

Document of  
The World Bank

Report No: ICR00001040

IMPLEMENTATION COMPLETION AND RESULTS REPORT  
(TF-57320 IDA-36520 TF-51022)

ON A

CREDIT IN THE AMOUNT OF SDR 6.7 MILLION (US\$8.3 MILLION EQUIVALENT)

AND A

GRANT FROM THE GLOBAL ENVIRONMENT FACILITY  
IN THE AMOUNT OF US\$5.1 MILLION

TO THE

REPUBLIC OF ARMENIA

FOR A

NATURAL RESOURCES MANAGEMENT AND POVERTY REDUCTION PROJECT

September 10, 2009

Sustainable Development Department  
South Caucasus Country Unit  
Europe and Central Asia Region

## CURRENCY EQUIVALENTS

(Exchange Rate Effective July 17, 2009)

Currency Unit = DRAM

306.63 = US\$ 1

US\$ 1.00 = 366.03

FISCAL YEAR

July 1 – June 30

## ABBREVIATIONS AND ACRONYMS

BRMA	Bio Resources Management Agency
CAS	Country Assistance Strategy
CIS	Commonwealth of Independent States
CPS	Country Partnership Strategy
DCA	Development Credit Agreement
DPL	Development Policy Loan
EMP	Environmental Management Plan
ERR	Economic Rate of Return
FAO	Food and Agriculture Organization
FISP	Forest Institution Support Project
FMP	Forest Management Plan
FREC	Forest Research and Experimental Center
FSMC	Forest State Monitoring Center
GDP	Gross Domestic Product
GEF	Global Environment Fund
GEO	Global Environment Objectives
GIS	Geographic Information System
IBRD	International Bank for Reconstruction and Development
ICR	Implementation Completion Report
IDA	International Development Association
IDF	Institutional Development Fund
ILAP	Illegal Logging Action Plan
IUFRO	International Union of Forest Research Organizations
M&E	Monitoring and Evaluation
MNP	Ministry of Nature Protection
MOA	Ministry of Agriculture
MTR	Midterm Review
NGO	Non-Governmental Organization
NRMPRP	Natural Resources Management and Poverty Reduction Project
OP	Operational Policy
PAD	Project Appraisal Document
PDF	Project Development Facility
PDO	Project Development Objectives
PHRD	Policy and Human Resource Development Fund
PIU	Project Implementation Unit

## ABBREVIATIONS AND ACRONYMS

PRSC	Poverty Reduction Strategy Credit
SDR	Special Drawing Rights
Sida	Swedish International Development Cooperation Agency
SNCO	State Non-Commercial Organization
TACIS	Technical Assistance to the Commonwealth of Independent States
TF	Trust Fund
TTL	Task Team Leader
USDA	United States Department of Agriculture
WCPA	World Commission on Protected Areas
WWF	World Wildlife Fund

Vice President: Shigeo Katsu

Country Director: Asad Alam

Sector Manager: John Kellenberg

Project Team Leader: Peter Dewees

ICR Team Leader: Ahmad Slaibi

**ARMENIA**  
**NATURAL RESOURCES MANAGEMENT AND POVERTY REDUCTION PROJECT**

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<b>A. Basic Information</b>			
Country:	Armenia	Project Name:	Natural Resources Management & Poverty Reduction Project
Project ID:	P057847,P069917	L/C/TF Number(s):	IDA-36520,TF-57320,TF-51022
ICR Date:	09/17/2009	ICR Type:	Core ICR
Lending Instrument:	SIL,SIL	Borrower:	REPUBLIC OF ARMENIA
Original Total Commitment:	XDR 6.7M,USD 5.1M	Disbursed Amount:	XDR 6.6M,USD 4.9M
<b>Environmental Category: B,B</b>		<b>Focal Area: B</b>	
<b>Implementing Agencies:</b> Ministry of Nature Protection			
<b>Cofinanciers and Other External Partners:</b> Swedish International Development Cooperation Agency			

<b>B. Key Dates</b>				
<b>Natural Resources Management &amp; Poverty Reduction Project - P057847</b>				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	01/06/2000	Effectiveness:		12/27/2002
Appraisal:	02/22/2002	Restructuring(s):		
Approval:	06/04/2002	Mid-term Review:	10/09/2005	10/09/2005
		Closing:	07/31/2008	01/31/2009

<b>Natural Resources Management &amp; Poverty Reduction GEF Project - P069917</b>				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	01/06/2000	Effectiveness:	12/28/2002	12/27/2002
Appraisal:	02/22/2002	Restructuring(s):		
Approval:	06/04/2002	Mid-term Review:	10/09/2005	10/09/2005
		Closing:	07/31/2008	01/31/2009

## C. Ratings Summary

C.1 Performance Rating by ICR	
Outcomes	Moderately Satisfactory
GEO Outcomes	Moderately Satisfactory
Risk to Development Outcome	Moderate
Risk to GEO Outcome	Moderate
Bank Performance	Moderately Satisfactory
Borrower Performance	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)			
Bank	Ratings	Borrower	Ratings
Quality at Entry	Moderately Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance	Moderately Satisfactory	Overall Borrower Performance	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Natural Resources Management & Poverty Reduction Project - P057847			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA)	Satisfactory
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA)	None
DO rating before Closing/Inactive status	Moderately Satisfactory		

Natural Resources Management & Poverty Reduction GEF Project - P069917			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating:
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA)	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA)	None
GEO rating before Closing/Inactive Status	Moderately Satisfactory		

<b>D. Sector and Theme Codes</b>		
<b>Natural Resources Management &amp; Poverty Reduction Project - P057847</b>		
	<b>Original</b>	<b>Actual</b>
<b>Sector Code (as % of total Bank financing)</b>		
Central government administration	2	2
General agriculture, fishing and forestry sector	85	85
Other social services	11	11
Sub-national government administration	2	2
<b>Theme Code (as % of total Bank financing)</b>		
Biodiversity	22	22
Environmental policies and institutions	23	23
Other rural development	22	22
Participation and civic engagement	22	22
Rural policies and institutions	11	11

<b>Natural Resources Management &amp; Poverty Reduction GEF Project - P069917</b>		
	<b>Original</b>	<b>Actual</b>
<b>Sector Code (as % of total Bank financing)</b>		
Central government administration	78	78
General agriculture, fishing and forestry sector	17	17
Other social services	3	3
Sub-national government administration	2	2
<b>Theme Code (as % of total Bank financing)</b>		
Biodiversity	25	25
Environmental policies and institutions	24	24
Other rural development	25	25
Participation and civic engagement	13	13
Rural policies and institutions	13	13

<b>E. Bank Staff</b>		
<b>Natural Resources Management &amp; Poverty Reduction Project - P057847</b>		
<b>Positions</b>	<b>At ICR</b>	<b>At Approval</b>
Vice President:	Shigeo Katsu	Johannes F. Linn
Country Director:	Asad Alam	Judy M. O'Connor
Sector Manager:	John V. Kellenberg	Marjory-Anne Bromhead
Project Team Leader:	Peter A. Dewees	Adriana Jordanova Damianova
ICR Team Leader:	Ahmad Slaibi	
ICR Primary Author:	Ahmad Slaibi	

<b>Natural Resources Management &amp; Poverty Reduction GEF Project - P069917</b>		
<b>Positions</b>	<b>At ICR</b>	<b>At Approval</b>
Vice President:	Shigeo Katsu	Johannes F. Linn
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ICR Team Leader:	Ahmad Slaibi	
ICR Primary Author:	Ahmad Slaibi	

## **F. Results Framework Analysis**

### **Project Development Objectives** (from Project Appraisal Document)

The project's development objective is adoption of sustainable natural resource management practices and alleviation of rural poverty in mountainous areas where degradation has reached a critical point. The project will help avert further deterioration of natural resources (soil, water, forest, fishery, and biodiversity) and stabilize incomes in the local communities.

### **Revised Project Development Objectives** (as approved by original approving authority)

The project's development objective and key performance indicators were not changed.

### **Global Environment Objectives** (from Project Appraisal Document)

The global environmental objective is to preserve the mountain, forest, and grassland ecosystems of the Southern Caucasus, through enhanced protected area and mountain ecosystem conservation and sustainable management.

### **Revised Global Environment Objectives** (as approved by original approving authority)

The global environment objective and key indicators were not changed.

#### **(a) PDO Indicator(s)**



Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Increase in income (or expenditure) in project villages compared to non-project villages.			
Value (quantitative or Qualitative)	Annual average income at baseline is AMD 493,000	10% increase in incomes in participating villages	N/A	Average income estimated in 2008 was 599,000 (21.5% increase). However, survey sampling base is small.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	The ICR uses a survey which compares farm income in project with non-project communities. The survey found a real increase of 17% in project villages as compared to a decrease of 6% in nonproject villages from 2002 to 2007. (100% achievement)			
<b>Indicator 2 :</b>	Increased crop and livestock productivity in project villages compared to non-project villages.			
Value (quantitative or Qualitative)	National statistics for the marzes	No targets defined	N/A	Comparison of yields in project versus non-project villages: Wheat +33%, Barely +32%, Milk +31%, Wool +31%, Sheep weight +15% , and Cattle weight +14%
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Productivity in project villages is significantly higher as compared to non-project villages. Sampling base is small (100% achievement)			
<b>Indicator 3 :</b>	Increased community participation in natural resources management decisions, as perceived by stakeholders in target communities.			
Value (quantitative or Qualitative)	Natural resource management in villages negligible	At least 20 communities report participation in natural resources management decisions evidenced by protection activities for common natural resources (forests, pastures, etc.)	N/A	40 Communities have participated and implemented protective activities on common natural resources in a participatory approach. Process was new but of significant quality.

Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Early project communities missed to develop participatory plans. After MTR, most new joining communities engaged in intensive participatory planning with the project over-achieving the target of 20 communities by 200%. (200% achievement)			
<b>Indicator 4 :</b>	Reduction in illegal activities destroying forest cover.			
Value (quantitative or Qualitative)	No baseline available.	Regulatory framework in place and implemented.	N/A	Illegal Logging Action Plan developed and implemented. Illegal logging was reduced by up to 50% during the lifetime of the project.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	The reduction in illegal logging was driven by improved socio-economic conditions as well as project activities. The development of the legislative & institutional framework under the project were instrumental to this reduction. (75% achievement)			
<b>Indicator 5 :</b>	Reversal of degradation in pasture vegetation cover.			
Value (quantitative or Qualitative)	Continuing trend of deterioration of pasture vegetation.	Some 9,500ha of community pastures will adopt best practice management	N/A	Grazing management plans in place in approximately 40 communities, access to 20,000ha of remote pasture was improved and reduced pressure on nearby overgrazed land. Rotational grazing and temporary protection of pasture improved vegetation cover.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	No quantitative information about the changes in the vegetation cover or plant composition is available; however beneficiaries report significant improvements. (75% achievement)			
<b>Indicator 6 :</b>	Increased quality, quantity and productivity of forest cover in the project area.			
Value (quantitative or Qualitative)	No concept for forest rehabilitation exists.	Forest management plans for around 70,000 ha completed. Forest rehabilitation activities covering	N/A	Management plans have been completed for 128,000 ha of forest area. Some 7,000 ha reforested or

		more than 1,100 ha afforestation / reforestation implemented.		protected for regeneration.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Forest management planning under the project significantly exceeded initial targets & gained momentum outside the project. However, some activities envisioned in the PAD were never completed (road rehabilitation & pest control measures). (75% achievement)			

**(b) GEO Indicator(s)**

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Development of protected areas management plans for Lake Sevan National Park and Dilijan Nature Reserve supported by local communities, adopted by Government, implemented in year two and made subject to annual reviews.			
Value (quantitative or Qualitative)	No management plans	Two management plans	N/A	Two management plans developed, adopted, and under implementation.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Management plans were significantly delayed and were approved two years before project closure; no reviews have yet been done, though management effectiveness is being regularly monitored. (75% achievement)			
<b>Indicator 2 :</b>	Stable or increasing numbers of key indicator species according to population census taken in two of the last four years of the project.			
Value (quantitative or Qualitative)	Baseline is not available	Target value to be determined after the baseline is determined. Impacts will only be visible in the long term and are unlikely to be captured through short term surveys.		Extensive studies of flora & fauna identified key indicator species. Management plans defined monitoring protocols, established conservation targets, & currently biodiversity monitoring is being carried out. Indications are that key populations are stable
Date achieved	05/15/2002	01/31/2009		01/31/2009
Comments (incl. % achievement)	There was no baseline established at Appraisal. Much effort & resources were involved in determining key indicator species & establishing monitoring protocols. Project activities served to protect & manage critical natural habitat.			

(70% achievement)

**(c) Intermediate Outcome Indicator(s)**

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
<b>Indicator 1 :</b>	Village micro-catchment plans implemented			
Value (quantitative or Qualitative)	No plans.	Up to 40 microcatchment plans (covering as many as 100 villages)	N/A	40 catchment plans and 40 village resource management plans.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	For all proposed micro-catchments, plans were developed and designed measures were implemented. (100% achievement)			
<b>Indicator 2 :</b>	Community capacity for sustainable use of common resources developed.			
Value (quantitative or Qualitative)	None of the participating communities have grazing management plans.	At least 20 participating communities have developed grazing management plans.  At least 7 of 12 communities have resumed community forest management.	N/A	40 communities have developed and implemented grazing management plans.  7 community forestry management plans developed.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Implementation of the grazing management plans is not equally effective in the 40 communes. Community forestry management plans remained behind expectation in terms of numbers and management turnover to local communities. (75% achievement)			
<b>Indicator 3 :</b>	Measures for effective protection of mountain biodiversity at watershed level effectively implemented.			
Value (quantitative or Qualitative)	No protection activities in place	Up to 50 small grants for biodiversity conservation.	N/A	24 small grants schemes and 4 awareness raising grants implemented.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Only about half of the originally envisioned number of schemes (50) were implemented; due to the limited biodiversity focus. After MTR, the scheme was changed & 4 additional grants with strong awareness building nature were implemented. (50% achievement)			

<b>Indicator 4 :</b>	Income opportunities of rural communities increased.			
Value (quantitative or Qualitative)	N/A	No targets defined	N/A	No quantitative data available
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	It was only after MTR that most of the Component One activities have been implemented directly by the beneficiaries in a participatory manner; this has created temporary job opportunities under the project. (100% achievement)			
<b>Indicator 5 :</b>	Sustainable forest management practiced in selected pilot areas on state forest land.			
Value (quantitative or Qualitative)	No valid forest management plans exist in project areas.	Two forest management plans covering 70,000ha.	N/A	Five state forest management plans (two approved, three in approval process) covering 128,000ha.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Significant project success, not only because it surpasses by almost 2-fold the target, but also because this planning initiative has paved the way for good forest planning, based on modern principles of sustainable forest management. (200% achievement)			
<b>Indicator 6 :</b>	Technical assistance for effective forest management delivered to Hyantar district branches, Department of Protected Areas, local environmental authorities and communities.			
Value (quantitative or Qualitative)	Deficient legal and institutional system, forest administration poorly trained.	Inter-ministerial task force in illegal logging established, Number of illegal logging cases reduced, National regulation on community forestry management in place, forest staff trained	N/A	Project developed or notably contributed to: National Forest Policy & Strategy; Illegal Logging Action Plan; National Forest Program; new Forest Code; Community Forest Management Regulation; & provided variety of training & capacity building activities
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Project has helped enormously to move the sector forward towards instituting the legal and institutional framework for multi-purpose sustainable forestry. (100% achievement)			
<b>Indicator 7 :</b>	Effective management of Dilijan and Lake Sevan Parks.			
Value (quantitative or Qualitative)	Dilijan Nature Reserve and Lake Sevan National Park dysfunctional and existing as paper	Management plans completed and under implementation;	N/A	Assessment of management plan effectiveness (Annex 6 to this

	protected areas. No effective management systems in place.	supportive policy, legal and regulatory changes implemented; capacity for participatory protected area management is increased.		ICR) indicates significant progress has been achieved in both National Park.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Capacity extensively improved, facilities upgraded, & equipment procured to improve overall protected area management. Nature protection legislation was passed such that a supportive regulatory environment provides for improved management. 100% achievement			
<b>Indicator 8 :</b>	Enhanced planning and management capacity of protected areas and increased public awareness.			
Value (quantitative or Qualitative)	No effective planning and management in place. Badly degraded office facilities in both Dilijan and Sevan National Parks. No acceptable visitor facilities in Dilijan National Park.	Adoption of 2 park management plans in year 2. Reduce illegal resource-use in parks, Establish bio & landscape monitoring (GIS), Carry-out training, Adequately staff parks, Establish ranger services & Improve public awareness of biodiversity conservation	N/A	Management plans for 2 target National Parks developed & approved in year 5, administrative & basic field infrastructure provided for both park. Extensive measures taken to improve public awareness through a PA campaign.
Date achieved	05/15/2002	01/31/2009	06/06/2002	01/31/2009
Comments (incl. % achievement)	Project activities transformed dysfunctional protected areas into better operated National Parks with improved management systems. Park infrastructure under development. PA planning & zoning good practices adopted but still need refinement. 75% achievement			

## G. Ratings of Project Performance in ISRs

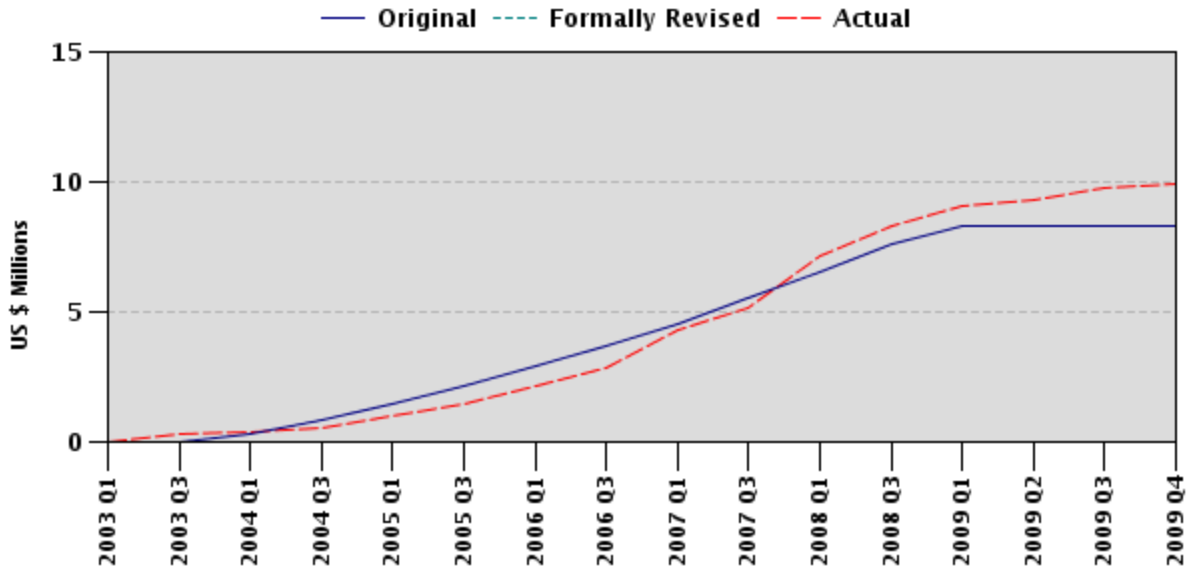
-						
No.	Date ISR Archived	DO	GEO	IP	Actual Disbursements (USD millions)	
					Project 1	Project 2
1	11/01/2002	S	S	S	0.00	0.00
2	01/28/2003	S	S	S	0.00	0.00
3	08/14/2003	S	S	S	0.37	0.13
4	01/29/2004	S	S	S	0.47	0.20
5	06/02/2004	S	S	S	0.66	0.26
6	12/21/2004	S	S	S	1.15	0.51
7	06/01/2005	MS	MS	MS	1.51	0.81
8	07/28/2005	MS	MS	MS	1.88	0.90
9	12/08/2005	MS	MS	MS	2.51	1.10
10	07/31/2006	MS	MS	MS	3.94	1.82
11	11/21/2006	MS	MS	S	4.52	2.27
12	05/21/2007	MS	MS	S	5.81	3.15
13	07/25/2007	MS	MS	MS	6.28	3.20
14	03/07/2008	MS	MS	MS	8.25	3.79
15	05/23/2008	MS	MS	MS	8.44	3.95
16	12/24/2008	MS	MS	MS	9.28	4.41
17	04/08/2009	MS	MS	MS	9.75	4.89

## H. Restructuring (if any)

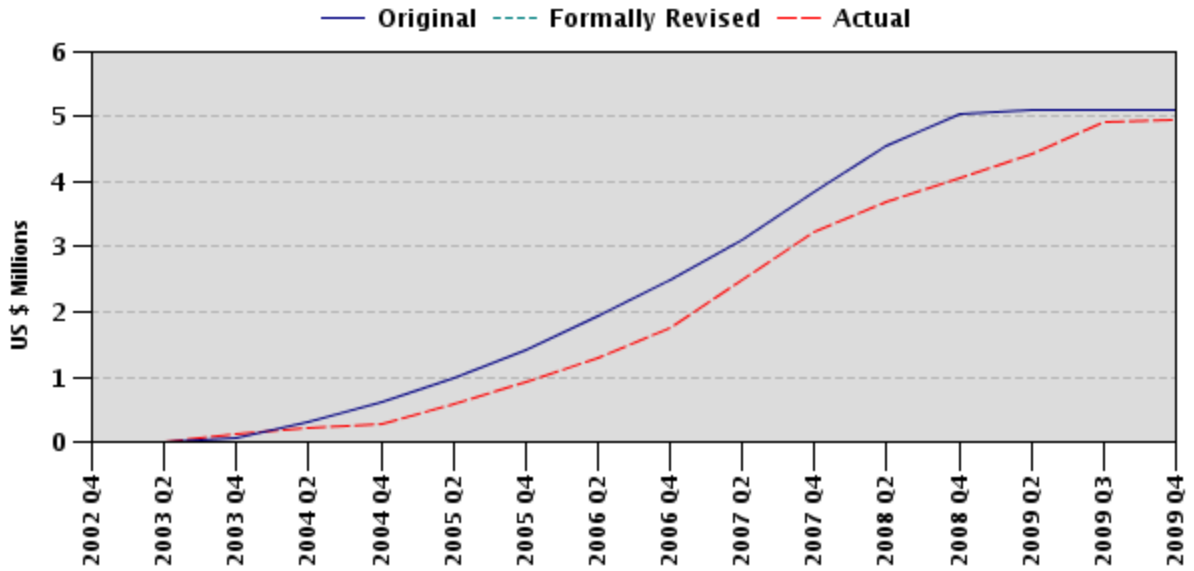
Not Applicable

# I. Disbursement Profile

P057847



P069917





## 1. Project Context, Development and Global Environment Objectives Design

*Project context.* The mountain ecosystems of Armenia produce a valuable flow of goods and services of local and global significance. When the Project was prepared, the unsustainable exploitation of natural resources in mountainous areas (largely within Tavoush and Gegharkunik Marzes) was eroding productivity due to forest loss and soil and pasture degradation, likely perpetuating rural poverty. Armenia's mountain, forest, meadow, aquatic and steppe ecosystems also host a large share of the country's globally significant biodiversity resources, and biodiversity loss was a major concern. Two main protected areas that are important biodiversity reserves in Tavoush and Gegharkunik Marzes are Lake Sevan National Park (1,500 sq.km) and Dilijan State Reserve (280 km<sup>2</sup>). The area is also rich in cultural heritage with good potential to develop ecotourism and natural heritage tourism.

At Appraisal, Project area natural landscapes were managed by the State Forest Corporation (Hayantar) under the Ministry of Nature Protection (MNP); the national network of protected areas was managed by the Department of Bioresources and Land Protection of MNP; and Village Councils (Haymanks) had legal responsibility for community pastures, and general oversight of management of private land within village areas. Weak natural resources management posed an increasing threat to the livelihoods of poor rural people who depend heavily on local soil, water, forest, and pasture, which were rapidly degrading. The Project aimed to reduce rural poverty through improved natural resource management, while protecting important natural habitats.

*Development objective.* The Project Development Objective is to support the adoption of sustainable natural resource management practices and alleviation of rural poverty in the mountainous areas of Armenia where degradation of natural resources was reaching a critical point.

*Global environmental objective.* The global environmental objective of the proposed Project is to preserve the mountain, forest, and grassland ecosystems of the Southern Caucasus, through enhanced protected area and mountain ecosystem conservation and sustainable management.

### 1.1 Context at Appraisal

**Country Background:** The Republic of Armenia is a mountainous landlocked country in the southern Caucasus with limited land links to international ports; some three million people occupy a territory of 29,800 km<sup>2</sup>—1.1 million in Yerevan—and the adult literacy rate is over 99 percent.

In 1991, after independence, the economy fell into a severe recession; 1993 GDP was only 47 percent of the 1990 level. In 1994, the economy began to recover, characterized by successful stabilization and structural reforms, and accompanied by trade and price liberalization, small and medium enterprise privatization, and the creation of a basic legal and administrative framework for a market economy. This led to real GDP growth in 1998 of 7.2 percent per annum. Since 1994, Armenia has exhibited one of the highest real GDP growth rates among the CIS countries, reaching 13.9 percent in 2005.

**Sector Background:** The dissolution of the former Soviet Union and the withdrawal of Soviet subsidies and markets was a serious setback for Armenia's many rural communities, especially in remote mountain and border areas; industries that had once provided employment disappeared and rural infrastructure deteriorated. In 2002, some 55 percent of Armenians were classified as poor, and rural poverty was pronounced among high altitude mountain residents; in Tavoush and Gegharkunik Marzes, about 70 percent of rural households engaged in subsistence agriculture and bartered their small surpluses in local markets, while remittances, pensions, and day labor provided cash. During the crisis years, the rural economy provided a safety net and absorbed a significant share of Armenia's excess labor.

As a result, many households had little cash and could not invest in productivity improvements, despite being increasingly reliant on natural resources for survival. Thus, a vicious circle was established—local

people were forced to over exploit natural resources to the point of severe degradation of forests, fish stocks, pastures, and soil, which threatened their own livelihoods and important biodiversity assets.

Armenia's biodiversity resources have been recognized as globally significant. The country is in the Caucasus Eco-Region, a Global 200 Eco-Region, at the crossroads of European, Central Asian, and Middle Eastern Zones, three bio-geographic zones that include unusually rich flora, fauna and natural landscapes and ecosystems. Armenian habitats contain nearly every plant community found in the southern Caucasus, and 50 percent of the region's flora diversity.

Natural resource degradation was considered critical in three key areas:

- a) *Declining soil fertility and pasture degradation.* Intensive farming around villages and inappropriate farming techniques, especially on slopes, increased soil erosion. During Project preparation, it was estimated that more than 60 percent of Armenia's arable land was experiencing levels of degradation.
- b) *Forest degradation.* Rising fossil fuel cost increased rural and urban reliance on wood for heating and cooking, as did restricted gas supplies that followed the war over Nagorno-Karabakh—within a few years, Armenia lost 10 to 20 percent of its forest cover and overgrazing curtailed regeneration of harvested forests. Forest management policy, legal, and institutional frameworks were largely ineffective, forest institutions were underfinanced, the forestry sector lacked management plans, and capacity to control illegal logging was limited.
- c) *Threats to critical natural habitats.* During Appraisal, Armenia's network of critical natural habitat protected areas were barely managed and poorly protected. Park boundaries were ad hoc and poorly linked to rational designation as protected areas. Similarly, internal zones were badly defined, and overall, institutional and legal frameworks for nature protection were weak.

**Rationale for Bank Involvement:** The proposed Project was consistent with the Country Assistance Strategy (CAS, July 31, 1997, No. 16899-AM) objectives of supporting social sustainability, poverty alleviation, and mitigating environmental degradation. The CAS identified environmental degradation as a key medium-term risk to economic growth sustainability; and emphasized environmental protection and regenerating natural resources to sustain local economies and reduce rural poverty.

## 1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)

The **Project Development Objective** is to support the adoption of sustainable natural resource management practices and alleviation of rural poverty in the mountainous areas of Armenia where degradation of natural resources was reaching a critical point. Key indicators described in the PAD were:

- increased incomes (or expenditures) in Project villages compared to non-Project villages;
- increased crop and livestock productivity in Project villages compared to non-Project villages;
- increased community participation in natural resources management decisions, as perceived by stakeholders in target communities;
- reduction in illegal activities destroying forest cover;
- reversal of degradation in pasture vegetation cover; and
- increased quality, quantity, and productivity of forest cover in the Project area.

## 1.3 Original Global Environment Objectives (GEO) and Key Indicators (as approved)

The **Global Environmental Objective** was to preserve the mountain, forest, and grassland ecosystems of the Southern Caucasus, through enhanced protected area and mountain ecosystem conservation and sustainable management. Key indicators outlined in the PAD were the following:

- development of protected areas management plans for Lake Sevan National Park and Dilijan Nature Reserve—supported by local communities, adopted by Government, implemented in year two, and made subject to annual review; and
- achieve stable or increasing numbers of key indicator species according to population censuses taken in two of the last four years of the Project.

#### **1.4 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification**

No formal World Bank Board revision of objectives or indicators was carried out. During the October 2005 Mid-term Review and supervision mission, some Project activities were reassessed and refined, but the Project Development Objective and indicators as stated in the PAD were unchanged.

#### **1.5 Revised GEO (as approved by original approving authority) and Key Indicators, and reasons/justification**

The Project's Global Environment objective and indicators were not revised.

#### **1.6 Main Beneficiaries**

During Appraisal, the two marzes focused on by the Project were among the poorest regions in Armenia. Project beneficiaries were expected to comprise residents of around 100 villages within these two marzes and expected benefits included increased incomes from more productive cropland, pasture, and forests. The PAD defined a broad range of Project beneficiaries including forest harvesters, agricultural product marketing agents, local and national environmental NGOs, local units of implementing agencies, academic institutions (National Academy of Sciences, universities), local marza and village governments, the private sector, and natural resource users in protected areas.

#### **1.7 Original Components (as approved)**

*Project Components:* The approved Project comprised four components.

**Component 1: Community-Based Watershed Management** (Total US\$6.4 m.; of which IDA US\$4.9 m. and GEF US\$0.9 m.)

The component aimed to support preparation and implementation of community based micro-catchment rehabilitation plans in selected villages. Plans were to be generated by each participating community, selecting from a menu of activities to improve soils, pastures, and forest management, and eligible for small grants to support small-scale local initiatives related to biodiversity conservation. Communities could choose from the following menu of options:

- a) ***Community forest management.*** Prepare and implement community forest management plans to rehabilitate and enrich forests through reforestation and afforestation, thinning; rehabilitate forest area pastures, demonstrate silvo-pastoral agro-forestry systems, and biogas production installations.
- b) ***Small-grants for biodiversity conservation.*** Participating communities were eligible for grants up to US\$5,000 to support local biodiversity conservation and reduce pressure on protected areas and biological resources.
- c) ***Community pasture management.*** Rehabilitate hay meadows through reseeding, rotational grazing, and restoring degraded pasturelands; construct livestock watering points and reintroduce forage legumes into crop rotations.
- d) ***Sustainable agricultural practices.*** Demonstrate cultivation of improved varieties of rain-fed barley and wheat, fertilizer use to improve soil fertility, and improved animal husbandry and bee keeping.
- e) ***Community infrastructure and income generation.*** Invest in small water collection systems for irrigation, restore field tracks and culverts, rehabilitate road networks for management and protection of community forests, and implement measures to control landslides and gully erosion.
- f) ***Development of Community Institutions.*** Provide support for village councils, marz-level organizations and village resource user groups to implement and monitor watershed and community forest plans. The Project was expected to finance small works, equipment, materials, and technical assistance; communities were expected to contribute labor. The GEF funds would finance technical assistance for measures to conserve forest biodiversity and to co-finance recovery costs for alpine meadows and steppes, including reseeding with indigenous grass species, and native wild fruit trees.

**Component 2: State Forest Management** (Total US\$6.0 m.; of which IDA US\$2.8 m.; GEF US\$0.17 m.; Sida US\$1.0 m. in parallel financing and later US\$1.3 m. in co-financing).

This component aimed to support rehabilitation, protection and sustainable management of state forests in the Project area; improve forest sector institutional, legal and policy framework; and enhance institutional capacity to monitor and control forest operations. Two major sets of activities included the following:

- a) ***Demonstrate improved forest management practices.*** (IDA US\$2.48 m.) This sub-component provided support for (i) preparation of modern multipurpose state forest management plans; (ii) pre-commercial thinning and thinning of pole stands in naturally regenerated forests; (iii) measures for regeneration of over-mature, partially disintegrating stands by applying group selection felling and low-impact harvesting methods; (iv) reforestation of over-logged stands and afforestation of blanks in forests; (v) protection of forests against fires and insects; (vi) rehabilitation of the forest road network to implement approved forest management plans and efficient forest protection; (vi) strengthening forest service operational capacity and local branches; rehabilitate offices and equipment.
- b) ***Strengthen legal and institutional frameworks and increase human resources capacity*** for sustainable forest management and biodiversity conservation. (IDA US\$0.35 m.; GEF US\$0.17 m.; parallel financing from Sida, US\$1.0 m.). This component was to be implemented largely with Sida-financed resources through the *Forest Institution Support Project* to increase national and local capacity to implement sustainable forest management programs. It was expected to support: (i) review and improvement of forest-related legislation; (ii) improved marketing and pricing of forest products, including initiatives to reduce illegal logging and to undertake forest certification; (iii) organizational reform of Hayantar; (iv) development and delivery of training programs for staff of Hayantar, protected areas, extension, and inspection services; (v) rehabilitation of a national forest and biodiversity training center in Zikatar. During the life of the Project, Sida provided an additional US\$1.3 m. co-financing to support forest institutional capacity as a full part of the NRMPPR.

**Component 3: Protected Areas Management and Biodiversity Conservation** (GEF US\$3.48 m.).

This component was to support measures to: (i) improve the management two key protected areas (Lake Sevan National Park and Dilijan State Reserve) for the conservation and sustainable use of biodiversity; and (ii) improve the capacity of the Department of Bioresources and Land Protection of the MNP to meet its biodiversity conservation mandate, including mainstreaming biodiversity in government policies, laws, and activities of line ministries and marza governments.

- a) ***Improve the management of Dilijan State Reserve and Lake Sevan National Park.*** Project support helped to prepare and implement management plans for Lake Sevan National Park and Dilijan State Reserve, which were expected to rationalize protected area boundaries. Specific component activities included: prepare participatory protected area management plans; develop monitoring systems and undertake applied studies to support improved management; provide professional development and training for protected areas staff and local stakeholders; build local awareness of protected areas' multiple objectives, encourage local participation in management; and establish park infrastructure and logistical support at Dilijan State Reserve and Lake Sevan National Park.
- b) ***Build MNP capacity to administer the system of protected areas and build public awareness of biodiversity conservation.*** Reform key nature conservation legislation and regulations; mainstream biodiversity conservation into central and sectoral ministries' planning and policy processes; strengthen information dissemination; undertake rapid assessment of landscape-level biodiversity conservation at selected sites; and strengthen transboundary cooperation in biodiversity monitoring and protected-area management.

**Component 4: Project Management and Administration.** (Total US\$1.1 m.; of which IDA US\$0.5 m.; GEF US\$0.5 m.).

Support Project administration and management. The Project planned to finance incremental operational costs of Project management team, essential technical assistance for Project management (e.g., financial management and procurement training, Project audit, institutional coordination, implementation

assistance to communities and public sector for capacity building, basic equipment and facilities, and PIU operating costs).

### **1.8 Revised Components**

Project components were not revised. During implementation, some delivery mechanisms were refined after Mid-Term Review discussions but all Project components were retained.

### **1.9 Other significant changes**

There were no significant changes to Project design, scope, or implementation arrangements. Changes occurred in the implementation schedule, expenditure category allocations, and scale of some activities (especially forest road rehabilitation, which was reduced). Due to the reasons listed in Section 2.2 below, the Bank granted a request from the Ministry of Finance and Economy to extend the Project closing date from July 31, 2008, to January 31, 2009. During the Project, Sida provided additional trust fund co-financing of US\$1.3 m. equivalent, supporting continued financing for institutional development activities launched under the second component.

## **2. Key Factors Affecting Implementation and Outcomes**

### **2.1 Project Preparation, Design and Quality at Entry**

The Project was prepared with a US\$360,000 grant from the Policy and Human Resource Development Trust Fund, a US\$180,000 Project Development Facility (PDF)-B grant from the Global Environment Facility (GEF), as well as several grants totaling US\$73,000 from Consultant Trust Funds. The Project was the first of its kind to support natural resource management in Armenia and to introduce participatory methods for Project preparation and implementation. Preparation was intensive and took more than three years from identification to approval, which yielded an impressive number of useful reports and design documents. Final Project design was complex and proposed numerous and multi-level activities, institutions, and stakeholders; Project designers attempted to include as many potentially relevant elements as possible, which limited their success at prioritizing and focusing Project activities, as well as strained limited local implementation capacity. Although Project design drew on lessons learned from other projects in the region, not all of these were relevant for local Armenian institutions, legal frameworks, and low capacity.

Project design represented then-prevailing practice of the logical framework to describe project inputs, outputs, and outcomes. However, this was too complex to be very useful during implementation. In hindsight, some critical risks identified in the PAD were understated; local institutional capacity to provide technical assistance appears to have been overstated, as was the potential for pilot projects to be replicated countrywide: therefore, “High” risk ratings might have been more appropriate for these risks. The PAD also fell short on identifying the critical risk of weak government capacity to support or to adopt innovation. Given these drawbacks, the overall “Substantial” risk rating for the Project was appropriate.

### **2.2 Implementation**

Despite the long preparation process, the complex Project design may have hampered Project readiness for implementation after effectiveness due to the vast array of design documents, inconsistencies among them, and significantly underestimated costs, which may have contributed to some uncertainty throughout implementation. Weak implementation capacity appeared to affect the first half of Project implementation in particular, creating significant delays, low efficiency, and sub-optimal sequencing, which compromised Project emphasis on integrated and participatory natural resource management. In hindsight, an early-on focus to improve PIU capacity in participatory processes would have been useful because Armenia has

little experience, and some capacity-building for Project team members would have allowed them to progress more rapidly, even though the PIU was hampered by continuous staff turnover.

Early stages of Project implementation were affected by design complexities coupled with a lack of local experience with and understanding of integrated natural resource management. Project activity sequencing appeared to be prioritized based on ease of implementation, rather than optimal Project progression. For example, the biodiversity small grants program, and community forest management activities were delayed until late in the Project, minimizing opportunities to institutionalize, refine, or improve these activities and approaches. Finally, the Project struggled to surmount inherent design problems linked to lack of component integration. The lengthy and extensive consultation processes during preparation of protected area management plans for Lake Sevan and Dilijan National Parks delayed actual Project implementation, diminishing opportunities to assess the investment impacts.

During implementation, it became clear that costs had been significantly underestimated—road rehabilitation by some 10-fold, and forest management, about half—which required a major funding shift among planned activities at the mid-term. Weak PIU capacity hampered the Project until the final year. Initially, the PIU misunderstood its role and limited direct interaction with Project beneficiaries and local communities, opting instead to act merely as contract managers, which confused local people about institutional responsibilities for implementation.

The Mid-Term Review (MTR) achieved a significant turn-around when many implementation issues were resolved by detailed Bank task team guidance. The PIU began to adopt an active role in working with communities; funds were reallocated to meet increased demands and costs for forest management planning activities; the scale of targets for severely underfinanced activities, such as road rehabilitation, were reduced; and community participation in Project implementation activities increased substantially, which significantly raised local awareness, understanding, and ownership of Project activities.

The Sida contributions were instrumental in achieving clear supportive regulatory and institutional backing for good forest management. Sida funds were phased: first, as parallel financing for the Forest Institution Support Project; and second, as co-financing during the Project's second half. Sida support helped establish the legal and policy framework as a foundation for many Project forestry activities, including the Illegal Logging Action Plan, the National Forest Policy, and forest legislation and regulation development. Sida also financed training and other capacity building that strengthened institutional abilities, especially to detect and counteract illegal logging.

Throughout the Project, Government ownership and commitment was good. At Project midpoint, institutional responsibilities for forestry shifted to the Ministry of Agriculture from the Ministry of Nature Protection. Some coordination challenges were encountered, but overcome; solid Ministry-level ownership was not always matched by implementing agencies. For example, Government made a commitment to community forest management, but Hayantar did not, and implementation of community forestry activities suffered from a weak enabling legal framework and lack of institutional will.

### **2.3 Monitoring and Evaluation (M&E) Design, Implementation, and Utilization**

The Project was designed with broad goals and ambitious indicators, with only a vague notion of methodology for monitoring progress, outcomes, or impacts. Even though most indicators were measurable, at Project closing it was unrealistic to expect that short-term changes in some indicators could be measured over the Project life span given that: (i) some baselines were not available; (ii) short-term changes were unlikely to be detected; and (iii) changes could not be attributed unequivocally to Project interventions.<sup>1</sup>

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<sup>1</sup> At that time, many Bank operations had Key Indicators that were less easy to monitor or track, whereas now, operations focus on monitoring progress and a results orientation.

As a result, developing longer-term capacity to establish baselines and monitor biodiversity became an important Project goal. Typically, monitoring biodiversity conservation impacts requires identifying key indicator species, establishing baseline population levels, and long-term monitoring of changes in habitat quality. In this Project, the proposed use of indicator species to track Project impacts was unrealistic as were several indicators that had been proposed at Appraisal because they required systematic and costly data collection that was not envisaged at the outset and for which no capacity existed.

During Project preparation, at Mid-term, and prior to ICR preparation, household surveys were carried out to help assess Project impacts on household expenditures, to provide feedback to implementing agencies on the status of Project components, particularly watershed rehabilitation, and for reference during Project supervision visits.

The Project established other measures for monitoring protected area management effectiveness (Annex 6). The Protected Area Management Effectiveness Tracking Tool (METT) was prepared with the assistance of the World Bank/WWF Forest Alliance to provide an overarching framework for assessing management effectiveness of protected areas and systems to guide decision-making and help harmonize assessments worldwide. The METT is organized around the assessment framework identified by the World Commission on Protected Areas (WCPA) and is a mandated reporting tool for GEF-financed biodiversity conservation operations. It was translated into Armenian and was used by the park management teams in Sevan and Dilijan to establish performance baselines and to monitor progress in improving management effectiveness.

Project-supported forest management plans were derived from extensive inventories that also provided a baseline. The Project improved capacity to monitor long-term forest and watershed changes, for example, strengthening the Forest State Monitoring Center (FSMC) and the Bio-Resources Management Agency (including with GIS capacity—a new tool for Armenia). Through these activities and the capacity created by introducing innovative forest management planning and inventory tools, the Project made a major contribution towards establishing scientific monitoring and evaluation systems and the basis of sustainable forest management.

As greater emphasis began to be placed on developing clear Project results, the Bank team worked with the implementing agencies to retrofit the original Log Frame into a ‘Results Framework,’ providing baselines where possible, defining intermediate outcome indicators, and defining progress reporting requirements. Outcomes against this matrix are summarized in the Data Sheet. In some respects, the Framework is qualitative, reflecting system-wide changes in thinking and institutional approaches that the Project sought to catalyze.

## **2.4 Safeguard and Fiduciary Compliance**

Safeguards compliance. During preparation, it was determined that the Project would trigger Safeguard Policies on Environmental Assessment (OP4.01) and Involuntary Resettlement (OP4.12) and the Project was classified as a Category B investment; an Environmental Assessment (EA) was prepared in accordance with the OP 4.01 and in compliance with environmental regulations in Armenia. An Environmental Management Plan (EMP) was prepared to establish adequate mitigation measures. The Bank monitored performance against the EMP throughout Project implementation. Overall, Project safeguard and fiduciary compliance was satisfactory throughout the Project.

The EA raised concerns about illegal logging and poor forest management. To mitigate potential adverse environmental impacts, the EMP outlined measures including policy, institutional, and legal reforms to counteract illegal logging and pilot forest certification. At the time of Appraisal, the Safeguards Policy on Forests (OP 4.36) was relevant *only* to tropical forests, but the OP was revised in 2003 to include *all* forests. Therefore, measures were included in the EMP to ensure compliance with anticipated OP revisions. During implementation, pre-commercial thinning and low-impact harvesting were dropped

from the Project since the Government was not ready to set a timetable to meet international standards for forest certification. That said, it completed two pre-certification assessments.

The Project also included provisions for forest pest control, which would normally trigger the Safeguards Policy on Pest Management (OP 4.09), but this appears to have been overlooked at Appraisal. During implementation, the Bank team established measures to ensure that OP 4.09 was adhered to and sought support from USDA Forest Department to prepare an institutional capacity assessment for forest pest management. The assessment concluded that Armenian standards were inadequate to comply with the Bank's pest management policies without substantial investments, and therefore planned investments for pesticide procurement were dropped.

The Project triggered OP 4.12 (Involuntary Resettlement) because under the biodiversity conservation component, internal zoning of protected areas to be carried out in conjunction with preparation of the National Park Management Plans might restrict local people's access to natural resources within Park boundaries. The Process Framework focused on how poor rural communities' needs would be addressed. The participatory process for the Management Plan met key objectives outlined in the Process Framework.

At Appraisal, a longstanding Government decision had been in place to raise the level of Lake Sevan to address some environmental problems. During the Soviet era, buildings had been constructed along the lakeshore, but during Appraisal, these were derelict and abandoned State properties, destined to be inundated by raised water levels in Lake Sevan. Nothing in the EA, EMP, or Lake Sevan Management Plan suggested that any of these derelict state-owned properties was occupied, or that any scope existed for their occupation. However, in or about 2004, some state-owned lake shore properties (in what is now the Park's Recreation Zone) were leased to investors on long-term leases, and some of these half-built, abandoned Soviet era buildings became the object of investments to expand and modernize them. These leaseholder investments could be put at risk by the rising lake level but the question of disposition of these properties is beyond the scope and capacity of the National Park Administration to address, and will have to be resolved at the political level through sustained consultation and discussion.

Fiduciary compliance. Overall fiduciary compliance was satisfactory; Project financial management was aligned with DCA provisions. In general, Project procurement complied with relevant World Bank procedures, with minor exceptions. Initially, procurement operations were slow, which sometimes slowed overall Project implementation, due primarily to procurement officers' lack of experience and high staff turnover. Several cases of alleged misuse of Project funds that were identified during supervision were referred to World Bank Integrity Vice Presidency for investigation.

## **2.5 Post-completion Operation/Next Phase**

The Project was implemented by existing Armenian institutions. A local firm was contracted to perform community-level services under the first component. The Project established a PIU as an operational unit of the MNP and financed it until May 30, 2009, to ensure smooth closing arrangements. Government is interested in maintaining the PIU to provide project management services for other Ministry projects.

Institutions that participated in the Project are well-placed to continue project activities. The Project-supported national park management plans provide a roadmap to guide operations of Dilijan and Sevan National Parks and the work of SNCOs charged with their management. Similarly, Project-supported forest management plans describe interventions for five forest enterprises, and are aligned with their financial and institutional capacity.

To remain relevant, national park and forest management plans require financing and monitoring; and the Government expressed its intention to provide funding and monitor these plans during the ICR mission discussions. Monitoring plans are specified in the management plans. Implementing agencies have increased capacity, staff, and equipment, thanks to Project investments and Government commitment. During the Project, Government substantially increased budgets and salaries, and Hayantar was



transformed through improved salaries, working conditions, and productivity, due to completion of Project-supported forest management plans.

Some activities carried out under the watershed component could experience long-term sustainability constraints if new village administrations are not continuously engaged and funded. A significant Project strength was using local community institutions and engaging local administrations in natural resource management activities; but Project-supported Resource User Groups, intended to empower local stakeholders, were less effective than envisaged at Appraisal. In addition, activities such as the fertilization program for pasture and hay meadows may be unsustainable due to high input costs.

Future Bank-supported NRMGRP-type activities may be aided by a new Country Partnership Strategy that proposes a two-pillar approach for the next Bank lending cycle: to address problems of vulnerability, and promote competitiveness and growth. Armenia will move from IDA to IDA/IBRD blend status; availability of GEF resources through the Bank is likely to decline—factors that Government must consider when seeking future Bank support for NRMGRP-type activities. Clearly, investments in forest management and degraded land rehabilitation would benefit vulnerable populations and create jobs.

### **3. Assessment of Outcomes**

#### **3.1 Relevance of Objectives, Design and Implementation**

The Project contributed to substantial improvements in Armenia's natural resources management and planning, raised public awareness, and improved institutional capacity, despite some Project design challenges. Project global and development objectives, design components, and implementation activities are not only fully consistent with, but also helped to shape, Armenian national and global environmental management priorities. They reflect strategic objectives and activities identified in the Bank Country Assistance Strategy (CAS) during Project preparation, and remain relevant to the current Country Partnership Strategy (CPS) priorities for environment and natural resource management, and increasing quality and effectiveness of public services.

#### **3.2 Achievement of Project Development Objectives and Global Environment Objectives**

##### **Rating: Moderately Satisfactory**

When the Project was prepared and launched, rural communities had few livelihood alternatives to over exploiting their natural resources and Armenia was facing rapid deforestation resulting from urgent demand for firewood. Natural resources management institutions were new and had yet to develop effective policies, legislation, or capacity. The Project was an ambitious, pioneering attempt to integrate natural resource management through technical, social, and institutional channels, and as such, a few envisioned activities were unrealistic and dropped, such as forest pest management and pre-commercial thinning, or were reduced in scope, such as forest roads. Furthermore, several activities' sustainability may be at risk. Nevertheless, the Project made important advances in natural resources management and therefore is rated moderately satisfactory. Key achievements include the following:

- a) **Improved policy, institutional, and legal framework for natural resource management.** The Project significantly improved Armenian policy, institutional, and legal frameworks for natural resource management, and piloted strategic investments in forest and protected areas, and in rural agricultural landscapes. The country has begun to address environmental and natural resource management in a more integrated manner because the Project successfully increased local, regional, and national awareness and understanding of the socio-economic implications among policymakers and citizens. Government is now focusing on the challenge of harmonizing socio-economic and environmental protection objectives, and will begin to use the Project-supported frameworks for further investments, and Project-supported capacity for achieving more effective outcomes.

- b) **Introduced best practices for natural resource management.** The Project demonstrated successful sustainable natural resource management practices that have been adopted. Mountain communities in Tavush and Gegharkunik marzes have implemented watershed management plans, reduced destructive practices on pasture and forest resources, and protected some of the most fragile lands, creating some visible improvements in vegetative cover. The Project successfully demonstrated improved land management practices that have improved rural livelihoods. In forestry, the first management plans since the 1980s were completed for five key forest enterprises; forest certification was piloted through two pre-assessments; community forest management plans have been piloted, setting an important precedent for advancing this critical area. Sustainability of these good practices will hinge on adoption by local governing bodies and MNP.
- c) **Reduced illegal logging.** The Project catalyzed the development of important mechanisms to counteract illegal logging. With Sida support, the Project contributed to developing and implementing an Illegal Logging Action Plan (ILAP). Technical assistance supported an independent Forest State Monitoring Center, and provided information on forest offenses and legal processes to the State Oversight Board for Illegal Logging. Project activities catalyzed support to counteract illegal logging through policy and financing mechanisms, such as the PRSC Series, and PHRD and IDF grants. These actions, plus increased rural gasification (recommended by ILAP), are helping to reduce illegal practices and stabilize forest and biodiversity resources. Recent surveys indicate that national levels of illegal logging may have dropped as much as 50 percent during the Project life.
- d) **Strengthened capacity for biodiversity conservation.** GEF-funded activities mainstreamed biodiversity conservation activities into policies, regulations, and activities of line ministries and local governments. The Project triggered inter-sectoral discussions on land use in and around protected areas and succeeded in developing protected area management plans for Lake Sevan National Park and Dilijan National Park and launching activities to transform them from so-called 'paper parks,' to alignment with modern international good practice. Zoning and management planning of the Dilijan and Lake Sevan National Parks drew on ecosystem studies, especially plant and animal species and their habitats, and detailed forest inventories.
- e) **Built institutional capacity.** The Project has been instrumental in supporting institutional and regulatory framework reforms for forest management and nature protection, especially new forest legislation, new National Forest Policy and Strategy, and new legislation and regulations on biodiversity conservation and protected area management. Management plans are established and under implementation for two national parks and five forest enterprises. Experience gained through preparing management plans has created capacity to prepare and finalize management plans in other protected areas and forest enterprises. The Project helped clarify institutional structures, roles, and organizations among line agencies responsible for natural resource management; it strengthened the operational capacity of the State Forest Corporation (Hayantar), the Ministry of Nature Protection, the FSMC, the two SNCOs responsible for management of the Lake Sevan and Dilijan National Parks, and many associated units by providing training and facilities and by helping to clarify their roles and functions. When the Project closed, the forestry institutional restructuring proposals were incomplete but they had fostered healthy debate on options for checks and balances in forest management. Finally, these processes themselves have strengthened institutional capacity to tackle similar issues in the future, as has the extensive training that took place under the Project. Much work remains to sort out conflicting legislation and the duplication of institutional responsibilities, but the Project helped Armenia advance on the legal and institutional framework needed for natural resource management, and created a national platform for stakeholders to address issues of common concern.

### 3.3 Efficiency

A cost-benefit analysis on Project benefits and efficiency used some assumptions from the PAD, plus actual outputs at Project closing to quantify economic and financial benefits. Efficiency was evaluated by the extent to which non-GEF funds could be leveraged to achieve Project objectives. See Annex 3 for a detailed ERR analysis, a summarized version appears below.

An IDA credit of US\$8.3 million was invested in Project activities in all three components; little IDA financing was used in the Protected Areas component; Government contributed some US\$1.5 million. The benefits can be derived by examining the values of the watershed component activities (improved environmental conditions and reduced poverty), the regeneration and rehabilitation of forest areas, and benefits of reduced illegal logging.

Component 1 activities generated total benefits of US\$29,269,738—some US\$28,257,600 in improved local incomes and US\$1,012,038 in environmental benefits (reduced sediment flows and improved water retention). IDA allocation for this Component was US\$4,953,900 and adding Government contributions provided an allocation of US\$5,473,800; therefore, the ERR is estimated at 14.5 percent. Component 2 activities generated an overall benefit of US\$24,534,518 in reforestation/afforestation, and the ERR is estimated to be 13.3 percent. IDA allocation for Component 2 was US\$2,833,900, and with Government contribution allocations equaled US\$3,514,900; hence, the ERR is estimated at 13.3 percent. The total Project ERR (IDA plus Government contribution to Component 4) is estimated at 13.0 percent.

Component 3 was financed by a GEF Grant (US\$3,489,000) plus modest Government funding (US\$179,500). Financial and economic efficiency were evaluated by the degree to which non-GEF funds could be leveraged to achieve Project objectives, a basic assumption of GEF Incremental Cost Analysis. An estimated US\$5.1 million in non-GEF contributions anticipated at appraisal was exceeded by more than US\$1000,000 after accounting for second Sida contribution. The GEF funds were leveraged by the IDA credit, Sida contribution, and Government commitments (see Tables in Annex 3). In total, GEF contributed an additional US\$935,200 to Component 1; US\$175,500 to Component 2; and US\$515,400 to Component 3. Overall, GEF funds were leveraged in the co-financing ratio of more than 1 to 2.3.

### **3.4 Justification of Overall Outcome and Global Environment Outcome Rating**

#### **Rating: Moderately Satisfactory**

The Project is significant for Armenia and the results have been inspiring. Despite a slow start due to design complexity and limited local implementation capacity, considerable improvements boosted the pace of implementation as well as project progress following the Mid-Term Review, and momentum also intensified during the final year of project implementation when PIU management improved. As a result, improvements took place in national- and local-level implementation performance and meeting Project objectives. Nevertheless, at project completion, all of the anticipated PAD outcomes were not attained (particularly in community forestry), and late implementation of some activities left little time to consolidate or replicate. Therefore, overall project performance is rated Moderately Satisfactory (MS).

### **3.5 Overarching Themes, Other Outcomes and Impacts**

#### **(a) Poverty Impacts, Gender Aspects, and Social Development**

The Project was designed to focus on poverty alleviation in two of Armenia's poorest marzes, and during 2002-08, income increased 22 percent. Some livelihood activities such as bee keeping and legume fodder planting have significantly raised rural incomes. Vulnerable groups identified at Appraisal received special attention through training—refugees, households with migrant workers, users of products from protected areas—which raised their acceptance of protective resource management practices.

#### **(b) Institutional Change/Strengthening**

The Project made remarkable advances in achieving clear and supportive legislative and institutional backing for good forest management, especially given the backdrop of the weak and often conflicting

regulatory and institutional environment in place at Appraisal. Sida parallel financing in the first three years, followed by Sida co-financing, was crucial to support forest sector institutional reforms. The Project, supported by associated PRSC-DPL reforms, was instrumental in supporting: (i) the development, using a highly participatory process, of a National Forest Policy and Strategy (approved September 2004); (ii) the preparation and approval of a 2004 Illegal Logging Action Plan; (iii) the development of a National Forest Program (2005); (iv) the adoption of a new Forest Code with principles of modern sustainable forest management (ratified November 2005); (v) the drafting of Community Forest Management Regulations; and (vi) substantial institutional capacity building. The Project also supported proposals to restructure the forestry institutional framework, which is now undergoing incremental reforms. Similar, less extensive reforms were also supported for nature protection.

**(c) Other Unintended Outcomes and Impacts (positive or negative)**

During the Project, an unintended outcome was the dramatic increase in budgetary allocations to forest institutions, which significantly improved the performance and effectiveness of these institutions towards the end of the Project. Originally, the institutional framework for natural resource management was extremely weak but the Project helped build awareness of the forest sector through extensive multi-stakeholder discussions about Armenia's national forest policy and legal framework; through this process, the Project also helped highlight the benefits of better forest management and the difficult financial position of Hayantar.

Project design did not anticipate the important synergies required in tackling illegal logging. This was addressed during implementation through the following measures: Sida provided additional funds to develop a strategic approach to counteract illegal logging through FISP, which complemented FSMC establishment (a measure included in the PRSC series), technical assistance provided to the Ministry of Finance's under a PHRD grant, a second round of Sida assistance, and support for the FSMC from the Institutional Development Fund—therefore, the Project was able to take advantage of multiple opportunities to tackle this problem.

**3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops**

During the Project, many workshops took place ranging from discussions on national legislation to zoning of conservation areas that included stakeholders from national and local government agencies, universities, NGOs, and local communities. No specific workshops were held for the preparation of ICR.

**4. Assessment of Risk to Development Outcome and Global Environment Outcome**

**Rating: Moderate**

The Project helped establish a solid foundation for improved watershed, biodiversity, and protected area management. Sustainability will depend on national-level institutional ownership and support. Indications are that project-supported activities will be sustainable:

- Some villages succeeded in using the Project to change practices for using agricultural land, pastures, and forest resources.
- Government provided funding for state forest area management planning for all remaining forest areas in Armenia—all 19 forest enterprises aim to have management plans by 2010.
- Since 2004, Government funding of the forestry sector has increased 10-fold. Forest officers continue to receive low wages and to be poorly equipped, but their situation has improved and Hayantar is better equipped to implement its new forest management plans.
- Hayantar is now voluntarily rehabilitating up to 9,000 ha per year with public funding; in 2002, during Project Appraisal, no ongoing forest rehabilitation operations existed.
- Illegal logging appears to have dropped by almost 50 percent since Project inception, according to Hayantar (annual survey of individual trees cut) and by the FSMC.

- The Zikatar Forest Training Center, through FREC, is now fully operational and implementing business and marketing plans prepared with Project support, to ensure self-financing and sustainability. After its 2007 opening, the Center hosted the International Union of Forest Research Organization's (IUFRO) regional meeting on forest legislation, in 2008, it hosted seven training events, and the Center has potential for regional use due to its proximity (70km) to Tbilisi. It has been selected as a regional training center by the UN Desertification Convention.
- The relatively independent FSMC, which reports to the State Oversight Board for Monitoring Illegal Logging, is compiling essential general data on Armenian forests and inappropriate forest practices. This center continues to receive significant support from the budget and other sources and carry out a priority function specified in the Illegal Logging Action Plan.
- Government adoption of the new law on protected areas provided an essential framework for improved management. Fundamental conditions for sustaining operation of these protected areas includes legal designation of the two National Parks, mapping and registering their boundaries with land cadastre, improved capacity, and providing basic infrastructure to these Park administrations.
- Two high-quality Project-supported products were the management plans for the two National Parks and a computerized biodiversity monitoring system. Systematic and meaningful application of these useful tools for protected areas management will depend on National Parks administrations, and guidance and leadership on behalf of the MNP.

## **5. Assessment of Bank and Borrower Performance**

### **5.1 Bank Performance**

#### **(a) Bank Performance in Ensuring Quality at Entry**

##### **Rating: Moderately Satisfactory**

The Project was designed to introduce strategic innovations in natural resource management to Armenia, and targeted some of the most challenging environmental degradation using a multi-sectoral and community-based approach. Significant efforts in Project preparation meant that project components were well developed, albeit overly complex. Initial Project preparation was carried out by three consulting firms—one for each component, with little coordination among them, and financed by separate sources: a PDF-B GEF grant and TACIS grants. This resulted in three separate designs that did not factor how, during implementation, the Project's components could be integrated. Implementation was also hindered by overestimating government institutional management capacity, as well as underestimating the manageability of many critical issues and associated project activity costs.

#### **(b) Quality of Supervision**

##### **Rating: Satisfactory**

Bank staff conducted regular and frequent supervision missions during Project implementation. After the MTR, frequent videoconferences complemented these visits and allowed the Bank team to maintain a continuous dialogue with the client and also to provide continued technical support. Over the Project lifetime and particularly after the MTR, supervision focused on ways to address implementation constraints. The Project had a slow start, but even before the MTR and during earlier supervision missions the Bank provided significant technical oversight and worked with the government so that needed adjustments were made to address implementation bottlenecks. Supervision frequency was appropriate and helped keep the Project on track. During the Project lifetime, the Bank and Project teams worked to refine the M&E framework to include measurable targets; the Bank team also provided close oversight to ensure compliance with OP 4.09 and OP 4.36.

#### **(c) Justification of Rating for Overall Bank Performance**

##### **Rating: Moderately Satisfactory**

Overall Bank performance is Moderately Satisfactory, due to noted shortcomings in Project design; at the MTR, the Bank and Government worked to identify achievable targets and outcomes to measure

achievement of Project objectives. Project Task Team Leaders (TTLs) established a strong and highly supportive relationship with the PIU, which strengthened Project implementation.

## **5.2 Borrower Performance**

### **(a) Government Performance**

Rating: **Satisfactory**

Performance of two key partners, the Ministries of Nature Protection, and Agriculture, is rated Satisfactory based on Government commitment to Project objectives, and support for sector reform consistent with Project objectives. Government honored all of its commitments in a timely fashion, increased by multiple increments the budget and salaries of personnel in natural resource management institutions, resolved project issues in a timely manner, and met all fiduciary responsibilities.

### **(b) Implementing Agency or Agencies Performance**

Rating: **Moderately Satisfactory**

The Project experienced delays in the first two to three years after project effectiveness due to an overly complex project design and innovations that made implementation difficult. The PIU had to overcome a steep learning curve and had high staff turnover. During the first phase of the project, the PIU did not have a full understanding of its responsibilities and its limited interaction with project beneficiaries and local communities fell far short of creating the necessary project identity in participating villages. The MTR recommended strong continuous interaction between the PIU and villages during all phases of Project introduction, awareness building, planning and implementation; this improved understanding and ownership among local communities, but only in the Project's final year, under a newly appointed director, was the PIU exceptionally proactive in furthering project objectives.

Implementation delays lead to the revision and scaling-down of several project activities; progress reporting was weak throughout the Project prompting the Task Team to introduce regular video/audio conferences with the PIU after MTR, which helped resolve urgent implementation issues. Action plan agreements developed during periodic supervision missions between the PIU and the Bank task team were usually implemented, though not always in a timely manner.

Project financial management was notably strong throughout implementation, as reflected in audit reports. Because Bank procurement procedures were new to the country and PIU, initial misunderstandings and delays resulted; however, with the support of Bank procurement specialists, procurement planning and management improved substantially.

### **(c) Justification of Rating for Overall Borrower Performance**

Rating: **Moderately Satisfactory**

Government performance is rated as Moderately Satisfactory based on commitment to and attainment of Project objectives. Much progress was made and most Project activities were completed satisfactorily; some Project activities remained incomplete despite the momentum gained in the final year under the improved management of the new project director, who succeeded in achieving many project targets. Concerns remain about what needs be done to fully integrate lessons learned and new practices into regular forestry and protected area planning and management. Maintaining strong leadership and political commitment will be essential to build on Project progress in managing protected areas, biodiversity conservation, and sustainable forestry.

## **6. Lessons Learned**

Some key lessons learned from the project include:

**Project design should be based on a shared understanding of objectives and outcomes as well as an accurate assessment of local implementation capacity to achieve them.** Introducing new approaches, such as beneficiary participation in selecting activities, initially created confusion and implementation inefficiencies. Also, project implementers were overburdened with a multitude of project subcomponents involving different institutions and stakeholders.

**Project design should take into consideration timing requirements if project objectives rely on policy and legal changes, or objectives should be aligned with the existing policies and legal framework if the timeframe is tight.** Several project activities hinged on legal reform, which created delays for these activities and others dependent on them, effectively compressing much of project implementation in the last two years of project life.

**Sustainable Natural Resource Management requires strong beneficiary commitment:** After the MTR, Project activities were funded only after villages had signed resource management agreements that committed them to managing natural resources in accordance with watershed and grazing management plans; when this process was followed, the likelihood of sustainability increased. Early in the Project, activities were implemented in villages without this prior commitment, and as such, were largely ineffective.

**Participatory approaches require extra time to introduce the concept and involve local stakeholders.** The time for developing management plans was underestimated for Lake Sevan and Dilijan National Parks because the concept was new to Government and clearance procedures took a long time. Delays in development and adoption of management plans are common for Armenia, so developing protected area management plans should occur early in the project cycle to allow for full implementation.

**The capacity of Bilateral donors to supervise parallel financed activities should be assessed during design.** Institutional and legal reforms in a sector such as forestry, characterized by multiple conflicting interests, require time and continual oversight. Parallel grant financing from Sida (the FISP support) was essential to Project achievements; however, its monitoring was complex. The second Sida grant (i.e., co-financing) was more successful in mainstreaming project activities in the Ministries because it was directly managed by the PIU, and had clearer TORs and monitoring.

**Donor coordination and collaboration are essential to tackle complex problems such as illegal logging that benefit from harmonizing experiences and funding potential.** Collaborating early on is important, as is coordinating funding from multiple outside sources, as in this Project. In Armenia, an Illegal Logging Action Plan was developed early on using a participatory process as well as applying funds and expertise from, inter alia: the PRSC-DPL (a prior action); PHRD grant (technical assistance to the FSMC); Sida (financing for advancing legislative and institutional reforms and training); IDF grant (strengthening monitoring capacity) and this Project (ensuring an overall, cohesive approach).

## **7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners**

### **(a) Borrower/implementing agencies**

The Draft ICR was shared with the Armenian Government for their comments. Overall, the Government was satisfied with its quality and they believe that the ICR assessed the project with consideration of both achievements and omissions. The Ministry finds that there is no need to place any limitation whatsoever on the publication of the evaluation results.

### **(b) Cofinanciers**

The Draft ICR was shared with Sida for their comments. Overall, Sida was satisfied with its quality and they believe that the ICR conveyed the picture on the ground.

### **(c) Other partners and stakeholders**

N/A

## Annex 1. Project Costs and Financing

### (a) Project Cost by Component (in US\$ Million equivalent)

<b>Natural Resources Management &amp; Poverty Reduction Project - P057847 / P069917</b>			
<b>Components</b>	<b>Appraisal Estimate (US\$ millions)</b>	<b>Actual/Latest Estimate (US\$ millions)</b>	<b>Percentage of Appraisal</b>
<b>COMMUNITY-BASED WATERSHED MANAGEMENT</b>	<b>5.68</b>	<b>6.14</b>	<b>108</b>
<b>STATE FOREST MANAGEMENT</b>	<b>4.32</b>	<b>5.64</b>	<b>131</b>
<b>PROTECTED AREAS MANAGEMENT &amp; BIODIVERSITY CONSERVATION</b>	<b>3.33</b>	<b>3.68</b>	<b>111</b>
<b>PROJECT MANAGEMENT AND ADMINISTRATION</b>	<b>1.04</b>	<b>1.79</b>	<b>172</b>
<b>Total Baseline Cost</b>			
Physical Contingencies	<b>0.66</b>	0.00	0.00
Price Contingencies	<b>0.97</b>	0.00	0.00
<b>Total Project Costs</b>			
PPF	0.00	0.00	0.00
Front-end fee IBRD	0.00	0.00	0.00
<b>Total Financing Required</b>	<b>16.00</b>	<b>17.25</b>	<b>108</b>

### (b) Financing

<b>P057847 and P069917 - Natural Resources Management &amp; Poverty Reduction Project</b>				
<b>Source of Funds</b>	<b>Type of Financing</b>	<b>Appraisal Estimate (USD millions)</b>	<b>Actual/Latest Estimate (USD millions)</b>	<b>Percentage of Appraisal</b>
Borrower	Budget	1.51	1.49	99
International Development Association (IDA)	SIL	8.30	8.26	99
Global Environment Facility (GEF)	Grant	5.12	4.89	96
SWEDEN: Swedish Intl. Dev. Cooperation Agency (Sida)	Grant (total)	2.36	1.83	78
Forest Institution Support Project (FISP) parallel financing	Grant	1.06	0.90	85
Armenia Forest Development Project (AFDP) co-financing	Grant	1.30	0.93	71



## **Annex 2. Outputs by Component**

Progress was mixed on Project components—considerable achievements in some areas and less satisfactory performance, outputs, and outcomes for others.

### **Component 1: Community-based Watershed Management**

Overall, Component 1 outcomes have been substantial, but short of fully meeting expectations at Appraisal. The Project generated substantial awareness and understanding of improved natural resource management. Many communities used the Project to implement sustainable improvements in their use of natural resources; some villages have successfully demonstrated improved and comprehensive natural resource management and have pioneered examples for sustainable watershed management. Outcomes on biodiversity conservation through the small grants scheme and community forest management remain behind appraisal expectations.

Watershed Management Plans and Village Agreements were implemented only in the fourth and fifth groups of villages (some 40 of the 100 project villages that entered the Project after the Mid-Term Review (MTR). They entailed detailed resource management plans, including specific actions for grazing and fodder management. Reference maps and detailed management measures for individual village areas have been carried out in some villages but must still be posted at mayors' offices and discussed in village meetings, in particular with village shepherds, who need to understand and adopt grazing management arrangements. Project visibility remains in the villages with signboards and documentation materials posted in the field and the mayor's offices. Using existing institutions to engage the local administration in natural resource management activities was a Project strong point, but not without shortcomings. For example, not all villages had strong and engaged local leaders, and sustainable management practices depend to some extent on future engagement of active village mayors and village administrations to maintain continuity of Project natural resource management achievements. New village administrations are often less familiar with the Project and therefore less committed. Resource User Groups created under the Project were intended to organize local stakeholders but were less powerful and effective than envisaged at Appraisal.

Common Natural Resource Management/Protection Activities. Each village received US\$15,000 for tree planting, fencing, and demarcation for protection and natural regeneration of degraded land and gully protection works. Some 1,554 ha of multipurpose trees were planted, 69 km of fences and 14 gully protection measures were implemented. In general, tree planting was carried out on highly degraded community pasture land and on slopes sensitive to soil erosion, using a mixture of local indigenous forest and fruit species, and horticulture trees, such as walnut, plum, apricot, apple, pears or cherries. Most plantings are protected by Project-supported fences. These activities were implemented with community participation. Survival rates and plantation conditions were generally satisfactory especially after additional efforts to water seedlings and/or replant. Most plantations are expected to provide protection and generate income from fruit and nut harvesting but lack of resources to maintain plantations after Project closing could erode sustainability. Several villages have already contracted out plantation management or plan to do so, which would increase the likelihood that this investment is sustainable.

Natural Resource Management for Livelihood Improvement. Under the Project, each village received US\$35,000 to invest in their choice from a list of livelihood improvement activities that included constructing stock watering points, restoring field tracks, fertilizing community pastures, improving and rehabilitating village hay meadows, reintroducing forage legumes into crop rotations, improved wheat and spring barley technology demonstrations, and bee keeping for honey. Contractors implemented these activities, supervised by villagers and the PIU.

The Project provided support for stock watering points and field tracks, which facilitate access to remote pasture and fodder, promote more rational resource use, and reduce pressure on the land. Under the Project, some 782km of field tracks were improved and 102 stock water points were constructed, which facilitated access to over 20,000ha of pasture and hay meadowland and some 3,200ha of crop land; an estimated 30,000 head of livestock use the stock watering points. Villagers were highly appreciative of these activities, which reduced pressure on local overgrazed land and forest resources.

Project-supported grass and fodder production introduced legumes and fertilizing of hay meadow and pasture areas, which increases pasture fertility and the availability of winter fodder so that early and late grazing can be curtailed, thereby reducing pressure on overgrazed land. Some 6,000ha of community pastures and 2,900ha of hay meadows were fertilized and 2,340ha of legumes were planted; fodder production is well established in the communities and has gained momentum. Some communities are expanding legume production by producing seed from Project areas. Combines, provided under other projects such as the World Bank-financed RESCAD project, have supported commercial legume seed production. Leguminous fodder production is also important and expected to expand post-Project. However, sustainability of the fertilization program for pasture and hay meadows remains questionable despite implementation changes introduced at the MTR that called for gradual cost-sharing arrangements. The effect of pasture fertilization on biodiversity was assessed due to concerns that Alpine pasture areas with a rich composition of indigenous plant species may have been affected by fertilization. However, the impact appears to be small and temporary, although no precise data are available.

The Project provided 2,260 beehives to villagers up until June 2007, an income-generating activity that was enthusiastically received. Local farmers report a good market for honey in Armenia, where one beehive can produce 10-20kg that sells for US\$10 per kg, yielding some US\$70-140 per beehive per year. The initial number of bee families has been substantially increased, for example, in Agahvnavank, from 60 Project-provided beehives to around 250 at the time of the ICR.

Early during the Project, 12 biogas production demonstration units were installed in Project villages; these use livestock manure to produce methane gas for cooking or heating. In winter, some methane gas is required to heat the digester to sustain methane production. The biogas units, at about US\$2,200, were fully Project-financed and given to larger households with access to sufficient livestock dung (from 8-10 head) to keep the units operating. Most units have successfully produced biogas and some are still in use, but the investment costs did not justify the potential gas production so this activity was discontinued after the MTR. The Project demonstrated that this technology is feasible, but farmers declined to adopt it if they had to use their own funds to build biogas units.

Demonstration Villages. Three villages— Vaghashen, Berdavan and Agahvnavank—were selected from the first round of Project villages, based on strong local leadership and commitment to comprehensive natural resource management. An extra US\$50,000 was provided to these villages to demonstrate that sustainable resource management is feasible and could increase local incomes. Overall, in the demonstration villages, improved resource management benefits were clear and visible, and in at least two villages, the Project contributed new ideas that enabled local leaders to develop their strategies for livestock production, grazing management, and community-owned land resource use.

In Vaghashen, the Project's visible impact on key village area land resources include increased grass coverage of protected and managed grazing land, and well-managed stands of fruit trees and shrubs that are expected to provide additional income. The village mayor has proposed using lessons learned from the Project to help restructure village livestock production by introducing improved breeds, adopting more fodder cut and carry, and reducing overall grazing—intentions that demonstrate changed thinking about land resource use.

In Agahvnavank, some Project activities were delayed by lack of clarity on borders and land access rights involving village authorities and the nearby Dilijan National Park, but the Project is now fully implemented and results exceeded expectations. The village established a comprehensive resource management plan: pastures have visible demarcation for improved grazing management; several highly degraded areas are fully protected for regeneration and most of these are planted with trees and shrubs for faster re-vegetation. Local people now collect wild berries, which have begun to grow back on these lands.

At Project end, two of the three demonstration villages have become public outreach tools—they model more sustainable natural resource management so the larger audience of other villagers in Armenia can understand and commit to better natural resource use. Government organizations, NGOs, and the public can learn from Project villages and scale up their activities.

Community Small Grants Scheme for Biodiversity: The Project provided US\$250,000 for financing small community-driven investment projects, up to US\$5,000 per project, awarded through competition. Funds were supported under the GEF grant to assist Armenia to meet its commitments under the Convention on Biological diversity. Implementation of this activity was delayed such that it was delinked from the remaining watershed management component. However, the sub-component was implemented in three rounds of applications with 28 proposals executed. Most of the early proposals failed to show a clear biodiversity conservation impact, but over the three rounds, improvements were noticeable toward measurement of the biodiversity conservation objective. The importance of conserving biodiversity was not well understood among local villagers, who were expected to be the source of investment proposals. As a result, the approach was changed toward the end of the Project. It was decided that the subcomponent would be supported by professional inputs from Government, research institutions, and NGOs working in biodiversity conservation. Four additional proposals were implemented involving the two local universities that undertook training and awareness building, and two proposals that included video documentaries for training and awareness-raising in schools, local communities, and civil society. These four proposals have potential to raise awareness of biodiversity well beyond the Project areas.

Community Forest Management: This sub-component was intended to support three key activities to be implemented in phases, each step depending on successful implementation of the previous one: 1) develop community forestry management plans for former kolkhoz and sovkhos forest areas; 2) legally transfer forest areas management rights and responsibilities to local communities or village-level organizations; and 3) invest in rehabilitation, reforestation, enrichment planting, or other improvements. This sub-component was a key element of the overall Project objective of improved natural resources management, since these forests are crucial village natural resources assets that suffer from severe deforestation and damage inflicted by grazing.

Contract management issues in community forest management plan preparation delayed implementation of this sub-component. Only seven of 12 planned forestry management plans were prepared, but at the time of the ICR, none had yet been approved. Late in the Project, some physical plantation and forest rehabilitation works were implemented, but were not fully completed. Community forest management planning, though significantly delayed and not completed to a stage of full transfer of management rights, has established an important precedent and prepared the ground for a new concept of forestry management in Armenia. Under the Project, seven community forest management organizations were set up to be in charge of implementing physical works for the community forest rehabilitation financed under the Project. These were intended to initiate establishment of other community forest management organizations as envisaged under national law. Based on this Project, discussions on more formal arrangements with communities about forest management have progressed steadily over the past years. Based on the above discussion, overall, this component is rated **Moderately Satisfactory**.

## **Component 2: State Forest Management.**

Management planning. The Project aimed to demonstrate improved management practices by providing resources to prepare and initiate implementation of forest management plans for a targeted 70,000 ha of Armenia's 334,100 ha of forests. To date, management plans are complete for 128,000 ha of forest, for the Forest Enterprises of Ijevan, Sevqar, Tsambarak, Artsvaberd and Novemberyan. The first two (i.e., from original targets) are approved, while the last three (introduced during Mid-Term Review) have passed the environmental assessment process and are ready for Ministerial approval—doubling projected targets, and paving the way for mainstreaming modern principles of sustainable forest management.

Pre-commercial thinning and thinning of pole stands in naturally regenerated forests. This proposed Project activity was never implemented. The Project Environmental Management Plan specified a forest certification process before initiating forest management with Bank financing, to avoid environmental risks and ensure sustainable forest management. Therefore, in October 2006, the Project financed a pre-certification exercise for the Sevqar Forest Enterprise and for the Zikatar Training Forest. The pre-assessment, carried out by the UK-based Soil Association, provided an independent third-party view of the quality of the Sevqar Forest Management Plan, management practices on-the-ground, and the legal and regulatory framework within which the management plan was to be implemented. It also specified measures needed to complete the certification process and provided Hayantar management with a more informed basis for decision-making and strategic planning. The certification process is more valuable to clarify the scope for development and implementation of standards for sustainable forest management, than as a means for producing marketable quantities of certified timber; certification is key to the Government Illegal Logging Action Plan. Armenia does not yet have forest certification and is unlikely to achieve it without substantial additional investment to improve forest management practices.

Forest rehabilitation activities. The original target was reforestation and rehabilitation of some 1,100 ha of high elevation, degraded forest lands, but when works were initiated, weaknesses were detected in the original designs. Some sites were inappropriate for rehabilitation as well as fencing and maintenance costs had been underestimated; therefore, the contract was revised as per Table 1 in Annex II. These changes increased the contract value by about 12 percent from AMD 231 million to AMD 258 million. The total area of forest that benefited from natural regeneration due to the fencing was increased to 6,822 ha (Table 2 in Annex II), surpassing the original target of 1,100 ha reforested or rehabilitated forests. During the ICR Mission, Hayantar SNCO had accepted the project-financed forest rehabilitation and fencing works in both Ijevan and Sevqar Forest Districts, accepting management and budgetary responsibility for replanting on these sites. The level of survival, noted in Table 1 (i.e., less than 25 percent and greater than 25 percent) is a contracting and community relations issue, as noted below. This activity have been completed successfully; it not only exceeded Project targets, but resulted in a Hayantar commitment to rehabilitate between 4,000 to 9,000 ha annually, using similar technologies.

Protection against Forest Fires and Insects: Forest fire fighting tools and equipment were purchased and delivered to five of Hayantar's Forest Enterprises; pest control measures were never implemented due to environmental safeguard risks. In 2004, Government requested the Bank to finance procurement of pesticides to counteract a brown-tailed moth infestation. The Bank mobilized assistance from a USDA Forest Service pest management specialist, who visited project sites and reported low capacity for environmentally sound forest pest management; the expert report noted that only substantial additional investments would achieve sufficient human and physical capacity to justify additional project funding for forest pest management. Moreover, the Task Team recognized that there was insufficient capacity to ensure that Project-financed pest management would comply with Bank Operational Policies. As a result, due to environmental safeguard risks, Project pest control measures were not undertaken

Rehabilitation of road network. Originally, some 70km of forest roads were to be rehabilitated to implement the approved forest management plans and facilitate efficient forest protection. However,

during the MTR, it was recognized that costs for many activities had been significantly underestimated; for example, the cost of forest management planning was US\$5.33 per ha rather than the PAD estimate of US\$2.00 per ha, the number of management plans to be prepared was greatly increased, and the actual cost of road rehabilitation was about 10 times original estimates. Moreover, the Bank team recognized that without a forest certification process, rehabilitated roads risked being used for unsustainable logging. As a result, this activity was scaled back to 7km for an access road to the Zikatar Forest Training Center, and some savings went to expand forest management planning.

Strengthening operational capacity of the forest service (Hayantar), the Ministry of Nature Protection, and the Forest Research and Experimental Center (FREC). This activity was successfully completed, including a wide range of civil works—construction or rehabilitation of three Hayantar forest enterprise offices (Ijevan, Sevqar, and Novemberyan<sup>2</sup>), rehabilitation of the Novemberyan forest nursery, rehabilitation of the Zikatar training facility, including access road and bridge—and office furniture, equipment, and vehicles were provided for those field offices. This activity also strengthened the capacity of the Bio-Research Management Agency (BRMA) of the Ministry of Nature Protection (MNP) by providing seven GIS workstations, plus software and training—a first in Armenia. Similar training was provided to six other institutions, including FREC and the Monitoring Center, to build institutional and technical capacity to use this powerful planning and monitoring tool. A follow-up practical training helped BRMA assemble compatible data sets for incorporation into the overall GIS database. GIS has been integrated in some forest operations and is now used in ongoing forest management operations. The Project supported Hayantar’s change of status to a State Non-Commercial Organization (SNCO), and helped it improve financial management capacity, which included a new Financial Management Manual, accounting software, and property register that allowed project-financed equipment to be delivered to the field offices. The Project helped develop a financial stabilization plan for Hayantar, which included commercialization and marketing studies.

Strengthen Legal and Institutional Framework: The Forest Institutional Support Project (FISP) proved most successful at: (i) developing, through a highly participatory process, a National Forest Policy and Strategy (approved by Government in September 2004); (ii) drafting and promoting Government approval (October 2004) of an Illegal Logging Action Plan, to counteract illegal logging; (iii) developing the National Forest Program (gazetted in 2005); (iv) instituting a new Forest Code (ratified in November 2005) with the principles of modern sustainable forest management; (v) drafting a Community Forest Management Regulation; and (vi) providing a large variety of training and capacity-building activities. At the conclusion of FISP, Sida initiated a follow-up trust fund (under direct Bank supervision) to support (i) Project priority actions to prepare key legal and regulatory instruments (called for in the Forest Code); (ii) community forest management planning and implementation; (iii) improved forest management and supervision; and (iv) improved organizational and institutional development. Through this support, the Project generated proposals to clarify forest sector institutional structure, roles, and organizations. This includes the units linked to the MOA—for policy and legal function, for forest management function (Hayantar), and for monitoring, regulation and law enforcement. When the Project closed, restructuring proposals were incomplete but they fostered a healthy debate on options for checks and balances in the sector. Much work remains to sort out conflicting legislation and duplication of functions, but the Project helped advance the legal and institutional framework required for multi-purpose sustainable forestry. Given the stage of development of the Armenian forestry sector in 2002, a ‘big bang’ approach to

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<sup>2</sup> Rehabilitation works on the Novemberyan Forest Enterprise office were only around 70% complete by the Project’s Closing date. Alternative financing, such as Hayantar’s regular budget, will be needed for any work completed after Project closing.

institutional reforms would have been impossible; incremental reforms of the type undertaken with the help of this Project were, and continue to be, the most appropriate.

The ICR mission identified the following additional lessons learned in the forestry component.

- **Certification could play a critical role in counteracting illegal logging.** Although it did launch the first steps toward forest certification, Armenia has otherwise made little progress in completing the process. Certification was a key measure identified in the Illegal Logging Action Plan, and could also help identify improvements to overall management practices.
- **Public consultations help identify issues but only Government intervention can resolve disputes and eliminate contradictions.** Consultations during the planning process with local villagers were essential to reach common understanding of land ownership, land use, and forest functions. Despite this, approval of management plans have run into cadastre problems due to overlapping claims for forest land. Better stakeholder consultation would have helped resolve contradictory management decisions resulting from unclear or conflicting laws and regulations, such as protection of water bodies (no harvesting allowed) and production forests.
- **Before approval, management plans should be assessed by qualified independent reviewers.** Guidelines for management planning have been developed and tested, but require an independent review of completed plans, similar to that for civil works. To avoid potential conflicts of interest, the oversight functions should be located in MNP or the Monitoring Center.
- **Reforestation should rely on planting seedlings to improve monitoring of outcomes.** The Project lifetime was too short to evaluate direct seeding germination rates, therefore, seedlings are better.
- **Successful Project information strategies and participatory approaches should convince stakeholders of the value of protecting reforested areas.** Some percentage of Project seedling mortality in Armenia was due to livestock grazing, which the agency or the community could have been prevented. Livestock managed to breach fenced areas, raising questions about (a) the value of fencing for forest regeneration; (b) whether villagers see the fencing as protecting future shared assets or an externally imposed barrier to their traditional grazing lands; and (c) whether Hayantar could have developed a closer working relationship with villagers and provided them with alternate pastures.

Based on all the above, this component has therefore been rated as **Moderately Satisfactory**.

Forest District (FD)/ Community	Activity	Original contract	Revised contract	Change	Survival / germination < 25 %	Survival / germination > 25%
Hovk Community	Forest rehabilitation (ha)	40.5	9	-31.5		9
	Support for natural regeneration (ha)	52.9	34.2	-18.7	3.6	30.6
	Fencing (meters)	1,375	1,375	0		
Enokavan Community	Forest rehabilitation (ha)	18.2	13.5	-4.7		13.5
	Support for natural regeneration (ha)	23.6	17.2	-6.4	17.2	
	Fencing (meters)	3,460	3,450	-10		
Aygehovit FD	Forest rehabilitation (ha)	101.6	126.5	24.9	8.2	118.3
	Support for natural regeneration (ha)	219.9	113.4	-106.5	62.8	50.6

Forest District (FD)/ Community	Activity	Original contract	Revised contract	Change	Survival / germination < 25 %	Survival / germination > 25%
	Fencing (meters)	12,150	12,150	0		
Gandzakar FD	Forest rehabilitation (ha)	27.3	deleted	-27.3		
	Support for natural regeneration (ha)	124.3	deleted	-124.3		
	Fencing (meters)	5,000	deleted	-5,000		
Ijevan FD	Forest rehabilitation (ha)	42	4.4	-37.6		4.4
	Support for natural regeneration (ha)	148.5	42.6	-105.9	42.6	
	Fencing (meters)	6,900	6,900	0		
Khachardzan FD	Forest rehabilitation (ha)	56.3	24.8	-31.5	23.5	1.3
	Support for natural regeneration (ha)	31.2	31.2	0	31.2	
	Grove establishment	31	31	0		31
	Fencing (meters)	4,265	4,060	-205		
Achajur FD	Forest rehabilitation (ha)	26.7	22.9	-3.8		22.9
	Support for natural regeneration (ha)	97.5	24.7	-72.8	24.7	
	Fencing (meters)	5,777	5,750	-27		
Getashen FD	Forest rehabilitation (ha)	19	28.5	9.5	4.2	24.3
	Support for natural regeneration (ha)	67.7	3.5	-64.2		3.5
	Fencing (meters)	5,286	5,250	-36		
Kirants FD	Forest rehabilitation (ha)	16.8	7.4	-9.4		7.4
	Support for natural regeneration (ha)	80.4	10.1	-70.3	6.6	3.5
	Fencing (meters)	1,724	1,725	1		
Sevqar FD	Forest rehabilitation (ha)	23.5	35.6	12.1	17.5	18.1
	Support for natural regeneration (ha)	72.1	11.8	-60.3	11.7	0,1
	Fencing (meters)	4,975	5,000	25		
Total	Forest rehabilitation (ha)	371.9	272.6	-99.3	53.4	219.2
	Support for natural regeneration (ha)	918.1	288.7	-629.4	200.4	88.3
	Fencing (meters)	50,912	45,660	-5,252		
	Grove establishment	31	31	0		31

N	Forest District (FD)	hectares
1.	Ijevan	1,348

Table 2: Area of improved natural forest regeneration due to fencing		
N	Forest District (FD)	hectares
2.	Aygehovit	1,619
3.	Khachardzan	850
4.	Sevqar	1,196
5.	Achajur	912
6.	Kirants	240
7.	Getashen	581
8.	Hovk	36.5
9.	Enokavan	26.9
<b>Total</b>		<b>6,822</b>

### Component 3: Protected Areas Management and Biodiversity Conservation

The general outcome of this component is positive, though not all milestones have been achieved. Project impact was most tangible on the two target protected areas, Lake Sevan and Dilijan National Parks, for which the objective was to align their management with modern international good practice. Although the Parks have yet to mature, they now represent an up-to-date model for replication throughout the country.

Armenia's network of protected areas is forming and the Project provided useful technical assistance for several MNP units engaged in protected areas management. However, the existing institutional framework needs adjustment before it can handle a holistic approach to protected areas planning and development, maintaining functional linkages among them, and managing various categories of protected areas as an integrated system. Mainstreaming biodiversity conservation in Government policies, line ministries' activities, and local government activities is a challenge among countries with an economy in transition and a developing democracy. The Project duration was insufficient to achieve multi-sectoral planning, but it triggered inter-sectoral dialogue on balancing multiple interests in and around protected areas.

Preparing participatory protected area management plans. Protected area management plans for 2007-11 were prepared for the first time for the Dilijan and Lake Sevan National Parks, using modern standards, and were approved by Government in 2007. It was anticipated that the management plans would be adopted during the earlier stages of the Project, but it took longer because such documents are completely new to Armenia and cover critical issues such as use of land, forests, and fisheries. The delay left little time to provide Project support to implement the plans.

Development of management plans set a precedent of multi-sectoral planning, because the process involved reconciling diverse interests through consultations with central and local government agencies, businesses, and local communities. Although consensus was possible only with major compromises on conservation needs, the hard-won achievements do have tangible biodiversity value.

After Project closing, several issues raised concerns regarding the quality and effectiveness of the management plans, in particular for Lake Sevan National Park. Over many decades, Lake Sevan's level had fallen considerably as water was abstracted for irrigation and hydropower. Studies suggested that lake ecology would improve if the level were raised and this has been Government policy since the late 1950s. In 2001, Government prepared a program to counteract the lake's ecological problems by raising the water level by around 6.5 meters over 30 years to raise the level to 1903.5m above the level of the Baltic Sea (ABSL), which local scientists calculated would improve lake conditions. This was to be achieved primarily by reducing abstractions for irrigation and using interbasin water transfers.



The Management Plan noted some “half-built, abandoned” derelict Soviet-era buildings that would likely be submerged as the water level rose; it called for a detailed inventory these derelict buildings and a program for their deconstruction/removal. The Plan included a provision for “possible upgrading” of buildings found within the Park or the buffer zone and indicated that unregulated construction within the National Park’s buffer zone was a significant negative anthropogenic influence.

The Management Plan contained no mention of any of the derelict state-owned properties being occupied, or implied any scope whatsoever that they could be. However, sometime during 2004, the state-owned lakeshore property that is now the Park’s Recreation Zone, was leased long-term to investors who expanded and modernized the “half-built, abandoned” derelict Soviet-era buildings. Other properties were acquired as greenfield sites for new development, and parts of the lake were filled in to extend the land area on which buildings could be constructed above the 1903.5 m level.

After the Management Plan, the Ministry of Nature Protection completed the inventory of illegal buildings; it identified 1,062 buildings within the boundaries of the National Park and its buffer zone that do not comply with current regulatory frameworks. The Chamber of Control has inventoried buildings that fall below the 1903.5m water level, and identified around 150 buildings that will be inundated by a raised lake water level.

At Appraisal, World Bank OP 4.12 on Involuntary Resettlement was triggered by the Project; a Process Framework was prepared that focused on potential loss of access to resources by poor communities living near the National Park. The highly participatory preparation of the Management Plan met the key objectives outlined in the Process Framework, although neither the Framework nor the Environmental Assessment that was prepared before Appraisal explicitly addressed potential issues related to the inundation of derelict state-owned buildings, a Management Plan shortcoming that will have to be resolved through ongoing review processes.

Developing monitoring systems and undertaking applied studies in support of improved management. The zoning and management planning of the Dilijan and Lake Sevan National Parks drew heavily from the ecosystem studies, especially those on plant and animal species and their habitats, and the detailed forest inventory. This research enabled the Project to identify and map Red Book species inhabiting the area and biodiversity hot spots—a substantial contribution to establishing the National Parks. However, continuous monitoring of key ecosystem indicators will be crucial to manage protected areas. To facilitate biodiversity monitoring in protected areas, special software was developed to record, store, and systematize monitoring data, and a users’ manual was published for the software. Information collected from individual protected areas will flow to the MNP for inclusion in a master database.

Providing professional development and training for protected areas staff. Institutional capacity building comprised an important part of assistance to Project beneficiary protected areas. During the Project life, the Lake Sevan and Dilijan National Parks administrations acquired adequate staff and established park ranger services. Professional training was delivered to 47 MNP staff and park administrations. Some 40 park rangers acquired new knowledge and skills to deliver their services. The Project helped develop training modules for protected areas staff, which the MNP is expected to use in scaling up human resources capacity in the national system of protected areas.

Developing environmental education and programs to build public awareness of protected areas’ multiple objectives and encourage local participation. Overall understanding of ecosystem balance, conserving biodiversity, and sustaining natural resource use is weak at the level of rural communities. Protected areas are generally perceived as a constraint to local livelihoods. Therefore, the public awareness campaign faced tremendous challenges; it began with the affected population participating in protected area planning, followed by information disseminated through print and television documentaries. Over the

Project life, public outreach efforts changed local peoples' perceptions of the National Parks. A 2008 independent survey found that 100 percent of respondents in a focus group knew about the Dilijan and Lake Sevan National Parks and were aware of the regime of resource use inside the Parks; however, less than 25 percent understood the concept of sustainable resource use, or saw the need for it.

Establishing infrastructure and logistical support at Dilijan State Reserve and Lake Sevan National Park. The Project invested substantially in physical infrastructure for selected protected areas. Both Dilijan National Park and Sevan Lake National Park now have premises for administrations and their branches, and Dilijan National Park has a visitor center. Overall, premises of both Parks are satisfactory but the visitor infrastructure needs further development. Protected area administrations understand future needs for servicing visitors, such as walking trails, campsites, shelters, bird watching towers, and information displays; visitor interpretation needs significant strengthening and follow-up. The Project helped provide both Park administrations with furniture; office, laboratory, and field equipment; transportation (vehicles, boats, and horses); a fire engine and construction machinery for maintenance works; and uniforms.

Reforming legislation and regulations for flora and fauna conservation in protected areas to strengthen the role of MNP management, and mechanisms for revenue retention. In 1991, Armenia passed the first law on protected areas but changes in the country make updates to the legal framework essential. The Project supported a new iteration of *the Law of the Republic of Armenia on Specially Protected Natural Areas*, adopted in December 2000. However, effective enforcement required several new bylaws to regulate aspects of governance and Project technical assistance helped develop regulations for monitoring, land registry, and use. Regulations on monitoring and land registry are approved, but the Ministry of Justice is reviewing regulations on land use. The new legislation permits protected area administrations to generate and retain income—significant progress to diversify financing to sustain operations. Project achievements in reforming regulations for managing protected areas are remarkable, although some legal gaps still need to be closed. Most importantly, the MNP role should be reconsidered, perhaps planning, developing, and managing the national network of protected areas should be consolidated under this agency.

Mainstreaming biodiversity conservation into planning and policy processes of central and sectoral ministries. This was among the overly ambitious Project outputs in the original design. Conservation interests are low priority on the national agenda and Armenia had no experience mainstreaming conservation needs in sectoral policies. Therefore, it was impossible to expect this level of transformation during the Project life, since it would have required altering entrenched governance patterns. However, the Project did succeed in engaging sectoral ministries and local governments in dialogue about the protected area planning, and negotiations on natural resource use, which led Park administrations and local administrative authorities to sign bilateral agreements on land use. This important progress provides a foundation for future mainstreaming of biodiversity conservation in sectoral and spatial planning.

Strengthening information dissemination. The Project's local and national dissemination of information increased public awareness and support for protected areas and biodiversity conservation. The Project information strategy used a range of outreach methods and tools targeted to various audiences including print media such as leaflets, brochures, and catalogues of species; electronic media such as Web pages for the Lake Sevan National Park and the Dilijan National Park, and several televised documentaries. The Project also helped strengthen the existing system of information dissemination by increasing the capacity of the MNP public information unit through developing guidelines on dissemination of environmental information through mass media, and publishing a local language version of the Aarhus Convention.

Rapid assessment for biodiversity conservation at landscape level by establishing PC-based GIS for integrated resource management and mapping. The Project introduced and established GIS, a modern and effective tool for protected area management and monitoring by providing the hardware and software to National Parks, MNP, Biodiversity Management Agency, Analytical Information Center, FREC, and

Hayantar; and providing training for a critical mass of professionals in GIS use. This innovation created an excellent cadre of users, and workable databases, and thematic maps, and GIS use made possible precise delineation of protected area boundaries and specific internal zones within.

Strengthening transboundary cooperation in biodiversity monitoring and protected areas management. Transboundary cooperation for biodiversity conservation in the Caucasus was supported primarily by GTZ and WWF. Work is most advanced in planning a transboundary protected area in partnership with Georgia to cover an ecosystem of high altitude lakes and wetlands that is an important avian habitat. Since existing efforts financed from alternate sources appeared sufficient, the Project did not invest directly in supporting the transboundary work.

In conclusion, the ICR mission is convinced that the Project succeeded in strengthening significant aspects of planning and management for protected areas in Armenia. Some delays in delivering critical outputs, combined with generally limited resources and time meant that the Project closed with some issues of concern, which are highlighted below for future consideration by the client.

***Protected area management plans.*** Because the management plans for the two National Parks were delayed, the Project covered less than two years of their implementation so support is required for the Protected Area administrations to sustain their motivation and capacity to adhere to the management plans.

***Conservation within the National Parks.*** Planning of the two National Parks was challenging because it required reconciling competing interests. Since land designated for protected areas is typically decided through consensus, insufficient size of strictly protected zones within the National Parks is understandable but problematic since small fragmented habitats cannot sustain key species over the long term. Dialogue among park administrations, resource users, and other interest groups should continue to explore the potential for revising existing boundaries of some zones within National Parks to align sizes and functions. Overall, definition and management regimes assigned for types and zones of protected areas should more closely align with internationally accepted IUCN categories.

***Managing the national system of protected areas.*** Under existing institutional arrangements, protected area administrations are discrete legal bodies subordinated to institutions such as MNP, Ministry of Agriculture, and Hayantar. Within the MNP, several departments and agencies cover aspects of protected areas, such as managing natural resources and biodiversity, monitoring, public information, and inspection. Consolidating leadership in policymaking, planning and development is required to develop and run an effective connected network of protected areas, although autonomy and diverse affiliations among departments and agencies are not incompatible with effective functioning. A systemic approach is essential to amplify conservation roles of individual protected areas and achieve national- and global-level outcomes. Based on the above discussion, this component is rated **Moderately Satisfactory**.

#### **Component 4: Project Management and Administration**

Component 4 was envisioned to support Project administration and implementation. The Project was intended to finance incremental operational costs of the Project management team and essential technical assistance for Project management (e.g., financial management and procurement training, project audit, institutional coordination, implementation assistance to communities, and public sector training for capacity building, basic equipment and facilities, and 85 percent of PIU operating costs).

The Project experienced delays, especially in the first years after Project effectiveness. The complex project design and innovations made implementation difficult. The PIU was slow to become proficient

and experienced a high staff turnover, and initially misperceived their role resulting in limited direct interaction with Project beneficiaries and local communities; this failed to create the necessary Project identity in participating villages. The MTR recommended strong and continuous interaction between the PIU and villages during project introduction, awareness building, planning and implementation, which was successfully achieved under the watershed management component, and improved Project understanding local ownership. Only in the Project's final year, with the appointment of new project director, did the PIU adopt a more proactive role to further Project objectives.

Progress reporting was weak throughout the Project; reports were often of limited value. Regular video/audio conferences between the PIU and the Bank were introduced after the MTR to solve immediate implementation issues and address the reporting gap.

During Project implementation, PIU capacity to manage contracts was limited, which delayed many contracts, meaning several project activities had to be revised or scaled back. The considerable momentum gained in the final year under a proactive Project director could not completely recoup Project objectives from earlier shortcomings. As a result, there are concerns that much remains to be done to ensure that lessons learned and new practices are fully integrated into regular protected area planning and management, and forestry sector administration. Strong leadership and political commitment are essential to build on Project achievements and benefit the national protected area and forestry sectors and promote stronger national support for biodiversity conservation in a sustainable development agenda.

Financial management throughout the Project lifetime was fully satisfactory, reflected by financial Audit reports. Bank procurement procedures were new to Armenia and some initial challenges caused misunderstandings and delays; but this improved as the Project progressed.

Based on all the above, this component is rated **Moderately Satisfactory**, a higher rating might have been possible if PIU capacity had been stronger earlier during the Project.

### Annex 3. Economic and Financial Analysis

A cost benefit analysis was conducted to quantify Project benefits and to evaluate efficiency. The following analysis used some of the assumptions discussed in the PAD together with actual outputs at Project closing to estimate economic and financial benefits. Efficiency was evaluated to the extent to which non-GEF funds could be leveraged to achieve Project objectives.

Around \$8.3 million were invested as an IDA credit in the Project activities. These investments were made in all three components and no IDA financing was used in the Protected Areas component. On the other hand, the Armenian government contribution in this Project was around \$1.5 million. The investments made in first two components can be valued by examining the benefits of the watershed component activities, the regeneration and rehabilitation of forest area, and the benefits associated with the reduction in illegal logging.

Watershed component activities had an immediate impact on the livelihoods of rural people in the Tavoush and Gegharkunik Marzes. These activities can be divided into those that (a) reduced poverty or (b) improved environmental conditions. Category (a) will value all activities that introduced or improved local agricultural practices that helped reduce poverty and improve economic conditions; Category (b) will include all the economic valuation of environmental benefits (reduced sediment flows and improved water retention) related to pasture and forest rehabilitation and regeneration.

In the PAD, each activity in the watershed component is evaluated separately, but to evaluate all activities combined would more accurately capture the overall impact. Project benefits relating to sustainable natural resource practices and improving incomes in local communities can be evaluated by comparing average incomes from Project and non-Project villages, which were estimated (based on a Baker-Tilly Armenia 2008 survey) for the Tavoush and the Gegharkunik Marzes. The 2007 survey estimated incomes as part of the Government-prepared ICR and the results are in Table 1 below and in their report.

Table 1: Average annual income in Armenian Dram

	Total Farm & non-Farm Income	
	Project Village	Non-Project Village
<b>Gegharkunik Marz</b>	480,000	437,000
<b>Tavoush</b>	719,000	631,000

Project activities were carried out in 40 villages—20 in the Tavoush and 20 in Gegharkunik Marzes, including 100 households in the Tavoush Marz and 200 in the Gegharkunik Marz. The average Project village household in the Tavoush Marz had an annual income of AMD 719,000 compared to AMD 631,000 in a non-Project village household. The average 2007 exchange rate was 345 AMD per US\$ and the income difference of US\$255.2 was projected over the Project lifetime of 30 years for a total benefit on households in the Tavoush Marz equivalent to US\$14,291,200. The analysis was replicated for the Gegharkunik Marz where the average 2007 household income was AMD 480,000 in Project Villages and AMD 437,000 in non-Project villages. In Gegharkunik Marz, the income difference was US\$124.7, smaller than in Tavoush Marz, however, the villages had almost double the number of households. Repeating the previous analysis yields an overall benefit of around US\$13,966,400.

Over the lifetime of the Project, 307.5 ha of forest were regenerated and 6,746 ha of pasture land were rehabilitated. Similar to the assumptions used for the PAD, the environmental benefits (reduced sediment flows and improved water retention) related to pasture and forest rehabilitation and regeneration were valued (in 2002) at \$5 and \$10 respectively. Generally speaking, economic values of watershed protection services of forests range from \$7 - \$20 per hectare and therefore the above estimates are reasonable. Assuming these were achieved in a linear function during 2002-08, the overall undiscounted benefit value is around US\$1,012,038 over the Project lifetime.

Overall, Component 1 activities generated total benefits of US\$29,269,738—some US\$28,257,600 in improved local incomes and US\$1,012,038 in environmental benefits. The IDA allocation for Component 1 was US\$4,953,900, together with the Government contribution, the total cost was US\$5,473,800; therefore the ERR of economic benefits would be 14.5 percent.

Component 1 and 2 activities contributed to some extent to the same outcomes, but for this analysis, efforts to rehabilitate and regenerate forest areas also reduced sediment flows and improved water retention, which was included in the valuation above. However, it also helps regenerate and rehabilitate pasture and forest areas, which in turn contribute to forest regeneration and development and can be anticipated to help sequester carbon and create a sustainable fuel wood harvest.

The Project regenerated oak, beech, and pine species, which can support a sustainable harvest of around 40 m<sup>3</sup>/ha every thirty years. Assuming that regenerated and rehabilitated areas will experience a 6 m<sup>3</sup>/ha of annual growth and that after 2012, 2 m<sup>3</sup>/ha/yr can be sustainably harvested, then 14,107 m<sup>3</sup> of sustainable wood can be harvested annually, beginning in 2012 and until 2032 (some 40 m<sup>3</sup>/ha in 30 years). The Project area forest consists of beech (70 percent), oak (20 percent), and pine (10 percent); based on their carbon density, around 0.3 tons of carbon can be sequestered in one cubic meter of wood (see Table 2). In addition, the weighted average of a cubic meter was based on international wood prices presented in Table 3, based on the UNECE/FAO roadside price series. Typically, local Armenian prices are lower than international prices, so the weighted average was halved to correct for harvesting and transportation costs. The 2008 price was assumed to be the average of six previous years, which was used as a basis for all future years.

Table 2: Carbon Content in Oak, Beech, and Pine

	<b>Project Wood Composition %</b>	<b>Specific Density</b>	<b>lbs/ft<sup>3</sup></b>	<b>Kg / m<sup>3</sup></b>	<b>% Carbon</b>	<b>tons C / m<sup>3</sup></b>
Oak	20.0	0.61	38.1	609.8	48	0.29
Beech	70.0	0.61	38.1	609.8	50	0.30
Pine	10.0	0.41	25.6	409.9	52	0.21

Numbers are based on Birdsey 1996.

Based on the above, over the Project lifetime, the economic value of sustainable wood harvested from rehabilitated and regenerated areas would be about US\$13,326,508. Assuming US\$19.25 per ton of sequestered carbon over the Project lifetime, the discounted value of sequestered carbon would be US\$6,073,208, based on April 27, 2009 carbon futures, European carbon market closing assessment.

Table 3 : Average international prices of wood (USD per m3)

Year	Pine	Beech	Oak	Weighted Average Price in our Area
2002	\$42.88	\$72.38	\$80.95	\$35.57
2003	\$45.11	\$73.97	\$81.55	\$36.30
2004	\$53.30	\$88.93	\$100.82	\$43.87
2005	\$58.02	\$98.96	\$124.84	\$50.02
2006	\$59.96	\$99.05	\$129.42	\$50.61
2007	\$76.04	\$98.44	\$152.72	\$53.53
<b>Average</b>	<b>\$55.89</b>	<b>\$88.62</b>	<b>\$111.72</b>	<b>\$44.98</b>

Table 4: Closing assessments Carbon Market Daily April 27, 2009 for European carbon market

	Euros	US\$
Spot	13.1	\$ 17.29
Dec-09	13.48	\$ 17.79
Dec-10	14.17	\$ 18.70
Dec-11	14.87	\$ 19.63
Dec-12	15.81	\$ 20.87
<b>Average</b>	<b>14.58</b>	<b>19.25</b>

In addition, this component and other Project activities have contributed to substantially reducing overall illegal logging in Armenia, estimate at 34,194 m<sup>3</sup> of wood in 2002. Based on Hayantar forest enterprise estimates, around 13.2 percent of illegal logs were used for construction and the rest for fuel wood. In 2008, illegal logging estimates dropped to 19,852 m<sup>3</sup>. A conservative assumption is that 50 percent of the reduction resulted from Project-related activities and that future illegal logging rates will decline at half that experienced during the Project lifetime. Thus, using the above carbon and wood prices, the economic value of the protected wood is about US\$4,148,597, and the value of sequestered carbon, US\$986,464.

The IDA allocation for Component 2 was US\$2,833,900, together with the Government contribution, the total cost was around US\$3,514,900. Component 2 activities generated an overall benefit of US\$24,534,518, and the ERR is estimated to be 13.3 percent.

Total economic benefits of the Project are US\$53,804,255; the final ERR is 13.0 percent. A more conservative carbon-pricing scenario would reduce economic valuation of environmental benefits. If the assumed price per ton of sequestered carbon is US\$5, the ERR would be 11.95 percent. The overall Project ERR estimate in the PAD is 20 percent.

Component 3 was financed via a GEF Grant of US\$3,489,000, and Government funds, US\$179,500. Financial and economic efficiency were evaluated above as the degree to which non-GEF funds could be leveraged to achieve Project objectives, basic to GEF Incremental Cost Analysis. GEF funds were leveraged with the IDA credit, Sida contribution, and Government commitments (Tables 3 & 4 below). In total, GEF contributed an additional US\$935,200 to Component 1; US\$175,500 to Component 2; and US\$515,400 Component 3. Overall, GEF funds were leveraged in the ratio of 1:2.3.

Table 5: Commitment distribution by source and component. (excluding first Sida Grant)

<b>Comp onent</b>	<b>IDA Contribution</b>	<b>Sida Contribution</b>	<b>GEF Contribution</b>	<b>Govt. Contribution</b>	<b>Value of Estimated Costs</b>
1	\$ 4,953.9	\$ -	\$ 935.2	\$ 519.9	\$ 6,409.0
2	\$ 2,833.9	\$ 1,081.4	\$ 175.5	\$ 681.0	\$ 4,771.8
3	\$ -	\$ -	\$ 3,489.0	\$ 179.5	\$ 3,668.5
4	\$ 518.9	\$ -	\$ 515.4	\$ 132.7	\$ 1,167.0
<b>Total</b>	<b>\$ 8,306.7</b>	<b>\$ 1,081.4</b>	<b>\$ 5,115.1</b>	<b>\$ 1,513.1</b>	<b>\$ 16,016.3</b>

Table 6: Total commitments and disbursements. (excluding first Sida Grant) .

	<b>Allocated</b>	<b>Disbursed</b>
IDA (& Govt.)	\$ 9,898,714.00	\$ 9,747,653.11
Sida	\$ 1,119,945.18	\$ 925,733.83
GEF	\$ 5,120,000.00	\$ 4,889,769.62
<b>Total</b>	<b>\$16,138,659.18</b>	<b>\$ 15,563,156.56</b>



## Annex 4. Bank Lending and Implementation Support/Supervision Processes

### (a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
<b>Preparation</b>			
Adriana Damianova	Program /Task Team Leader	ECSSD	Task Team Leader
Paavo Eliste	Natural Resource Economist	ECSSD	Environmental and Natural Resource Economist
Gerhard Dieterle	Lead Forestry Specialist	ECSSD	Forestry Specialist
Phillip Brylski	Senior Biodiversity Specialist	ECSSD	Biodiversity Specialist
Julian Lampietti	Social Development Economist	ECSSD	Social Development Economist
John Fargher	Agricultural and Forestry Economist, Consultant	ECSSD	Agricultural and Forestry Economist
Sandro Zanus Michei	Financial Management Specialist	ECSSD	Financial Management Specialist
Jose Martinez	Procurement	ECSSD	Procurement
Daria Goldstein	Legal Counsel	LEGEN	Legal Counsel
Gayane Minasyan	Operations Analyst	ECSSD	Operations Analyst, Yerevan
Rohan Selvaratnam	Operation Analyst Project Costing	ECSSD	Operations Analyst
Irene Bomani	Program Assistant	ECSSD	Program Assistant
Nedred Durutan	Peer Reviewer	ECSSD	Peer Reviewer
Juergen Voegele	Peer Reviewer	ECSSD	Peer Reviewer
<b>Supervision/ICR</b>			
Adriana Jordanova Damianova	Lead Environment Specialist	ECSSD	Task Team Leader
Frauke Jungbluth	Senior Rural Development Economist	ECSSD	Task Team Leader
Peter A. Dewees	Lead Environment Specialist	ECSSD	Task Team Leader
Gayane Minasyan	Environmental Economist	ECSSD	Environmental and Natural Resource Economist
Artavazd Hakobyan	Operations Officer	ECSSD	Operations Officer, Yerevan

Names	Title	Unit	Responsibility/ Specialty
Josef Ernstberger	Consultant	ECSSD	Watershed Specialist
Alexander Astvatsatryan	Procurement Officer	ECSSD	Procurement
Plamen Stoyanov Kirov	Procurement Specialist	ECSSD	Procurement
Arman Vatyan	Sr Financial Management Specialist	ECSPS	Financial Management Specialist
Ahmad Slaibi	Young Professional	ECSSD	Environmental and Natural Resource Economist
Robert Kirmse	Consultant	ECSSD	Forestry Specialist
Darejan Kapanadze	Environment Specialist	ECSSD	Protected Areas Management Specialist

**(b) Staff Time and Cost**

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	US\$ Thousands (including travel and consultant costs)
<b>Lending</b>		
FY99		0.00
FY00	18.4	38
FY01	19.6	92
FY02	30.7	148
FY03	0.2	0
<b>Total:</b>	68.9	308
<b>Supervision/ICR</b>		
FY02		0
FY03	21.7	71
FY04	24.4	70
FY05	36.8	93
FY06	31.3	91
FY07	24.8	83
FY08	24.1	96
FY09	13.1	99
<b>Total:</b>	176.2	604

## **Annex 5. Summary of Borrower's ICR and/or Comments on Draft ICR**

This Implementation Completion Report on behalf of Government is an overall assessment of Project objectives, design, implementation, and operational experience; it summarizes Project impacts, achievements, and Lessons Learned. A summary of this 25-page report follows below.

The Project changed natural resource management policy and attitudes within Armenia. Only a decade ago, awareness of environmental protection was limited and rural poverty resulted in unsustainable forest and land use. Through the Project, attitudes toward the environment have shifted and the country has begun to address environmental and natural resource issues in a new, holistic manner that is creating visible socio-economic impacts, and behavior changes.

Although it is difficult to isolate Project impacts on poverty reduction, the Impact Evaluation Report finds that participation in the Community-based Watershed Management component contributed to increasing crop and livestock productivity and farm incomes: during 2002-07, among Project communities, total average annual income rose by 21.5 percent, compared to 8.3 percent for non-Project communities. Government is pleased to note that Armenia's 2006 poverty rates declined to 26.5 percent from 34.6 percent in 2004, and extreme poverty rates dropped to 4.1 percent from 6.4 percent, surpassing PRSP projections,<sup>3</sup> and creating conditions conducive for Project implementation.

The Project introduced a new approach and attitudes toward the environment. The Social Assessment<sup>4</sup> carried out during Project preparation reveals the level of despair in rural communities regarding forest protection, loss of livelihoods, illegal logging, and environmental damage. Now, in 2009, Government is addressing the challenge of harmonizing socio-economic and environmental protection objectives, recognizing the strength of public consultation to support top-down decision-making with bottom-up strategies, and promoting acceptance and sustainability of environmental policies.

Armenia is developing a long-term vision to manage natural resources so that future generations will have a homeland that is richly endowed and pleasant place to live. The country has signed 14 international environmental conventions, signaling commitment to attaining international standards; Armenia is the leader among all CIS countries in pursuing best practices and innovative approaches and is on the path to environmental recovery. Key Project performance indicators agreed during Project pre-appraisal were met and progress was made in line with the Government Strategy to: i) reduce rural poverty; ii) reverse declining soil fertility and degradation of pastures; and iii) conserve biodiversity and strengthen protected areas. While acknowledging considerable progress, Government recognizes that much remains to be done, including committing resources to maintain, consolidate, and deepen Project gains.

### **Component 1: Community-based Watershed Management**

By the late 1990s, Armenia was overexploiting its natural resources in large part because of the economic crisis. The collapse of state industries led to mass unemployment; land privatization encouraged many who had little agricultural knowledge to seek land ownership for their livelihoods, including an influx of urban refugees from Azerbaijan. In the face of scarce resources, people with inadequate knowledge and skills resorted to 'mining' their environment, and even people who understood the result would be long-term resource degradation, felt they had few alternatives.<sup>5</sup> Community participation and sustainable

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<sup>3</sup> PRSP – II (October 2008).

<sup>4</sup> Hranush Kharatyan et al. Report on Qualitative Social Assessment. (2000).

<sup>5</sup> Arcadis Report, October 2001

management of shared natural resources, forests, and pastures are concepts that did not exist prior to the Project. People felt little responsibility for community decision making.

Component 1 Project activities encouraged active community participation; raising awareness and living standards helped communities understand that managing their resources is essential to achieve short- and long-term benefits. The participation rate was satisfactory and some communities became enthusiastic about the Watershed Management Plan, Community Forest Management Plan, and the formation of Resource User Associations (RUAs). Local people began to understand that unmanaged tree cutting would leave nothing for the next generation, which resulted in independent decisions and implementing activities independently. Community Forest Management Plans were developed to introduce communities to accredited management of forests within the administrative boundaries of each community. These were developed in a participatory manner for 5-6 Project villages, covering approximately 2,100 ha of community forest area—a first in Armenia. For each Community Forest Management Plan, a Memorandum of Understanding agreement was signed with the MoA.

Restricted grazing provided by fencing, and planting fruit trees, forest trees and leguminous fodder crops in overexploited communal areas helped reverse the degradation. Fencing land, combined with adopting rotational grazing principles reduced pressure on adjacent pastures, maintained newly planted trees and shrubs, improving the grazing system on community land and the quality, quantity, and productivity of pastures. There were visible increases in fodder grasses and trees in 220 ha of degraded communal areas in the 40 Project villages. Livestock owners could travel farther to graze their animals, which significantly improved the community pastureland vegetative cover, the quality and productivity of forest cover, and reduced pastoral conflicts.

Community-based watershed management activities demonstrated how quantifiable short-term socio-economic benefits could be harmonized with long-term environmental protection. Evaluations confirmed economic benefits for Project communities, and Project impacts were broadly welcomed, but these pilot activities raise questions about the sustainability of these gains, since community mayors report that few communities have sufficient resources to replicate and expand Project activities. This is true even in model communities with high rates of revenue collection, such as Aghavnavank.

## **Component 2. State Forest Management**

During the 1990s, Armenian forests were affected by rapid transformation from a centrally planned to a market-oriented economy. The concept of a Forest Management Plan was foreign and most forestland was not managed productively. State Forests were not fenced; illegal logging was persistent and widespread among commercial interests and individuals and large areas of forest were heavily cut, often in a non-sustainable manner. Sida forestry consultants predicted that in the longer term, forested areas would be destroyed or eliminated, damaging the economy and reducing biodiversity.<sup>6</sup> The same report on the Armenian forest sector revealed that local people did not feel responsible for the forest; therefore, well-intentioned forest laws would not always have the desired effect.

During the Project lifetime, Armenia progressed significantly toward a multi-purpose approach to forest management. National program policy and strategy documents are being developed with the potential to strengthen sustainable forestry management and clarify roles and responsibilities. The Forest Code was drafted and passed.<sup>7</sup> Forest Management Plans were prepared and related project interventions have improved the forest cover. In Project areas, illegal logging, and grazing and fencing conflicts with local

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<sup>6</sup> Forest Reserves Assessment (financed by SIDA 1998-99)

<sup>7</sup> Under SIDA Trust Fund.

communities have been reduced, while timber volume has improved. Drafting is underway for five sub-legal acts to regulate activities such as management planning, although the institutional framework remains incomplete and contradictory. Until forest legislation is revised to eliminate gaps and overlaps and clarify responsibilities among ministries, the Armenian forest sector will remain at risk. Coherent legislation must be discussed, agreed, explained, and accepted, followed by a period of monitoring to ensure that new practices are entrenched and aligned with the new policies.

Illegal logging, measured by number of trees cut and volume of wood in cubic meters, has significantly declined from 2003 levels. This is due to several factors: (a) better forest sector monitoring (forestry officials are now more forthcoming in providing data on illegal activities); (b) cooperation from local communities; (c) newly developed capacity for independent forest inspection services; and (d) overall economic improvements. In addition, Project-installed fencing helped protect over 5,000 ha of forest from excessive grazing and illegal logging, which improved forest cover and supported natural regeneration of forest vegetation. Public participation in the preparation of State Forest Management Plans reduced conflicts with local communities on grazing and fencing issues.

Project staff provided local and international training courses to ministry and agency staff, including on GIS, forest operations, management planning, inventory assessment. These trainings improved performance because some 90 percent of forest sector staff lacked specialized knowledge, especially chief foresters and Hayantar department. Civil works included rehabilitating offices, construction of the Zikitar training center, and 7 km of forest roads. Trucks, excavators, and vehicles were purchased, improving guards' ability to build forest roads, harvest trees, and reconstruct forest areas.

### **Component 3: Improved Management of Protected Areas and Biodiversity Conservation**

There are many unaddressed legal and regulatory issues for two key protected areas, Sevan and Dilijan National Parks: a Bio and Landscape Monitoring System (GIS), as well as systematic process of recording indicator species of flora and fauna (as per Red Book indicator species) are urgently needed. Inventory and control is difficult and time consuming without adequate vehicles, equipment, or systematic training programs for the staff of MNP, PAs, and Park Rangers. Study area community participants were aware of Sevan National Park, resource locations, and ways of obtaining them, but most knew little about sustainable use of natural resources, or conservation and management of wildlife, due to poor information.

The Project helped convert two National Parks into functional and well-managed protected areas (PAs). Dilijan NP and Sevan NP can no longer be described as 'paper parks'. Management Plans were updated and facilities and equipment were completely upgraded. Revised PA legislation, passed in January 2007, replaced the 1991 law. The PIU was instrumental in overcoming bureaucratic resistance and successfully lobbied for a new law. Legal and regulatory changes were implemented to facilitate boundary and zoning changes, retain revenue in protected areas, and strengthen economic activities. The PA facilities were upgraded and equipped and defunct structures removed. Staff working conditions, salaries, motivation, and sense of responsibility have all improved, especially compared to pre-Project conditions.

Management plans and capacity building in MNP to administer the system of protected areas, and public awareness for biodiversity conservation have contributed to population stabilization or increases in several key indicator species of the Red Book in the Sevan and Dilijan National Parks. The Plans were developed through local community participation and professional training. A detailed survey of indicator species of flora and fauna was carried out as part of the Management Plan, the first of its kind since the 1990s. The national parks administration is transformed. These positive steps are a prelude to much more that remains to be done, for example, visitor information centers and services are rudimentary, and Project activities need to be extended to all Armenian PAs to achieve Global Environmental Objectives.

## **Assessment of the Objective, Design, Implementation, and Operation Experience**

Despite weaknesses, Government is satisfied with Project achievements. Adapting the Project midway through its lifespan based on Lessons Learned, and completing most Project activities in spite of setbacks, is a testament to World Bank responsiveness and excellent cooperation with PIU staff.

The Project could have achieved more if serious delays in launching NRMPR activities could have been avoided; bureaucratic procedures limited some achievements. Some delays were due to: i) incomplete preparation at Project effectiveness; ii) the vast scope of activities; iii) PIU inexperience and staff turnover; iv) Armenia's lack of experience with environmental projects; v) procurement delays; and vi) Ministry bureaucracy. The initial lengthy delay resulted in six years of Project activities being condensed into the final 2-3 years. Many Project goals were revised downward at the Mid-term Review; time for institutional learning and development was insufficient.

Several activities that were only partially realized are urgent and must be continued. It is important to build on the Project momentum before it dissipates. Follow-up Project design and scope are open to discussion, but Government strongly believes in expanding and deepening the work begun under NRMPRP to extend Project activities, build on Project gains, and promote sustainability. The condensed Project implementation period did not allow sufficient time to nurture and communicate with local stakeholders and institutions. Coherent policies still need to be developed, addressing gaps in legislation, a clear ministerial mandate, and an incentive structure for responsive management. The Armenian public is realizing only now the importance of environmental protection. Sustained public awareness needs to be built and there is a pressing need to expand program activities beyond Tavush and Gegharkunik marzes in line with NEAP-2, PRSP, and CAS priorities.

Government is satisfied with the Project as implemented by the PIU, an essential component of Project architecture. The PIU flexibility due to its independent status outside of the Ministries, general quality of the PIU staff, and smooth relations between the PIU and Ministries, were key to achieving results. As the implementing agency, the PIU is more familiar with Bank procedures, better informed about the Project, better remunerated, less bureaucratic, and uniquely positioned to resolving contradictions among Ministry priorities. The NRMPRP had a large and diverse program that the Ministry alone could not have managed, due to its narrower focus. However, PIU implementation was initially very slow because the staff lacked experience and familiarity with some issues, staff turnover was high, and staff tended to focus on logistical issues, with a corresponding inattention to Component activities and results. However, late in the Project, the PIU began to function extremely well under new leadership and Project team guidance. Therefore, Government is satisfied with World Bank cooperation. Flexibility to make design adjustments to Project components mid-way and closer engagement, especially assessing conditions 'on the ground' was crucial to Project outcomes.

In the future, it would be beneficial if the World Bank engages more fully during Project preparation with lower-level stakeholders, a process that was insufficiently handled during NRMPRP preparation, creating a lack of awareness and misunderstandings among stakeholders on some issues, including a miscalculation about the applicability of what was done in other countries, but unsuitable for Armenia. Furthermore, despite lengthy and expensive Project preparation, key practical elements, such as the Operations Manual and Terms of Reference, were not ready at Project effectiveness and took several years to complete. During Project preparation and Project launch, the World Bank was slow to respond, Bank procurement rules were unfamiliar, and PIU performance was below par, creating severe delays. Mid-way through the Project, the Bank became more responsive, and managerial changes noticeably improved implementation and results. The Armenia World Bank office was responsive and supportive.

World Bank procurement guidelines were valuable for their strict control but some flexibility would have speeded procurement and implementation because aspects of Bank procurement guidelines are inappropriate for countries like Armenia. For example, requirements for separate 14-day periods for advertising, presentation, and proposals slow procurement considerably, particularly if insufficient bids are received and the process must be repeated. In addition, waiting for World Bank 'no objection' ruling at every phase necessitates considerable correspondence. A significant brake on Project implementation was slow World Bank responsiveness on even minor procurement issues. While it is desirable to consistently follow correct procedures, addressing irregularities, errors, or unforeseen issues delayed Project implementation, and in the future, improved communications between procurement officers in Washington and Armenia would be welcome.

Project procurement had some design weaknesses which required revisions before implementation. First, the Project was originally designed to hire *individual* consultants, but in the event, procurement had to be revised to hire *firms* to supervise individual consultants. Second, a lengthy revision process resulted when it was discovered that costs for many goods and services had been underestimated, the basis for the original estimates was unclear, and inflation had not been taken into account.

International experts who supported all three components were extremely helpful and were instrumental in raising the knowledge and competency levels of staff at various agencies. Government recognizes and greatly appreciates the significant impact of foreign expertise in setting Armenia on the path to a better environmental future. However, there were exceptions: sometimes the competence of consultants and firms did not match their CVs or credentials; one firm, apparently competent, appeared to have outsourced tasks to poorly qualified individuals, resulting in some unusable outputs. In the Forestry component, coordination was so poor that it was unclear to newly contracted consultants which tasks had been completed; a Sida-supported consultant arrived only to find that his assigned tasks had already been completed. A team leader should have reviewed completed outputs and provided direction. Furthermore, consultants working on institutional issues should report to an inter-ministerial committee to avoid the risk that recommendations reflect the interests of only one institution. Inter-ministerial consensus is essential to effective institutional reforms.

Finally, the Government expresses satisfaction for the many significant achievements made under the four Project components, and is grateful for invaluable support and spirit of cooperation among the World Bank and international experts. The Government is eager to continue its cooperation with the World Bank in nature protection, forestry, biodiversity, and other environmental concerns.

## Annex 6: Using the Protected Area Management Effectiveness Tracking Tool in Armenia

The Protected Area Management Effectiveness Tracking Tool<sup>8</sup> was prepared with the assistance of the World Bank/WWF Forest Alliance to provide an overarching framework for assessing management effectiveness of both protected areas and protected area systems, to give guidance to managers and others and to help harmonize assessment around the world. It is organized around the assessment framework identified by the World Commission on Protected Areas (WCPA), which is summarized in Table 1. It has been mandated as a reporting tool for GEF-financed biodiversity conservation operations.

**Table 1. WCPA Framework for Assessing Management Effectiveness**

Elements of evaluation	Explanation	Criteria that are assessed	Focus of evaluation
<b>Context</b>	<i>Where are we now?</i> Assessment of importance, threats and policy environment	<ul style="list-style-type: none"> <li>- Significance</li> <li>- Threats</li> <li>- Vulnerability</li> <li>- National context</li> <li>- Partners</li> </ul>	Status
<b>Planning</b>	<i>Where do we want to be?</i> Assessment of protected area design and planning	<ul style="list-style-type: none"> <li>- Protected area legislation and policy</li> <li>- Protected area system design</li> <li>- Reserve design</li> <li>- Management planning</li> </ul>	Appropriateness
<b>Inputs</b>	<i>What do we need?</i> Assessment of resources needed to carry out management	<ul style="list-style-type: none"> <li>- Resourcing of agency</li> <li>- Resourcing of site</li> </ul>	Resources
<b>Processes</b>	<i>How do we go about it?</i> Assessment of the way in which management is conducted	<ul style="list-style-type: none"> <li>- Suitability of management processes</li> </ul>	Efficiency and appropriateness
<b>Outputs</b>	<i>What were the results?</i> Assessment of the implementation of management programmes and actions; delivery of products and services	<ul style="list-style-type: none"> <li>- Results of management actions</li> <li>- Services and products</li> </ul>	Effectiveness
<b>Outcomes</b>	<i>What did we achieve?</i> Assessment of the outcomes and the extent to which they achieved objectives	Impacts: effects of management in relation to objectives	Effectiveness and appropriateness

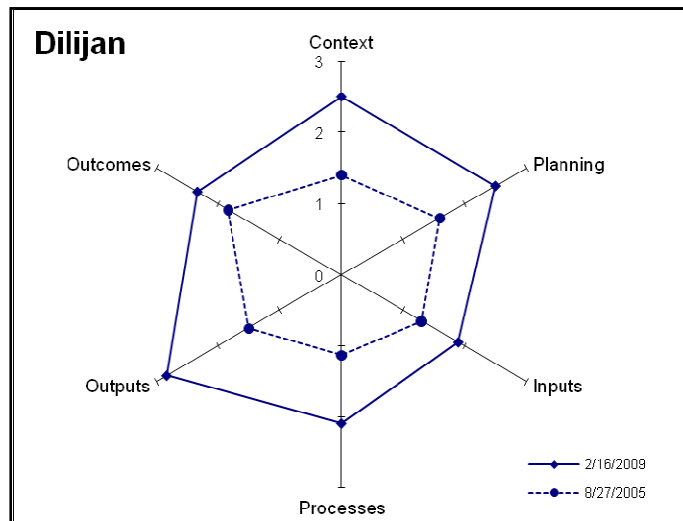
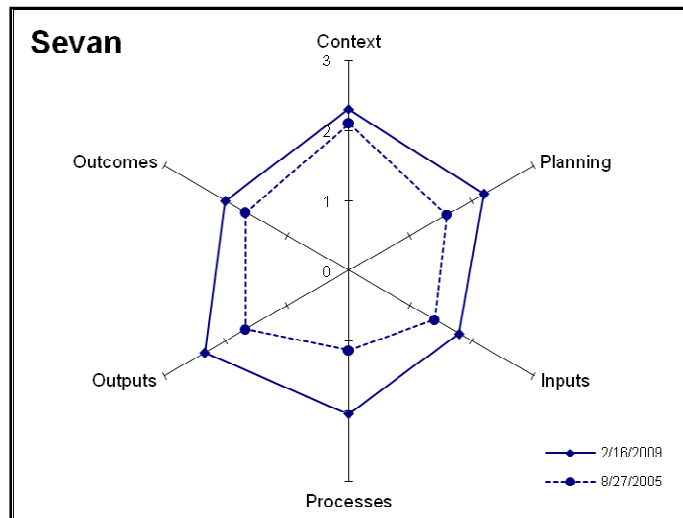
The Tracking Tool comprises 30 questions, scored on a basis of 0 to 3, which address the six themes in the WCPA framework. It was introduced and piloted in Armenia during the MTR in 2005, when baseline

<sup>8</sup> Sue Stolton, Marc Hockings, Nigel Dudley, Kathy MacKinnon and Tony Whitten (2003). *Reporting Progress at Protected Area Sites: A simple site-level tracking tool developed for the World Bank and WWF*.



evaluations were carried out of the four pilot sites with the full involvement and engagement of the project teams. The Tracking Tool was introduced as a self-assessment tool, to help management teams understand where progress had been good, where more progress was needed, and to provide a frank assessment of park management team performance. The Tool was not originally intended to be a reporting mechanism, though GEF later chose to use it as such. However, the aim of presenting the results here is to show that progress was being self-monitored, not that particular performance targets were being set and assessed using the Tracking Tool.

Rather than using the gross total scores that were produced by the Tracking Tool, a series of spider graphs have been created to compare baseline performance against each of the six WCPA criteria over time. The results from the two pilot sites are summarized in the charts.



## **Annex 7. Comments of Cofinanciers and Other Partners/Stakeholders**

The ICR team shared a Draft ICR with the Armenian Government and their comments are attached below:

### **MINISTRY OF NATURE PROTECTION OF THE REPUBLIC OF ARMENIA**

No. 1/37/11142  
September 9, 2009

Mr. Aristomene Varoudakis  
Country Manager  
World Bank Armenia Office

Your Excellency Mr. Varoudakis,

On January 27 - February 6, 2009, the World Bank carried out a Mission on Implementation Completion Report for Armenia Natural Resources Management and Poverty Reduction Program (P057847, P069917).

The purpose of the Mission, headed by Ahmad Salibi, was to review the overall progress in achieving program development and global environmental objectives, as well as to collect data for the Final Activity Report. The evaluation team was diligent and impartial in carrying out its mission, as a result of which the project was assessed with consideration of both achievements and omissions.

The report has been discussed in relevant services and agencies of the Ministry of Nature Protection. The Ministry finds that there is no need to place any limitation whatsoever on the publication of the evaluation results.

Meanwhile, I would like to thank you, your colleagues, as well as our partners in the WB Washington D.C. Office for their support of the program and effective collaboration. I look forward to working with you again in near future.

Sincerely Yours,

A. Harutyunyan

## **Annex 8. List of Supporting Documents**

PAD Armenia Natural Resource Management and Poverty Reduction Project, 2002.  
Aide memoires, ISRs and Midterm Review.  
Borrower's ICR Report.  
Aide-Memoire ICR supervision January-February, 2009.  
Site (Park and Forest) Management Plans.