



ADAPTATION TO CLIMATE CHANGE IMPACTS IN THE MOUNTAIN FOREST ECOSYSTEMS OF ARMENIA

ARMENIA CASE STUDY

SEPTEMBER 2010

Country	Armenia [http://www.adaptationlearning.net/country-profiles/am]
Region	Western Asia
Key Result Area	Climate Change Protected Areas Mountain Forest Ecosystems Capacity Building Vulnerability Adaptation Monitoring
UNDP Project ID	3814
Project Activity Dates	Start: 2009 End: 2012

ABSTRACT

Containing more than half the region's floral diversity and over 300 species of trees and bushes, Armenia's forest ecosystems form a vital eco-corridor that extends through the Eastern Lesser Caucasus. Although these forests are a biodiversity hotspot and a global conservation priority, the region has been identified as critically vulnerable, especially to the risks posed by climate change. Given the significant value of preserving the area's biodiversity, this project is working to enhance the forest's resilience through improving ecological restoration, preventing forest fires and fighting pests. Targeting 75,000 hectares of land, UNDP, in cooperation with scientists, government officials, forestry enterprises, and local communities, is working to preserve the forests. Efforts are also being made to support the local communities to participate in and benefit from the adaptation efforts. By integrating measures to adapt to climate change, the project is also responding to anticipated environmental changes that will occur over the next 25 to 50-years. The immediate focus of pilot adaptation measures are in the Syunik region in south-east of Armenia, but the project may be of broader relevance to all mountain forest ecosystems in Armenia. Key lessons learned from the project to date indicate the need for engagement of stakeholders at all levels and throughout the project cycle based on assessment of their needs and capacities. Lessons also recognise the value of evaluation at different stages of the project, inclusion of international experiences and expertise, and development of institutional capacities and policy frameworks at both local and national levels.

BRIEF DESCRIPTION OF ISSUES

Background

The climate of Armenia's Syunik region is remarkably diverse due to its complex topography. The high altitude above sea level, orientation of the mountain ranges, and occluded borders of the river valleys and basins has a notably large impact on the local climate. In general, the climate is quite dry owing to the high elevation of the terrain above sea level and its relief. The annual precipitation in the Syunik region is irregular, as is the distribution of the rainfall, which varies dramatically in certain areas and increases with elevation. Analysis of observed data from 1978-2007 shows that there has been a significant reduction of precipitation in the area. Projections based on statistical analysis suggest that a further reduction of precipitation is very likely during the next 2-3 decades. Although it is less alarming than reductions in precipitation, air temperature increases have been reported. Average air temperature during the period of 1935-2007 has increased by 0.7°C during the summer season.

If climate change scenarios become reality, based on these projections, more than 17,000 hectares of forest might disappear in Armenia as a result of the worsening forest growth conditions (5-5.5%). Expected climate changes could adversely affect forest ecosystems by worsening sanitary conditions, enlarging the spread of pests and diseases and increasing fire hazards. In this case, forests in the southeastern forested areas will be the most vulnerable. Moreover, with the expected temperature increases in the already arid climate, the probability of more intensive forest fires will rise. This particular danger is more imminent for forests in central, southern and southeastern forested areas.

BRIEF DESCRIPTION OF PROJECT

Solution: Adaptation Approach, Components and Description

In response to the problems outlined above, the project Adaptation to Climate Change in the Mountain Forest Ecosystems of Armenia has been designed to help Armenia develop strategies to cope with the consequences of climate change. In order to enhance the adaptive capacities of the vulnerable mountain forest ecosystems in the pilot region, the project will undertake activities in the Goris and Kapan districts of Syunik and also in "Arevik" National Park in Meghri district. Selected adaptation measures aim to reduce forest fragmentation, improve ecological restoration and mitigate increased pest outbreak and forest fire risks exacerbated by climate change. With a high value placed on long-term monitoring and careful project documentation, lessons from the project are expected to be replicated in other mountain forest ecosystems of central and northern Armenia.

SUCCESSFUL PRACTICE

Key Successes	The project has established cooperation between forestry enterprises and conservationists.
What Factors Supported Success	In July 2009, the project spearheaded an organizational workshop to foster connections between project board members, representatives of the government, and scientific and educational institutions. This dialogue has been vital to preparations for addressing anticipated climate changes over the coming years.
Relevant Information	Additionally, two round-table discussions have been held with local partners in Kapan and Goris towns in November, 2009. Representatives of local NGOs, tourism businesses and forest management and protection authorities were present at the meetings. More recently there was a Workshop on Climate Change Risks Assessment held May 7th, 2010. Again, representatives from the various stakeholder ministries, Syunik regional administration, members from the private sector as well as project national experts participated in the discussion.

LESSONS LEARNED

Results and Learning

Key lessons learned:

- 1. Engage a range of stakeholders (from regional, national and community levels) throughout the project planning cycle based on assessment of their needs, role and capacity:** During the project preparatory and initiation phases, a stakeholder analysis (including face-to-face discussions, interviews with questionnaires, and seminars) facilitated identification of stakeholder need, roles and capacity. This analysis resulted in a summary matrix of stakeholders and their relevance to the project, including the interests and possible functions of government and non-government entities, community-based organizations and other concerned groups in project implementation. Throughout the development and implementation of the project, various stakeholders at regional, national and community levels have filled a specific niche. Stakeholders have participated in discussions about project ideas and have provided background information during early stages of project planning. Regional-level stakeholders have served as the main authority over planning activities linked to the forest sector (i.e. related to land management, agriculture and economic development) in cooperation with national authorities. National-level stakeholders have also been well positioned to provide forest-sector education on multiple levels. Local specialists have provided important data and technical expertise, and community-level stakeholders have served as primary partners in organizing activities intended to promote community awareness and mitigate anthropogenic pressure on forest ecosystems.
- 2. Evaluate the project at different stages of the project cycle - preparation, initiation, life time:** The team realized that project evaluation provides key inputs and is therefore a very important element in the project preparation cycle. Two expanded seminars were organized by the Climate Change Program Unit for evaluating the project at its different stages: one during the project's inception, and the second in the presentation of findings and fine tuning of the planned measures. In these evaluation meetings, current climate change variability and risks, as well as future scenarios of climate change, were discussed along with suggested mitigation measures that pose a challenge and require the collaborative action of different project partners.
- 3. Bring in international experience to improve forest management and response to climate change risks:** During a workshop, International Technical Advisors shared their experiences with implementation of approaches to assess forest vulnerability to climate change impacts and European forest adaptation initiatives. It was found that the project needed to incorporate more international knowledge and experience, including modern concepts of adaptive forest management, as well as early warning and response system to climate change risks, into adaptation measures.
- 4. Develop institutional capacities and policy frameworks at national and local levels:** Recognizing that effective local and national government leadership and institutional and legal framework are needed to coordinate and guide adaptation, the project has prioritised building institutional capacity. A public outreach and advocacy strategy has been developed to raise awareness and build capacities for sustainable management of forests vulnerable under forecasted climate change. Specifically, community representatives have been active in designing, planning and implementation project's initiatives in reforestation, pest outbreak and forests fire monitoring and mitigation.

Sustainability

Based on recommendations that emerged from the Project Inception Workshop in 2009, locally-based organizations in Syunik have been engaged in piloting selected forest rehabilitation measures and will continue to cultivate local ownership and long-term sustainability of project objectives. Enhancement of adaptive capacities through strong and innovative policy and institutional support, demonstrations of pilot adaptation measures, documentation of lessons learned, and solid project management on all sector levels will also contribute to increased sustainability of the project.

Replicability

In order to replicate project successes and facilitate broader application of climate change adaptation measures, lessons learned from the project will be documented carefully. It is expected that by sharing lessons from the project, adaptation measures can be replicated in other mountain forest ecosystems of central and northern Armenia. The project's mandate to share experiences and lessons through the ALM is already contributing to this goal.

Funding

GEF (GEF Trust Fund): US\$950,000

Co-financing sources and amounts: \$1,900,000

Total project cost: \$2,850,000

Time Frame

2009-2012

Profile Created: September 2010

"

Acknowledgements: This case study is produced by the Adaptation Learning Mechanism (ALM). The ALM team would like to gratefully acknowledge the participation and support from the Regional Technical Advisor, Ketii Chachibaia, and the valuable input of the UNDP/GEF Project Task Leader, Aram Ter-Zakaryan. References used: A. Gabrielyan - Adaptation Issues under UNFCCC; D. Harutyunyan - Natural Ecosystems' V&A; K. Chachibaya - Monitoring and Evaluation of UNDP/GEF Projects; A. Ter-Zakaryan - Main Components of the Projects; A. Ter-Zakaryan - Log-frame of the Projects; Armenia PPG Document (Revised); PIF Document (Revised); Request for CEO Endorsement; Project Document for CEO Approval (Revised); <http://gefonline.org/projectDetailsSQL.cfm?projID=3417> and <http://www.nature-ic.am/ccarmenia/en/?nid=1281>, Project Implementation Report - July 2009 – June 2010, Project Overview – October 2010.

Contact Information:

Regional Technical Advisor: Ketii Chachibaia, Email: keti.chachibaia@undp.org

Aram Ter-Zakaryan, UNDP/GEF Project Task Leader, UNDP Armenia, Email: aramterzakaryan@gmail.com

Project Website: http://www.nature-ic.am/index.php?Page=PR_F_PD&Lang=1

GEF Database - Armenia: <http://gefonline.org/projectDetailsSQL.cfm?projID=3417>

Adaptation Learning Mechanism: www.adaptationlearning.net

ALM Project Website: <http://adaptationlearning.net/project/adaptation-climate-change-impacts-mountain-forest-ecosystems-armenia>