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Brief Description:

The USAID/Armenia submits the attached FAA 119 analysis for E&E Bureau Environmental Officer approval in preparation for the development of our new strategy.

This analysis addresses: (1) the actions necessary in that country to conserve biological diversity; and (2) the extent to which the actions proposed for support by the Agency meet the needs thus identified (FAA, Sec. 119(d))."

The Mission requests the EEO approval for the report.

Jill Appelgren

Approval: 3-27-13
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Clearance: 03.25.2013
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Clearance: 25 Mar 2013
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Concurrence: April 9, 2013
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E&E Bureau Environmental Officer (acting)



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ARMENIA

BIODIVERSITY ANALYSIS UPDATE FOR ARMENIA

UPDATE TO 2009 BIODIVERSITY ASSESSMENT

February 2013

The update of Armenia Biodiversity Integration Opportunities report was produced by USAID/Armenia MEO Marina Vardanyan, in compliance with requirements for the preparations of the USAID/Armenia Country Development Cooperation Strategy (CDCS) FY 2013-2018. The original report was prepared by ECODIT for the Biodiversity Analyses Update for Armenia, under the Prosperity, Livelihoods and Conserving Ecosystems (PLACE) IQC Task Order #4

AUTHORITY

This update of the Biodiversity Analysis Update for Armenia dated February 2013 was prepared by USAID/Armenia MEO to meet the requirements of the USAID/Armenia Country Development Cooperation Strategy (CDCS) FY 2013-2018.

It updates Biodiversity Analysis Update for Armenia Final Report that was prepared for USAID/Armenia under Prosperity, Livelihoods and Conserving Ecosystems (PLACE) Indefinite Quantity Contract number EPP-I-04-06-00010-00, Task Order #04 awarded 14 November 2008.

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LIST OF ACRONYMS

AAC	Advocacy and Assistance Centers
ADS	Automated Directives System
ACP	Armenia Copper Program
ANEL	Armenian National Engineering Laboratories
CDCS	Country Development Cooperation Strategy
CBD	Convention on Biological Diversity
CFR	Code of Federal Regulations
CSO	Civil Society Organization
DCA	Development Credit Authority
DO	Development Objectives
EIA	Environmental Impact Assessment
EDMC	Entrepreneur Development and Market Competitiveness Project's
EMMP	Environmental Mitigation and Monitoring Plan
EU	European Union
FAA	Foreign Assistance Act
FAO	Food Agricultural Organization
GDP-	Growth Domestic Product
GDA	Global Development Authority
GEF	Global Environment Facility
GMO	genetically modified organisms
GMP	Good Manufacturing Practices
GOA	Government of Armenia
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i> (German Agency for International Cooperation)
IEE	Initial Environmental Examination
IUCN	International Union for the Conservation of Nature
KfW	Kreditanstalt für Wiederaufbau
MNP	Ministry of Nature Protection
MoA	Ministry of Agriculture
NEAP	National Environmental Action Plan
NP	National Park
NRM	Natural Resources Management
OSCE	Organization for Security and Cooperation in Europe
PA	Protected Area
PRP	Partnerships for Rural Prosperity
PWD	People with Disabilities
RA	Republic of Armenia
SO	Special Objective
SPNA	Specially Protected Nature Area
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

USAID United States Agency for International Development
USG United States Government
WB World Bank
WWF World Wildlife Fund

EXECUTIVE SUMMARY

The biodiversity analysis is intended to assist USAID/Armenia during the strategic planning process for USAID/Armenia CDCS (2013-2017) by identifying necessary actions in the country to conserve biodiversity, and recommending measures USAID can take that will benefit biodiversity conservation. This assessment fulfills Section 119(d) of the U. S. Foreign Assistance Act (FAA) which requires USAID to assess, in all country strategy documents, a country's biodiversity conservation needs and USAID contributions to these needs. FAA 119 (d) states:

Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of:

- (1) The actions necessary in that country to conserve biological diversity, and*
- (2) The extent to which the actions proposed for support by the Agency meet the needs thus identified.*

USAID Mission and Bureau Environmental teams have together prepared this Biodiversity Analysis update by relying heavily on the information provided in the extensive 2009 Armenia Biodiversity Analysis update. Interviews with other Mission staff, NGOs, government entities and other stakeholders in Armenia have shaped the recommendations.

As in the 2009 Biodiversity Analysis, the direct threats to biodiversity in Armenia were determined to be:

1. Illegal logging, unsustainable fuel wood collection and commercial timber harvesting;
2. Mining and other industrial and commercial construction/development;
3. Poaching of fish and wildlife;
4. Inappropriate grazing practices;
5. Climate change regimes indicate that Armenia's ecosystems are at great risk of desertification;
6. Invasive species are affecting species composition and ecosystem functions, thereby degrading biodiversity; and
7. The protected area system does not adequately protect ecosystems with significant and threatened biodiversity.

These direct threats were attributed to the root causes of poverty, lack of environmental awareness, lack of good data and limited access to information, lack of political will and law enforcement, and lack of appropriate recognition of the economic value of biodiversity and natural resources. A number of recommendations from the 2009 Biodiversity Analysis to address both direct threats and root causes of these threats were looked at again and synopsized in this report.

Finally, this Biodiversity Analysis looks closely at the proposed new Country Development Cooperation Strategy (CDCS) and ongoing and planned programs to address the second part of the analysis, the “extent to which” USAID is addressing the biodiversity recommendations. This Biodiversity Analysis update includes a review of any threats to biodiversity and forests from activities proposed for USAID support in the framework of a new Country Development Cooperation Strategy (CDCS) for years 2013-2017; suggests mitigating actions; and identifies opportunities for cross-cutting, cross-sectoral linkages with proposed activities, especially those that are low cost and/or would enhance the effectiveness of the proposed activities.

I. INTRODUCTION

A. Background

Section 119(d) of the U. S. Foreign Assistance Act (FAA), as amended, requires USAID to assess, in all country strategy documents, a country's biodiversity conservation needs and USAID contributions to these needs. Specifically, FAA Section 119(d), Country Analysis Requirements requires that:

Each country development strategy statement or other country plan prepared by the Agency for International Development shall include an analysis of:

- (1) The actions necessary in that country to conserve biological diversity, and*
- (2) The extent to which the actions proposed for support by the Agency meet the needs thus identified.*

Specifically, the purpose of this analysis is to conduct an update of the country biodiversity analysis for Armenia. The analysis is intended to assist USAID/Armenia during the strategic planning process for the new interventions by identifying necessary actions in the county to conserve biodiversity, and recommending measures USAID can take that will benefit biodiversity conservation.

A biodiversity analysis was originally conducted in 2000 with a Mission-prepared update in 2003. A thorough biodiversity analysis for Armenia was prepared as an update by ECODIT in 2009. This analysis included a comprehensive picture of the biodiversity, natural resources and related policy and social factors in the country and a public version is available online¹. This present biodiversity update relies heavily on the information from the 2009 Biodiversity Analysis and does not attempt to replicate the effort that went into the previous report. The recommendations given in this assessment attempt to build on the findings of the 2009 report, but not supplant them.

B. Methodology

This Biodiversity update was conducted by the Mission Environmental Officer in consultations with the USAID/Mission respective Strategic Objective (SO) teams and the Bureau Environmental Officer and his team.

Information for this assessment was gathered from interviews and discussions with a number of entities familiar with biodiversity conservation issues in Armenia. These included international organizations (e.g. WWF, REC Caucasus, GIZ), USAID's projects, Armenia's governmental (Ministry of Nature Protection, Ministry of Energy and Natural Resources,

¹ http://armenia.usaid.gov/sites/default/files/ECODIT%20Armenia%20119%20Report%20February%202009_%20public.pdf

Biodiversity Agency, Water Resource Management Agency, etc.) non-governmental (Transparency International, Association of Young Environmental Lawyers and Economists, etc.) and scientific institutions (Institute of Hydroecology and Ichthyology, Scientific and Research Institute of Energy, etc.). A full list of organizations and individual consulted are listed in Appendix One.

II. STATUS OF BIODIVERSITY IN ARMENIA

Armenia is a landlocked country, located in the South Caucasus and covering 29,800 sq. kilometers. It is situated along the route of the Great Silk Road, and is bounded by Georgia in the north, Azerbaijan in the east and southwest, Iran in the south, and Turkey in the west. Contemporary Armenia is a fraction of the size of ancient Armenia. The population of the country, which is overwhelmingly ethnic Armenian, is around 3.0 million. Most of the population lives in the three major cities –Yerevan, Gyumri and Vendor.

According to Armenia’s Economic Growth Assessment (USAID, 2012)², “Armenia has achieved considerable economic growth and development progress over the past two decades. However, these advances have not been sufficient to place the country on a trajectory of sustainable growth capable of creating substantial employment opportunities and materially reducing the incidence of poverty.”

Armenia attained periods of considerable GDP growth during the 1990s and 2000s, but these were in part needed to offset precipitous declines in output in the early 1990s. The more recent expansion was fueled artificially by a hyper-active real estate and construction boom. In addition, growth has been uneven among different regions. In 2009, GDP dropped by a precipitous 14% as remittances to the country decreased and when important drivers of the economy, such as the construction sector, came to a standstill. Starting from 2011 the economy is on the rebound and GDP shows growth. Armenian GDP in 2011 was \$10.01 billion; and per capita income was US\$3, 033. The GDP growth forecast for Armenia is 4.0 percent per annum from 2013 to 2020.

Progress has been made in establishing industries and sectors to replace those lost when Soviet industries moved out, but the Armenian economy remains highly concentrated and dependent on a few sectors; it has yet to yield a diversified, robust and internationally competitive, environmentally friendly set of industries capable of propelling growth and employment.

Armenia is rich in biodiversity. The diverse ecosystem types are found in Armenia, including sandy deserts, semi-deserts, arid open forests, shibliak (a Mediterranean type of vegetation, characterized by dominance of spiny shrubs and small trees; in Armenia, the dominant vegetation of shibliak is *Paliurus spina-shristi*) mountain steppes, forests, meadow-steppes,

² Armenia’s Economic Growth Assessment: Business Environments for Agile Markets, USAID, 2012

sub-alpine meadows, and alpine meadows and carpets. At different altitudinal belts, intrazonal ecosystems are also present: wetlands, petrofilous ecosystems (cliffs, rocks, screes), and ecosystems of disturbed habitats. About 12, 5 % of the country's territory is covered by protected areas (PA), according to the WWF³. Despite the attention paid to biodiversity and protected areas with donor support, there are significant remaining threats to biodiversity as described below.

Armenia has two globally recognized biodiversity hotspots: the Irano-Anatolian and the Caucasus Hotspots. For the Irano-Anatolian hotspot, the principal habitat is mountainous forest steppe that supports oak-dominant (*Quercus* spp.) deciduous forests in the west and south (Anatolia and Zagros mountains) and juniper (*Juniperus* spp.) forests in the east (southern slopes of the Elburz Mountains and the Kopet Dag). A wide zone of alpine vegetation covers the mountain peaks above the timberline, and thorn-cushion formations are abundant in the sub-alpine zone. The Caucasus hotspot is characterized by diverse vegetation. In the northern part of the hotspot, the ecosystem transitions from grassland in the west to semi-desert to desert in the east. In the central Transcaucasian Depression, swamp forests, steppe, and arid woodlands are replaced by semi-deserts and deserts along the Caspian Sea. Scattered throughout the hotspot are broadleaf forests, montane coniferous forests, and shrublands.

WWF's *Global 200* provides⁴ a list of ecoregions that are priorities for conservation. WWF assigns a conservation status to each ecoregion in the Global 200: critical or endangered; vulnerable; and relatively stable or intact. Armenia is located in the Caucasus-Anatolian Hyrcanian Temperate Forest Global 200, which is considered a critical/endangered Global 200 Eco region.

The threats to this Global Eco region include clear cutting and replanting with alien species, coastal development in narrow coastal strips, overgrazing, recreation, and dam construction in large and small catchments.

There are about 3,600 species of wild-growing vascular plants in Armenia.^{5 6} More than the half of the flora of the Caucasus (about 7,200 species) occurs in Armenia, which occupies only 6.7 percent of the whole territory of the Caucasus. In particular, plant density in Armenia is rather high - about 100 species per km².

The fauna of Armenia is also very rich and diverse. There are over 500 species of vertebrates, including 350 bird species (as a comparison, the continental United States has approximately

³ World Wildlife Fund, Specially Protected Nature Areas of Armenia, 2012

⁴ <http://worldwildlife.org/ecoregions/pa0805>

⁵ FOREST PLANT DIVERSITY OF SOUTH ARMENIA AND GLOBAL CLIMATE CHANGE

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July 2011

⁶ Fourth National Report to the Convention on Biological Diversity, Republic of Armenia, p.7

550 species).⁷ Bird species of Europe, the Mediterranean, and the Middle East are represented in Armenia, and the country is on a major migratory pathway. Mammals represent the second largest vertebrate class in Armenia, after birds, with 83 species recorded. The number of invertebrate species is about 17,000.

A total of 40 species of fish and eight amphibian species have been recorded in Armenia. The country is recognized as having one of the most interesting reptile faunas in the former Soviet Union. Of 156 reptiles recorded from across the former USSR, a total of 53 are present in Armenia, many of which are both endemic and threatened.

The 125 plant species endemic to Armenia represent 3.5 percent of the total Armenian flora (as compared to 1.5 percent endemic across the Caucasus). Of about 17,500 animal species recorded in the country, at least 330 are endemic to Armenia, including fish, reptiles, birds and mammals. Many of species of plants and animals are included in Armenia's Red Book. Given that the Armenian Red Book (plants and animals) is out of date, and the new edition is available only for plants⁸, the IUCN list is a credible alternative source of information for vulnerable, endangered, and critically endangered plants and animals

According to the FAO *Global Forest Resources Assessment (2005)*⁹ and the *State of the World's Forests (2010, 2005, 2003, 2001)*¹⁰, between 1990 and 2000, Armenia lost an average of 4,100 hectares of forest annually. This amounts to an average annual deforestation rate of 1.18 percent. Measuring the total rate of habitat conversion (defined as change in forest area plus change in woodland area minus net plantation expansion) for the 1990-2005 intervals, Armenia lost 15.7 percent of its forest and woodland habitat. As a result of overexploitation the forest ecosystems in Armenia are significantly damaged.

“Measures of reforestation and forest conservation were carried out on 32,065 hectares of territory in the country”¹¹. At present the forest lands in Armenia make 344, 200 ha including 277,100 ha of forested area.¹²

III. DIRECT THREATS TO BIODIVERSITY

Through research, discussions and site visits, the various direct threats to Armenia's biodiversity have been identified. These are the same as those identified in the 2009 Biodiversity Analysis, indicating that there has not been significant progress since then in the country's efforts to address these continuing threats. The major direct threats continue to be:

1. Illegal logging, unsustainable fuel wood collection and commercial timber harvesting;

⁷ Fourth National Report to the Convention on Biological Diversity, Republic of Armenia, p.7

⁸ The Red Book of Plants of the Republic of Armenia, Yerevan 2012

⁹ FAO *Global Forest Resources Assessment (2005)*

¹⁰ *State of the World's Forests (2010, 2005, 2003, 2001)*

¹¹ http://www.uncsd2012.org/content/documents/800Armenia_Report_Final.pdf Page 86

¹² *Specialty Protected Natural Areas and Forests of Armenia*, 2012, WWF-Armenia

2. Mining and other industrial and commercial construction/development;
3. Poaching of fish and wildlife;
4. Inappropriate grazing practices;
5. Climate change regimes indicate that Armenia's ecosystems are at great risk of desertification;
6. Invasive species are affecting species composition and ecosystem functions, thereby degrading biodiversity; and
7. The protected area system does not adequately protect ecosystems with significant and threatened biodiversity.

The extent and impact of these threats has been updated by the team assembling this report. A description of these updated impacts is described for each one of them below.

1. Illegal logging, unsustainable fuel wood collection and commercial timber harvesting

The two primary threats to forest resources are illegal industrial timber harvesting and unsustainable collection of fuel wood for heating and cooking.

Forest in Armenia is owned by state. As a result of Armenia's energy crisis during 1990 - 2005, the country lost 18.2 percent of its forest cover, 3,000 hectares of which were primary forest, the most bio diverse forest.

Illegal logging in Armenia is the result of weak law enforcement, corruption, poor management practices, poverty, and increase of gas prices and lack of access to alternative fuel resources.

There are no recent data on illegal logging. The Ministerial Report of 2006 stated that the total timber production (commercial) amounted to 847,000 cubic meters, yet only 63,000 were officially recorded. The National Forest Research and Experimental Center estimated that in 2001 the total area of natural forest logged was about 20,000 hectares and that about half of this was cut without official permits.

The RIO+20 National Assessment Report stated that as a result of global economic crisis, the country faces increases in its poverty level: in 2009 the level of poverty and extreme poverty were respectively 34.1 percent and 3.6 percent, and in 2010 - 35.8 percent and 3.0 percent respectively. There are no recent data on wood collection for fuel, however this threat found to be significant. The original Biodiversity Analysis update of 2009 also found that threats to forests were significant.

2. Mining, construction, and other industrial development conducted without appropriate environmental safeguards.

Mining is one of the leading industrial areas in Armenia, according to 2012 RIO20 National Assessment Report. There are about 600 mines, although fewer than half are operational. Armenian mines include gold, molybdenum, copper, zinc, perlite, etc. The sector is a

dominant source of export revenues and the government sees this as potentially a leading sector in developing some of the rural parts of the country¹³.

Many of these areas are forested; others are near important waters and wetlands. According to the Proceedings of the Conference on Urgent Environmental Issues (2007), about 470 hectares of forest lands were allocated by the Government of Armenia for mining at the Teghut Forest copper site. According to the Armenian Environmental Network¹⁴ the allocated land for the Teghut Forest copper mining operation is 3,684 acres, of which 82% (or 3,044 acres) is covered with forests. Teghut Forest is home to six species of flora and 29 species of fauna listed as endangered in the Red Book of Armenia. Due to high level of biodiversity in this region, Teghut remains the most contentious of Armenian mine projects, leading environmentalists to make a wide range of appeals to national authorities and United Nations bodies.

According to *National Geographic*¹⁵, environmentalists argue that there are alternative development paths for Teghut such as tourism or harvesting honey. However, community interviews in Teghut reveal that a majority of the population supports the mine.

“In the nearby town of Alaverdi, where the ore would be smelted, there is a history of mining and mineral processing, dating back to the eighteenth century. Public health studies of this region have shown high levels of heavy metals in the soil and some signs of health impacts as well on the local population”¹⁶. However, many in Teghut consider these outcomes to be a calculated risk, while the activists from Yerevan and the diaspora feel the local community is being exploited. The capital is bustling with young diaspora returnees who are sincerely trying to invest in their ethnic homeland.

Although the environmental NGOs are fighting this decision, the copper mine remains a threat to these forests. According to Armenia Environmental Network and Transparency International representative in Armenia, the EIA report covered only the first eight years of the project.¹⁷ It gave no consideration to consequences over the 50 years of project lifetime and beyond, nor did it take account of emergency situations and risks in a transboundary context. In addition the decision-making processes related to mining in Teghut did not fully meet the requirements of public notification and participation in accordance with Armenia’s legal and international framework. Finally, they argue, the EIA was carried out with inaccurate data and specious conclusions.

Environmentalists argue that multilateral donors support to Armenia must to ensure that support for the government’s development plans must be linked to appropriate regulatory

¹³ <http://newswatch.nationalgeographic.com/2012/12/21/armenia-mining>

¹⁴ www.earthisland.org

¹⁵ <http://newswatch.nationalgeographic.com/2012/12/21/armenia-mining> (checked on 2013/12/17)

¹⁶ <http://newswatch.nationalgeographic.com/2012/12/21/armenia-mining>

¹⁷ Personal interview from Biodiversity Analysis Update, 2009, p. MEOs discussion with the representative of Transparency International, December, 2012.

structures that allow for environmental monitoring and liability for mining investment. Their analysis of the current legislation reveals several pertaining to liability for tailings dams and the implementation of the environmental impact assessment process, particularly in a seismically active region like Armenia.

According to NEAP-2 (2008), among the many environmental issues related to mining, those associated with biodiversity impacts are: mining practiced without appropriate mitigation measures that would be required by a professionally conducted EIA; failure to collect fees that could be used as “insurance” for clean-up and reclamation; and lack of re-use, re-cultivation and recycling in the mining industry.

Mine tailings and processing facilities are often located near bodies of water to minimize the cost of obtaining water, and discharge often results in pollution of those water bodies. Mining directly disturbs terrestrial resources by disturbing the land surface to gain access to minerals and metals: even with appropriate safeguards, mining will have negative environmental impacts. Reclamation can reclaim some habitats; but it is costly, and certain species, especially those that have very specialized habitat requirements and/or are already under stress (for example, from climate change or hunting pressure) may be destroyed regardless of attempts to reclaim habitat.

There is a lack of economic incentives to implement clean technology, including low environmental pollution fees/fines, lack of law enforcement and lack of well-informed decision making. The result is that mining companies are more likely to pollute than to prevent pollution.

3. Poaching of fish and wildlife and illegal hunting

Threats to wetlands, in particular the water level decrease in Lake Sevan, are substantive threats to biodiversity. Lake Sevan, the biggest freshwater alpine lake in the Caucasus, has several endemic fish species. The wetlands adjacent to the lake, including drained Lake Gilli, provide important habitat for migratory and nesting bird species. As a result of the decrease in Lake Sevan’s water level, Lake Gilli has dried up, and this has resulted in a decrease in the number of water birds at Lake Sevan. Out of 159 bird species, 33 rare and disappearing species have been registered in the Armenian Red Book. The decrease of fish stocks, as a result of water decrease and illegal fishery has influenced the entire ecosystem of the lake.

One of the main reasons for illegal fishing is poverty and unemployment in the Lake Sevan region. Other factors are weak enforcement of regulations and corruption.

To allow the endemic trout and white fish populations of Lake Sevan to regenerate, every year, from November through December, during spawning season, the Ministry of Nature Protection (MNP) bans fishing for these species. Lake Sevan National Park inspectors patrol the area for illegal activities, including illegal hunting and fishing. General information about

respective cases and amount of fines can be found on the website of the Ministry of Nature Protection of Armenia (<http://www.mnp.am>).

The Law on Rehabilitation of the Lake Sevan Ecosystem, its Maintenance, Reproduction and Utilization has a special provision to increase of the lake's water level, which is the main requirement for rehabilitation of the system. That law limits outflows to 170 million m³ per annum. Due to this Law, in the last six years, water withdrawals from Lake Sevan have been reduced, and the lake's level has increased. However, the water level increase without respective mitigation measures, including removal of vegetation and infrastructure, has caused further eutrophication of the lake's ecosystem and threatened biodiversity. Increasing the water level affects habitats along the shore, resulting in increased suspended solids near to shore. This can destroy near-shore habitat used as nurseries by fish and amphibians. Water level fluctuations can result in eutrophication, which also can affect species composition of the lake and near the shore. In 2012 water withdrawals exceeded 310 million m³ for irrigation purposes due to a controversial amendment to the law.

Illegal hunting was registered by several NGOs in the territories of PAs.

4. Inappropriate livestock grazing practices result in the degradation of alpine and sub-alpine meadow ecosystems.

Due to their slope, climatic conditions, and vegetation, alpine and sub-alpine meadow ecosystems are highly sensitive to impacts such as inappropriate livestock grazing, and are very slow to regenerate.

According to NEAP-2 (2008), inappropriate grazing in meadow ecosystems results in the reduction of vegetation on steep slopes and causes gradual land degradation. The NEAP continues, "The lands that degrade due to a variety of reasons easily lose their restorative capacity thereby, resulting in decreased biological productivity and increased economic loss." The NEAP supports preventing degradation rather than "combating its consequences, which is more difficult and less efficient."

According to the Third CBD Report (2006), natural pastures have been degraded [by over-grazing] and there has been a significant change in species composition and even extinction of some species.

A number of Government policies, strategies, and projects aim to improve meadow ecosystems and promote sustainable use: the National Biodiversity Strategy and Action Plan, National Action Plan to Combat Desertification, National Water Program, basin planning component of Clean Energy and Water project (2011, USAID), etc.

5. Climate change regimes indicate that Armenia's ecosystems are at great risk of desertification.

According to the RIO+10 National Assessment Report¹⁸, climate change impact may be one of threats to biodiversity of Armenia. Climate change is expected to worsen existing pressures on water resources, with a wide range of consequences for humans and the environment, including biodiversity. The precipitation, river flow and lake levels will fall; droughts, landslides, mudflows, and floods will become more common as it was pointed out in “The Socio-Economic Impact of Climate Change in Armenia” report, prepared by Stockholm Environment Institute. The biggest reductions in precipitation are predicted for Yerevan and the Ararat Valley – 30 percent less precipitation in 2100, where the countries urban and rural population is concentrated. In those mountainous areas decreases in snow cover will greatly reduce spring run-off and river flow. Changes in river flow in the Kura-Aras river basin with a 10 percent decrease in precipitation have been predicted to cause a 30-50% loss of flow. In Armenia, climate change is expected to result in an increase in average air temperature of 1.7°C, and a decrease in precipitation of about ten percent by 2100 (although there are various alternative scenarios, as discussed above, they all indicate that Armenia’s biodiversity is threatened by climate change). This threat was included in the 2009 Biodiversity update.

According Climate Change Information Center¹⁹ the following consequences of climate change are predicted: Over the next 100 years, a shift of landscape-zone borders is expected upslope by about 100-150 meters. The desert-semi-desert zone is expected to expand by 33 percent. The steppe belt is expected to expand by four percent and shift upwards by 150-200 meters. The lower border of the forest belt will move upward by 100-200 meters. The sub-alpine belt will be reduced by 21 percent, and the alpine belt will be reduced by 22 percent on average.

The climate will become more arid and desertification processes will intensify. Annual river flow will be reduced by 15 percent, and evaporation from the surface of Lake Sevan will be increased by 13-14 percent. The efficiency of plant cultivation in Armenia will be reduced by 8-14 percent. The productivity of cereals will be reduced on average by 9-13 percent, vegetable cultures by 7-14 percent, potato by 8-10 percent, fruits by 5-8 percent. The productivity of more heat-resistant grapes will grow by 8-10 percent. Pasture area is expected to reduce and productivity of stocks will decrease by 4-10 percent. Productivity of mountain hayfields will decrease by 7-10 percent.

At current levels of deforestation, the entirety of Armenia will become a desert in 50 years. Mountain ecosystems, especially alpine meadows, are highly vulnerable to climate change. These ecosystems are in fact indicators of climate change.

6. Invasive species are affecting species composition, ecosystem functions, and thereby degrading biodiversity.

¹⁸ http://www.uncsd2012.org/content/documents/800Armenia_Report_Final.pdf

¹⁹ <http://www.nature-ic.am/ccarmenia>, 2012, 12, 20.

According to the Acopian Center of Environment, AUA²⁰ there are more than 85 invasive species that can cause damage to Armenia's natural ecosystems. In Armenia, invasive species of plants and animals and their destructive impacts on lakes and wetland areas have been well documented, *e.g.*, Lake Sevan. This threat to biodiversity was discussed in the 2009 Biodiversity Analysis update, as well as in the Rio+10 Assessment Report (2012).

Invasive species enter Armenia through many routes, and may be brought in purposefully or unknowingly. Fish farms, which use natural water systems, such as rivers and reservoirs, to capture a population of commercial fish have introduced invasive species. Example of introduction of new species without scientific research and discussions is a whitefish, which was brought to the Lake Sevan in 1920s to create a commercial fishery. It became competitor to native species, and appears have caused damage to endemic species.

In addition to whitefish, carp and crayfish are also alien species in Lake Sevan. Carp is a serious competitor with other fish in the lake Introduction of crucial carp in the fishponds of the Ararat Valley (1960s) and later, in Lake Sevan (1978) negatively affected the quantity of Koghak since their young are food competitors.

Muskrat is one of the aggressive invasive species of fauna, and it is rapidly spreading. It has destroyed the vegetation in the area of Ardenis Lake, which the gray-eyed diver relies on for egg laying. The muskrat has seriously reduced the population of gray-eyed diver.

To meet CBD obligations, Armenia adopted the Law on Flora (1999), Law on Fauna (2000), and Law on Lake Sevan (2001). Articles of these laws prohibit illegal (without an MNP permit) import and export of flora and fauna. The State quarantine service inspects the main transportation routes; however, according to the Third CBD Report (2006), attention is focused exclusively on known weeds and agriculture and forest pests. The quarantine list registers five species of agriculture plant pests; two species of weeds, and three diseases. Import of alien invasive species that may present a potential threat to natural ecosystems is not specifically controlled.

7. The protected area system does not adequately protect ecosystems with significant and threatened biodiversity.

According to recent reports^{21,22} the GOA has adopted several decisions expanding the specially protected nature areas, In particular Lake Arpi and Arevik National Parks; Jermuk Hydrological, Hankavan Hydrological and Zangezur and Zikatar State Sanctuaries. The territory of Khosrov Forest State Reserve has been expanded through establishing a reserve mode in Gilan Sanctuary. As a result, the total surface of specially protected areas in Armenia has grown by 76.3 thousand ha, resulting in 380.0 thousand ha of specially protected nature

²⁰ <http://www.acopiancenter.am/data/docfiles/trees-and-shrubs-of-armenia.asp>

²¹ http://www.uncsd2012.org/content/documents/800Armenia_Report_Final.pdf

²² <http://www.mnp.am>

areas (SPNA) in Armenia. This comprises about 12.8 percent of the country's territory, which is close to internationally accepted standards. The status of some constituents of biodiversity, including panther, Bezoar goat, Armenian muflon, birds of prey, etc. was improved. The second edition of the Red Book has now been published, but it reports that the system of SPA is still weak. This is due to several factors, including the enforcement of environmental legislation, lack of capacities, including capacities of SPA staff, the absence of management plans or weak implementation of existing plans, and budget constraints.

In addition, local people are often poorly informed about SPAs, and, as a result of the economic crisis in the Caucasus, poaching, illegal forest cutting, and grazing in SPAs is on the rise. Buffer zones are virtually non-existent, so resource use and human pressures outside reserves spill over the borders and impact protected ecosystems.

Budgetary constraints mean that the SPA system is not adequately financed. To effectively protect biodiversity in existing SPAs, management plans need to be produced and implemented, SPAs require sufficient staff, supplies, and equipment, and there is a need for construction and rehabilitation of infrastructure, and regular maintenance. Funding is also needed to create additional SPAs and corridors. A limited information base on biodiversity resources means that important biodiversity outside SPAs may remain unprotected.

The Law on the Specially Protected Areas, adopted in 2006, currently is undergoing revisions to reflect changes in the status of SPAs and to strengthen regulatory requirements.

Protected Area Management Plans (PAMPs) have been prepared for Dilijan and Lake Sevan National Parks, and adopted by Government in January 2007. These were developed with support from the World Bank's Poverty Reduction and NRM project, which collaborated with communities on the border of the national parks to develop the PAMPs. A participatory approach was used to produce the PAMPs, but the communities do not yet benefit from the national parks, since implementation of Management Plans and PAMPs is an issue. When communities adjacent to PAs are not benefiting from the existence of the PA, they are less likely to be proponents of the PA, more likely to view it as an obstacle, and undertake activities that degrade resources (over-fishing, poaching of wildlife, cutting fuel wood, and unsustainably collecting plants).

IV. ROOT CAUSES OF THE THREATS

A. Poverty combined with low level of environmental awareness leads to unsustainable use of natural resources.

Armenia lacks sustainable economic opportunities and struggles with high rates of unemployment, especially outside of the few urban areas. Poverty remains a serious problem and it is estimated that 25-45 % of the rural population lives at or below the national poverty line²³ while approximately 40-50% of the labor force is employed in agriculture, it is estimated that it only contributes about 17% of GDP. Including agro-food processing, raises this to 21.7% of GDP. Farm and rural non-farm incomes are low and labor is underutilized. As such, poverty, especially in rural areas, and low level of environmental awareness leads to the unsustainable use of natural resources. Poor people have few if any options other than to exploit natural resources, often unsustainably. Poaching fish and wildlife and inappropriate grazing practices are direct threats to biodiversity. In addition, increased natural gas prices have led to an increase in the unsustainable collection of timber for fuelwood.

Poverty also explains why communities advocate for development projects even if they are shown to harm health and the environment. For example, despite environmental concerns about the Teghut mine, the towns near the planned mine have generally shown support for the Armenian Copper Program (ACP). Both the villages of Teghut and Shnough have high rates of emigration and unemployment, and the mine would bring needed jobs—although most of these jobs would be short-term. However, this illustrates how poverty combined with a low level of environmental awareness can affect decision making.

B. Lack of good data and limited access to information to promote biodiversity conservation

The Government of Armenia shows little concern about well-informed decision-making and transparency in decision-making. Government decisions over the use and protection of natural resources are often poorly informed: they are hampered by a lack of good quality data, including data from regular monitoring of biodiversity resources, data from local people and impacted communities. According to the IUCN website (Countdown 2010), in southern Caucasus countries, data are collected sporadically, are not compiled systematically, and are not made publicly accessible. The responsible institutions often have insufficient capacity to implement modern monitoring approaches²⁴. In many cases decisions fail to take into account civil society concerns and recommendations. There is also limited public participation in government decision making on biodiversity issues, despite the provisions of the Armenia Environmental Impact Assessment (EIA) law.

²³ <http://www.worldbank.org/content/dam/Worldbank/document/Armenia-Snapshot.pdf> (pp.4-5)

²⁴ <http://www.iucn.org/about/union/secretariat>

While poverty can lead to communities' advocating for unhealthy choices for humans and the environment, CSOs and other NGOs can be proponents for communities. However, access to information very often is an issue for community members, CSOs, and other NGOs, in supporting balanced decisions.

Access to environmental information in Armenia is guaranteed by the RA Constitution, Article 33.2, which states that officials are responsible for providing environmental information. In 2001, Armenia ratified the Aarhus Convention and agreed on the principles of access to environmental information, public participation, and public access to justice. Essentially, the Convention provides for the participation of local people and transparency in decision making. Nevertheless the existing legal framework, including laws on EIA, needs to be revised, and the by-laws and the mechanisms through which that information is provided to the public need to be developed. Since the Aarhus Convention was signed, seven public environmental information centers (Aarhus Centers) have been established in the capital and Marzes with assistance from the OSCE Armenia. These centers include official and non-official information, training materials, scientific publications, and videos.

In the past few years, most government institutions have developed websites that notify the public about their activities. However, several NGO representatives, including Transparency International, Ecolur and others stated that their concerns are often not reflected in the approved project design, in addition very often approved EIAs is very poorly developed. Another big concern is monitoring of EIA's implementation.

C. Lack of political will and lack of enforcement of environmental legislation

Biodiversity legislation has been revised and updated over the last several years, but there are still legislative and institutional gaps and weaknesses. Environmental professionals and civil society representatives advise that enforcement of newly developed or updated legislation is a big issue in Armenia. This is due to a lack of capacity and staffing constraints (e.g. environmental inspectorate), budget constraints, corruption, weak data, feedback and public participation in decision-making. All these reflect a lack of political will to protect and conserve natural resources, including biodiversity. Limited enforcement of legislation and regulations is one of the root causes of the unsustainable use of resources.

Armenia's environmental compliance legislation needs to be strengthened, and needs to be enforced. Compliance is limited by environmental impact assessment requirements. A full-scale EIA is required for a wide range of activities that exceed the "ultimate level," which is determined by the Government of the RA²⁵. Meanwhile there are no procedures or requirements for those cases where the proposed activity will not have significant effect but environmental mitigation and monitoring measures (EMMP) still require a negative

²⁵ Biodiversity Analysis Update for Armenia , February 2009, Condit, Inc. p.61

determination (with conditions according to CFR 22)²⁶. A full-scale EIA is costly and time consuming for such projects, with the result that the process discourages even “clean” investment in Armenia.

Post-EIA monitoring is weak; often it is difficult to find information about the implementation of mitigation measures outlined in the EIA document, which itself questions the enforcement of EIA. Revision and enforcement of environmental compliance legislation could improve environmental protection and support sustainable use of resources. It could also help encourage investment and reduce poverty. It should be mentioned that the revised environmental compliance law has been in circulation for more than two years, but due to several factors, including lack of political will, the revisions have not been finalized and adopted. The GOAM has approved a plan of 10 activities to implement the Aarhus Convention. Those activities include, in particular, changes to environmental compliance legislation²⁷.

Protected Areas expanded significantly in 2009-2010, currently occupying about 12.5 percent of the country’s territory. Due to lack of political will and weak capacities, however, the Protected Areas (PA’s) are experiencing substantial budget constraints. In addition, the law on protected areas is undergoing revision.

D. Biodiversity is under-valued in the country’s accounts; and environmental fees/fines do not provide an incentive for conservation.

According to NEAP-2 (2008) in countries like Armenia, economic growth causes environmental damage commensurate with 8-10 percent of the country’s annual GDP. NEAP states that the actual damage caused is more than 20 times the revenue generated.

The NEAP found that environmental charges, fees, and compensations for environmental damage were used by the State in a highly centralized manner. Charges collected for the purposes of funding environmental protection measures and programs were only partially used for that purpose.

In 2009 update of biodiversity it was mentioned that²⁸ “from our point of view it's more complicated and challenged to work with mining related environmental and nature use charges”

In 2012 new Mining Code was adopted to apply “one window” approach by simplifying exploitation provision process. Although the Code defines the principles of preservation and protection; however there are no major improvements in this area. The issue of waste did not received adequate reflection in the mining code.

26 MEOs observations. Discussions with MCA’s environmental specialist, other environmental professionals
27 (http://www.unccd2012.org/content/documents/800Armenia_Report_Final.pdf Page 71

28 Biodiversity Analysis Update for Armenia, 2009, ECODIT. P.63

As it mentioned in 2009 update²⁹ “The EIA process fails to account for the full value of biodiversity. For example, the market value of the commercial timber in the forest is considered, but not the intrinsic value of the forest (flood control, fresh air, habitat provision, carbon sink, etc.). Therefore, an EIA that recommends against a development project (or recommends significant mitigation) may appear to be recommending against economic development of the country, when in reality, from an economic standpoint, conservation may be the best choice in the long-term”.

According to Association of Young Environmental Lawyers and Economists the step forward was a new amendment Governmental Decree on biodiversity use fees, which was adopted in 2010 and includes list of flora and fauna from the red book of Armenia starting from 1500 AMD for Spanish Sparrow till 350 000 AMD for Brown Bear, however the calculations are not based on any methodology, and if there are they could of been higher.

However, the lack of economic valuation of natural resources and low environmental fees are disincentives for biodiversity conservation. In this days framework of charges for use of bio resources is comprehensive and covers most of possible resource users. From our point of view it's more complicated and challenged to work with mining related environmental and nature use charges.

²⁹ Biodiversity Analysis Update for Armenia, 2009, ECODIT. P.63

V. ACTIONS NECESSARY TO CONSERVE BIODIVERSITY IN ARMENIA

The present biodiversity assessment update did not undertake an analysis of actions necessary to conserve biodiversity in the country and instead is relying on the conclusions of the team that conducted the very thorough Biodiversity Assessment for Armenia in 2009 (Ecodit, 2009).

In the 2009 assessment, specific recommendations were made to address deficiencies in the following areas which are summarized below. The full list of the 2009 recommendations are provided in Appendix Two. A summary of each cluster of recommendations is given below:

A. Unsustainable fuel wood collection

Recommendations include poverty reductions activities, provision of alternative fuels, community forestry activities, improved protection of PAs, and the use of wood lots for fuel.

B. Unsustainable commercial timber harvesting

Recommendations include sustainable forest management plans, ensuring transparency in commercial forestry enterprises, strengthening community-based approaches, creating an open GIS system, and targeted NGO training.

C. Inappropriate grazing practices

Recommendations include incorporation of anti-erosion measures, restoration of degraded lands, reduction of land fragmentation, an open GIS system, and facilitation of land use planning exercises.

D. Mining and other industrial and commercial developments that impact biodiversity

Recommendations include increasing environmental fines to encourage use of clean technology, ensuring that a transparent EIA process is in place, strengthening capacity of the State Environmental Inspectorate, strengthening environmental compliance, implementing an insurance mechanism to cover reclamation costs, strengthening pollution prevention legislation, building NGO capacity to address issues, raise awareness of the public and implement land use planning measures.

E. Poaching of fish and wildlife

Recommendations include implementation of a holistic approach to recover native and commercial fish stock and implementation of community based natural resources management activities for wildlife and natural resources.

F. Climate change

Recommendations include developing alternative livelihood options for vulnerable communities, development of sources of clean energy, enlarging wildlife corridors and protected areas, increase the forest cover target, and implement integrated pest management systems..

G. Invasive species

Recommendation include improving State Quarantine inspections at borders, implementation of relevant articles of the Law on Flora (1999); Law on Fauna (2000); and Law on Lake Sevan (2001), development and implementation of management plans for the control of alien invasive species.

H. Protected Area (PA) system

Recommendation include implementation of the MNP's National Strategy and Action Plan on Developing Specially Protected Areas., implementation of community PA models, implementation of a improved biodiversity monitoring scheme, rationalization of roles and responsibilities of different government entities, conduct biodiversity awareness campaigns, improvement of environmental education and charging entrance fees to increase PA revenue.,

VI. Extent to Which Programs Will Address Biodiversity Threats and Recommendations

A. USAID/Armenia Country Development Assistance Strategy (CDCS)

The CDCS (2013-2017) does not include a specific biodiversity priority goal, nor do the proposed programs include a biodiversity conservation activity. However, certain USAID activities may directly or indirectly affect biodiversity, and these effects may be positive or negative. Implementation of the recommendations provided in this report can mitigate negative effects on biodiversity, strengthen positive effects and help fill gaps in biodiversity conservation needs in Armenia.

The goal of the CDCS (2013-2017) for Armenia is:

An engaged citizenry shares the benefits of increased prosperity and effective governance.

The goal is founded on the principle that greater openness, increased opportunities for both economic and political engagement and more accountable governance will lead to a more competitive and better governed Armenia responsive to an engaged citizenry. Supporting this goal are two Development Objectives and one Special Objective for health:

Development Objective 1 (DO 1): Inclusive and sustainable economic growth;

Development Objective 2 (DO 2): More participatory, effective, and accountable governance; and

Special Objective (SPO): Selected health outcomes improved and sustained.

DO 1: Inclusive and sustainable economic growth

Description of DO: USAID will work to: make the business climate more attractive for trade and investment; strengthen the competitiveness of key industries for increased exports and employment; and level the playing field for small to medium enterprises (SMEs). By improving economic governance, opportunities for corruption will be reduced. As a result, growth will be more inclusive, providing citizens with increased economic opportunities and thereby a greater stake in society. Economic growth activities addressing root poverty issues and promoting small and medium sized enterprises may address biodiversity issues when the focus is on community endeavors near biodiversity rich areas.

DO 2: More participatory, effective, and accountable governance

Description of DO: Improved governance is critical to ensuring and sustaining Armenia's stability and prosperity over the long term. USAID/Armenia will seek results in two areas to achieve this DO: (i) citizens engage more in and exercise oversight of reforms; (ii) public policymaking and implementation of reforms is more transparent, responsive, and effective.

USAID/Armenia intends to take a new and more collaborative approach with the GOAM in order to achieve results under this DO. The Mission is currently in the process of developing an Assistance Agreement which would support major reforms in decentralization, anti-corruption and the efficient provision of government services at the national and sub-national level. Future assistance will consider environmental impact stemming from national policy reforms and subsequent local level structural reforms.

A number of activities in democracy and governance area may help address the root threats of lack of public education and awareness and lack of political will about biodiversity conservation matters, especially increasing the participation and voice of local NGOs and affected public, and local governments.

Special Objective: Selected health outcomes improved and sustained

Description of SPO: Within the framework of our vetted Global Health Initiative (GHI) strategy, USAID/Armenia will tailor a more focused approach to sustaining and improving targeted health outcomes during this abbreviated strategy period. The new approach will build upon the government's priorities, outcomes of the 2010 Demographic and Health Survey, and USAID's assistance to the health sector to date. Emphasizing sustainability and increased host-country ownership, USAID will take a systems-level approach to improving access and quality of selected healthcare services. Assistance will achieve outcomes in: improvement of tuberculosis and multi-drug resistant tuberculosis treatment and prevention; promotion of modern methods of family planning; and access to quality reproductive health services. Aligned with USAID Forward reforms, USAID/Armenia will build government capacity in the provision of selected services. USAID Armenia will continue its strategic partnership with the Government of Armenia, civil society, and other stakeholders to address weaknesses and gaps in the health system that are critical in reducing maternal and child mortality and morbidity and burden of TB in the country. In particular USAID will address inefficiencies in health resource allocation, poor capacity of health system to deliver quality services to population, and weaknesses in public health surveillance to improve access to and quality of maternal and child health , reproductive health/family planning, and TB services.

The USAID-funded health program expects to improve the quality and efficiency of essential services for mothers and children at critical points in pre-pregnancy, pregnancy, birth, and early childhood. This will reduce maternal and child morbidity and mortality. It is expected to reduce excessive hospitalization and promote diagnostics and treatment of TB at the PHC level, expand patient-friendly models of care, improve TB infection control, which will ultimately result in higher TB case detection and treatment success rates and decrease the overall burden of the disease. USAID's efforts to improve access to and use of more reliable methods of contraception will reduce the number of unwanted pregnancies and the incidence of induced abortions, thus improving the reproductive health of women in Armenia.

B. Biodiversity Considerations in Mission Programs

The following recommendations are based on the review and analysis presented in this update, on a review of the CDCS, and discussions with the Mission regarding upcoming

programs. Within the existing and upcoming USAID programs recommendations are provided for:

- Enhancement measures to increase the positive effect on biodiversity of the USAID/Armenia programs.
- Cautions and mitigation measures that reduce harmful effects on biodiversity

These are based on the actions needed to conserve biodiversity and the gaps. Measures recommended are within the framework of the planned USAID programs.

DO 1 Programs and Activities

The Partnerships for Rural Prosperity (PRP)³⁰³¹ project will support rural economic development in Armenia by assisting communities and villages through promotion of communities' competitive advantages, and identification of value-added opportunities and translation them into sustainable economic activities. The project will promote access to markets, entrepreneurship; renovate community assets that will support economic development and sustainability, and support communities' ability to protect the environment and their economic base. Project personnel will work with communities in rural areas to raise alarms on environmental issues and disaster preparedness.

Extent to which this addresses biodiversity recommendations: Although this program is not designed around biodiversity it can address a number of biodiversity recommendations, particularly those related to climate change preparedness and rural poverty mitigation measures. These activities can be targeted more directly towards biodiversity conservation in the suggestions below.

Suggestions for further inclusion of biodiversity related activities: The program should consider support in implementation of environmental mitigation measures for business activities and infrastructure projects to protect the environment and conserve biodiversity. The PRP may implement poverty reduction activities, with a focus on areas of high biodiversity importance: buffer zones of PAs, important wetlands and watersheds. The project may improve protection of PA resources, and as appropriate, introduce a program of sustainable, well-monitored fuel wood collection by communities. This may have the potential to become a community enterprise that could generate income for communities.

Cautions in implementation to reduce risks to biodiversity conservation: An Environmental Mitigation and Monitoring Plan (EMMP) approved by the MEO and BEO will ensure that negative biodiversity impacts are identified and mitigated. In addition, care must be taken that timber, non-timber forest products, wildlife or other

³⁰ DCN: 2012-ARM-005

³¹ DCN: 2013-ARM-001

biodiversity are not harvested unsustainably and that management plans for the species being utilized are developed and implemented.

Entrepreneur Development and Market Competitiveness Project's (EDMC)³²³³ goal is to assist the Armenian private sector to sustainably transform the competitiveness of high potential value chains in the Armenian economy; in a manner which will drive major increases in private investment and export growth, and expand employment. EDMC seeks to facilitate the development of competitive enterprises and value chains by stimulating innovation, improving management capacity, enhancing workforce skills in key occupational niches, accelerating new enterprise formation, improving access to finance, and addressing critical shortcomings in the business environment. EDMC works in the tourism, IT, pharmaceutical and food processing value chains to build capacity of companies in marketing, financing and management. EDMC will support access to finance and provide training to banks to support environmental compliance and minimize environmental risks including those banks that are recipients of USAID's Development Credit Authority (DCA). The Mission's IEE recommends that environmental compliance training for banks be conducted, and environmental procedures of banks be reviewed to ensure that loans guaranteed through USAID in compliance with Armenia's environmental legislation, and respective mitigation measures are developed to minimize impact on biodiversity or the environment

Extent to which this addresses biodiversity recommendations: Although this program is not designed around biodiversity it can have a positive effect on livelihoods, reducing poverty and giving people other sources of income besides unrestricted consumption of biological resources and training provided in environmental compliance will help address lack of public awareness and pollution issues.

Suggestions for further inclusion of biodiversity related activities:

If the biodiversity resources of Armenia are providing income and are generating revenue for the country, USAID's activities could also have an indirect positive effect—civil society and the Government will see value in biodiversity that is protected. Given that Armenia's Protected Area's system suffers from budgetary constraints, and that tourism visits to PAs (other than Lake Sevan) have not reached carrying capacity, well managed ecotourism activities can have positive effects on conservation of these lands and biological resources.

Cautions in implementation to reduce risks to biodiversity conservation:

Negative impacts from this program may include increase of tourist numbers that degrade ecosystems, and waste disposal from pharmaceutical and food processing,

³² DCN: 2010-ARM-001

³³ DCN: 2012-ARM-008

which may affect biodiversity. EDMC support in the pharmaceutical sector focuses on Good Management Practices (GMP) from production to storage to distribution. While disposal of expired products is not included in the GMPs, disposal of pharmaceuticals is a significant threat to biodiversity. Worldwide, pharmaceuticals have been found in water and on land, and they have been implicated in reproductive health issues in animals and humans. USAID interventions in this sector must promote environmentally sound waste disposal practices. EDMC will support agro processing, indirectly these could impact ecosystems, and pollution may increase affecting biodiversity. EDMC will promote clean technologies by providing training and expert advice to minimize the effects on the environment while promoting workforce development.

Tax Reform Project's³⁴ overall goal is to improve the effectiveness and efficiency of State Revenue Committee's tax administration and Ministry of Finance tax policy development, which in turn will improve business competitiveness in Armenia.

Extent to which this addresses biodiversity recommendations: This project does not address biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: USAID may consider supporting development of the tax mechanisms supporting greening of economy and conservation of biodiversity

Cautions in implementation to reduce risks to biodiversity conservation:

Finance for Economic Development³⁵ project will work on strengthening the soundness, safety, stability and integrity of the financial sector through improved legal and regulatory practices, capacity building and promotion of pension reform through capital market strengthening and expansion.

Extent to which this addresses biodiversity recommendations: This project does not address biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: The project must promote financial institutions environmental compliance procedures and capacities by supporting development of respective regulations and abilities for environmental due-diligence and review to mitigate environmental risks and minimize impacts on environment, including biodiversity.

³⁴ DCN: 2012-ARM-001

³⁵ DCN: 2012-ARM-002

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

The Clean Energy and Water program³⁶ provides assistance to improve Armenia's climate resilience and provide greater access to clean energy and water by supporting an integrated approach to sustainable energy and water management, including basin planning. It also assists local communities and enterprises in selected water basins to improve the accessibility, reliability, quality, efficiency, and affordability of energy and water services.

Extent to which this addresses biodiversity recommendations: This project directly addresses biodiversity recommendations regarding climate change resilience and also addresses threats to biodiversity from water and air pollution. By support in implementation of clean energy and water projects the activity may support efficient use of resources, reduction of Illegal logging, unsustainable fuel wood collection and unsustainable use of resources. The demonstration projects may provide alternative fuel especially in rural areas, and a financial program to help cover costs of obtaining fuel. All of these aspects directly address biodiversity threats and recommendations.

Suggestions for further inclusion of biodiversity related activities: Through this project USAID should consider to strengthen host government ability to adequately monitor river flows, including support in development of methodology for calculation of environmental flows and respective monitoring to protect biodiversity in water ecosystems. During the consultations with stakeholders for participatory basin planning, USAID should consider raising awareness on environmental and biodiversity issues, and proposed mitigation measures developed in Environmental Assessment (EA) report for basin planning. Broad dissemination of EA report and respective consultations with stakeholders and public will guarantee the implementation of biodiversity conservation measures and sustainability of the plans. Furthermore USAID may consider providing necessary assistance in basin planning to support sustainable decisions regarding pollution control and water quality, along with decisions on water use permits and hydropower development. The project may create an open access GIS including application of environmental/biodiversity monitoring criteria. This should incorporate accurate reforestation/deforestation data.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

The GDA with Coca Cola and Dilijan³⁷ municipality will have a positive effect on biodiversity. Waste disposal directly into river Agstev affects biodiversity of Dilijan National

³⁶ DCN: 2011-ARM-006

³⁷ DCN: 2008-ARM-003

Park. Construction of wastewater treatment system will reduce pollution and positively affect biodiversity in the National Park's watershed.

Extent to which this addresses biodiversity recommendations: This project directly addresses biodiversity recommendations related to management of protected areas and also addresses threats to watershed from pollution.

Suggestions for further inclusion of biodiversity related activities: Environmental education programs could be incorporated into this project to better inform the municipality about the need to conserve biodiversity in waterways.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

Energy Assistance Program³⁸ must consider and provide information regarding the potential significant environmental effects associated with hydropower, wind, solar and other energy sources that may have a significant effect on the environment, including biodiversity.

Extent to which this addresses biodiversity recommendations: This project addresses biodiversity recommendations regarding alternative sources of fuel to reduce overharvesting of fuelwood.

Suggestions for further inclusion of biodiversity related activities: Environmental education could be worked into this program to raise public awareness about the tradeoffs between biodiversity conservation and energy generation.

Cautions in implementation to reduce risks to biodiversity conservation: USAID's assistance in the development of the civilian nuclear energy sector must be provided in accordance with western environmental standards, particularly to avoid contamination of wetlands, protected areas and important biodiversity. Care needs to be taken to avoid blocking off fish migratory routes through installation of dams on mainstems, the location of windmills to avoid bird migratory routes and other biodiversity threats that energy production may entail.

Collection and Reuse of Plastic Refuse Project's³⁹ objective is to assist local waste management companies in Armenia to collect polyethylene terephthalate (PET) for recycling and stimulate further investments in high-level PET and other recycling. The project supports reduction of PET pollution in soil and water sources, including area of National Park- Lake Sevan, thus reducing impact on biodiversity. Project also supports increase of public awareness and public participation on PET impacts and collection.

Extent to which this addresses biodiversity recommendations: This project directly addresses biodiversity recommendations related to pollution.

³⁸ **DCN: 2013-ARM-002**

³⁹ **DCN: 2010-ARM-009**

Suggestions for further inclusion of biodiversity related activities: Environmental educational activities as part of this project could include biodiversity conservation materials and information.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

The ANEL Global Development Alliance⁴⁰ will strengthen the educational capabilities and enhance the research potential of the Armenian engineering sector by upgrading and expanding the State Engineering University of Armenia (SEUA) educational and research facilities to world-class standards through the establishment of the Armenian National Engineering Laboratory (ANEL). In the framework of this GDA renovations expected to take place, implementer of renovations is GOAM's partner of GDA. USAID's partner must monitor implementation of proper mitigation measures outlined in the respective IEE.

Extent to which this addresses biodiversity recommendations: This project does not address biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: This project could support including a biodiversity conservation course for engineers to enable them to understand the biological consequences of engineering projects.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

The Global Development Alliance with Microsoft Innovation Center Armenia⁴¹ seeks to increase the employability of young IT professionals. Within the GDA renovations are expected. IEE requires that mitigation measures will be implemented and the equipment will be properly disposed to mitigate effects on environment, including biodiversity.

Extent to which this addresses biodiversity recommendations: This project does not address biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: There are no suggestions for further biodiversity conservation activities in this program.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

⁴⁰ DCN: 2012-ARM-009

⁴¹ DCN: 2012-ARM-014

Entrepreneurship and civic activism for young people⁴² project aims to provide assistance to Armenian schools in economics education by providing teacher training and access to modern, high quality educational material, and other methods.

Extent to which this addresses biodiversity recommendations: To the extent that environmental economics courses and activities are developed in this program, it may directly address biodiversity recommendations regarding economic valuation of natural resources.

Suggestions for further inclusion of biodiversity related activities: The project may consider including topics on natural resource management with the focus on biodiversity resources. The development of environmental economic courses and training in environmental evaluation can be a strong factor in biodiversity conservation in Armenia. The project may improve environmental and natural resource management education, as part of economics education in Armenia, at school level by training teachers and by providing the material and equipment needed.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

DO 2 Programs and Activities

Civil Society and Local Governance Support Project's⁴³ objectives are to increase the level of informed and organized civic activism at the local and national levels, and strengthen local governments through participatory, decentralized, and accountable governance. The program is focused on expanding opportunities for the public to organize and advocate for their needs and concerns, as well as increasing local government accountability and capacity to be responsive to citizen interests.

Extent to which this addresses biodiversity recommendations: The project and the follow-up activities will enhance environmental advocacy skills of selected number of civil society organizations and by supporting public access to environmental information, and participation in environmental decision making. The future project may provide training to target environmental NGOs that have the potential to serve as advocates for community interests and strengthen capacity in advocacy, management, and fundraising. The activity may conduct biodiversity awareness raising campaign for Armenia's PA system to help raise awareness about the biodiversity heritage of the country, and its revenue generating potential. These activities directly address biodiversity recommendations regarding public awareness of biodiversity and natural resources conservation and lack of political will.

⁴² **DCN: 2010-ARM-016**

⁴³ **DCN: 2010-ARM-005**

Suggestions for further inclusion of biodiversity related activities: The activities also should work with municipalities, communities and civil society to raise awareness on environmental issues. The project may rationalize roles and responsibilities of national and local governments in supervision, management, and use of biodiversity resources. Given that budgetary, staff, and technical constraints are high, moving towards decentralization and eliminating overlapping. Further strengthening of local government, along with activities to improve financing, increase transparency and greater citizen participation, must consider to improve environmental compliance capacities of local governments, including development of municipal environmental programs, ability to review environmental impacts of local activities and monitor respective mitigation measures to minimize impact on biodiversity, and broader environment.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

The Alternative Resources in Media ⁴⁴ project pursues an integrated approach to promote media pluralism and enhance access to independent and quality news sources. The project addresses these objectives by supporting traditional and alternative media to embrace new communication technologies and to bring civic demand for alternative content. The project also helps address key issues affecting the media environment in Armenia and works closely with media support organizations to foster an enabling environment for diverse and freer media in Armenia.

Extent to which this addresses biodiversity recommendations: The ARM project supports citizen reporting from environmental hotspots in Armenia, including PAs and economic activities impacting biodiversity. This project helps address biodiversity recommendations regarding public awareness of environmental issues.

Suggestions for further inclusion of biodiversity related activities: Future activities aimed at increasing citizen access to independent and reliable information will consider training of journalists to improve their understanding of biodiversity conservation issues, as well as rights and responsibilities of different actors in protection of environment.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

⁴⁴ **DCN: 2009-ARM-011**

The Support to the National Assembly Project⁴⁵ will assist to improve capacities of selected committees and increase citizens' interest representation. The project may consider to work with the Committee on Environment and Natural Resources as well as to assist in review and adoption of environmental laws.

Extent to which this addresses biodiversity recommendations: To the extent that this project includes biodiversity-related legislation, this project directly addresses recommendations regarding political will and public awareness.

Suggestions for further inclusion of biodiversity related activities: Biodiversity related laws regarding hunting, fishing, protected area conservation, etc should be included as much as possible in the work of this project.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

The **Livelihood Improvement through Fostered Employment for People with Disabilities Project's**⁴⁶ goal is to develop an effective model for provision of employment services to People with Disabilities (PWD) through: Increasing availability and access of PWDs to coherent set of services; improving capacity of and quality of educational and employment services for PWDs and, increasing public awareness on access to employment and employment rights of PWDs.

Extent to which this addresses biodiversity recommendations: This project does not directly address any biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: The project may consider improving environmental education and access to information about biodiversity, including awareness and access to biodiversity conservation and environmental protections jobs.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

Development of the Advocacy and Assistance Centers (AAC) National Network.⁴⁷ The primary goal of the project is to build local institutional capacity to address corruption through continued support to the existing National Network of Advocacy and Assistance Centers (AACs). Initially established by the USAID Mobilizing Action against Corruption project (2007-2011), the Network includes eleven AACs situated in urban centers of all regions of Armenia.

⁴⁵ **DCN: 2011-ARM-014**

⁴⁶ **DCN: 2011-ARM-003**

⁴⁷ **DCN: 2011-ARM-005**

Extent to which this addresses biodiversity recommendations: This project does not directly address any biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: The project may help to address corruption in environmental compliance area supporting protection of biodiversity.

Cautions in implementation to reduce risks to biodiversity conservation: This project has no foreseeable negative impacts on biodiversity.

SPO Programs and Activities

Armenian-American Wellness Center (AAWC) GDA⁴⁸ provides physical examinations, health promotion, breast and cervical cancer screening to Armenia population. The Center also conducts disease prevention/healthy lifestyle public awareness campaigns in rural and urban areas and promotes cancer support group programs. About 90% of the clinic's beneficiaries are women and girls.

Extent to which this addresses biodiversity recommendations: This project does not directly address any biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: There are no suggestions for further biodiversity conservation activities in this program.

Cautions in implementation to reduce risks to biodiversity conservation: The project must consider proper medical waste management to mitigate impact on biodiversity.

Center of Excellence (COE) for the Prevention of Childhood Blindness project⁴⁹ will establish a Center of Excellence for the Prevention of Childhood Blindness, which will strengthen the quality of newborn care services in Armenia and encourage regional cooperation to prevent childhood blindness.

Extent to which this addresses biodiversity recommendations: This project does not directly address any biodiversity recommendations.

Suggestions for further inclusion of biodiversity related activities: There are no suggestions for further biodiversity conservation activities in this program.

Cautions in implementation to reduce risks to biodiversity conservation: The project must consider proper medical waste management to mitigate impact on biodiversity.

⁴⁸ DCN: 2010-ARM-010

⁴⁹ DCN: 2012-ARM-011

VI: CONCLUSIONS

Current and planned projects and activities under the CDCS (2013-2017) for USAID/Armenia are not designed around biodiversity objectives, but they do address some recommended biodiversity actions in their content. Further suggested adjustments to these programs can strengthen biodiversity conservation components within the given frameworks.

The primary cautions regarding biodiversity conservation activities are to insure that economic growth activities do not involve the unsustainable use of timber and other forest products, fish or wildlife in these efforts. Any clean water and energy programs need to be careful to avoid encouraging the building of dams that cut off fish migratory routes, windmills that bisect major bird flyways and other activities that may harm biodiversity. It is also necessary to be aware of proper waste disposal and pollution mitigation measures that limit harm to the natural environment.

APPENDIX ONE: LIST OF PERSONS INTERVIEWED

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APPENDIX TWO: ACTIONS NEEDED TO CONSERVE BIODIVERSITY IN ARMENIA FROM 2009 BIODIVERSITY ASSESSMENT (ECODIT, 2009)

The 2009 Biodiversity Assessment for Armenia (Ecodit, 2009) detailed a number of specific actions that are necessary to conserve biodiversity in Armenia at that time. This list is extracted here in its entirety, as follows:

A. Actions needed to address unsustainable fuel wood collection

1. Implement poverty reduction activities, with a focus on areas of high biodiversity importance: buffer zones of PAs, IBAs, important wetlands and watercourses, and in key watersheds.
2. Provide alternative fuel (gas, electric, etc.) especially in rural areas, and a financial program to help cover costs of obtaining fuel.
3. Implement community forest activities: designate community forest land; develop and implement community forest management plans; ensure transparency in providing community benefits; provide training, as necessary, to community members; and monitor compliance. As part of this, capacity should be strengthened in the MoA (Hyantar) to oversee community forest management; and capacity will have to be strengthened in communities to implement community forest management activities.
4. Improve protection of PA resources, and as appropriate, introduce a program of sustainable, well monitored fuel wood collection by communities. This may have the potential to become a community enterprise that could generate income for communities.
5. Encourage use of wood lots for fuel wood.

B. Actions needed to address unsustainable commercial timber harvesting

1. Implement “industrial forests” category; require a sustainable forest management plan; and monitor for compliance with the FMP.
2. Ensure a transparent process for appropriating industrial forest to commercial enterprises.
3. Consider community benefit component in industrial forests, where communities could form commercial enterprises and manage a forest for commercial purposes. In conjunction with this, capacity strengthening should be provided to communities and community-based organizations so they can implement or oversee commercial timber harvesting, including the negotiation and management of timber contracts.
4. Create an open access GIS including application of environmental/biodiversity monitoring criteria. This should incorporate accurate reforestation/deforestation data.
5. Provide training to target environmental NGOs that have the potential to serve as advocates for community interests and strengthen capacity in advocacy, management, and fundraising.

C. Actions needed to address inappropriate grazing practices

1. Reduce and prevent land degradation with anti-erosion, anti-landslide measures.
2. Implement restoration measures (re-cultivation) of degraded lands.
3. Define principles for privatized agricultural land consolidation to reduce land fragmentation.

4. Create an open access GIS including application of environmental/biodiversity monitoring criteria.
5. Through land use planning exercises, strengthen and train local government authorities who will make decisions about land use.

D. Actions needed to address mining and other industrial and commercial developments that impact biodiversity

1. Increase environmental fees/fines to encourage use of clean technology to minimize waste, and water, land, and air pollution.
2. Ensure that a transparent EIA/environmental compliance process is implemented that takes into account all concerns.
3. Strengthen environmental compliance by developing environmental compliance legislation that provides for tiered environmental review and that incorporates transparent, third party environmental audits.
4. Implement an insurance mechanism, funded by the commercial/mining enterprise, which would create a fund that can cover reclamation costs.
5. Strengthen the capacity of the State Environmental Inspectorate.
6. Strengthen pollution prevention legislation on water discharge (point and non-point discharge) and implement pollution prevention measures, including water monitoring programs.
7. Target environmental NGOs that have the potential to serve as advocates for community interests and train them in advocacy, management, and fundraising.
8. Raise awareness of the public of importance of biodiversity and trade-offs between industrial development and other development (tourism, niche agriculture, etc.); and provide environmental education to schoolchildren.
9. Implement land use planning, incorporating Environmental Action Plans to integrate environmental concerns into land use decisions.

E. Actions needed to address poaching of fish and wildlife

1. Implement a holistic approach to recover the fish stock, including commercial and endemic fish populations. This includes artificial propagation; control of invasives; protection of the fish stocks; regularization (minimize) of water withdrawals from Lake Sevan, especially at time periods critical to the ecosystem (not only fisheries, also migratory and nesting birds, amphibians, etc); and implement a program to provide livelihood options for those living near the lake. It is important to treat the entire ecosystem—including the human dimension.
2. Implement a program of community-based natural resources management (CBNRM) that would allow local populations to benefit from hunting and fishing and other natural resource use. This would also encourage conservation and discourage illegal activities, and should be implemented in conjunction with biodiversity awareness campaigns.

F. Actions needed to address climate change

1. Develop alternative livelihood options for communities in areas that are particularly vulnerable to climate change and who rely on vulnerable biodiversity resources.
2. Develop clean, alternative sources of clean energy for use by Armenia's population.

3. Enlarge/establish additional PAs and corridors between PAs to mitigate climate change effects and to allow migration of wide-ranging species.
4. Gradually increase the forest cover area (target: 266,500 hectares by the year 2050, First National Communication on Climate Change, 1999).
5. Implement an integrated system of forest protection from pests, diseases, livestock grazing, and fire.

G. Actions needed to address invasive species

1. Improve State Quarantine inspections at borders; and train customs officers on important and endangered species requiring import and export permits.
2. Implement relevant articles of the Law on Flora (1999); Law on Fauna (2000); and Law on Lake Sevan (2001), which prohibit illegal import and export of “flora and fauna organisms for acclimatization and selection purposes.”
3. Develop and implement management plans for the control of alien invasive species.

H. Actions needed to address PA system

1. Implement the MNP’s National Strategy and Action Plan on Developing Specially Protected Areas. If implemented, the strategy will improve the system of SPNAs (**Annex I**) by ensuring the network corresponds to international agreements, standards, and criteria.
2. Implement community PA model(s) to illustrate how communities can benefit from management and use of PA resources.
3. Implement an improved biodiversity monitoring scheme, including regular data collection, systematically compiled, and publicly accessible.
4. Rationalize roles and responsibilities of central, regional, and local governments in supervision, management, and use of biodiversity resources. Given that budgetary, staff, and technical constraints are high, moving towards decentralization and eliminating overlapping functions would help ensure that those best placed to provide certain functions are providing them and on a cost-effective basis.
5. Conduct biodiversity awareness raising campaign for Armenia’s SPNA system to help raise awareness and pride in the biodiversity heritage of the country, and its revenue generating potential.
6. Improve environmental education in Armenia, from pre-school through university by training teachers to provide environmental education to students and by providing the material and equipment needed. Teacher training and access to modern, high quality educational material are keys to ensuring environmental education programs are implemented.
7. Consider charging entry fees (to international tourists, and eventually, possibly to local tourists) to increase the revenue from the PA system, and allow this revenue to be used by the SPNA system (implement article in law, “On the RA Budget System” that applies to environmental programs, which is scheduled to be implemented by 2011). Charging entry fees can also be a source for revenue sharing with adjacent communities

APPENDIX THREE: MAP OF ARMENIA SHOWING PROTECTED AREAS

Map from: www.panda.org



