548,370__USD or ___25.5_ % Adaptation		
A.10. Implementation period	8 Years		
A.11. Total project/ programme lifespan	20 Years	**A.12. Expected date of internal approval**	*3/11/2020*
A.13. Executing Entity information	Republic of Armenia, acting through the Ministry of Environment / FAO		
A.14. Scalability and potential for transformation (Eligibility for SAP, max. 50 words)			

1 Senior loans and subordinated loans.

This investment focusing on a Forest-Energy nexus approach will address the government's urgent priority in both climate change mitigation and adaptation targets holistically and synergistically. The approach will secure the CO2 removals by increasing sustainable forest cover, improving forest management and forest restoration practices, and reducing GHG emissions from energy efficient fuelwood stoves.

Climate adaptation of forests is a precondition to achieve the mitigation targets – the project will increase the extent and resilience of forest cover against the projected climatic changes by introducing climate adaptive forestry technique such as production of climate adaptive seedlings (locally available species) and planting practice and improved management of restored forest lands. Moreover the introduced energy efficient stoves will reduce the use of fuelwood from forests and therefore reduce the pressure on forest ecosystems but also at the same time increase energy security in the rural areas vulnerable to the climate change.

This nexus approach is built on several innovations in particular application of ecosystem-based adaptation technique in forest restoration, integration of evidence-based GIS methodology for national forest governance and community engagement, development of national standards for energy efficient stoves, and a market-driven approach for access to affordable energy efficient stoves in rural communities vulnerable to the projected climatic change.

This GCF project will un-lock the private sector participation and future investments in the forest and energy sub-sectors, which are currently limited in the country, through: i) implementing supportive national policy guidelines in forest and rural energy sub-sectors; ii) introducing economically and financially sustainable afforestation and forest restoration practices and techniques; iii) enhancing the access to energy efficient technology; and iv) developing national curricula of the introduced / enhanced practices in forest-energy sub-sectors, to bring the highest sustainability of the nexus approach and impacts from the project.

Securing and scaling up CCA/CCM investments via tailored technology transfer (climate adaptive silviculture and rural energy efficiency) is a precondition for Armenia to fulfill the NDC[2] and to involve the private sector in achieving targets.

A.15. Project/Programme rationale, objectives and approach (max. 250 words)

The WB ranked Armenia among the top 4 CC vulnerable countries in the EECA region[3]. Forests are reported as most sensitive to climate change[4] with rural population heavily dependent on fuelwood for energy[5].Total GHG emissions in 2014 accounted for 10.5 $MtCO_2eq$ with reported growing tendency (+57% by 2030) and carbon removals from the forest sub-sector contracting by 11% (2010-2014). Literature correlates fuelwood with forest degradation as it is the primary energy's source for about 74% of rural households. Although the NDC identifies forestry as the major mitigation / adaptation tool, energy efficiency of heating appliances fueled with wood hardly reaches 40%. In this sense, the project will target adaptation measures by applying precautionary principle by investing in forest cover as an instrument to reduce exposure of communities in Lori and Syunik Marzes (49% of total forest cover) to climate induced risks. The project investments will aim at: (i) expanding national forest cover to about 2.5%, (ii) reducing fuelwood demand by at least 30%, and (iii) enabling sustainable and climate adaptive forest management on at least 135,800 ha[6] (20 y) also ensuring technology transfer to rural communities, private sector and both central and local institutions. Due to high public debt (> 61% GDP), the Country is undertaking key fiscal adjustment and increasing the foreign currency debt which represents an additional source of vulnerability (IMF).

Additionally, the implementation of adaptation measures will require an update in stakeholder's knowledge in Armenia to ensure that climate adaptive methodologies and technologies are transferred and mainstreamed in the formal education sector and can be reproduced beyond the project life span. In this sense, will respond to the Government goal to increase forest cover following an ecosystem approach for climate change adaptation and mitigation by restoring forests.

2 Kindly refer to Annex 2 pg. 6 for a complete list of acronyms and definitions used in the funding proposal.
3 WB, 2012 ref [329] Annex 2
4 See Climate Scenario Under Section 6 of the pre-feasibility study (Annex 2)
5 UNECE, 2017 suggests that at least 30% of population in the country can be considered energy poor with about 50% of total family income on energy and heating.
6 Equivalent to Forest Cover in Lori and Syunik.

B. PROJECT/PROGRAMME DETAILS

B.1. Context and baseline (max. 500 words)

Describe the climate vulnerabilities and impacts, GHG emissions profile, and mitigation and adaptation needs that the prospective intervention is envisaged to address. Available trends and projections indicate exposure to: (i) Average temperature increases of 2°C – 2070 / 4°C – 2100; (ii) Precipitation decreases of 3% - 2030, 6% - 2070, 9% - 2100[7];(iii) River flow decreases of 6.7% - 2030, 14.5% - 2070, 24.4% - 2100 compared to the 1961-1990 period; (iv) Snow cover decreases of 7% - 2030, 16 to 20% - 2070, 20 - 40% in 2100.

The Third National Communication to the UNFCCC (TNC) estimates that under a business as usual scenario (BAU) 5-6% of existing forests might be lost by 2030 as unhealthy trees and forest stands will become more sensitive to pests, diseases and fires. Additionally, rural communities are still heavily dependent from forests and, reportedly, responsible for the harvesting of up to 2 million m^3 of fuelwood yearly against an annual growth of forests of about 0.6 million m^3/y. Recent surveys on households' energy consumption concluded that due to raising prices of fossil fuels, fuelwood consumption per energy unit output will increase.

Concerning adaptation challenges, forestry represent one of the less adapted sub-sector. The TNC forecasts a shift in forests' boundaries associated with the development and spread of other ecosystems, forest wildfires, diseases and mass generation of pests. Similarly, a recent publication from USAID[8] includes ecosystems among the sectors that are more vulnerable to climate change and where impacts will be extensive and tangible. According to various sources[9] , 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 % of Armenia's higher plant species are reported in danger of extinction due to projected climate change. Semi-desert and desert areas are projected to expand by 30 %, 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. Additionally, studies from the Armenian academia, the UN the World Bank confirm that climate change is expected to have significant effects on the population dynamics of forest pest species. Armenian forests are expected to suffer significant growth losses caused by insect attacks under climate change. Severe and repeated pest infestations will lead to increased tree mortality, which also contributes to the accumulation of drying dead organic matter in forests increasing the risk of wildfires. As described Armenian forest are becoming more vulnerable and less resilient to climate change.

Consequently, net carbon emissions will be negative affected (forests are the only existing carbon sink in Armenia) and rural communities might be forced to accelerated migration to urban areas or abroad. In other words - without forest - national commitments toward the Paris Agreement and the Country's socio-economic development targets might be compromised. A full description of the climate scenario, exposure, vulnerability and adaptation deficit of Armenia and project areas is included in Annex 2 pages 12→19 (National circumstances) and pages 54→61.Total national emissions (2014) accounted for 10,450,000 tCO_2eq. The main contributor (>67%) is the energy sector while forests remove about 4.6% of total emissions yearly. Armenia's NDC (2015) aims to reach 20% of forest cover and to emit 2.07 tCO2eq/capita applying an ecosystem based approach by 2050. Mitigation will be mainly from renewable energy (RE), energy efficiency (EE), forests, and carbon storage in soil. Compared to 2010 levels, literature[10] forecasts + 57% emissions' increase by 2030 while the already decreased carbon removals (-11% 2010-2014) is projected to further decrease in the BAU scenario. Introducing climate adaptive silviculture practices, reducing degradation drivers of forests (i.e. fuelwood) and increasing participation in forest governance, will contribute to achieve NDCs and to low-carbon development pathways consistent with a temperature increase of less than 2 °C[11].

Describe the baseline senarios that the proposed intervention seeks to overcome (i.e. emissions baseline, climate vulnerability baseline, resilience/adaptation challenges. The baseline scenario includes: (i) carbon removals from the forest sub-sector (5% of total GHG emissions), (ii) fuelwood use (8m3 per hh/y) and emissions in project areas , (iii) Adoption rate of climate adaptive practices in forestry (0%), and (iii) community participation in forest governance (absent)[12].

Describe any recent or ongoing projects that are related to this FP, such as financing from Global Environmental Facility, Adaptation Fund, Climate Investment Funds or others, and how this project/programme complements these. EE and forestry are themes Armenia has experience in. Nevertheless, none of the current initiatives address the nexus between forests, EE /energy

[7]. Detailed information on climate change trends and projections is available in Annex 2- Section 6. References are available in Annex 12 # 160, 319,329, 335, 344
[8] Sources: Annex 12 # 160, 170, 180, 319, 329, 335.
[9] Sources: [21-31-94-102-123-170-190-214-220-228-255-257-258-263-264-267] Annex 12
[10] Sources: Annex 12 # 170, 180, 308, 320, 356
[11] Described approach is also one of the recommendations of the latest IPCC report [Annex 12 # 365].
[12] Baselines, targets, indicators and means of verifications are detailed in Annex 2-Sections 8/9/13

security and mitigation in rural areas. The project is designed to scale up best practices from past EE and forestry projects and to collaborate and coordinate with ongoing projects in the Country and in similar contexts (i.e. Lebanon, Turkey, Georgia)[13] so as to ensure that both approaches could be combined contributing to NDC targets.

Describe the main root causes and barriers (social, gender, fiscal, regulatory, technological, financial, ecological, institutional, etc.) that need to be addressed. As detailed in Annex 2-Section 6, the main root causes and barriers are:

- **(a)** lack of alternatives for rural populations – especially women (25% of rural households are headed by single women) - that need to fulfil their primary energy needs with inefficient and costly practices and appliances;
- **(b)** lack of technical capacities and institutional coordination of institutions to address energy needs and climate change in the forest sector;
- **(c)** lack of adequate policy mechanisms to apply the ecosystem approach aimed for in the NDC and ensure stakeholder participation in forest governance as foreseen in the Armenia Forest Code (2005) and related decrees[14].

B.2. Project/programme description (max. 1,000 words)[15]

Describe the proposed set of components, outputs and activities that will address the identified barriers and lead to the expected project/programme objective. The description should be provided for each component, output and activity, and should include a clear rationale for the cause-effect relationship of the interventions in each component. Include description of the target beneficiaries. The project will be executed in Lori and Syunik Marzes[16] (Annex 2-Sections 7 pg.49→56). Project areas have been selected by stakeholders as priority areas due to the importance of forest ecosystem in both Marzes, climate and climate change exposure and poverty level of rural population, population density, and type of forests.

Project support will be delivered in two Provinces: 105 rural communities in 8 municipalities of Lori Marz and 102 rural communities in 7 municipalities of Syunik Marz ("Project Area"). The selection of these Provinces, as well as the selection of direct beneficiaries, is further summarized in Table B.2.1. The Project will not foresee any transfer of ownership for the beneficiary contribution.

Table B.2.1. Selection of Project Area and beneficiaries

Level / type/ related project component	Criteria / process	Stage / timing
Municipality and community selection	The primary target group of the Project are all the rural population (mostly poor or very poor) with the higher direct dependency on forest ecosystem services for fuelwood (average 8 m3/y) and livelihood (e.g. agriculture, beekeeping, NWFP) in the 15 municipalities and 207 rural communities of Lori and Syunik Marzes. The selection of the municipalities and communities of Project Area was based on the assessment of a large number of data sets at national and regional scale and using the Earth Map tool as well as a series of vulnerability analysis and according to the following criteria (See Annex 2, Section 7: Project Areas And Target Group): a. Relevance of forest cover for the Country (Criteria: forest cover in %); b. Exposure of ecosystems to climate variability and change as well as to anthropogenic	Completed during project design. The following regions have been prioritized, and constitute the 'Project Area'. Lori Marz: 105 rural communities in 8 municipalities. Syunik Marz: 102 rural communities in 7 municipalities.

[13] For details on best practices and lessons learned Annex 2-Section 6. For the list of projects with which the project will coordinate and or collaborate: Annex 2-Section 11.
[14] E.g. Decree N- Decree N 583-N 2006 on forest concessions to communities.
[15] Detailed description of activities is available in Annex 2, pages 72→96
[16] Equivalent to governorate.

	stressors (Criteria: i) Fragility of mountain ecosystems characterized by forests; and ii) Relevant presence of forests (biodiversity hot spot) currently exposed to changing climate variables (mostly temperature) extensive exploitation for fuelwood and mining); c. Vulnerability of ecosystems and communities to climate change (Criteria: Availability of land suitable for forest restoration investments); d. Mitigation potential in terms of forest rehabilitation as a function of availability of suitable land from the State Forest Land (SFL) and from Municipalities (Criteria: i) Dependency of communities from forest for Energy, livelihood and protection); and ii) Interest of communities to engage into forest governance and positive past and ongoing experiences of communities and municipalities willing to invest in increasing forest cover); e. Socio-economic vulnerability of communities / high dependency of communities from ecosystem services (Criteria: i) Families located in the low/lowest income in %; ii) Households involved in migration processes in %; iii) Population relying on fuelwood as primary source of energy in %).	
Selection of State Forest Fund and municipal lands for Activity 1.2.1	Final selection of forest restoration investments will be determined by the MoE according the following agreed criteria: a. Identified sites will not overlap with other forestry projects; b. Identified sites will not correspond to areas assigned to offsets environmental damages caused by the private sectors or others; c. Identified sites will have the necessary biophysical requirement to secure survival of seedlings; d. Identified sites will be cleared by central and local institutions and will be clearly defined from a legal point of view (potentially disputed plots excluded). e. Identified sites will not require changes in land tenure or that might cause conflicts with adjacent communities; f. Identified sites will not include areas under legal/illegal pasture uses. g. Absence of natural regeneration.	During the project formulation, MoE (Hayantar State Non-Commercial Organization) pre-identified and geo-referenced about 8,000 ha of potential areas for planting of seedlings on State-owned forest fund lands. Finally selected sites will be reviewed by the Project Steering Committee (PSC) and final approval by the Executing Entities under the overall and final confirmation of the AE during the project implementation.
Beneficiary institutions actors at national level for the following Activities: 1.1.1; 1.1.2; 1.2.1; 1.1.2; 1.3.1; 1.3.2	Beneficiaries will be ministries, institutions, CSOs, and the private sectors including, among the others, Ministry of Environment, the Ministry of Economy, Ministry of Education, Science, Culture and Sport, Ministry of Territorial Administration and Infrastructure, Ministry of Labor and Social Affairs, Environmental Project Implementation Unit (EPIU), Hayantar State Non-Commercial Organization (SNCO), State Forest Monitoring Center (SCFU), WWF Armenia.	Identification of primary beneficiaries was completed during project design. Additionally research and educational institutions, private sectors and NGOs will be inclusively considered based on the discussion at the PSC and final approval by the Executing Entities under the overall and final confirmation of the AE during the project implementation. Contractual agreements required for co-financing contribution by selected beneficiaries will be signed by:

2.2.1; 2.2.2; 3.2.1; 3.2.2; 3.2.3.	Eligibility criteria for national level stakeholders include institutions involved in planning, management and monitoring of forest resource base and renewable energy in the context of climate change, institutions mandated to stimulate on socio-economic development. Eligibility criteria of beneficiaries for Activity 2.2.1 will include teachers and trainers of the Institute for Vocational Education and Training. Eligibility criteria for private sector actors at national level will be: • Private actors that are active in plant production in related fields (horticulture, etc) and/or are interested in forestry and sustainable use of forest resources of Armenia; or • Private actors that are involved in stove production and energy efficiency.	i) FAO and the Government of Armenia (Ministry of Environment) for the activities on forest land, nursery, and project management; and ii) FAO and WWF Armenia for the activities on technical assistance related to community engagement and participation in forest management and creating new forest areas in municipal lands in the Project Area. The final selection of private sector beneficiaries of Activity 2.2.1 will be carried out by FAO (Executing Entity) under the oversight of AE (FAO), reviewed by the PSC and finally confirmed by AE during the project implementation (Target number of beneficiaries will be 15 private companies). The Project will consult with national partners and will make every possible effort to promote involvement of young women to trainings during the implementation.
Beneficiary Institutions at local level for the following Activities: 3.1.1; 3.1.2; 3.2.3; 3.3.1.	The beneficiaries will be Marzes, town branches of Hayantar SNCO, municipalities, and communities. Eligibility criteria for national level stakeholders include institutions involved in planning, management and monitoring of forest resource base and renewable energy in the context of climate change, institutions mandated to stimulate on socio-economic development in the Project Area.	Identification of primary beneficiaries was completed during project design. Additionally research and educational institutions, private sectors and NGOs will be inclusively considered based on the discussion at the PSC and final approval by the respective Executing Entity under the overall and final confirmation of the AE during the project implementation.
Rural households participating in the adoption of Energy Efficient (EE) wood stoves benefitting from Technology Grant Support of Activity 2.3.1 (“End-users”)	The main selection criteria for the rural household beneficiaries of adopting EE wood stoves benefitting from Technology Grant Support of Activity 2.3.1 (“End-users”) will be: • Being a permanent resident of a forest adjacent community in Lori or Syunik; • Being registered in the Social Welfare assistance program; and • Full attendance of the fuelwood management training. The target number of beneficiary benefitting from Technology Grant Support will be 9000 rural households in the Project Area.	The final selection of rural household beneficiaries (“End-users”) will be carried out by the local CSO under the oversight of municipalities and EPIU (EE), reviewed by the PSC, and finally confirmed by AE during the project implementation. Contractual agreements with selected End-users will be signed by service providers (e.g. retailers, suppliers) of energy efficient wood stoves to be procured by EPIU through tendering process. Contractual agreement will contain indication of beneficiaries’ contribution amount.

The project will work with national and local institutions as well as with the FAO, the ADA, WWF-Armenia and the Autonomous Province of Bolzano – South Tyrol that are also co-financing activities in each of the proposed components. To ensure the aimed paradigm shift[17] the following goal, objective, outcomes and outputs[18] have been identified:

Overall Goal: By 2030, contribute to achieving ecosystem neutral GHG emission with clear and monitorable adaptation co-benefits[19].

[17] Detailed description of the paradigm shift as well as of the theory of change is available in Annex 2 – Section 8
[18] A complete list of identified activities per output is available in Annex 2-Sections 9 and 10.
19NDC goal

Project Objective: By Y8, CO_2 removals from the forests subsector are increased by at least 7% via sustainable climate adaptive forestry investments and fuelwood energy efficiency with effective involvement of communities.

Component 1. Climate Change mitigation and adaptation through forest investments and technology transfer[20]: will address the forest restoration interventions responding to the country goal to increase the national forest cover to at least 20% by 2050 (Armenia's NDC, 2015). The project will support the implementation of forest restoration interventions ensuring technology transfer and capacity development of concerned stakeholders pursuing both climate change mitigation and adaption objectives in order to: (i) secure higher capacity of forests to store carbon and (ii) contribute to higher resilience to climate risks of forests. **Barriers Addressed:** Item (a), (b) and (c) in Section B.1. ***Outcome 1*** *By Y8, at least 2.5% of degraded forestland is restored and sustainably managed following a climate adaptive methodology.*

Intervention	Mitigation benefits	Adaptation benefits
Output 1.1: By Y2, at least 3 nurseries are operational in the production of climate adaptive seedlings and Hayantar staff capacitated	• Increased carbon sequestration.	• Increased forests' drought/pest resistance, regeneration capacity after fires and other human induced stressors, • Enhanced ecosystem services for rural livelihoods (i.e. beekeeping and other NWFPs).
Activity 1.1.1: Establishment of 3 additional forest climate adaptive nurseries and capacity development of Hayantar staff and stakeholders on related topics	The project will develop nursery capacities for production of climate adaptive seedlings in Lori and Syunik Marz and by adding two greenhouses at Hayantar existing nursery in Hrazdan. The activity will include training of stakeholders involved in nurseries' management.	
Activity 1.1.2: Production of at least 12,000,000 container seedlings	Seeds will be collected by trained Hayantar staff in selected forests close to investments' areas (well-preserved forest site in the vicinity of each plot) according to specific protocols to ensure sustainability of the process and production of high quality plant materials. Production operations will start in the nurseries in order to have 12,000,000 one-year seedlings of the different target species. At least 9,000,000 seedlings will be used in project areas while remaining production will be used to sustain the regular operations of Hayantar.	
Output 1.2: By Y7, at least 7,300 ha of forest investments are secured in project areas with sustainable and climate adaptive approaches and practices	Increased carbon sequestration.	• Increased forests' drought/pest resistance, regeneration capacity after fires and other human induced stressors, Enhanced ecosystem services for rural livelihoods (i.e. beekeeping and other NWFPs).
Activity 1.2.1: Preparation work on selected State Forest Fund and municipality lands	Forest restoration areas will be selected by the MoE, Hayantar and communities according to criteria aimed at ensuring the highest survival rate and participation of communities. Species for each restoration plot will be selected based on the species composition of the reference ecosystem (well-preserved forest site in the vicinity of each plot).	
Activity 1.2.2: Planting and maintenance work on selected State Forest Fund lands (6,300 ha) and Municipal Lands (1,000 ha)	The project will restore an average of 784 ha every year from year 2 to year 6 of the project and ending planting activities in autumn of year 7 with replacement of dead seedlings on previous year's plantings sites. Forest restoration in Municipal lands will mainly take place in Syunik municipality, as part of a collaboration framework between the project and WWF-Armenia. Finally, the project will establish 1,600 ha of adaptive management measures that will be applied with stakeholders to secure health and growth of degraded stands.	
Output 1.3: By Y6, at least 1,700 people (of which 30% women) from Hayantar, local authorities, private sector and civil society are trained in sustainable and climate adaptive silviculture	• Long term sustainability of the intervention and country ownership, • Increased opportunities for youth and women, • Replicability of the project in Armenia and the region.	
Activity 1.3.1: Development and formalization of the training curricula with the MoE and the Institute for Vocational Education and Training of required trainings	The project will involve national institutions to ensure that capacity development needs identified by the experts and initially used to train practitioners involved in nursing, planning, planting and maintenance of forests in project areas, are transferred not only to targeted Hayantar staff but included in national curricula related to agriculture and forestry.[21]	
Activity 1.3.2: Capacity development of at least 1,700 people from Hayantar, Armenian Civil Society, Academia, Vocational Schools teachers and private sector	Methodologies and techniques introduced by the project will be disseminated among stakeholders with specific trainings, courses, workshop so to ensure the highest possible technology transfer to stakeholders.	

20 A detailed description of Component 1 is available in Annex 2-Sections 9 and 10, Component 1.

[21] The project team will consult with national partners and will make every possible effort to encourage involvement of young women to trainings, and ensure that at least 30 percent of trainees are represented by them.

Component 2. Promoting forest sustainability reducing forest degradation drivers[22]: will address the main driver of forest degradation (fuelwood harvesting) ensuring technology transfer of energy efficiency appliances to both the private sector and rural households so as to decrease pressure on natural ecosystems and strengthen natural regeneration and sustainability of forestry investments. **Barriers Addressed:** Item (a) and (b) in Section B.1. ***Outcome 2:*** *By Y6, fuelwood consumption per energy unit output of targeted rural communities is optimized and decreased by at least 30%. The project LogFrame (presented in Annex 2, pages 67-71) will inform GCF impact indicators M3 and outcome indicator M7, particularly related to GCF result area "Buildings, cities, industries and appliances".*

Intervention	Mitigation benefits	Adaptation benefits
Output 2.1: By Y2, National Standards for energy efficiency of heating related appliances are approved and EE companies are trained on how to incorporate them in their operations	• Transfer and scale up of emission reduction technologies and practices, • Low emission technologies are available to citizens, • Engagement of the local private sector in securing low emission development.	• Introduced technologies will increase energy security of the poorest and improve management of the energy needs at the national level.
Activity 2.1.1. Design and approval process of quality standards for EE heating appliances	The project will develop in joint venture with the MoE and the Ministry of Economy the standards necessary to sustain a sound and long term oriented engagement of the private sector as well as to guarantee quality of EE heating appliances fueled with wood.	
Activity 2.1.2. Testing of appliances	The project will support detailed analysis of the efficiency and risks of current heating appliances fueled with wood biomass as well as of those that will be installed via the project.	
Output 2.2: By Y5, at least 15 private EE companies are involved in wood-stoves assembling, installation and maintenance and dispose ofskilled labor in project areas	• Reduced emission from single sources, • Increased carbon storage due to avoided fuelwood related disturbance on forests.	• Reduced use on fuelwood will reduce pressure on forests increasing resilience against CC negative impacts
Activity 2.2.1. Coaching of manufacturers, retailers and teachers from vocational schools	Development of a manual for improved wood stoves and training of constructors and vocational schools teachers involved in the courses of light industry, energy and other disciplines related to EE.[23]	
Activity 2.2.2: Development and formalization of the training curricula with the MoE and the Institute for Vocational Education and Training of required trainings	The project will involve national institutions to ensure that capacity development needs identified by the experts are transferred not only to targeted private sector enterprises but included in national curricula related to EE appliance production, installation and maintenance.	
Output 2.3: By Y6, at least 9,000 HH (of which at least 25% women are single women headed) use increased EE wood stoves in project areas and are trained on fuelwood management	• Long term sustainability of the intervention, • Increased opportunities for youth and women, • Improved living standards for women and vulnerable HHs, • Replicability of the project in Armenia and the region.	
Activity 2.3.1. Technology Grant Support for the adoption of the RE appliances is developed and available for target households	The project will work with institutions and civil society to identify beneficiaries according to selected criteria[24] and will provided a technology incentive to cover the additional cost of technology of targeted appliances.	

Component 3. Strengthening governance of Forest resources and climate change's impact management at community, as well as local and central government levels[25]**:** of the project will assist stakeholders in creating the enabling conditions to execute the Armenia Forest Code (2005) and related bylaws ensuring sustainable and climate adaptive management and enhancing the capacity of rural communities to engage in forest governance. **Barriers Addressed:** Item (b) and (c) in Section B.1. ***Outcome 3:*** *By Y8, relevant stakeholders (including Hayantar[26] and local communities) are enabled to adopt effective governance and adaptive management of forests and related ecosystem services.*

Intervention	Mitigation benefits	Adaptation benefits
Output 3.1: By Y5, the guidelines to enhance participation and engagement of Community in sustainable and climate adaptive management of forest and related ecosystem services are adopted	• Increased carbon storage thanks to sustainable and climate adaptive forest management, • Reduced pressure on existing forest will allow higher rates of natural regeneration and increase	• Climate adaptive practices introduced by the project and formalized in the guidelines will increase the resilience of forests and mitigate negative impacts of CC,

22 A detailed description of Component 2 is available in Annex 2-Sections 9 and 10, Component 2.
23 The project team will consult with national partners and will make every possible effort to encourage involvement of young women to trainings, and ensure that at least 30 percent of trainees are represented by them.
24 With highest priority given to vulnerable women and vulnerable groups.
25 A detailed description of Component 3 is available in Annex 2-Sections 9 and 10, Component 3.
26 Hayantar is under the subordination of the State Forest Committee. Main functions of Hayantar are to ensure control, protection, conservation of biodiversity, restoration, re/afforestation and efficient use of state forests and forest lands. Annex 2, Section 6 pg. 27.

	carbon storage at no cost for the national budget.	
Activity 3.1.1: Development of sustainable and climate-adaptive forest governance guidelines applicable under forest concessions for community organizations	A group of national and international experts will design, with the stakeholders, the guidelines to enhance engagement of communities in forest governance and related fuelwood market applying introduced sustainable and climate-adaptive forest methodologies and practices[27]. The guidelines will be integrated by feasibility studies developed under Activity 3.1.2.	
Activity 3.1.2: Institutional and community support in applying climate adaptive forest governance guidelines including rural EE and climate change mainstreaming	The project will support relevant stakeholders in project areas in building the competencies to apply sustainable and climate adaptive management practices. Target communities will also receive specific and additional training related to energy efficiency, fuelwood management and sustainable biomass production so to increase the efficiency of the process and the interest of communities on forest management and sustainable use rather than exploitation. In addition, the project will also develop feasibility studies, to integrate the guidelines produced under Activity 3.1.1, developed together with stakeholders, for the creation of market oriented aggregation platforms, provided with or supported by viable financial inclusion mechanisms as appropriate to secure sustainable supply of fuelwood from community concessions.	
Output 3.2: By Y8, a National Forest Monitoring and Assessment System (NFMA) is established, the first inventory cycle completed, discussed with stakeholders and results mainstreamed into relevant policies	• Increased carbon storage thanks to sustainable and climate adaptive forest management, Reduced pressure on existing forest will allow higher rates of natural regeneration and increase carbon storage at no cost for the national budget.	• Increased knowledge of forests, their distribution and the ecosystem associated will increase the options available to policy makers also enhancing resilience and mitigating negative impacts of CC.
Activity 3.2.1: Assessment of land categories and, designing of forest monitoring system and developing national capacities	A forest monitoring system will be designed by the end of year 1. The design will be presented and discussed at a survey design validation workshop in the fourth quarter of year 1 beginning of year 2. This survey will consist of the visual interpretation of sample points (plots) on the basis of high resolution imagery available.	
Activity 3.2.2: Field data collection including survey data management, quality assurance, evaluation and interpretation of survey results	Field data collection will start in year 2 and continue till year 7 of the project when the plots established in year 1 of the first inventory cycle will be re-visited and re-assessed and will also serve as means of versification for Component 1.	
Activity 3.2.3: Assessment of intervention areas and impact by orthophoto mapping and digital surface models	Every second year of the project the SFMC will secure orthophoto mapping and digital surface models of project areas so to monitor investments and advise on mitigation actions if and when needed.	
Output 3.3: By Y7, at least 300,000 people (of which 52% women) from 207 rural communities in project areas are informed, sensitized and empowered on climate adaptive silviculture, Energy Efficiency and climate change mainstreaming	• Long term sustainability of the intervention, • Increased opportunities for youth. • Replicability of the project in Armenia and the region • Climate Change mainstreaming in National policies.	
Activity 3.3.1: Community empowerment, awareness and sensitization	The project will involve communities in project areas and at the national level in activities that aim at increasing the awareness of citizens concerning the main topics of the project and to enhance their participation into forest governance.	

Recent literature [Third National Communication and others] highlights that Armenian forests are particularly sensitive to changing climate conditions, as the long life span of trees prevents rapid adaptation in forest ecosystems. Many climatic factors such as changes in temperature and precipitation or more frequent heat waves and droughts will affect tree growth under climate change. Wind storms, wildfires and heavy rains are projected to become more frequent and intense under changing climate conditions with consequent significant effects on forests.

Additionally, consulted literature (**Annex 12**) forecasts that: suitable ranges of forest tree species will likely shift upwards on the mountain slopes associated with the development and spread of other ecosystems, forest wildfires, diseases and mass generation of pests. Additionally, the “aridifying” climate will increase the risk of wildfires by drying vegetation and making the dead organic matter in forests more flammable.

The changing conditions will also affect NWFP, which can have, in addition to the loss of crucial ecosystem services, significant impacts on rural populations and their livelihood as well as on recreational values of forests with probable impacts on ecotourism strategies of the Country.

Given the reported vulnerability and NDC commitments, investments in mitigation via forestry require an adaptive approach so as to ensure that new and existing forests will increase resilience against projected climate changes.

[27] Produced polices and guidelines will be gender responsive, and the staff will be trained on how to use them, and will be also exposed to awareness raising and sensitization.

In a business as usual scenario, the registered decrease in carbon reductions from forests will continue preventing – among other - the Country to fulfill its nationally determined commitments for both adaptation (i.e. forest ecosystems adaptation) and mitigation (i.e. mitigation contribution from land use and forestry).

Therefore, the project will support the implementation of several forest restoration interventions pursuing both climate change mitigation and adaption targets. Higher resilience to climate risks of existing and restored forests will correspond with higher and protracted capacity to store carbon and reduce exposure to climate induced risks.

Adaptation of ecosystems will be ensured by enhancing the forestry sector's capacity to produce adaptive seedlings, ensure adaptive plantations processes (Component 1), reducing drivers of degradation (Component 2) and providing the adequate management practices to central and local stakeholders (Component 3).

Selection and engagement of beneficiaries is differentiated throughout the project components but the selection has been agreed by participants of the national engagement process, the NDA and the FAO according to the following five criteria: a) relevance of forest cover for the Country, b) exposure of ecosystems to climate variability and change as well as to anthropogenic stressors; c) vulnerability of ecosystems and communities to climate change; d) mitigation potential in terms of forest rehabilitation as a function of availability of suitable land from the State Forest Land (SFL) and from Municipalities; and e) socio-economic vulnerability of communities / high dependency of communities from ecosystem services.

In this sense, direct beneficiaries are the population of project areas of Lori and Syunik Marzes (377,308 – 12% of the total population, 52% women) distributed in the 15 municipalities and 207 rural communities, public sector institutions and private sector's actors involved in nurseries, forestry and energy efficiency (EE). Including the entire population of project areas responds to the fact that increased and more resilient forest cover will directly and positively affect each communities (enhanced ecosystem services, higher availability of NWFP and reduced exposure to extreme events). Each of the 15 municipality and the connected 207 rural communities will be involved in trainings and awareness campaigns planned in Component 2 and 3.

Additionally, within the scope of Component 2, 10,000 people will be further involved in direct EE activities. Direct beneficiaries have been identified by considering the total rural population of project areas (35,209 households) that has fuelwood as main energy source for heating (74%) and that is included in the State Social Welfare Program of the Ministry of Labor and Social Affairs (39%). Rural communities in the two Marzes are mostly poor or very poor with the highest direct dependency on forest ecosystem services for fuelwood (average 8 m3/y) and livelihood (i.e. beekeeping, NWFP).

The entire Armenian population is considered indirect beneficiaries in view of the fact that forests in Armenia are public property and key ecosystem services such as reduced exposure to climate driven hazards as well as carbon sequestration will benefit the entire country population because: (i) it will be enhance the capacities of the entire staff of Hayantar (responsible for forest management within the Ministry of Environment) to manage forests in the context of a changing climate; (ii) it will transfer EE technologies and practices to the concerned private sector; (iii) it will ensure that transferred technologies and practices become part of the national curricula preparing youth in the field of forestry management and energy; and (iv) it will support the State in the design, adoption and mainstreaming of EE efficiency and safety standards for heating appliances fueled with biomass.

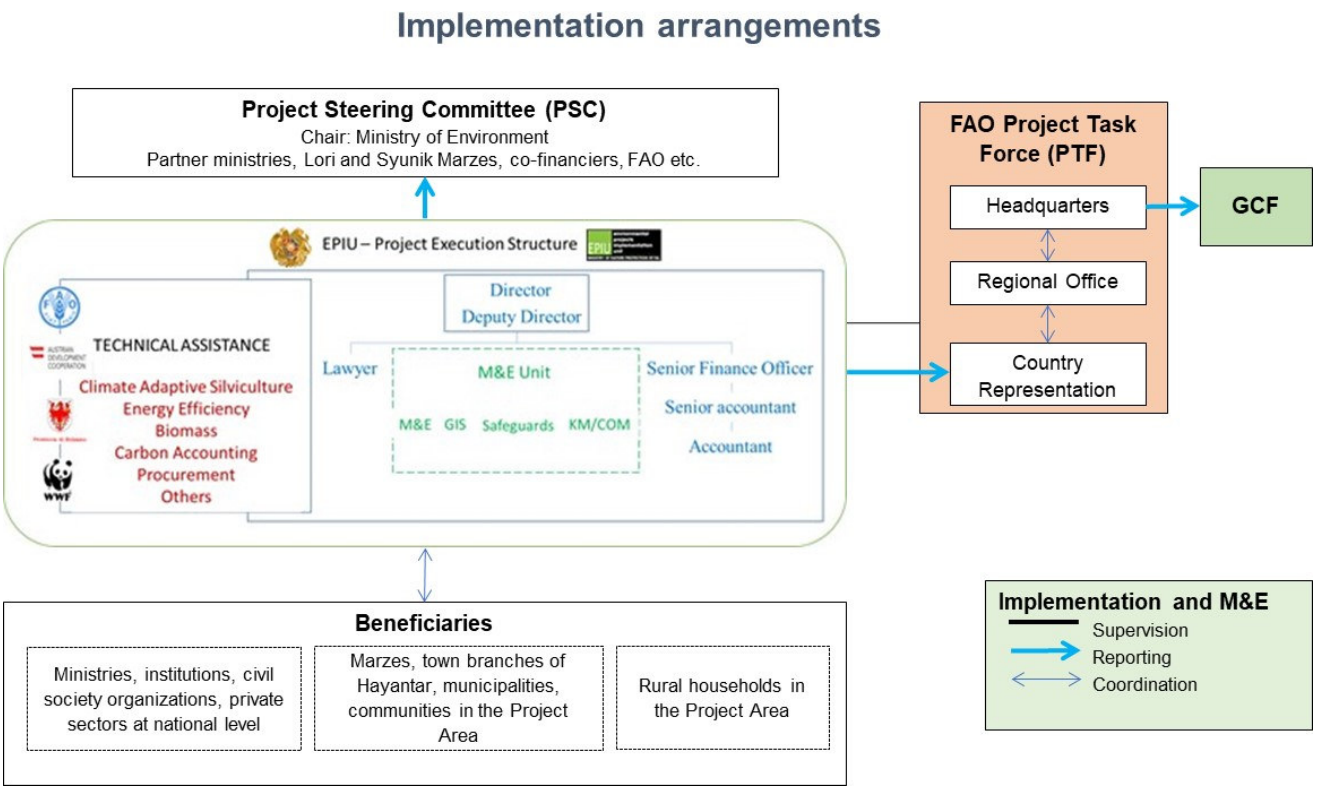
During execution of activities, beneficiaries will be selected according to the criteria agreed with the NDA and Steering Committee during the national engagement process. Details of beneficiaries is available in Annex 2, Section 7 pg.56→57.

Forest restoration under an ecosystem-based adaptation approach is a quite new concept characterized by the complexity of holistically addressing the environmental, social and economic challenges of forest restoration in a climate change scenario. Very limited experience is still available worldwide in terms of implementation. FAO established the Forest and Landscape Restoration Mechanism (FLR Mechanism) in 2014 to support the global efforts to regain ecological integrity and enhance human well-being through the restoration of the world's deforested and degraded lands (150 million hectares of restored forests by 2020 under the Bonn Challenge; 200 million hectares of restored forests by 2030 under the New York Declaration on Forests). In this sense, the envisaged efforts under this project will particularly contribute to the achievement of Armenia's commitment of bringing 0.26 million hectares of deforested and degraded land into restoration by 2030

B.3. Implementation / institutional arrangements (max. 750 words)

Provide a description of the project/programme implementation structure, outlining legal, contractual and institutional arrangements and the structure between the GCF, the Accredited Entity (AE) and/or the Executing Entity (EE) or any third parties (if applicable) and beneficiaries. Provide diagram that maps such arrangements and governance structure..

As Accredited Entity of the Project, the FAO's supervising role will be attributed to the FAO Regional Office for Europe and Central Asia (REU, located in Budapest) with support by the FAO Climate, Biodiversity, Land and Water Department (CB, located in Rome) and other technical divisions as required (located at FAO headquarters in Rome). FAO Representation in Armenia (FAO-AM) will be in charge of the execution of selected activities and of the contractual agreements with the project implementing partners (see Annex 2, Section 12: Institutional Arrangement and Project Management, page 103→107 for detail). The Executing Entities of the Project are the Republic of Armenia, acting through the Ministry of Environment (MoE) and FAO. Execution of activities will be conducted by the Environmental Projects Implementation Unit (EPIU) of the MoE, while FAO will coordinate the technology transfer and technical assistance to the EPIU. Both EEs will be jointly and severally responsible for the execution of the entire project. EPIU will sign a legal agreement (i.e. Operational Partners Agreement (OPA)) with FAO to enter EE role for the project. Scope of roles and responsibilities and legal conditions are defined in the OPA.



The project will work with a strong country ownership under the guidance of a Project Steering Committee (PSC) representing: (a) line ministries, (b) Governors of Lori and Syunik Marzes and (c) co-financiers (Austrian Development Agency, the FAO, the Autonomous Province of Bolzano (Italy), and WWF- Armenia[28]). The PSC will be chaired by the NDA to the GCF and will have the main function of: (a) ensuring political coordination, guidance and advisory and (b) to approve the Annual Working Plan and Budget (AWPB) and Annual Report (AR) according to the specifications provided in Annex 2-Section 13 and in Annex 10. PSC will meet at least once a year or when requested by the majority of its members. The PSC will submit to the FAO-HQ the approved AWPB and AR for official submission to the GCF

[28] A detailed description of co-financing and co-financiers is available in Annex 2 Sections 5 and 15.

and to co-financiers. The FAO (HQ/REU) will participate in the PSC as a member while FAO will support the MoE and the EPIU with logistic and organization needs.

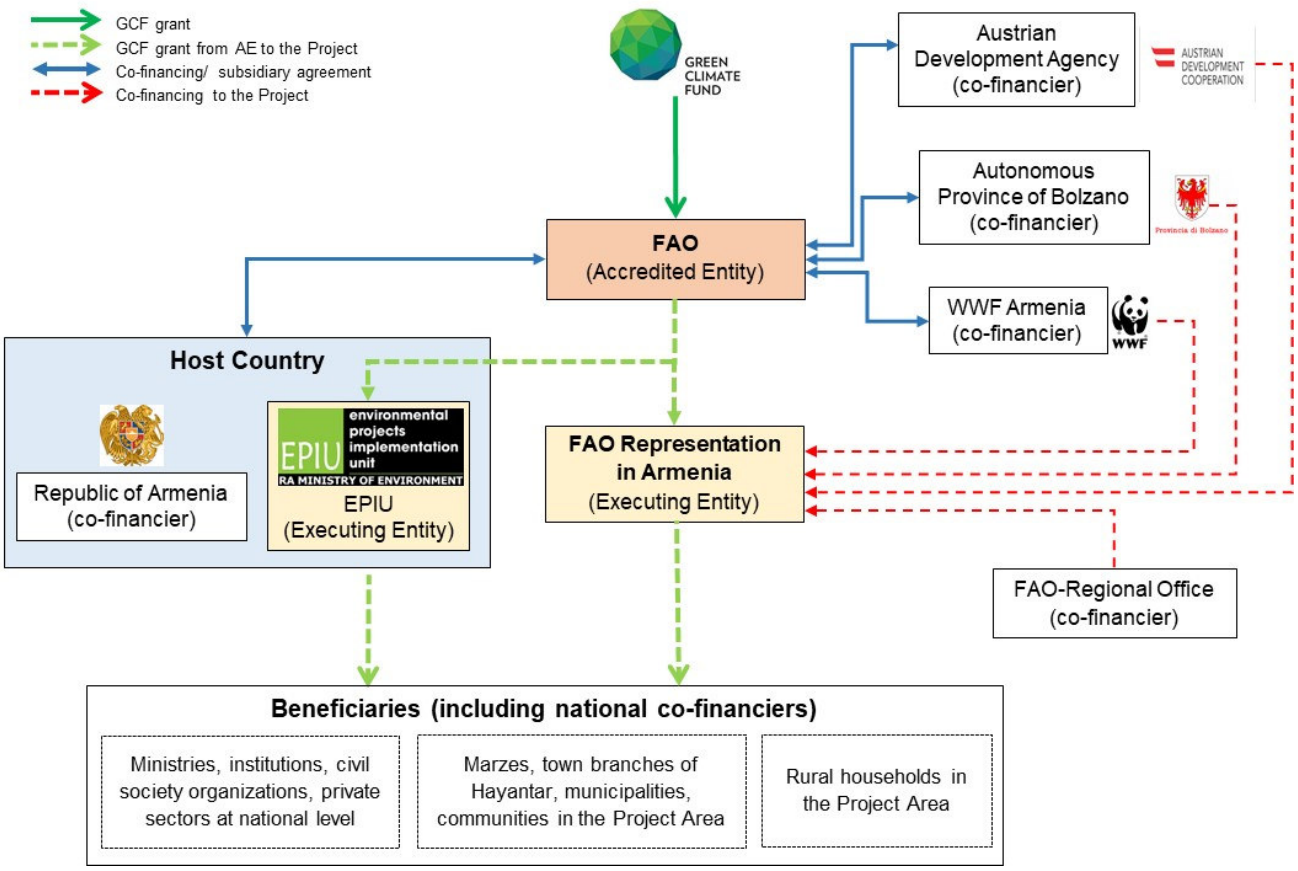
The EPIU will be in charge of the daily management of the project, will report to the PSC and will be supported by experts from FAO/Co-financiers and by international consultants hired by the FAO in agreement with the MoE. The external technical assistance component, a precondition which is essential for the proposed technology transfer, will be managed by the FAO Representation in Armenia so as to ensure the timely deployment of experts and enhance knowledge and technology sharing processes between international and Armenian experts. TORs of each expert will be jointly prepared by the FAO and the EPIU and will be included in the AWPB.

Additionally, the project will also integrate the existing staff of the EPIU with a dedicated M&E Unit that will be in charge, as detailed in Annex 2 – Section 14, pg. 106→107) and in Annex 10 Section 5.3, of monitoring and evaluation, of the E&S safeguards and of reporting/advising for the EPIU. The M&E unit will also have the mandate to ensure respect of the Gender and Environment Action Plan including the promotion and execution of intense training for EPIU and partners' staff members focusing on gender mainstreaming and the prevention of sexual harassment or any harassment for that matter as well as abuse of authority. All the other functions (in blue) will be co-financed by the project according to Armenian laws and FAO/GCF rules.

The project will be executed according to the agreed Term Sheet (Annex 6). FAO will sign with the MoE a legal agreement such as Letter of Agreement and/or Operational Partner Agreement (OPA)[29]. Similarly, FAO will sign with co-financiers a Letter of Intent / Memorandum of Understanding to formalize co-financing arrangements.

Provide information and an organogram on the financial flows between the AE and the EE(s) or any third party (if applicable), and the financial flows between the EE or any third party (if applicable) and beneficiaries. Also describe the financial flows in the context of applicable AE's accreditation parameters (e.g. specialized fiduciary function).

[29] Assuming the Assessment of the EPIU is positive and rated as low risk.



Co-financing from the Austrian Development Agency, the Autonomous Province of Bolzano (Italy), and WWF- Armenia will be managed by FAO Armenia in coordination with the Ministry of Environment. Co-financing agreement will be countersigned between each co-financier and FAO.

The in-kind co-financing from the Government of Armenia, the Autonomous Province of Bolzano, and WWF-Armenia will be monetized, monitored and reported during project implementation.

The in-kind co-financing from the Government of Armenia will contribute to achieve the project results through EPIU (as EE). It will be provided mainly by the Hayantar State Non-Commercial Organization (one of the structures of the Ministry of Environment) for the establishment of nurseries and production of seedlings (Output 1.1), preparation work and planting/ maintenance work of selected lands for forest restoration (Output 1.2), the establishment of national forest monitoring and assessment system and conduction of inventory cycle (Output 3.2). A legal agreement will be signed between EPIU and Hayantar SNCO for the usage of state budget as in-kind co-financing.

The in-kind co-financing by the Autonomous Province of Bolzano will deploy in Armenia the technical staff needed to execute Component 2 and part of Component 3 for elaboration of quality standards, coaching of retailers, EE/RE monitoring, biomass value chain analysis, and climate action plans. The co-financing is considered paramount for the execution of Component 2 and 3 as identified staff and competences are especially requested by Armenian counterparts, which are not available in Armenia. Identified experts will work under FAO supervision and guidance and will dedicate their work to technical assistance. The main support to the project will be for Activity 2.1.1, 2.2.1 and 3.1.2. The in-kind co-financing will be directly monitored by FAO and will be monetized based on the salary of identified experts, their per diem and travel expenditures.

WWF-Armenia is an independent Non-Government Organization (NGO) that has been registered as Armenian NGO since 2006. The in-kind co-financing by WWF Armenia is an integral contribution to activities needed to achieve the results of the project through the provision of trainings by experts on climate adaptive forest investment and community ecosystem management for the target communities in the Project Area. It is considered paramount for the execution of Component 1 as identified staff and competences are unique in successfully involve communities in forest restoration projects. The in-kind co-financing will be monetized based on the salary of identified experts, their per diem and travel expenditures. It will be directly monitored and reported by FAO during project implementation. Details on co-financing allocation are available in Annex 2 Sections 5 pg. 9, and12 and in Annex 3.

The Autonomous Province of Bolzano and WWF Armenia will contribute to the Project by providing their technical expertise though FAO. There will be no direct arrangement between the Autonomous Province of Bolzano, WWF Armenia and the Beneficiaries; however FAO as AE for the project will oversee the provision of support to the communities.

MoE is NDA to the GCF and, for this FP, will also act as Executing Entity. During the formulation period, AE has reviewed and identified potential conflict of interests that may raise in the dual role arrangement. In order to mitigate any potential conflict of interest, the following risk mitigation/ remedial measures will be considered during the implementation: i) Separation of personnel for the NDA office and EPIU (EE) office ; ii) Separation of functions for project approval process between the NDA office and EE. The Project will follow the statutory reporting requirements of EPIU according to the national legislation. EPIU will sign an Operational Partners Agreement (OPA) with FAO to legally define the EE role for the project; iii) Preparation of (a) terms of reference for PSC and its members and (b) of mitigation measures to address any potential conflict of interest; and iv) Continuous monitoring of potential conflict of interest by AE.

C. FINANCING INFORMATION

C.1. Total financing

(a) Requested GCF funding (i + ii + iii + iv + v + vi)		10.0		million USD ($)	
GCF Financial Instrument		**Amount**	**Currency**	**Tenor**	**Pricing**
(i)	Senior loans	Enter amount	Options	Enter years	Enter %
(ii)	Subordinated loans	Enter amount	Options	Enter years	Enter %
(iii)	Equity	Enter amount	Options		Enter % equity return
(iv)	Guarantees	Enter amount	Options	Enter years	Enter %
(v)	Reimbursable grants	Enter amount	Options		
(vi)	Grants	10.0	million USD ($)		

(b) Co-financing information	**Total amount**	**Currency**
	8,704,730	million USD ($)

Name of institution	**Financial instrument**	**Amount**	**Currency**	**Tenor**	**Pricing**	**Seniority**
Government of Armenia	In kind	5.904680	million USD ($)	Enter	Enter%	Options
Austrian Development Agency*	Grant	1.631542*	million USD ($)	Enter	Enter%	Options
FAO	Grant	0.764758	million USD ($)	Enter	Enter%	Options
Autonomous Province of Bolzano	In kind	0.20375	million USD ($)	Enter	Enter%	Options
WWF Armenia	In kind	0.2000	million USD ($)	Enter	Enter%	Options

(c) Total investment (c) = (a)+(b)	Amount	Currency
	18.704730	million USD ($)
(d) Co-financing ratio (d) = (b)/(a)	*(b) = 8,704,730 USD (* converted from 1.5 million EUR to the amount in USD)* *(a) = 10,000,000 USD ==>* ***co-financing (b)/(a) = 87.0%***	
(e) Other financing arrangements for the project/programme (max ½ page)	*9,000 Households - selected according to objective criteria (Annex 2, section 7 "target groups and beneficiaries", page 62; ibidem under output 2.3, page 86) –will receive a technology grant support for the adoption of the Renewable Energy (RE) appliances (improved heating stoves). Such transfer will be conditioned to the contribution of a portion of the cost, for an overall estimated amount of about 450,000 USD in total.*	

C.2. Financing by component

Please provide an estimate of the cost per component (as outlined in Section B.2. above) and disaggregate by sources of financing.

Component (header text shortened)	Outcome	Indicative cost (USD)	GCF financing		Co-financing		
			Amount (USD)	Financial Instrument	Amount (USD)	Financial Instrument	Name of Institutions*
1. Climate Change mitigation via climate adaptive silviculture	**Outcome 1:** By Y8, at least 2.5% of degraded forestland is restored and sustainably managed following a climate adaptive methodology.	**10,111,064**	**4,566,424**	**Grants**	**5,544,640**	**Grants/in-kind**	**ADA, WWF, FAO, Government**
2. Promoting forest Sustainability reducing forest degradation drivers	**Outcome 2**: By Y6, fuelwood dependency of targeted rural communities is optimized and decreased by at least 30%	**4,204,802**	**3,391,552**	**Grants**	**359,750**	**Grants/in-kind**	**ADA, FAO, Bolzano**
3. Strengthening community participation in forest governance	**Outcome 3**: By Y8, relevant stakeholders are enabled to adopt effective governance and adaptive management of forests and related ecosystem services.	**3,922,636**	**1,563,996**	**Grants**	**2,358,640**	**Grants/in-kind**	**ADA, FAO, Bolzano, Government**
Project Management		**919,728**	**478,028**	**Grants**	**441,700**	**Grants/in-kind**	**ADA, Government**
Indicative total cost (USD)		**18,704,730**	**10,000,000**		**8,704,730**		

**Notes on Name of Institutions: Austrian Development Agency (ADA), the Government of Armenia (Government), the Autonomous Province of Bolzano (Bolzano), WWF-Armenia (WWF)*

This table should match the one presented in the term sheet and the names (in the rows) should match those presented in the logic framework in section D below. If the project/programme is envisaged to support capacity building and technology evelopment/transfer, please specify the total requested GCF amount for these activities respectively in this section..

The overall cost of capacity development is 4.6 million USD (2.3 m USD are funded by the GCF grant, i.e., 23 % of the grant), and the cost of Technology Transfer is about 6.4 million USD (4.1 m USD under GCF, or 41 % of the grant). The rest of GCF grant is dedicated to labour for planting (29%), travels (4%) and administrative costs (3%).

C.3. Justification for GCF funding request (max. 500 words)

Provide information why GCF is the appropriate donor for the proposed project/programme. The project fully aligned with the Armenia NDC and will contribute in creating the enabling conditions for the country to fulfill Paris Agreement "[…] *Developing country Parties should continue enhancing their mitigation efforts, and are encouraged to move over time towards economy-wide emission reduction or limitation targets in the light of different national circumstances." (Article 4.4)*. The proposed project represents an opportunity for Armenia to maximize the synergy between adaptation and mitigation actions necessary to ensure the envisaged ecosystem approach (NDC, 2015). As reported in the NDC, the country requires financial support to achieve its conditional commitments and technical assistance to ensure proposed strategies and means of implementation. The GCF is the only fund currently available that could mobilize the needed resources to support Armenian commitments, to mobilize key co-financing and to ensure the proposed technology transfer to adapt forestry to CC, ensure energy efficiency and ultimately supporting Armenia in attaining its main objective of reaching 20% forest cover by 2050.

Describe the challenges to access finance (public and private). Also, describe the financial gaps and barriers that the proposed project/programme is expected to fill and address in the absence of any other financing. Forests in Armenia are too limited to be relevant for large private investments. Land tenure (99% state owned) and the policy framework (Annex 2, Section

6 page 20→23) ruling the sector does not allow to foresee any specific interest from the formal private sector to invest in plantation of forests. Therefore, the task of expanding and maintaining forests applying an ecosystems approach (NDC, 2015) is fully on the central and local government budget. Nonetheless, forests are key in sustaining both food and energy security of rural households (36% of the total population). As reported, without technology and knowledge transfer in both the forestry and rural energy sectors (Annex 2 – Sections 6,9 and10) , the country will most likely miss its NDC targets with serious repercussions on livelihood and financial security of rural household. Co-financing from the State represents 31% of the total investment, but additional resources from the national budget could not be allocated to respond to climate change without: (i) increasing the public debt which is not currently an option as it has reached 61 % of the GDP and/or (ii) decreasing the foreign component of it (over 90 %). The increased national climate adaptive silviculture potential supported by the project will allow to meet in a more stable and secure way the NDC's CO2e sequestration forestry-related targets.

The involvement of the private sector is a critical element in the project's intention to shift paradigms, and the most suitable tool to ensure long term sustainability for the envisaged technological shift towards energy efficient heating stoves for rural areas. By financing the development of low cost EE stoves in the country and by providing concessional transfers of EE stoves, the project will increase awareness in rural areas of the related private and reduced adoption costs to affordable levels (HHs' savings in fuelwood) and public (increased CO2e sink potential) benefits and will generate a demand for improved technologies as demonstrated in the European Union, in Georgia and in Lebanon. At the same time, strengthening local manufacturing capacities to produce certified efficient stoves will allow to respond to the increased local demand. On the latter, the project will only provide capacity development, while private manufacturers will invest own resources to meet the increasing demand of EE stoves. Given the time horizon for accruing financial benefits in forestry investments, private sector's participation would not be possible even when considering positive externalities such as ecosystem benefits (e.g. beekeeping and NWFP) In this case, public resources are essential. As the country's external financial exposure would not allow to contract further sovereign debt, external grant resources are needed to break the initial barrier to forestry investment.

C.4. Exit strategy and sustainability (max. 250 words)

Elaborate how the project will be sustained after GCF exits the project. Specify the elements that will guarantee the sustainability of the investment, including essential information on the operation and maintenance of the activities in the post-implementation phase (e.g. key infrastructure, assets, contractual arrangements).

	Sustainability Rational
Outcome 1: By Y7, at least 2.5% of degraded forestland is restored and sustainably managed following a climate adaptive methodology	**NURSERIES:** Given the observed situation (Annex 2, Sections 6 and 10) technology transfer and capacity development to produce climate adaptive seedlings is a precondition for the attainment of the NDC commitment related to: (i) forest cover increase (+100% by 2050) and (ii) ecosystem based approach. Co-financing from the State will absorb about 72% of the investment. The technology transfer secured by the project will not require additional investments from the Country and will contribute to the overall reduction of costs related to NDC commitments (Annex 9). **FOREST RESTORATION**: The use of climate adaptive practices together with the capacity development investments supported by the project will reduce the cost of maintenance of forests, increase the resilience of ecosystems and enhance stakeholders' capacities to plan / maintain and restore forests. Introduced practices constitute a technical upgrade of existing practices with no changes in budget requirements or workforce needs.
Outcome 2: By Y6, fuelwood dependency of targeted rural communities is optimized and decreased by at least 30%	**BENEFICIARY LEVEL:** Proposed technologies will not require additional investments from beneficiaries. Introduced appliances will have a life span of at least 15 y compared to the current one of about 5 y. Introduced technology will reduce the yearly cost of fuelwood for rural households of about 30% greatly benefitting poor family income (Annex 9) as operational and maintenance costs of introduced technologies is equal or smaller than existing ones. **PRIVATE SECTOR LEVEL:** Introduced technologies and knowhow will allow enterprises to serve the Armenian market with locally produced and imported EE stoves allowing them to expand to rural areas also. **STATE LEVEL:** The introduction of standards for EE of heating related appliances fueled with wood or sun will not require additional resources from the state but will increase consumer confidence in the EE Armenian market.
Outcome 3: By Y7, relevant stakeholders (Hayantar and local municipalities) are enabled to adopt effective governance and adaptive management of forests and related ecosystem services.	Outcome 3 will ensure that: (i) communities are informed about the importance of and will acquire the necessary skills for fuelwood management and handling, thus saving money and protecting the forests, while local administration include biomass from forest in their management plans and energy need assessments; (ii) forests are monitored and assessed in a transparent and consistent manner for evidence-based forest governance; and (iii) key legal acts such as the Armenia forest code and the decree N-563 N[30] could be executed to enable communities to obtain concessions over state forests. Without this three set of actions sustainable management of forests will not be an achievable target.

[30] Provision of state forests to concessional management for the community organizations without competition.

	As reported inn Annex 2, pages 23→35, rural households are still largely dependent from forest for their livelihood and about 74% depend on fuelwood as primary source of heating energy. Therefore, community engagement in local governance and management of forest ecosystems associated with the appropriate forest monitoring tools and practice is the key to ensure long-term sustainability of any forest investment in Armenia. Ensuring access for communities to forest resources under the community concession window established by Decree N 583-N jointly with the introduced practices and technologies will: (i) increase the capacity of stakeholders to manage forests sustainably also factoring in climate change; and (ii) create the enabling conditions for private initiatives to develop sustainable biomass markets. Such knowledge and possibility will not imply increases of costs from the BAU scenario. Additionally, thanks to the agreement with the Ministry of Education and its vocational and training schools, the project will ensure transfer of practices and technologies also after the project as these will become regular elements of the national curricula related to energy efficiency, biomass production and forestry.

The exit strategy of the project is based on four pillars: (i) National ownership of the process [the project is aligned with national policies and strategies and is the result of extensive national consultations]; (ii) Economic and financial sustainability of the activities [as reported in Annex 9, proposed activities are financially sound with positive internal rate of return without further impacting on national or household's budgets]; (iii) Transfer of well tested innovations [proposed technologies and approaches have been already tested with success in different countries in the region and elsewhere] and set standards [support the State in the design, adoption and mainstreaming of energy efficiency (EE) and safety standards for EE wood fuel stoves]; (iv) Establishment of a viable market for locally produced low cost EE stoves complemented by the guidelines for sustainable biomass market and possible associated financial inclusion platform such as Renewable Resources and Energy Efficiency Fund (R2E2); and (v) inclusion in the national curricula of vocational schools of the introduced / enhanced practices [the Ministry of Education with the support of co-financiers will embed introduced technologies and practices so as to ensure capitalization and scaling up of the project]. These actions will ensure the sustainability after completion of the project and will provide beneficiaries and national authorities with the relevant tools to continue and scale up these actions to other parts of the country.

C.5. Financial management/procurement (max. 300 words)

Describe the project/programmer's financial management including financial accounting standards, disbursement and procurement arrangements (details in Annex 8 for procurement). Explain how the AE will ensure that its fiduciary standards (based on its accreditation type) are adhered to at all times. Explain the methodology and frequency of the periodic financial reviews, reporting of the project expenditures including the audit requirements and the frequency of the audit to ensure that funds are used for the intended purposes and project complies with the covenants, if any. The project will be executed by the EPIU, in the MoE, under FAO legal agreement such as the Operational Partner Implementation Modality (OPIM). FAO-Armenia, as Executing Entity and Budget Holder (BH), will be responsible for operational, administrative and financial management of GCF resources directly managed by FAO, and for overall project monitoring and reporting[31]. The BH will also be responsible for supervising the Operational Partner's (OP) management and results as summarized in the Feasibility Study and as specified in the OPA. Financial resources of the GCF will be managed according to AMA, Funded Activity Agreement and project term sheet. The administration of funds to be received from FAO is based on FAO rules and responsibilities of OPIM (FAO Manual Section MS-701).. Standard assurance activities to monitor financial and administrative management under OPIM are comprised of: i) Spot Checks (Evidence-based monitoring to verify that FAO project funds were used for the intended purpose, consistent with the work plan and required standards, policies and procedures for funds management and procurement, and conducted by an audit/accounting firm contracted by FAO; ii) Scheduled Audit (A scheduled audit conducted by an audit firm contracted by FAO); and iii) Special Audit (only when specific issues and concerns arise). The schedule and type of assurance activities are determined based on the annual transfer amount and overall risk rating of Micro Assessment Report prepared by an audit firm contracted by FAO. The BH will perform third party audits and spot checks on the OP performance at least once a year and will withhold any payment due to the OP in case of non-compliance with the reporting obligations detailed in the OPA. The OP shall maintain books and records that are accurate, complete and up-to-date. The OP' books and records will clearly identify all Fund Transfers received by the OP as well as disbursements made by the OP under its OPA, including the unspent and accrued interest. Procurement planning will be conducted to ensure the "Best Value for Money" for both executing entities. The BH and OP will prepare annual procurement plans for major items which will be the basis of requests for

[31] Additional details are available in Annex 2 – Sections 14 and 15.

procurement actions during implementation. The plan will include a description of the goods, works, or services to be procured, estimated budget and source of funding, schedule of procurement activities and proposed method of procurement. Details on Procurement are described in the Annex 8.

D. LOGIC FRAMEWORK AND MONITORING, REPORTING AND EVALUATION

This section refers to the project/programme's logic framework in accordance with the GCF's Performance Measurement Framework under the Results Management Framework to which the project/programme contributes as a whole, including in respect of any co-financing. This is different from the project/programme-level log frame(as there may be other impact measures for example that go beyond those defined by the GCF). A project-level logical framework, with specific indicators, baselines and targets, means of verification and assumptions should be provided as part of Annex 2.

D.1. Paradigm shift objectives [ANNEX 2, Section 8 pg. 58→60]

Shift to low-emission sustainable development pathways	In line with the NDC, carbon removals from the forests sub-sector are increased via the combined effects of Adaptation investments [(i) introducing climate adaptive practices in public and private silviculture operations] and Mitigation ones [(ii) securing technology transfer of EE heating appliances to the private sector, institutions and communities, and (iii) in enhancing community participation via ecosystem based approaches.]
Increased climate-resilient sustainable development	

D.2. Impacts measured by GCF indicators [ANNEX 2, Sections 9 and 14]

Select the appropriate impact for the project/programme. Note that more than one indicator may be selected per expected impact result. Add results as appropriate.

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
M3.0 Reduced emissions from buildings, cities, industries and appliances	M.3.1 Tonnes of carbon dioxide equivalent (t CO_2eq) reduced or avoided as a result of Fund-funded projects /programmes – buildings, cities, industries, and appliances sub-indicator	BUR submitted to UNFCCC by the MoE; Reports from Independent and external household surveys	Emission from heating appliances (t CO2eq)[32]: 0	Reduced Emission (t CO2eq): -122,988 Y4	Reduced Emission (t CO2eq): -175,697 Y8	GHG estimates are based on the twenty-year (20) project lifetime, estimated with EX-ACT tool, and monitored with independent households surveys aimed at assessing fuelwood management/consumption in project areas as well as project's reports. The project will decrease the fuelwood energy needs by at least 30 % (from 8 m^3 per households to 5.6 m^3 per households). Equivalent to a reduction of wood consumption from 36,806[1] to 25,764 tonnes of dry matter per year considering an emission factor of 1.326[33] t CO2eq/t of dry matter. Expected emission reductions over the project lifetime of 20 years –175,697 tCO_2eq.

[32] Based on data collected via household surveys aimed at assessing fuelwood consumption for heating purposes. Residential energy consumption survey, 2015
[33] Energy content of wood (moisture content 25%-35%) = 3.4 kWh/kg Wood CO2eq with an emissions factor of wood = 0.39 kg CO2 eq/kWh wood. Möllersten, K. 2017. The Power Africa beyond the Grid Fund for Zambia: Methodology to measure, report and verify on annually avoided greenhouse gas emissions and Breisinger, M. 2012. Greenhouse Gas Assessment Emissions Methodology.

M4.0 Reduced emissions from land use, reforestation, reduced deforestation, and through sustainable forest management and conservation and enhancement of forest carbon stocks	M.4.1 Tonnes of carbon dioxide equivalent (t CO_2eq) reduced or avoided (including increased removals) as a result of Fund-funded projects /programmes – forests and land-use sub-indicator	BUR submitted to UNFCCC by the MoE FAO EX-ACT informed by annual reports from the MoE - FMC[34]	Carbon removals from the forest sub-sector (t CO_2eq): 0	Carbon removals from the forest sub-sector (t CO2eq): -849,972 Y4	Carbon removals from the forest sub-sector (t CO_2eq): -7,919,876 Y8	According to the best available data, it has been estimated at project start that the total forest area of the target areas equals 135,790 ha, using the following Definition of Forest (based on forest code of Armenia in accordance with FAO FRA): Minimum land area of 0.1 ha with trees higher than 5 m and a canopy cover of more than 30 per cent. Forest Degradation can be defined as changes within the forest which negatively affect the structure or function of the stand or site, and thereby lower the capacity to supply products and/or services. Due to two decades of overexploitation of forest, mainly for fuelwood purposes, the average level of degradation at project start was estimated large (60%) according to EX-ACT classification, The change in the level of forest degradation with and without project scenarios are described in the EX-ACT methodology. The expected emissions over the 20-year project lifetime are -18,833,290 tCO_2eq. Absence of major natural disasters including forest fires in the country and in target areas. State budget allocated to fulfill NDCs is guaranteed during and after the project. The economic, social and political context in the country and project areas remains stable.

[34] Data will be collected by the Forest Monitoring Center of the Ministry of Environment via repeated assessment of the situation in project areas by field inspections + aerial imagery (high resolution orthophoto maps and surface models) acquired by drones in year 1, 3, 5 and 7. Location for each of the forest investment site will be georeferenced and a complete Project Intervention Atlas will be constantly updated by the M&E Unit starting from the Baseline. The Atlas will be public and shared annually.

A4.0 Improved resilience of ecosystems and ecosystem services	A 4.1 Coverage/scale of ecosystems protected and strengthened in response to climate variability and change	BUR submitted to UNFCCC by the MoE informed by annual reports from the MoE – FMC[35] National Report of the Republic of Armenia to the UNCBD and to the UNCCD.	0 ha of forest	3,800 ha of forest	135,800 ha of forest	Analysis of the Land Productivity Dynamics (LPD) via FAO Earth Map joined with ground truthing done with external experts[36] and communities will allow the assessment of project's impacts on ecosystems. Results will be disaggregated per level of degradation[37] at district, community and ecosystem levels. Absence of major natural disasters including forest fires in the country and in target areas. State budget allocated to fulfill NDCs is guaranteed during and after the project. The economic, social and political context in the country and project areas remains stable.

D.3. Outcomes measured by GCF indicators

Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
M7.0 Lower energy intensity of buildings, cities, industries and appliances	M7.1 Energy intensity / improved efficiency of buildings, cities, industries and appliances as a result of Fund support	Reports from external and independent technical assessments	Improved Efficiency of heating appliances <40% Energy Intensity < 50 GWh	Improved Efficiency of heating appliances >60% Energy Intensity 67.5 GWh	Improved Efficiency of heating appliances >60% Energy Intensity > 75 GWh	Economic social and political situation in the country and in project areas remains stable. Energy efficiency of existing wood stoves is < 40%. Introduced technologies and practices will increase the efficiency value to > 60%. Since current efficiency of wood stoves is <40%, less than 50 GWh of the total energy content of the Wood fuel (=125 GWh) can currently be transformed into heating energy. Detailed technical assessment will be performed by external and independent service providers after installation of the EE stoves, during the 4y of execution and at completion.

[35] Data will be collected by the Forest Monitoring Center of the Ministry of Environment via repeated assessment of the situation in project areas by field inspections + aerial imagery (high resolution orthophoto maps and surface models) acquired by drones in year 1, 3, 5 and 7. Location for each of the forest investment site will be georeferenced and a complete Project Intervention Atlas will be constantly updated by the M&E Unit starting from the Baseline. The Atlas will be public and shared annually

[36] Independent surveys.

[37] Declining productivity, Early Signs of Decline, Stable but Stressed, Stable not Stressed, Increasing productivity.

M9.0 Improved management of land or forest areas contributing to emissions reductions	*M9.1 **Hectares** of land or forests under improved and effective management that contributes to CO2 emission reductions	BUR submitted to UNFCCC by the MoE. Informed by annual reports from the MoE – FMC[2] External and independent interim and final evaluations	0	3,800 ha	135,800 ha	Analysis of the Land Productivity Dynamics (LPD) via FAO Earth Map joined with ground truthing done with external experts[38] and communities will allow the assessment of project's impacts on ecosystems. Results will be disaggregated per level of degradation[39] at district, community and ecosystem levels.
M5.0 Strengthened institutional and regulatory systems	M5.1 Institutional and regulatory systems that improve incentives for low emission planning and development and their effective	0	1 National energy efficiency standard for heating appliances and biomass fuels approved [40]	1 National energy efficiency standard for heating appliances and biomass fuels approved and implemented successfully.	Official publication from the Ministry of Economy (National Gazette)	Economic social and political situation in the country and in project areas remains stable. Standards will be prepared jointly with the Ministry of Economy, the Ministry of Energy and Natural Resources and the Ministry of Environment. Standards will be prepared according to the principles stated in the RA Law "On Energy Saving and Renewable Energy" (L. 122) 2004.
A8.0 Strengthened awareness of climate threats and risk-reduction processes	A8.1: Number of males and females made aware of climate threats and related appropriate responses	Vocational schools registers Reports from external and independent surveys with municipalities, communities and civil society Project reports[41].	Males: 0 Females: 0	Males: 74,000 Females: 78,000	Males: 144,000 Females: 156,000	The project will involve communities in target areas (15 municipalities and 207 rural communities).

Besides the arrangements (e.g. annual performance reports) laid out in the Accreditation Master Agreement, please provide project/programme specific institutional setting and implementation arrangements for monitoring, reporting and evaluation. Please indicate how the independent interim/mid-term and final evaluations will be organized, including the timing. As detailed in Annex 2 – Section 9 and 14 and Annex 10, the project will follow an evidence and result-based management approach also involving communities. The project will be monitored via: (i) **Georeferencing** ensuring a unique link between project's activities and geographical coordinates (Annex 2, Section 14, pg 105) and allowing stakeholders to ensure clear identification of activities and beneficiaries. (ii) **Field data Collection:** Field data will be collected by the Forest Monitoring Center and by the M&E unit via dedicated activities planned with communities according to the structure described in Annex 2- Section 14, pg 105 and in Annex 10. To this end the M&E unit will collect data with and from communities following the approach and specifications identified for the development of baseline. Additionally the project has planned for two supplementary households and institutions survey at mid-term and project completion (iii) **Geospatial analysis:** the M&E unit - supported by the Forest Monitoring Center of the MoE and by the FAO - will monitor activities and processes thanks to remote sensing and photointerpretation analysis via drones available at the MoE. The combination of georeferencing, groundtruthing, monitoring with communities and remote sensing analysis will allow stakeholders, including the GCF, to have a clear understanding of project's effectiveness and efficiency. Additionally, the described approach will allow the M&E unit to advise and support the EPIU management enhancing project's capacity to deliver and to support stakeholders in the decision making processes.

[38] Independent surveys.
[39] Declining productivity, Early Signs of Decline, Stable but Stressed, Stable not Stressed, Increasing productivity (Based on UNCCD definition).
[40] Government of RA's commitment to promotion of energy efficiency (EE) is reflected in the Law on Energy Saving and Renewable Energy (2004). The Law lays out the principles of the government's policy and governance structure supporting energy efficiency. While forming a fertile ground to ensure EE, the current laws and policies do not include EE standards for fuelwood fueled heating appliances that are the primary source of about 74% of the rural population. Such gap will be filled by the project as the current legal frameworks contains the elements needed to include fuelwood and other biomasses and EE standards for wood fueled appliances.
[41] Project reports will also include geographical coordinates (georeferencing) of each activity including trainings and forest investments. These will be public.

FAO as accredited entity will ensure annual reporting to the GCF. The report will include also the audit report that will be commissioned by FAO to an independent firm according to FAO covenants, rules and standards. Project's reporting will consist of four elements: (I) Technical Reports (TRs) prepared by Partners / Service Providers. TRs will describe executed activities and involved beneficiaries according to M&E indicators. Partners and service providers will ensure Georeferencing of each executed activity and will present TRs on a quarterly base to the M&E Unit of the EPIU/FAO; (II) Quarterly reports (QRs) prepared by the M&E for EPIU Director. QR will present the work and achievements of activities presented in the AWPB. It will include - among other - data and information from the beneficiaries and other involved stakeholders. QR are prepared by the M&E team for the EPIU and will contribute to the annual report; (III) Annual reports (ARs) prepared by the M&E unit for the PSC and FAO. ARs will present the work and achievements reported by the M&E unit via the QRs and will include implementation and fiduciary chapters. ARs will include findings and recommendations of FAO supervision reports (SRs). ARs will include as well independent annual audit reports (AARs) and the "Project's Implementation Atlas" presenting the maps and charts obtained thanks to the georeferencing of project activities. Both will be presented as annexes of the AR. ARs are prepared by the M&E Unit, validated by FAO-ARMENIA and the EPIU director and after inclusion in the AWPB are validated by the PSC and are transmitted to the GCF via FAO-HQ.

Evaluation Reports (ERs) are commissioned by FAO to an external and independent entities according to FAO covenants, rules and standards. ERs are shared with the Steering Committee and the EPIU for comments and after finalization sent to the Green Climate Fund at midterm (MTE) and within six (6) months from project's closure (FE). In accordance to FAO procedures for the evaluation of initiatives funded by voluntary contributions, the AE will secure:

a. An independent Mid-Term Evaluation, when delivery will reach 50% of the initial total budget and/or mid-point of scheduled project duration, to review efficiency and effectiveness of implementation in terms of achieving project objective, outcomes and delivering outputs. The MTE will be instrumental for contributing through operational and strategic recommendations to improved implementation for the remaining period of the project's life. FAO Office of Evaluation, in consultation with project stakeholders, will be responsible for organizing and backstopping the Mid-Term Evaluation, including: finalizing the ToR, selecting and backstopping the team and Quality Assurance of the final report.
b. An independent Final Evaluation, within six months prior to the actual completion date (NTE date) of the project. It will aim at identifying project outcomes, their sustainability and actual or potential impacts. It will also have the purpose of indicating future actions needed to assure continuity of the process developed through the project. FAO Office of Evaluation, in consultation with project stakeholders, will be responsible for organizing and backstopping the Final Evaluation, including: finalizing the ToR, selecting and backstopping the team and Quality Assurance of the final report.

FAO will support the PSC and the EPIU in reviewing and analyzing progress reports and assessing performances against baseline and targets. In addition to the support provided from FAO-Armenia, FAO-HQ will organize two or more (depending on needs) supervision mission per year[42].

In accordance with the AMA, the FAO Office of Evaluation will be responsible for the interim and final evaluation of the intervention. The evaluations will be conducted with a question-driven approach, and may include assessments against the broad criteria of relevance, effectiveness, and sustainability, amongst others, as appropriate. The interim evaluation will be instrumental for contributing through operational and strategic recommendations to improved implementation, setting out any necessary corrective measures for the remaining period of the project's life. The final evaluations will assess the relevance of the intervention, its overall performance, as well as sustainability and scalability of results, differential impacts and lessons learned. The evaluations will rely on a detailed evaluation methodology including the use of different evaluation methods and tools (including available open sourced tools FAO has developed, e.g. Collect Earth, Open Foris package). In addition to primary data collected by the evaluators and available secondary national data, both, interim and final evaluation will draw on the monitoring activities and reports prepared by project staff, including the surveys that will be implemented at baseline, mid-term, and project completion.

E. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

E.1. Impact potential (max. 300 words)

E.1.1. Expected tons of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided (Mitigation only)	Annual	998,769 tCO_2 eq
	Lifetime	19,975,387 tCO_2 eq
E.1.2. Expected total number of direct and indirect beneficiaries, disaggregated by gender	Direct	377,308 52% of female
	Indirect	3,018,854 52% of female
	**For both, Specify the % of female against the total number.*	
E.1.3. Number of beneficiaries relative to total population	Direct	12% (Expressed as %)
	Indirect	100.0% (Expressed as %)

	Impact/Result Potential:	Target	Rational

[42] Additional details on M&E and reporting procedures are available in Annex 2- Sections 12, and 14 pg. 113→ 115

MITIGATION	*Expected tonnes of carbon dioxide equivalent (t CO_2 eq) to be reduced or avoided*	19,975,387 tCO_2 eq/20Y	The project will ensure increased carbon removals from forests via: identified investments (C1); climate adaptive capacity development (C1-C3) and by reducing fuelwood consumption by 30%. Finally, the involvement of the private sector and of the Ministry of Economy in the technology transfer process (C2-C3) will increase availability of EE appliances for rural households and creating the enabling conditions for the biomass sector to develop sustainably and legally at both local and national level magnifying impacts in terms of emissions' reduction.
	Expected improvement in the management of land or forest areas contributing to emission reductions.	7,300 ha (8Y) 143,800[43] ha (20Y)	Ensuring investments in forestry (6,300 ha of public forests) and agroforestry (1,000 ha of municipal lands) in project areas as well as in capacity development, the project would increase national forest cover by 2.5% and will have direct positive impact on about 143,800 ha.
ADAPTATION	*Expected total number of direct and indirect beneficiaries, (reduced vulnerability or increased resilience); number of beneficiaries relative to total population (PMF-A Core 1), particularly the most vulnerable groups*	377,308 (52 % women) Individuals in project areas. Indirect beneficiaries: total population	The project will directly target the population of the Marzes of Lori and Syunik. An indirect positive impact is expected in terms of increased carbon removals, reduced emission from rural EE and in terms of market opportunities (EE) on the entire population of Armenia (100%) (Annex2, Section 7 pg. 56→57).
	Expected strengthening of institutional and regulatory systems for climate-responsive planning and development (PMF-A 5.0 and related indicator(s))	Increased participation of communities in forest governance and introduction of climate adaptive silviculture	The project, via the practices and technologies introduced in C1 and C2 will create the enabling conditions for communities to participate in forest management - according to existing laws and regulation – and ;largely contributing to the overall sustainability of the project in the medium and long term. The project will also create the enabling conditions for communities to organize sustainable and regulated biomass markets and possible associated financial inclusion.

E.2. Paradigm shift potential (max. 300 words)

Describe the degree to which the proposed activity can catalyze impact beyond a one-off project or programme Investment.

	Paradigm Shift	**Target**	**Rationale**
INNOVATION	*Opportunities for targeting innovative solutions, new market segments, developing or adopting new technologies, business models, modal shifts and/or processes*	**Adoption** of EE standards for heating appliances, **Introduction** of EE technologies for heating appliances and new procedures for forests investments. **Expansion** of the EE market to rural areas,	The project will support technology transfer and capacity development to increase the efficiency of existing heating appliances and will set, with the Ministry of Economy (standards) and the Ministry of Education and Science (education), the enabling conditions to support the private sector in contributing to a low emission and green growth of the Country. In the forestry sector the project will transfer technologies and practices to secure higher survival rate of forests investments.
LEVEL OF CONTRIBUTION TO GLOBAL	*Expected contributions to global low-carbon development pathways consistent with a temperature increase of less than 2 degrees Celsius*	Forests in Armenia are more resilient allowing enhanced and increased carbon removals in the described GHG growth scenario.	The project will decrease forest degradation drivers via tailored technology and knowledge transfer so as to: (i) increase resilience of forests and (ii) enhance community participation in forest governance. The selected approach will contribute in increasing carbon removals from the forest subsector by at least 7% against the observed declining 5%.
SCALABILITY	*A theory of change for scaling up the scope and impact of the intended project without equally increasing the total cost of operation*	No additional cost for the national budget	The project will not cause additional expenditures from the national budget to secure NDC targets and national strategies. The intervention will not add or modify such targets but will transfer the needed technology and knowledge to reach them at a lesser cost and higher impact.
REPLICABILITY	*A theory of change for replication of the proposed activities in the project in other sectors, institutions, geographical areas or regions, communities or countries*	Replication at the national and regional level	The project will enable stakeholders to expand proposed practices and methods outside project areas.
	Potential for exporting key structural elements of the proposed programme or project elsewhere within the same sector as well as to other sectors, regions or countries (replicability)	Linking energy needs of Rural HH with forest governance and climate adaptation to enhance carbon removals from the forest sub-sector	The strategy is replicable in the region with particular scalability in countries such as Georgia, Kyrgyzstan and Tajikistan where the nexus between energy security and forests is similarly strong.

[43] The total number of ha reported among the targets correspond to the existing forest cover plus the additional hectares restored by the project.

POTENTIAL FOR KNOWLEDGE AND LEARNING	*Contribution to the creation or strengthening of knowledge, collective learning processes, or institutions*	Introduced practices and technologies are transferred in relevant National VET Curricula Forest monitoring assessment protocol is in place and an M&E plan is available and shared among stakeholders	In addition to the program of awareness and community empowerment activities the project will work with the Ministry of Education (National Center for Vocational Training) to inject into targeted national curricula[44] the newly introduced technologies and practices so to ensure long term sustainability and national ownership. Additionally the project will ensure the preparation and sharing of a precise protocol to assess forests at the national level as well as of project activities also contributing to the creation of sustainable enabling conditions for the development of biomass market.
CONTRIBUTION TO THE CREATION OF AN ENABLING ENVIRONMENT	*Sustainability of outcomes and results beyond completion of the intervention*	No additional cost for the National Budget (Annex 9) Reduced heat expenditure costs for HH (-30%)	Given the NDC, the proposed outcomes will not generate additional costs to institutions and/or communities but will contribute to savings at both the household and national levels thanks to the reduced fuelwood cost, the increased survival rate of planted trees, the improved management practices and the enhanced participation of communities with possible impacts on the biomass market in Armenia.
	Market development and transformation	Technology transfer to the private sector and to consumers	The project will enhance the capacities of local entrepreneurs and technicians with new technologies related to heating appliances and will increase permeability of the EE market within the Country of the EE market increasing the basin of potential customers of EE appliances/materials as well as for technicians and certifiers. Finally the project will stimulate the creation of enabling conditions for communities in rural areas to establish market mechanisms that will allow sustainable sourcing of fuelwood.
CONTRIBUTION TO THE REGULATORY FRAMEWORK AND	*Potential for strengthened regulatory frameworks and policies to drive investment in low-emission technologies and activities, promote development of additional low-emission policies, and/or improve climate-responsive planning and development*	Technology transfer to national institutions (I, MoE --> EE standards for heating appliances and fuelwood)	The project, thanks to its collaboration with the I, will support the development and application of national standards to secure the quality and safety of heating appliances fueled with wood also mainstreaming EE and biomass for fuel standards at the national level strengthening Law 122 on Energy Saving and Renewable energy" ensuring forest biomass in the energy equation of the Country. The project will also ensure operationalization of the Armenia Forest Code enhancing community participation in forest governance as stated in Article 4 of the Code as well as its management also for commercial purposes (fuelwood coppicing).

In terms of rationale, please briefly describe the theory of change and provide information on how it serves to shift the development pathway toward a more low-emissions and/or climate resilient direction, in line with the Fund's goals and objectives. This should summarize the diagram of the theory of change requested as an annex to the funding proposal. BAU management of forests and energy security in rural areas has failed in guaranteeing the livelihoods, security and natural regeneration of forest's resources. Addressing forest mitigation and adaptation potential is instrumental in shifting from forest mining to a new path of development where forests are sustainably managed to ensure the provision of ecosystem services that are at the base of community survival in both project areas and that are precondition to secure mitigation targets of Armenia in 2050. Communities' dependency from forests for energy and livelihoods (i.e. beekeeping, NWFP) calls for innovative strategies and approaches to factor in climate change impacts and allow stakeholders to prepare and react rather than passively cope with impacts and effects of forests' degradation. Therefore, in line with the NDC, carbon removals from the forests sub-sector are increased via the combined effects of: (i) introducing climate adaptive silviculture practices applied by public and private operators, (ii) securing technology transfer to the private sector, institutions and communities, and (iii) in enhancing community participation in forest management via ecosystem based approaches. The combined effects of the three interlinked components will support Armenia in shifting from the described BAU scenario towards low-emission sustainable development pathways enabled by an increased climate-resilient forest cover and the enhanced capacity and adaptability of related private sector's operators. The BAU management of forest is not a consequence of missing the necessary legal framework but missing implementation of the existing forest code and related regulations. Mitigation becomes an opportunity to increase forest cover, enhance preparedness and to secure wider participation of stakeholders into forest's governance with clear and measurable co-benefits in terms of adaptation and low emission development of the most vulnerable population. See Annex 2, pages 63→64 and detailed step by step in the logical framework and project description available in Annex 2, pages 67→96, indicating how the project will demonstrate the needed change in the forest and energy sector and how these important lessons can be scaled up across the country.

E.3. Sustainable development (max. 300 words)

The project underwent screening according to FAO's Environmental and Social Management Guidelines (Annex 10) and the GCF's exclusion criteria as per the GCF Guidelines for the Environmental and Social Screening of Activities Proposed under the Simplified Approval Process. The proposed scope of activities will primarily result in positive environmental and social impacts. In addition to the described indicators, the project will also contribute to 8 SDG Indicators. The M&E unit will ensure data collection and description of each of the selected indicators in addition to those reported in the logframe matrix as reported in Annex 2 – Section 14 pg. 108→110.

	Sustainable Development Potential:	Target	Rationale
PROJEC	*Expected positive environmental impacts, including in other result areas of the Fund, and/or in line*	Contribution to: **Environmental:** SDG 12 [2]	The activities proposed by the project will contribute to tangible improvements of the overall state of the environment in Armenia. The project will have positive impacts on Armenian Biodiversity, on air quality (with particular emphasis on

[44] Light industry, (ii) agriculture, (iii) Forest resource reproduction and recycling and (iv) Energy

	with the priorities set at the national, local or sectoral level, as appropriate	SDG 13 [1,2,3,] SDG 15 [2,3,4,9,A-B] **Social and Gender** SDG 5 [B] SDG 7 [1,2,3, B] SDG 11 [4,6] **Economic** SDG 1 [5,] SDG 12 [2]	indoor air quality and household health), on soil quality (reducing erosion thanks to forest conservation) and water availability.
			Addressing EE at the rural HH level, involving rural women as actors and promoters of change, will have major impacts on women condition (reducing their direct vulnerability to CC) as well as on household health. At least 9,000 women (90% of component 2 beneficiaries) will be involved, and will be empowered to lead the new green growth opportunity of rural communities stimulated by the project.
			EE combined with investment in forests and forestry will also generate long term economic benefits for communities and in particular for rural women. Energy efficiency will allow savings of at least 30% of the total cost of heating with fuelwood corresponding to about 12% of annual income. Additionally, the project will increase the number of job opportunities in rural areas transforming, once more, forests and other ecosystems from exploitable resource to investments of national relevance (Annex 9).

Provide a summary of the gender assessment and project/programme-level gender action plan that is aligned with the objectives of GCF's Gender Policy. Please provide the full gender assessment and project-level gender action plan as an annex to the funding proposal. The project addresses gender dimensions in project design and implementation in order to identify and integrate interventions to provide gender responsive and transformative results. The prevalence of women headed households increased in Armenia due to high rate of long-term labor migration of men, as well as divorce. In 2016 the share of female-headed households was 34.3% (in urban areas 37.7 and in rural 27.8%)[45]. Women are key players in managing basic household resources, including stoves for cooking and heating. Women are also known as primary users of forests and main gatherers of forest products. Though women play such an important role in the protection of forests, their participation and presence in decision-making bodies is often seen to be insignificant. To this end, a gender analysis and action plan was prepared that accounts for gender and social inclusion in both forest resources management and energy efficiency activities (Annex 4).

E.4. Needs of recipient (max. 300 words)

Describe the scale and intensity of vulnerability of the country and beneficiary groups, and elaborate how the project/programme addresses the issue (e.g. the level of exposure to climate risks for beneficiary country and groups, overall income level, etc). Reportedly, target communities are vulnerable to climate change because of the following: (i) direct dependency of livelihood, food and energy security from ecosystem services provided by forests (49% of national forest is in project areas), (ii) high economic vulnerability of target population (15.2% of the nation's poor are in project areas) and (iii) high share of single women headed households (about 28% of which about 44% are poor)[46].

Describe how the project/programme addresses the following needs:

	Needs of Recipient:	Target	Rationale
ECONOMIC AND SOCIAL DEVELOPMENT LEVEL	*Level of social and economic development of the country and target population*	9,000 HH living in forest adjacent communities with priority given to: (i) SWHH[47], (ii) registered at the Ministry of Social Affaires	Communities in the two project areas and especially in Lori are reported as the most vulnerable in the Country home to about 15% of the Armenians living below poverty line [48] . Additionally, target population is the most vulnerable to climate change (high mountains communities).
ABSENCE OF ALTERNATIVE SOURCES OF FINANCING	*Opportunities for the Fund to overcome specific barriers to financing*	Cost of NDC target is reduced thanks to increased survival rate of forest, enhanced natural regeneration and reduced us of fuelwood of rural communities.	GCF funding will allow to: (i) update the technical and managerial capacities of forest stakeholders; and (ii) allow inclusion of communities in forest governance. Given the current economic situation and the national debt rate, the Country, will be able to factor in climate into policies and practices only if financial support will be provided. GCF funds will be catalytic in ensuring that efficient stoves will start being available at much lower prices in the market, nurseries will be prepared to address the needs of reforestation factoring in climate change and populations will be more aware of how to better benefit from forests and empowered to contribute to their governance.
NEED FOR STRENGTHENING INSTITUTIONS AND IMPLEMENTATIO	*Opportunities to strengthen institutional and implementation capacity in relevant institutions in the context of the proposal*	Enhanced mainstreaming of CC in the MoE, the MoA, the MENR and the MEI and the MSA[49]s	The project will be an opportunity to mainstream the importance of sustainable forest management and climate change within line ministries and to ensure understanding of the environmental, social and economic co-benefits. Designed activities will enable partners to execute effectively the Forest Code and the existing renewable energy policies described in Annex 2, Section 6.

E.5. Country ownership (max. 500 words)

Please describe how the project/programme contributes to the country's (or countries') identified national priorities (e.g. country's NDC, national climate strategies, relevant sectoral policies, or other plans such as Nationally Appropriate Mitigation Actions (NAMAs), National Adaptation Plans (NAPs), National Adaptation Programmes of Action (NAPAs), Technology Needs Assessments (TNAs), National Communications to the UNFCCC or equivalent). Please describe which priorities identified in these documents the proposed project is aiming to address and/or improve. The project

[45] Social Snapshot and Poverty in Armenia, National statistical service. 2017;p.57; http://www.armstat.am/file/article/poverty_2017_a_2.pdf
[46] Details description of project areas and target groups is available in Annex 2, Sections 5, 6, 7 and 10 and in Annex 4.
[47] Single Women Headed Household.
[48] https://www.armstat.am/file/article/poverty_2016_eng_2.pdf
[49] A detailed list of acronyms is available in Annex 2, Section 1.

aligns with (A) **NDC (2015)**: (**i**) Increase Armenia's forest cover from about 9.3% to 20.1% by 2050 (contribution of 1.7%); (**ii**) Decrease net annual GHG emissions per capita to 2.07 tCO_2e by 2050; (**iii**) Prioritize sector-based mitigation strategies with a focus on land use and forestry based on ecosystem approach; (**iv**) support the adaptation process of key ecosystems including forest ecosystems; (**v**) establish institutional mechanisms to overcome barriers for the introduction of innovative technologies for climate change mitigation and adaptation; (**vi**) support 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. (B) **Additional alignment with**: (**i**) Armenia Forest Code (2005); (**ii**) National Program on Energy Saving and Renewable Energy of the Republic of Armenia (2007) (**iii**) Second National Environmental Action Program (2008) (**iv**) Armenia Renewable Energy Program (2014); (**v**) Armenia Development Strategy for 2014-2025 (2014).

Please provide a full description of the steps taken to ensure country ownership, including engagement with relevant NDAs on the funding proposal design and applicable no-objection letter(s), and how the country ownership is embedded in scope and concept of the project/programme. Country ownership is secured by the following: (i) adherence with relevant national strategies and policy frameworks, (ii) joint development of the proposal with the NDA and relevant stakeholders (Annex 10, Section 5.1 page 13), (iii) involvement of a diverse set of central and local institutions, (iv) substantial co-financing (32%) allocated by Armenia to ensure the success of this project; (v) joint execution of the project.

Please describe experience and track record of the AE and EE(s) with respect to the activities that they are expected to undertake in the proposed project/programme. Please mention the AE's and EE's experience in the country/region, in the sector and experience of handling projects of similar funding cost. Describe in what way the AE is well placed to undertake the planned activities and what will be the implementation arrangements with the EE(s) and implementing partners. The FAO has extensive experience in the field of Climate Change Adaptation and Mitigation, fuelwood management and forestry. With more than 138 climate and resilience projects worth over USD 600 million including the GCF approved projects in Paraguay and El Salvador, the organization has the experience and technical capacity to manage the requested grant and to properly support Armenia in the forestry sector. Since 1993, FAO has built a vast and long lasting reputation in Armenia with over 30 projects executed (> USD 70 million). Forestry best practices are available in key publications such as FAO, 2011. Climate Change for Forest Policy Makers, FAO. 2010. Forests and Climate Change in Eastern Europe and Central Asia, FAO. 2008. Integration of climate adaptation and mitigation measures is co-beneficial for forest development in Armenia. Additionally, the FAO collaborates actively with the UNECE in the project: Accountability Systems for Sustainable Forest Management in the Caucasus and Central Asia. In addition, ADA has a long-standing experience and a portfolio of (ongoing or successfully completed) reference projects. ADA has been accredited with the GCF in October 2018.

The Ministry of Environment (NDA) is the Armenian Institution whose mandate oversees the state forest fund and its forests. The Ministry has a long lasting experience with international projects and is the repository of all the baselines concerning, forest, climate change and environment in general. As reported in the previous sections the Ministry of Environment will execute the project via its EPIU jointly with the FAO and will be the chair of the steering committee. The EPIU was formed with the decree N786, August 29, 2001 of the RAG. Its mandate is under the subordination of the RA Ministry of Environment. EPIU staff was formed following the RA Prime Minister's decree N707, 03.10.2001. Relations between the RA Government and the EPIU are regulated according to the RA legislation and the institution charter. The EPIU is accredited by the Adaptation Fund and is already accredited to the GCF as of February 2019. A list of past and current initiative managed by the EPIU is available in their official website.

Describe the selection process and related consultations undertaken to ensure the proposed project/programme reflects a broad spectrum of stakeholder views, including the approval process by NDA for providing the no objection letter and criteria used for selection of the proposed activities, with a particular emphasis on gender and ESS consultations. Details on the stakeholders consultation carried out during the project proposal preparation can be reported as part of annex 2 The current proposal is the resultant of the consultations with communities, civil society, private sector, development actors and institutions undertaken between June 2017 and November 2018. Details of the process are reported in Annex 10, Section 5.1 page 13. In order to ensure constant and transparent involvement of the NDA a no objection letter was provided for the Concept Note and an Aid Memoire was signed with the MoE after each phase of the process to ensure mutual agreement on achievement of the design and planning of next phases.

Briefly summarize the multi-stakeholder engagement plan and the consultations that were conducted when this proposal was developed. Under the guidance of the NDA the FAO facilitated 3 national and 2 local (Lori and Syunik Marzes) engagement workshops with the participations of local authorities, CSOs, IFIs, UN agencies, NGOs, Bilateral Donors as well as national academia and private sector. Details of the multi-stakeholders engagement plan and consultations are available in Annex 10, Section 5.1.

E.6. Efficiency and effectiveness (max. 1 page)

E.6.1. Estimated cost per t CO_2 eq, defined as total investment cost / expected lifetime emission reductions (Mitigation only)	(a) Total project financing	US$ 18,704,730
	(b) Requested GCF amount	US$ 10,000,000
	(c) Expected lifetime emission reductions	-19,975,387 tCO_2eq
	(d) Estimated cost per tCO_2eq (d = a / c)	US$ **0.93 / tCO_2eq**
	(e) Estimated GCF cost per tCO_2eq removed (e = b / c)	US$ **0.50 / tCO_2eq**
E.6.2. Expected volume of finance to be leveraged by the proposed project/programme and as a result of the Fund's financing, disaggregated by public and private sources (Mitigation only)	(f) Total finance leveraged	US$ 9,168,235
	(g) Public source finance leveraged	US$ 8,504,740
	(h) Private source finance leveraged	US$ 663,500
	(i) Total Leverage ratio (i = f / b)	**87.0%**
	(j) Public source leverage ratio (j = g / b)	80.5%
	(k) Private source leverage ratio (k = h / b)	2.1%

Describe how the financial structure is adequate and reasonable in order to achieve the proposal's objective(s), including addressing existing bottlenecks and/or barriers; providing the minimum concessionality; and without crowding out private and other public investment. With a full alignment to the NDC forest-related mitigation targets, the project is pursuing a public good-rated objective with a highly intensive requirement of public resources. The strategic selection, mobilization and involvement of partners and co-financiers allows the development of the project's objectives while ensuring public sustainability of the interventions. The financial structure of the project responds to the minimum needs to ensure success for such public good. Forestry investment (Component 1) is the core of the mitigation objective and represent about 53 % of the total project

cost. However, about half of such costs are composed of contributions from the Government of Armenia, showing ownership and guaranteeing financial sustainability. Investment in reduction of energy requirements via increased use and availability of improved EE wood stoves (Component 2) represent an essential element to ensure the sustainability of the physical investment in forestry, and include on the project total cost for less than one fourth of the budget (23 %). Despite the prevailingly low levels of income in the target rural areas, and the relatively high incremental cost of the improved technology (on average, 350 USD / stove, corresponding to over a third of the average annual income of a rural HH), the beneficiaries' contribution to the investment in EE stoves component is still set at about 15 %. Within the same framework, the project's investment in developing local EE stoves manufacturing capacities which will allow to break a technological barrier by allowing the private sector to invest (including via commercial loans) and meet the increased demand for EE stoves. Investment in improved governance and enabling environment (Component 3) is also a critical element in the paradigm shift, expected to absorb about 20 % of the project's cost. Component 2 has virtually the same amount of public investment as Component 3, despite directly addressing one of the main issues of forest unsustainability (inefficient use of fuelwood), because it aims at leveraging investment from the private sector. The third component receives a lower proportion of investment as it addressed mostly institutional and behavioral changes needs, which are critical to ensure project sustainability, but less demanding in terms of investment capital.

Provide the rationale of requested concessionality and explain the methodology and assumptions used to define it. Justify why the level of concessionality of the GCF financial instrument(s) is the minimum required to make the investment viable considering the incremental cost or risk premium of the project/programme. Additionally, how does the grant and the proposed pricing fit with the concept of minimum concessionality? Who benefits from concessionality? Refer to the financial analysis where appropriate. The access to financial products is a precondition for the sustainability of the investment under component 2. In this respect, the fluidity of the financial sector in the country represent a significant asset. The banking sector and credit organization provide financial services to a large share of the population (over half of the adults borrowed in 2017). While the agricultural sector represents only about 5 percent of the total portfolio (steadily growing in the last years), the overall access to credit is quite high (the share of adults borrowing to start a farm or business passed from 9 to 17 percent between 2014 and 2017), with manufacturing and trade representing over a third of it (CBA). Despite a relatively high cost of loans (interest rates are between 6 and 15 % in local currency), the financial system is sufficiently developed to provide the required liquidity to establish new investment and enterprises in the EE sector.

In general, the public debt level and the related limited space for fiscal policy, translate in strong limitations of the government of Armenia to fund its strategy to achieve its NDC mitigation targets. Nevertheless, the project succeeds at securing enough government financing so that, if continued at such levels, it alone will allow for scalability of project intervention after the project initial investment (nurseries, technology update and institutional and organizational reform). As shown in the economic and financial analyses, the project is capable to enable continued public investment after the project. Also, the project addresses clear market failures in terms of (i) investing in reforestation – largely a public good; (ii) investing in introducing awareness and capacity to produce energy efficient technologies suitable to rural areas. The project is built on the premise that by reducing the risk of investing in the development of efficient stoves by local manufacturers, these will be in conditions to supply the local market.

Please describe the efficiency and effectiveness of the proposed project/programme, taking into account the total financing and mitigation / adaptation impact the project/programme aims to achieve, and explain how this compares to an appropriate benchmark. If an economic analysis applies to this SAP funding proposal, please specify the expected economic rate of return and net present value based on a comparison of the scenarios with and without the project/programme. Provide summary of financial analysis provided as an annex and include (if applicable): Expected financial rate of return with and without the Fund's support Identification of the financial needs and gaps Identification of the constraints and barriers to access finance Investment analysis with sensitivity under various stress scenarios wherever applicable. An economic and financial analysis (EFA) has been carried out to assess the efficiency and effectiveness of the project. The structure of the analysis follows the one of the project, with three groups of models: (a) forestry investment for CO2e storage; (b) energy efficient stoves use and; (c) small scale economic activities associated to forest use (nurseries development, beekeeping, coppicing), related to the provision of capacity development. Details of the EFA are available in Annex 9.

Forestry. The limited potential financial benefits related to the collection of NWFPs (from selected varieties of wild fruit trees) are not sufficient to ensure attractiveness for the private sector, and remain essentially a co-benefit of the public investment. The economic benefits, taking into account the incremental above- and below-ground biomass creation, and some additional ecosystem services (NWFPs) are significantly higher. Even taking into account the minimum valuation of CO2e (i.e., 40 USD/t), through the investment mobilized by the GCF grant, the IRRs are substantially above the minimum threshold (refinancing rate of the CBA), and respective the NPVs remain essentially positive until the CO2e value drops by 50% (i.e., 20 USD/t). The high effectiveness of the forestry-related investment (including climate adaptive silviculture, coppicing and other activities) is shown not only by the overall cost of CO2e reduction of the project (USD9.2/tCO2e for component 1 only), but especially for the capacity to produce seedlings for an incremental 1,000 ha / year of reforestation. As fruit of the project's support to seedling production capacity (1.8 m seedlings / year), the country will be able to cover between 8 and 10 percent of the NDC reforestation target by 2050.

EE stoves. The support for the adoption of improved EE stoves will generate at least 30 % reduction in fuelwood consumption compared to BAU [61] (from 8m^3 to 5.6 m^3/year), corresponding to savings for up to one third of the annual income of a rural household (Annex 2, Section 6 page pg. 36→48). Currently, improved EE stoves are neither marketed nor produced in Armenia. In order to break the current lack of technology capacity and to ensure the generation of the demand for improved EE stoves, the project has identified a twofold approach: (**i**) by importing of EE stoves for demonstration (ranging from 60-70% efficiency, with costs comprised between 400-600 USD each). Considering the lack of alternatives and the high cost as share of rural HH income, the project set the concessionality between 50-60%. Such level (corresponding to an investment for the project between 200 and 350 USD, and for the beneficiaries between 200 and 250 USD), would allow the beneficiaries to enjoy net savings from reduced fuelwood consumption already from the second year after the investment. These net savings represent the needed adoption incentive for the target beneficiaries in rural areas, and represents the opportunity to increase their use beyond the project intervention by generating awareness, trust and breaking the market barrier serving as example and driver for a demand of technology shift; (**ii**) by supporting the local manufacturing of more affordable improved stoves (min 52 % efficiency, 250 USD/stove), the project will support the technology transfer. For this model, the project has set the concessionality at 20 percent, as with an investment of 50 USD, even the beneficiaries with lowest purchasing power would appreciate the incentive to investment in the new technology, and pay back the investment within one year (reference: EFA, in Annex 9). With the energy efficiency trainings, the awareness and information campaigns, and the support to the adoption will create a demand for stoves beyond the project area, the local manufacturing of stoves is a potentially lucrative economic activity (the 10-year IRR and NPV are positive even with a reduction of sale price of one stove by 15 percent), and can moderately contribute to employment generation in rural areas (especially for the youth in rural areas).

Small scale economic activities. While the project will not provide financial support to any private entrepreneurial activity, there are opportunities emerging from the improved conditions of forests and from the growing development of the biomass value chain. Through the incremental project's investment for the expansion and improved conditions of the forests, the large outreach of trainings sessions in forest management, the specific trainings on sustainable coppicing, and the potential increasing public procurement of seedlings to meet the NDC's targets the project will contribute to generate economic opportunities. Some of these opportunities include: (**a**) private small scale nurseries, funded through existing regular commercial loans to agriculture (15% interest, 3 years) show a positive financial performance (without loan, the 10 year IRR and NPV are respectively 59 % and 16,600 USD). The ideal case the entrepreneur can get access to an investment and working capital loan (which would reduce to less than 300 USD per year the negative cash flow, and possibly providing additional incentives for the young to enter the business); (**b**) beekeeping activities in rural areas will gain better results thanks to improved forests (a 10-year horizon NPV between 620 and 930 USD / year, depending on the size of the investment), and can be initiated with a limited agricultural loan; (**c**) sustainable coppicing activities are also promising, with 32% IRR and over 1,400 USD financial NPV (over 3,400 USD when considering the reduction in tCO2e losses by marketing fuelwood from sustainable coppicing practices).Concerning fuelwood marketing, the project will develop a series of guidelines and trainings for target communities and administrations to ensure that the enabling conditions for the market to develop sustainably and transparently are created (Annex 2, Activities 3.1.1 and 3.1.2). Also, the project will work with the Renewable Resources and Energy Efficiency Fund (R2E2)[50] – and other possible platforms promoting access to energy efficient technologies, to include sustainable fuelwood and other biomasses among the eligible renewable energies for start-ups and development financing (Annex 2, page 49).

Aggregated results of the EFA. The project aggregated benefits take into forest investment in 7,300 ha (including 1,300 ha under sustainable coppicing), the adoption by at least 9,000 HH of improved EE stoves, and at least 35 additional private enterprises for stove manufacturing, 40 new nurseries, 100 new beekeeping activities, and reduced forest degradation in at least 135,000 ha. The Financial analysis shows a 20 year IRR for about 13 percent, and corresponding NPV of USD 7.2m, higher than the 6 percent discount rate equivalent to the refinancing rate applied by the Central Bank of Armenia. The Economic analysis (which includes valuation of CO2e at 40 USD / tCO2e) shows a very high E-IRR (101 percent), with USD 268.6m NPV. The sensitivity to increase of costs or decrease of benefits also shows solid results: the financial NPV is negative in case of twofold costs or a drop in benefits by 45%. Economic results are substantially independent of costs and benefits, while they depend on the carbon pricing: when considering 10 USD / tCO2e (as the lowest range in the current carbon pricing initiatives), the E-IRR is 46 percent and NPV 77.0m. Considering the public nature of the forestry interventions, it is estimated that without grant no investment would take place (including for private sector investments which would be triggered by the forestry investment and by the technology grant transfers to stimulate EE stoves adoption).

An efficient approach to meet NDC Forest related targets. An additional benefit of the project lies in the effectiveness of the forestry investment and in the increased capacity of the country to meet the NDC forest-related targets (expanding forest cover by about 300,000 ha by 2050). The BAU practices for afforestation / reforestation in Armenia are characterized by higher seedling density (between four and six thousand, compared to two thousand) per hectare and lower survival rates (60 percent under BAU versus 80 percent) compared to the results of the techniques proposed by the project that follow the international practices. In order to achieve the additional 300,000 ha of forests, once the project techniques are fully adopted, the cost of the full target reforestation would still remain high (about 1 billion USD), but the country could save about 800 million USD compared to BAU.

An efficient carbon sequestration investment. Overall, the project is ready to tap into an efficient investment to meet its mitigation targets. The WB estimated social value of CO2e ranges between 40 and 80 USD per ton. Such level is considered the minimum required to stay consistent with achieving the temperature goal of the Paris Agreement (WB, 2017). A more recent study provides a review of carbon pricing actually applied by individual initiatives (government, international community – WB, 2018), showing prices varying between less than 10 (30 percent of the initiatives) to over 40 USD per tCO2e (20 percent of the initiatives).). As additional scenario, the 5 USD/t practiced by REDD+ is also used by taking the lowest price in this range, with an estimated removal of about 20.0 million tCO2e in 20 years, the project is able to generate a net incremental discounted value of about varying between 47 to 234 m USD (depending on the carbon pricing set – respectively 10 and 40 USD).

Please explain how best available technologies and practices have been considered and applied. If applicable, specify the innovations/modifications/adjustments that are made based on industry best practices. For the preparation of this proposal, the FAO executed a detailed analysis of existing technologies as well as of those available in the region and in similar contexts and constitute as well the keystone of the co-financing strategy of the project. Accordingly, the ADA and the Autonomous Province of Bolzano are the most relevant partners to enhance the proposed paradigm shift and support the inclusion of the private sector and its needs in the project (Annex 2, Section 6).

[50] The "Renewable Resources and Energy Efficiency Fund" (R2E2) was established within the 2004 "Law on Energy Savings and Renewable Energy". The World Bank initially financed R2E2 as a non-governmental agency in order to create and enabling environment for private sector involvement in EE/RE. This fund financed small hydropower stations and utilized its revolving budget among others especially for the retrofitting of Public buildings. (Kindergartens, prisons, schools etc.). Additional details are available in Annex 2 pages 49→50.

F. ANNEXES

F.1. Mandatory annexes and file names contained in the submission package

☒	Annex 1	NDA No-objection Letter
☒	Annex 2	Feasibility Study
☒	Annex 2a	Project Logframe
☒	Annex 2b	Timetable
☒	Annex 3	Budget plan
☒	Annex 4	Gender Assessment and Action Plan
☒	Annex 5	Co-financing commitment letters
☒	Annex 6	Term sheet and evidence of internal approval
☒	Annex 7	Risk Assessment and Management
☒	Annex 8	Procurement plan

F.2. Other annexes to be submitted when applicable/requested

☒	Annex 9	Economic and/or financial analysis
☒	Annex 10	Environmental and Social Action Plan (ESAP)
☒	Annex 11	EXACT Carbon Accounting
☒	Annex 12	References

** Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*