



**US Forest Service (USFS)
Assessment Report:
Observations and Opportunities for USFS
Engagement in Armenia**

September 27 to October 1, 2010

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ACRONYMS

ATP Armenian Tree Project

ENPI-FLEG Improving Forest Law Enforcement and Governance in the European Neighborhood Policy East Countries and Russia

EV Economy and Values Research Center

FAO Food and Agriculture Organization

FREC Forest Research and Experimental Center

FSMC Forest State Monitoring Center

GDP Gross Domestic Product

GEF Global Environment Fund

ILAP Illegal Logging Action Plan

IUCN International Union for Conservation of Nature

MNP Ministry of Nature Protection

NGO Non-governmental organization

NTFPs Non-Timber Forest Products

PAPA Participating Agency Partnership Agreement

RECC The Regional Environmental Center for the Caucasus

SIDA Swedish International Development Cooperation Agency

SNCO State Non-Commercial Organization

UNDP United Nations Development Program

USAID United States Agency for International Development

USFS United States Forest Service

USG United States Government

WB World Bank

WWF World Wildlife Fund

EXECUTIVE SUMMARY

Two US Forest Service (USFS) representatives, Lara Peterson and Bella Gordon, visited Armenia from September 27 to October 1. The mission was designed to explore opportunities for USFS technical engagement that would support capacity needs and US Government strategic objectives in Armenia. The team conducted meetings with USAID staff, government land and forest management agencies, donors, and nongovernmental organizations. This report outlines the trip's major findings and identifies potential areas for USFS collaboration, including potential activities to be undertaken in this fiscal year.

In Armenia, the transition from the Soviet era was marked by a considerable increase in consumption of local natural resources, especially forests. It is estimated that Armenia, a low forest-cover country, lost about 16% of its remaining forest cover between 1990 and 2005. While rates of deforestation and illegal logging have decreased, both remain severe problems today. In addition to a loss of forests, Armenia's natural grasslands have suffered significantly as a result of unsustainable grazing practices. One hundred fifty thousand hectares of pasture are estimated to have already lost productivity because of overexploitation. On the horizon, climatic changes are already negatively affecting Armenia's ecosystems and are predicted to intensify.

Meanwhile, capacity in natural resource management within the Ministry of Natural Protection and the Ministry of Agriculture remains in need of further resources and attention. There is a lack of trained forestry and biodiversity experts within government agencies. The funding, authority, and staff numbers within these agencies remain inadequate. A number of important systems of sustainable land management (e.g. inventory, secure land tenure, effective management plans) are not yet in place. Many of the protected areas are not being actively managed. At the same time, much of the rural population that most relies on natural resources continues to suffer from poverty and high levels of unemployment. On a more optimistic note, there currently seems to be considerable interest being paid to environmental and forestry issues by civil society, the media, and the population at large.

The USFS is in a unique position to collaborate on many of the issues that Armenia faces in its natural resource sector. USFS expertise in sustainable forest and grassland management, reforestation and ecosystem rehabilitation, watershed management, and engagement of civil society on natural resource issues, could be used to build capacity of Armenian government and non-government institutions working in the natural resource field. The USFS hopes to establish a long term relationship with Armenia. Our agency can provide technical exchanges in the form of study tours, tailored workshops and trainings, admittance to USFS seminars, and USFS expert technical assistance for projects implemented by Armenian government or NGO organizations. A direct government to government relationship and the ability to bring multiple stakeholders to the table allows USFS to serve a role that could be highly beneficial to Armenia's development.

USFS plans to support and conduct a short-term technical assistance activity in FY2011. We propose for a USFS expert to travel to Armenia to conduct a multi-stakeholder training. Possible topics for such a training are discussed in section V of this report. We request feedback from USG agencies in Armenia to ensure that the activity chosen falls within the scope of US priorities in Armenia.

I. BACKGROUND

Armenian ecosystems are part of the Caucasus biodiversity ecoregion, home to the highest level of endemism in the temperate world. The region has been recognized to be of international biodiversity importance and has been named a biodiversity hotspot by Conservation International and a priority ecoregion by WWF. Armenia's forests and rangelands are also of vital economic importance for rural livelihoods, providing fuel wood, grazing land, non-timber forest products, and tourism development opportunities. Finally, forests represent an issue that truly engages Armenian society. There is a network of more than 40 NGO's working on forestry issues, often teaming up with young activists, who independently and passionately publicize forestry issues on the internet. Interest in forestry and natural resource management, moreover, is widespread in the general public not just a small environmentally minded community. Stories regarding illegal logging, for example, are regularly published in newspapers. This issue is even beginning to be picked up by politicians' for their election platforms.

The USFS has attempted to engage in Armenia in the past. In 2004, a USFS team traveled to Armenia at the request of the USDA Marketing Assistance Project (MAP) and the Minister of Agriculture, who had recently inherited responsibility for forestry, to participate in the International Agroforum and assess opportunities for USFS engagement. A lack of sustained resources, however, precluded the possibility for development of long-term programs at that time. To explore new avenues for USFS engagement and collaboration in Armenia, two USFS International Programs representatives, Lara Peterson and Bella Gordon, visited Armenia from September 27 to October 1. The team visited and conducted meetings with USAID staff, government land and forest management agencies, international donor agencies, and non-governmental organizations (NGOs) (see Appendix for schedule of meetings). The main objectives of the USFS visit were to: 1) identify natural resource management issues, priorities, and capacity challenges in the region, 2) explore opportunities for USFS collaboration, and 3) establish contact with potential partners.

This assessment report outlines observations and findings from the trip and identifies short and long-term illustrative activities for USFS technical assistance and opportunities for USFS partnership with USAID, the US State Department, and other entities working in the region.

II. ISSUE AREAS AND MAJOR FINDINGS

A. Current State of Ecosystem Health and Major Threats

1. DEFORESTATION

Trends:

There is much controversy on forest cover dynamics in Armenia, with quotes of current forested land ranging from 7% to 11% of total area of the country (see section B.2 on inventory). However, even the more conservative figures reported by FAO's latest report on forests show a loss of about 16% of Armenia's forest cover between 1990 and 2005 (FAO, 2009). Deforestation peaked during the energy crisis in 1991-4, when more than half of Armenian households were forced to rely on fuelwood for heating and cooking. The report on Armenian forest industry produced in 2007 by the Economy and Values Research Center (EV, 2007) estimates that annual logging volumes in 2001-2006 were half of the volumes in 1994-2000. However, illegal logging remains a tremendous environmental threat at the present time. The same report (EV, 2007), estimated annual average unreported logging in 2001-2006 to be about five times the official timber harvest. Others give illegal logging estimates of an order of magnitude above the annual allowed cut of about 70000 m³ (Savcor, 2005). To put this in perspective, the World Bank estimates that if deforestation continues at the current pace Armenia's forests would be eradicated in 20 years (ECODIT, 2009). In addition to the discouraging statistics on deforestation, forest degradation (due to fragmentation and selective logging of high value species) significantly affects the remaining forested lands, resulting in further biodiversity loss (EV, 2007).

Drivers:

Armenia's independence from the Soviet Union resulted in:

- Decreased supply of cheap energy for heating and cooking (i.e. subsidized and even free gas and electricity) from Russia.
- Decreased supply of imported wood from Russia.¹
- Increased poverty² and use of logging for income generation.
- Decreased resources, expertise, and attention for forest protections.
- Increase in corruption.

Current drivers:

- **Fuelwood demand remains high**

In the 1990's more than half of Armenian households used fuelwood for heating and cooking (ECODIT, 2009). This number decreased to 9% in the next decade as energy supplies became more reliable and percent of gasified houses rose from 15% in 2001 to 57% in 2006 (EV, 2007). However, the majority of rural households still rely on fuelwood. Additionally, the recent

¹ Before 1991 95% of wood used by Armenia's wood processing industry was imported from Russia. These imports ceased completely after 1991 and were substituted with local wood. (Sayadan, 2007)

² In 1993 Armenia's GDP was only 47% of GDP in 1990.

economic crisis and slow recovery may work to reverse the trends of decreased fuelwood use (ECODIT, 2009).

- **Demand for wood in domestic commercial use is growing**

While Armenia's rising living standards served to decrease demand for fuelwood, they increased the demand for construction wood, parquet, furniture, and other items. In 2006 the construction sector constituted 26.7% of GDP and was the fastest growing economic sector (EV, 2007).

Wood imports did not keep up with the increase in demand which was primarily met with local timber (EV, 2007).

- **Armenian timber export**

Armenia's forests contain high value wood species that are prized for export. Currently annual export volumes are estimates at 10,000-12,000 cubic meters and \$2.6 million, with primary destination being Iran. (EV, 2007).

- **Relative contributions of fuelwood and commercial logging to deforestation**

There is quite a bit of controversy on the relative contribution of fuelwood and commercial logging to total volumes logged. Invariably the NGOs we met with characterized the problem as one primarily due to commercial logging. Meanwhile, government agencies, such as Hayantar, claim most of the illegal logging is due to fuelwood procurement by the local population. It seems possible that fuelwood remains the larger consumer of wood, though the proportion of industrial wood is significant and rising. Additionally, much of the fuelwood is not collected by locals for local use, but is logged, transported and sold by commercial enterprises.³

- **Poor forest management**

Armenian capacity for forest management (resources allocated, expertise available, institutional structure, governance) remains low. Please see next section.

- **Poor regeneration**

Due to grazing and in some locations climate change, regeneration of forests is just a fraction of its potential. These issues affect both natural regeneration and planting.

- **Infrastructure**

³ A couple of studies were conducted on the issue around 2004-5. Their results are rather divergent but show between 50-70% of wood used for fuel (EV, 9). The most often mentioned of these, a survey funded by SIDA in 2004 (Mitchell, 2004) and cited by the World Bank, gives the volume of wood used for fuel by rural households as 568000 m³ out of 847000 m³ total cut, with 150000 m³ of the total being unauthorized timber sold for commercial purposes and the officially allowed cut being 63000 m³. The World Bank will be attempting to replicate the survey with improved methodology in the coming year.

Some of the difference in opinion might result from the fact that fuelwood use has fallen, while demand for industrial lumber rose in the last five years. Additionally, much of the wood cut for fuelwood is logged, transported, and sold to villagers by commercial enterprises. This logging is probably considered by the NGOs' as commercial logging, while being counted as "fuelwood" by the SIDA survey.

Additionally, the negative impact of commercial logging is often larger than the volumes would imply because it targets high value species. Finally, official statistics appear to show recent decrease in illegal logging values accompanies by an increase in sanitary cutting. Some take this to mean that some of the previous volume of illegal logging has in effect been "legalized" by being permitted as sanitary cuts, though actually commercial logging is carried out. Similar issues involve transfer of land from forest fund by redrawing border or compensating with land with no timber, or lower quality timber. This kind of illegal logging with proper paperwork is obviously much more accessible to business concerns with the proper connections rather than local citizens.

In recent years, projects that require clearing of forests to make way for large infrastructure projects such as mines⁴ and roads⁵ have become more commonplace. Armenia lacks a trustworthy review process that would protect forest land from unreasonable environmental impacts.

- **Deforestation of Mount Karabagh**

Mount Karabagh has about 35% forest cover (compared with the Armenia-wide estimate of 10%) and is famous for its large oak stands. The forests suffered severely during the war and were overused for fuelwood during the transportation and economic blockade. Presently, though information is difficult to obtain, there is some indication that the Karabagh forests are being severely overexploited for wood that is brought into Armenia for commercial use. (Savcor, 2005).

Mitigating Factors:

- At least 30% of Armenian forests are highly inaccessible and unlikely to be cut.
- There is a great deal of publicity and activism around the issue of illegal logging
- There seems to have been some lessening of corruption in recent years (see below)
- Forest area has rebounded once before. The process of collectivization and industrialization beginning in the 1930's led to a massive decrease in Armenian forest cover. However, forests did recover from this as policies changed. National forest inventory data shows percent of forested area as 8.5% in 1966, 9.9% in 1978, and 11.2% in 1993. (EV, 2007)

Impacts:

Given Armenia's status as one of the world's 70 low-forest-cover countries (under 10% of total area), continuing deforestation is especially detrimental. A number of detrimental effects have already been observed:

- Loss of Biodiversity
- Drying up of streams
- Decreased water quality
- Soil erosion and impact on agriculture
- Landslides and Floods
- Desertification
- Economic loss of alternative uses for forest (i.e. tourism, NTFPs)
- Threat to rural livelihoods as resources diminish

⁴ At present, the most highly contested project of this sort involves the proposed clearing of about 470 ha of primary forest in Teghut in order to develop a rich copper and molybdenum mine. The issue has united a number of traditional environmental NGOs and activist youth groups against it.

⁵ In some cases we heard about (i.e. the road to be build in Shikahogh that was successfully stopped by environmentalists), the road building is seen by NGOs as primarily a mechanism for companies to receive access to high value timber.

Deforestation is the issue that was most often put in the forefront of threats to Armenia's biodiversity in our preparatory reading and conversations. However, during our consequent meetings and readings two other topics within USFS expertise emerged as important threats to be considered: grazing and climate change.

2. *GRAZING*

Trends:

Armenia's natural grasslands have been substantially degraded in the last two decades. Pastures near villages are significantly overexploited for grazing purposes, so much so that 150,000 ha of pastures have become useless. There has been a significant change in species composition and even extinction of certain species. Additionally, grazing practices in forested areas have drastically decreased regeneration of forests. The result of grazing and haying has been a transition of forest areas to meadows in both the upper and lower altitude reaches of the forest zone, creating a thinner forest belt on mountains slopes. It is estimated that the vertical borders of forests have gone down 100-500 meters from their highest altitude. (CBD, 2009).

Drivers:

- There is no efficient system of pasture management in place
- Lack of inventory and monitoring
- Lack of restoration activities

Impacts:

- Loss of grassland and alpine meadow biodiversity
- Contributes to deforestation
- Soil erosion
- Impact on rural economy as productive grazing land becomes less available

3. *CLIMATE CHANGE*

Trends:

Predicted climate change scenarios for Armenia include a rise in average temperature by 1.7°C and a 10% drop in precipitation. Data from 1930-1990 show an increase in temperature by .7°C and 5.8% decrease in precipitation. The semi-desert and steppe vegetation zones have already expanded, while the alpine vegetation belt has been reduced. Moreover, valuable tree species are already failing to regenerate in certain forest areas, being replaced by hornbeam and dry oak forests. (ALM, 2009).

Drivers:

- Global climate change
- Local climate change due deforestation and degradation of grassland areas

Predicted Impacts: (ECODIT, 2009)

- A shift of landscape zone borders 100-150 m. upslope in the next 100 years
- Expansion of dessert and semi-dessert zone by 33%
- Degradation and decrease in area of alpine meadows and forests
- Annual river flow reduced by 15%, increased evaporation of Lake Sevan
- Decrease in efficiency of plant cultivation and in pasture area⁶
- Increase in pests and diseases
- Increase in forest fires

B. Institutional Capacity in Natural Resource Management

1. CAPACITY OF FOREST MANAGEMENT AGENCIES

- **Shortage of forestry expertise in forest management agencies**

The lack of forestry specialists in Armenia is lamented by both government agencies and NGOs. It is estimated that within Hayantar only 4-5% of staff are forestry specialists. Part of the reason is historic. During the Soviet era, Armenia did not have its own foresters or forestry education. These functions were provided from the regional forestry department in Georgia. Additionally, as resources for forest management and with them employee salaries plummeted⁷ after the fall of the Soviet Union, many of the best experts chose to leave. Even more detrimental has been the lack of new foresters coming into the profession for the last two decades. Many of the forestry experts that remain today are fast approaching, or have already passed retirement age.

- **The next generation of forest experts**

A university level forestry program was established in 2003 and has seen 120 graduates so far. However, less than a handful of these forest graduates have found a forestry related job. On the one hand recent graduates are not hired because their education is seen by some as not having enough fieldwork. On the other hand, many of the university graduates are not willing or able to move outside Yerevan to work in the field where foresters are most needed.

- **Lack of Authority and Resources**

--*Hayantar funding levels:* For most of the last 15 years Hayantar received just \$100,000 for its annual budget from the government. The rest it needed to earn through selling timber, which creates an obvious conflict of interest. Additionally, both funding and support for programs is unpredictable. For example, with a new minister of Agriculture committed to forestry issues,

⁶ Reduction of the areas of the most valuable and high-yield pastures of the sub-Alpine belt for 19% and Alpine belt - for 22% and the productivity of mountain grasslands for 7-10%. (MNP, 1998).

⁷ Currently Hayantar forest rangers receive salaries of about \$100/month and Environmental Inspectorate inspectors receive less than \$200/month.

funding levels increased in 2004 allowing for much needed reforestation work. However, when the minister left, funding plummeted again, leaving no money for tending new plantings.

--*Hayantar's status and authority:* As a State Non-Commercial Organization (SNCO), Hayantar's authority is restricted. Hayantar's director complains of lack of access to decision makers as a result of low agency status. More importantly the status does not allow Hayantar to conduct certain management functions. For example, there are a number of protected areas within forest fund land. None of these are effectively managed because Hayantar cannot create SNCO's (that is the usual status of protected areas under the MNP) to manage them, since Hayantar itself is only an SNCO.

--*Resources for forest protection:* Additionally, Hayantar's foresters do not have the authority to arrest violators, rather, they are required to involve inspectors from the MNP's Environmental Inspectorate. Meanwhile, the Inspectorate has only 1 or 2 inspectors in each of Armenia's 9 regions and 14 inspectors in its forest supervision division.

2. LACK OF FOREST INVENTORY, MANAGEMENT PLANS, SECURE LAND TENURE

- **Inventory**

The question of forest cover in Armenia is one of the most contentious disagreements between environmental NGOs and government agencies managing forests. Government agencies often give the percent of Armenia covered by forests as 11.2%, the amount calculated during Armenia's last forest inventory in 1993. NGOs usually site the figure determined by studies done in 2000-2001 using remote sensing, which put forest cover at that time at about 8%. Some NGOs further speculate that if forest cover was about 8% in 2000, it must be closer to about 5-6% today given continuing levels of deforestation. Both NGOs and Hayantar expressed interest in USFS helping to mediate this dispute.

A forest inventory is important not only to speak to the controversy on the severity of deforestation in Armenia. Without a current and accurate inventory it is impossible to monitor trends in forest area and health to evaluate whether current policies are successful. Perhaps even more importantly, in the absence of inventory there is a lack of data needed to make management decision on particular land parcels.

- **Management Plans**

Forest management plans have been done for 80% of the forest fund (15 out of 19 forest enterprises) by Forest Research Experimental Center (FREC). Two problems remain, however: 1) The quality of the plans produced by FREC is questioned by many Armenian forestry experts. The Monitoring Center apparently found a number of violations when reviewing the plans (i.e. logging allowed on slopes that are too steep, etc.) and 2) The plans are often not implemented.

- **Cadastral Maps**

The official maps that designate land categories and boundaries (e.g. forest fund, agricultural land, etc.) are agreed to be highly inaccurate. This lack of secure land tenure creates opportunities for sale of forest fund land, which cannot legally be sold. Another scheme is to move forest fund boundaries in such a way as to leave the most productive and valuable forests outside the boundaries and available for industrial logging.

3. PROTECTED AREAS

- **Paper Parks**

Many of the protected areas in Armenia are paper parks. They have no staff, no management plans, and no protection. Out of 23 protected areas under the MNP, only 3 have management plan at present. Moreover, as mentioned above, for protected areas under Hayantar it is administratively impossible to create a management body and staff, and therefore they are virtually ignored.

- **Low Capacity**

The protected area system under the MNP is poorly funded. The management plans that do exist have faced a lot of criticism from environmental NGO groups (i.e. Dilijan National Park has only a 10% core zone area). There is a lack of competent staff in many protected areas.

- **Tourism**

Tourism is a priority of the Armenian government for protected areas. Only recently, a protected area law has been changed which now allows tourism in nature reserves, spurring a number of protected areas to develop ecotourism projects, often with foreign donor support. One example of this we saw directly was the work funded by WWF (and currently continued by the Caucasus Nature Fund) in Khosrov Reserve, where a large tourist center has just been built and is in the process of being outfitted. There are also some concerns by NGOs based on previous incidents that development in protected areas could happen without proper consideration of environmental impacts.

4. INSTITUTIONAL STRUCTURE

- **Frequent Changes**

Frequent changes in legislation, funding levels, key decision-makers (e.g. Ministers of Agriculture), and institutional structure present a challenge to land management agencies' ability to function effectively.

- **Agency rivalry**

The transfer of Hayantar to the Ministry of Agriculture from the Ministry of Protected Areas (which still manages the Protected Area system and the Environmental Inspectorate) created two ministries responsible for land-use and forest management. There is as yet often more competition than cooperation between the two ministries.

- **Donor Coordination**

There are a number of donor groups working on similar issues. It seems there is room for more close coordination of their efforts and sharing of lessons learned.

5. FOREST GOVERNANCE

- **Trends**

A number of institutional and legislative changes have taken place starting in 2004:

--In 2004 Hayantar was transferred from the Ministry of Natural Resources to the Ministry of Agriculture.

--A new National Forest Policy and Strategy (NFPS, 2004), a National Forest Program (NFP, 2005), a new Forest Code (2005), and an Illegal Logging Action Plan (2004) were adopted.

Though an important development, these legislative efforts did not come with sufficient funding to implement a lot of the endeavors proposed under them.

--*The Forest Monitoring Center (FMC)* is a unique institution that was established in 2005 to be an independent monitor of forest governance issues⁸. The FMC is generally seen as a unique structure and a positive development for forest governance in Armenia. However, much of the FMC's effectiveness seems to be directly correlated to the current leadership of the organization.

Corruption:

--Corruption in the forest sector was rampant in the 1990s. It is generally seen to have decreased somewhat in recent years, especially after Hayantar's transfer to the Ministry of Agriculture in 2004. However, corruption remains the key threat to forest resources. The environmental inspectorate told us that they find violations on almost every single inspection they conduct. Additionally, there have been 5 or 6 fairly recent cases where heads of forest enterprises were forced to resign due to illegal activity. IUCN reported that it is hard to fill those positions, as it proves nearly impossible not to participate in the systemic corruption.

- **Remaining corruption issues**

--*Sanitary cuts* are being used as a pretext for illegal logging. Sanitary cutting is the only logging currently allowed. The volume of sanitary cuts has been increasing in recent years. Some believe that this increase has resulted from illegal logging activities being "legalized" by receiving permits for "sanitary cuts," which are in fact industrial logging.

--*Lack of well-defined forest fund boundaries* makes it possible for government officials to revise these boundaries in such a way that the best forest land is left outside the forest fund and could be sold.

--*Forest fund land is sometimes transferred to other categories* by makeshift committees that are created specifically for that purpose and then disbanded.

C. Rural Livelihoods

- **Community Forestry**

After a law allowing communities to own and manage forest was passed, a number of pilot projects have been developed with funding from various international funders, with management plans being developed for some (see section on work done by foreign donors). However, to date none of the communities have been found sufficiently prepared by Hayantar to receive the right to manage their forests. Some of the criticism of previous projects were: expectations were raised for the villagers which could not realistically be met, not enough support and capacity building was provided to the villagers (in some cases because too many projects were being implemented at the same time), and sustainability of projects after donor funding period came to an end was not well thought out. There is currently an active 3 year community forestry project being implemented by REC Caucasus. The project is currently in its second year.

⁸ It is tasked with reporting not only on illegal logging figures, but also on such things as percent of illegal logging cases opened by the inspectorate that go to court (15% in 2006-8), whether Hayantar's silvicultural activities meet requirements stated in the management plan, regulations required but not yet promulgated under forestry legislation, etc.

- **Non-Timber Forest Products (NTFPs)**

Armenia already has a certain amount of NTFPs (berries, medicinals, nuts, honey, etc.) being collected for the domestic and tourist markets. However, this is mostly of an informal nature, without sophisticated markets, and could be significantly increased by marketing activities. One barrier to expansion is the current lack of law base for NTFP collection.

- **Tourism**

Armenia's combination of ancient monasteries, beautiful landscapes, and famed mountain air would seem to promise good prospects for tourism development. Indeed, tourism development is a priority for the Armenian government. It is also an area where a lot of protected areas would like to develop in. Currently, however, tourism is at a rather low level. For example, Dilijan, which in the Soviet days was an exclusive and highly prized vacation destination, has seen many of its former hotels and sanatoriums go out of business in the last 20 years. The lack of jobs in the region and its proximity to forests (the town of Dilijan is inside the Dilijan National Park) creates a significant pressure on natural resources.

- **Grazing**

As described above, current grazing practices in much of Armenia are unsustainable. Much pasture land has already been degraded and forest regeneration has been significantly impacted. A rationalization of grazing needs to occur if the resource is to remain productive in the future.

D. Civil Society

Civil society's involvement in the forestry sector is perhaps the good news story in Armenian forest management. We met with a number of very active environmental NGOs, most of which are part of the alliance of more than 40 NGOs called "Forest Net" that share information and come together to work on environmental issues. In addition to formal non-profit groups, there is an inspiring amount of youth activists, who among other things, investigate illegal activity and post it on a widely read blog.

Another impressive accomplishment is that government officials in Armenia will meet with civil society to discuss land management issues. For example, a few months ago there was a meeting set up by environmental NGOs to discuss forestry issues, which the director of Hayantar attended (and was forced to answer a multitude of questions by a somewhat belligerent audience). Though in many ways there is hardly a constructive partnership between the NGOs and government center, the openness of government officials to even come to such meetings and have discussions with NGOs in a number of other ways is already quite an achievement.

The second half of the success story is the involvement of the media in forestry issues. One of our respondents when discussing the illegal logging issue mentioned, "You can't open up a newspaper without seeing an article on illegal logging somewhere." This is partly due to the activity of NGOs. IUCN, under the aegis of the FLEG program, has perhaps been most active in this. They provided training to 15 journalists on covering forestry issues. The trainings culminated in a series of field trips for the journalists. Seventy forestry related articles have already been produced by that group of 15. Additionally, NGOs continued outreach on blogs and IUCN even has a series of films that are soon to be broadcast on national television.

III. WORK BEING DONE BY FOREIGN DONORS

A. World Bank and SIDA “Natural Resource Management and Poverty Reduction Project”

- A \$13.4 million (\$8.3 million in credit and \$5.1 million as a GEF grant) project was implemented in 2002-2009 with co-funding from SIDA.
- Project components included: State Forest Management, Community Watershed & Forest Management, Protected Areas and Biodiversity Conservation.
- Major achievements World Bank reported included: pilots in community watershed and forest management, creation of management plans for 5 forest enterprises and two protected areas (Dilijan & Sevan), creation of Illegal Logging Action Plan (ILAP), work on new Forest Policy & Strategy and forestry legislation. (World Bank, 2009).

B. Legislation

- **WWF and GTZ** are conducting a gap analysis of PA management legislation recently submitted to the government.
- **WWF** is working on creating a manual on current forestry legislation that can be used to do training in 6 marzes.
- **GTZ** is working to revise the Armenian Forest Code, Law of Protected Areas, NTFP permit system, and the National Biodiversity Monitoring System. They expect to have a draft of new forestry code in mid-2011. The World Bank, which had a role in the creation of the previous forestry code, thinks it would be better to make changes to existing forest code than to rewrite completely, but did not wish to comment on GTZ efforts.

C. Combating Illegal Logging

The **ENPI-FLEG** program is implemented by WWF, IUCN, and World Bank. Some of its activities include:

- **WWF** has recently finished a study on wood processing in Armenia (available at <http://enpi-fleg.org/index.php?id=research>), whose goals included characterization of existing wood processors, identification of problems and solutions, and an analysis of the feasibility of an industry association.
- **IUCN** has done some impressive work on training media to report on illegal logging issues. It has also done road-shows to provide information to communities on illegal logging and initiate brainstorming on ways communities can help combat it.
- **World Bank** is currently working on three main areas: conducting a timber tracking pilot project, providing capacity building for the Forest Monitoring Center, and facilitating communication regarding sustainable resource use to local people.

D. Forest Rehabilitation

- **WWF** provided funding to plant 600 ha of forest, implemented by **Armenian Tree Project (ATP)**—400ha, and **Hayantar**—200 ha.
- **ATP** has planted about 1000 ha of forests altogether. It also has a successful “Backyard nurseries” program in which ATP pays villagers to raise seedlings.
- **UNDP** has a pilot project to plant a poplar industrial forest.
- The **WB, FAO, and RECC** have all conducted some trainings that involved reforestation.

E. Protected Areas

- **WWF** is working on creation of new protected areas, protection issues in PA’s, tourism and outreach.
- The **Caucasus Nature Fund** was initiated by WWF to provide continued support for operating costs of protected areas. The fund is currently working with Khosrov.

F. Inventory

- **GTZ** is creating a pilot inventory and management plan in a forestry enterprise.
- **GTZ** is working with Forest Monitoring Center on country wide inventory utilizing primarily remote sensing technology.

G. Community Forest Management

- **RECC** is working with two communities on developing community forestry.
- There have been a number of community forestry pilot projects in the recent past (World Bank Project, funded by the Norwegian government, etc.) or some of the communities management plans were even developed. However, these plans were never approved by Hayantar and by some accounts the villagers involved were disillusioned by the process and lack of sustainable support.
- **GTZ** is working on facilitating FairWild certification (www.fairwild.org).

IV. POTENTIAL AREAS FOR USFS ENGAGEMENT

A. Capacity building in forest management

1. FOREST REHABILITATION

The Need:

- Armenia has undergone a severe amount of deforestation in recent years (see section IIA).
- There are a number of organizations that are working on afforestation and forest rehabilitation activities. However, many of them have cited a lack of forestry expertise as the major challenge, leading to very low survival rates of the trees planted.

What USFS can offer:

- USFS has established and managed nurseries and conducted reforestation and ecosystem restoration activities in the varied ecosystems of the United States for more than a 100 years. That experience in technical methodology and scientific planning process could certainly be of use in Armenia. Training and technical support can be provided on: project design including choice of site, timing, and tree species to be planted; planting methodologies; nurseries; tending of plantings. Potential partners:
- Hayantar, Armenian Tree Project, FREC, UNDP, communities.

2. FOREST GOVERNANCE

The Need

- Illegal logging and related corruption remains the largest threat to Armenia's forests.

What USFS can offer:

- The USFS does not currently face a large problem with forest theft, but it did just a few decades ago. Past challenges necessitated the development of a number of monitoring and enforcement technologies and methodologies, which proved successful and are still in use today. Areas where best practices can be shared include: law enforcement (institutional set-up, training, etc.), timber tracking, information systems, remote sensing techniques, transparency, and cooperation between forest agencies and civil society on the illegal logging issue.

Potential partners:

- Hayantar, Environmental Inspectorate, Forest Monitoring Center, environmental NGOs like IUCN, WWF, members of the Forest Net alliance, local communities, etc.

3. INVENTORY

The Need:

- The lack of inventory presents a number of management and monitoring challenges (see section II.B.2). Additionally, it is a large point of contention between government and NGO's. The current effort by GTZ is developing a system of monitoring, working with the Forest Monitoring Center. However, there have not been any stakeholder processes to agree on or even discuss methodology with other stakeholders.

What USFS can offer:

- The USFS's Forest Inventory and Analysis program utilizes a systematic inventory and monitoring system, which has been effectively shared with a number of other countries. Technical cooperation on inventory and monitoring can be a direction for work in Armenia, as well. Even in places where the US model is not fully appropriate to the local context, USFS expertise on methodology, sampling design, and other topics could be useful. Questions of forest extent and inventory methodology are an area of particular dispute between stakeholders, where provision of a forum for discussion and independent technical expertise could be of use.

Potential partners:

- Hayantar, Forest Monitoring Center, GTZ, environmental NGOs.

4. SUSTAINABLE FORESTRY PRACTICES

The Need:

- One of the most often cited problems conveyed to us is the dearth of forestry expertise both in and outside of government forest management agencies (see section B1). Moreover, the lack of expertise is likely to continue given the lack of new forestry graduates joining the natural resource management field.

What USFS can offer:

- The USFS manages 60 million hectares (150 million acres) of National Forests for multiple uses. As such, the agency is uniquely placed to provide training in sustainable forestry practices such as balancing different management objectives, creating management plans, controlling pests and diseases, fire, monitoring and information systems, silvicultural practices, and adaptation to climate change.
- In addition to providing continuing education opportunities to current forestry professionals, USFS can facilitate educational opportunities for young people studying to become foresters by, for example, providing internship and field work opportunities.

Potential partners:

- Hayantar, protected areas, community forestry groups, environmental NGOs working on these issues (i.e. WWF, RECC, ATP, etc.). Forestry Program of the Agrarian State University.

B. Rural livelihoods

1. TOURISM

The Need:

- Tourism is a priority for Armenian government. It provides a potential source of income for both protected areas and the communities that surround them. The current state of tourism development in Armenia is fairly low.

What USFS can offer:

- The USFS currently earns more revenue from tourism than from timber sales. Best practices can be shared in the areas of: marketing, tourism infrastructure design, environmental impact assessments of tourism, environmental interpretation, use of volunteers, business planning, and a number of other areas.

Potential partners:

- Protected areas, local communities, Caucasus Nature Fund, WWF, and other NGOs with projects on tourism.

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2. *COMMUNITY FORESTRY*

The Need:

- The majority of rural households rely on fuelwood for heating and cooking. Though the law has allowed communities to manage forests for a number of years now, and several donor agencies funded projects to help them do so, there are currently no communities who have been approved to manage forests.

What USFS can offer:

- The complex jurisdictional patterns in the U.S. necessitate collaboration across boundaries and between agencies and communities. The USFS State and Private Forestry branch provides technical and financial support to state and local landowners on a variety of topics. In addition, the USFS engages heavily with the public throughout planning and management activities. Perhaps the largest challenge in establishing a community managed forest is the need for a community to have competent forest managers and management systems in place. Training in sustainable forest management and help in management plan creation for communities can help fill that void.

Potential partners:

- Currently RECC has a community forestry project, although the fact that it only assumes support for 3 years raises questions of sustainability. There are others that are also considering supporting a community forestry project (i.e. ATP). It would be important to partner with an agency that has a clear plan for sustainability.

3. *GRAZING*

The Need:

- Much of Armenia's grasslands have been degraded by unsustainable grazing practices leading to environmental damage and loss of a resource vital for rural livelihoods. Grazing also contributes to deforestation by preventing forest regeneration. (See section: II.A.2)

What USFS can offer:

- Domestically, USFS manages 20 National Grasslands consisting of 3.8 million acres (1.5 million ha) of public land. US Forest Service has considerable expertise in monitoring, restoring, and apportioning grazing permits on rangelands. A USFS team could work with stakeholders in a pilot area to review current range management techniques, and conduct training workshops on pasture monitoring and inventory, carrying capacity and grazing permitting structures, and enforcement of sustainable grazing practices.

Potential partners:

- Local communities, environmental NGOs that work on community sustainable resource management like ATP, WWF, etc., Ministry of Nature Protection (i.e. Bioresources Management Agency).

4. *NTFPs*

The Need:

- Non-timber forest products such as berries, teas, mushrooms, nuts, medicinal plants, honey have the potential to contribute to rural economic development. There is a need for market development and for regulation of NTFP collection.

What USFS can offer:

- As stated earlier, the USFS manages its lands for multiple uses, including the harvesting and use of NTFPS. USFS has extensive expertise in working with local communities to regulate NTFP use, inventory and monitoring of these resources, sustainable harvesting techniques, permitting, and other areas of NTFP management. Technical cooperation could be useful on a variety of topics, including NTFP inventory and monitoring, determining sustainable yields, regulations and permitting, certification, marketing NTFPs, and working with local communities to ensure a balance between use and access with sustainability needs.

Potential partners:

- Legislators, GTZ, local communities, protected areas, Hyantar, MNP.

C. Promoting constructive relationship of government with civil society

The Need:

- Though there is dialogue between civil society and land management agencies, which is certainly an important step, the dialogue does not always take a constructive vein which could lead to commonly agreed on directions for further work.

What USFS can offer:

- USFS has a long history of collaboration with civil society. The message to government agencies of the needs and benefits of working with civil society might bear more credence coming from a counterpart government agency. Methods of such cooperation would also be shared.
- Many of the topics for trainings proposed above are on topics of use to both government agencies and NGOs. It provides a potential for bringing stakeholders together to work through technical issues and learn from each other. This kind of non-divisive forum could foster formation of inter-sectoral relationships.
- Part of the conflict between NGOs and government is due to lack of information and trust. Participation of USFS experts in discussions of particular topic could provide a mediating function of providing independent information, thus helping to build trust. An outside mediator to steer the conversation into more constructive, problem-oriented channels, is also very often helpful.

D. Watershed management

The Need:

- Forest and alpine degradation are already having negative effects on the quantity and quality of water in Armenia's watersheds. There are also specific water bodies and issues, such as Lake Sevan where a change in water level is being proposed, that could benefit from technical assistance. Additionally, Armenia shares a number of water bodies with its neighbors, which provides opportunities to engage regionally on these issues.

What USFS can offer:

- USFS has extensive experience working with a variety of stakeholders on watershed management, and USFS specialists serve as members on a number of Water Councils. Some activities USFS commonly undertakes domestically and could provide similar expertise on in Armenia include: Working with states and private forest owners to establish forest management plans that focus on watershed protection; working with landowners and land managers to implement best management practices for erosion control and soil protection; logger and forester training to ensure best practices in forest management and harvest techniques; ensuring best practices in road building; bank stabilization and flood prevention through revegetation of river banks and restoration of riparian forests and flood plains.
- If transboundary watersheds are the ones chosen for engagement, communication between watershed managers of the countries involved could be facilitated by USFS.
- An issue that had been brought to our attention, as requiring technical assistance, is that the logging of forest land on the shores of Lake Sevan in preparation for the increase of Lake Sevan's water level was not appropriately completed and much woody debris remains.

V. POTENTIAL USFS ACTIVITIES FOR FY2011

The U.S. Forest Service has some very limited funds for work in Armenia in 2011. Given our limitations in funding we propose to conduct activities that aid existing endeavors within the country and help us to continue to further build relationships while learning about the needs and opportunities for work in Armenia.

The extent of our capabilities will probably allow for one training activity in Armenia during FY11. We might also be able to host a participant from Armenia to one of our yearly international seminars (see below). Additionally, we hope to continue the open communication exchange with our Armenian colleagues begun during our trip to the region.

Training Activity in Armenia:

We propose to conduct a training activity in Armenia in FY2011. The potential topics under consideration include forest restoration and nurseries; tourism development in protected areas and adjoining communities; managing forests for multiple uses including creation of management plans and zoning; government and civil society cooperation in the area of forest governance. We look forward to feedback from our USG colleagues in Armenia and potential partners on which topics they believe would be of most use.

The training would be designed to target a number of different government and non-government actors (specific agencies would depend on training topic). The proposed format of the training would include site visits to consult on specific projects in detail, followed by a workshop where stakeholders have a chance to discuss technical approaches with their peers. An explicit goal of any such training would be to foster ties between diverse actors (government, NGOs, local communities), using technical level discussions of existing projects as a method for achieving said goal.

International Seminars

We have sent out invitations to suggest participants for our annual international seminars. We have already received one indication of interest from a potential participant from Armenia and are optimistic about our ability to fund this participant.

USFS international seminar topic areas include climate change, watershed management and protected area management. The seminars are organized in partnerships with Universities and provide participants opportunities to engage with specialists from a variety of agencies and organizations to hear and discuss the most up to date research findings on each of the three topics. Perhaps even more exciting, the seminars give participants an opportunity to discuss issues and lessons learned with natural resource practitioners from around the globe and explore opportunities to improve resource management within their own country and circle of influence. The seminars are held in English, so any potential participant must speak English.

The dates for this year's seminars are as follows: Watershed: May 2nd-21st; Climate Change: May 7th-29th; Protected Areas: July 18th- August 6th. More information is available at: <http://www.fs.fed.us/global/is/welcome.htm> .

Exchange of Information

In addition to above concrete activities, we seek to develop relationships with various Armenian stakeholders and become an information resource for them. Likewise, we hope to serve as a resource to USG actors on topics of USFS expertise. This can include providing materials and information to contribute to existing programs, advice on USFS areas of expertise, or information on potential future areas of endeavor.

VI. USFS COLLABORATION WITH USAID and STATE DEPARTMENT

As a land management government agency, USFS understands the constraints, pressures, and tasks land management agencies across the globe confront every day. Such an understanding allows for a unique cooperation potential, exchanging ideas, tools and practices between government agencies that face similar challenges. USFS has a 100-year history of balancing multiple pressures and challenges. Today, with approximately 35,000 employees and a multiple-use mandate, USFS expertise encompasses a wide range of disciplines, including protected area management and ecotourism, forest planning and fire management, grazing and range management, climate change, and the management of both timber and non-timber forest products. Such diverse expertise is needed to address the management required to protect nature while enabling the public to sustainably utilize the land base for water, recreation, and economic growth.

USFS provides technical assistance around the world in Asia, Africa, the Middle East, Eastern Europe, Russia, and Latin America. USFS technical assistance is being applied in the areas of democracy and governance, economic growth, and community development to support USAID programs and U.S. foreign policy objectives in these regions. Further, USFS has extensive experience contributing to country strategies, designing new programs, and developing activities to support existing USAID projects and implementing partners. USFS assistance and

collaboration, therefore, have the potential to complement and support key USAID and U.S. Embassy programs, priorities, and strategies in Armenia.

USFS collaboration with USAID and U.S. State Department has provided capable, effective land management expertise easily, efficiently, and rapidly for US missions and their partners around the world. To facilitate collaboration with USAID, the USFS International Programs Office has an existing interagency agreement with USAID, a Participating Agency Partnership Agreement (PAPA). USAID Missions can utilize this mechanism to contribute financial resources that will allow USFS technical assistance to be readily applied to support country objectives. USFS also has a wide range of existing agreements and funding mechanisms currently in place with the U.S. Department of State and has the capability of developing new interagency agreements. While USFS plans to support only one or two small-scale technical assistance and exchange activities with Armenian partners this year, the PAPA or other interagency agreements can be utilized to develop more comprehensive activities in support of US government programs and initiatives.

VII. NEXT STEPS

As described in the report, USFS sees a wide range of opportunities to develop partnerships and collaborative activities in Armenia. USFS seeks further dialogue with USAID and U.S. Department of State to develop short-term activities that would best support USG strategic objectives in Armenia. We look forward to receiving comments and feedback from USAID to inform the activities we undertake in FY2011. After receiving these comments we will formulate more concrete plans for said activities which we will share with USG agencies in Armenia and potential Armenian partners.

Upon request, we can also develop more detailed proposals and budgets for long-term projects of interest. Ideally, the near-term USFS investments and activities in Armenia will lead to a long-term partnership with USAID or the U.S. Mission to Armenia. USFS, USAID, and State Department partnerships around the world have proved effective in promoting economic development and good governance of natural resources, and working collaboratively in Armenia would yield similar results.

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APPENDIX: List of Meetings (September 28-October1)

US Government

- USAID:** Raymond Morton, Marina Vardanyan and Diana Avetyan (Economic Growth Office)
- State Department:** Charles Lobdell and Megan Bouldin (Pol-Econ Officers)
- USDA:** Frederick Johnston (Project Coordinator)
- Peace Corps- Armenia:** Nicholas Bruno (Program and Training Officer)
- Out-brief** with Acting DCM John Maher

Armenian Government

- Hayantar:** Ruben Petrosyan (Chief Forester)
- Forest State Monitoring Center:** Ashot Papazyan (Director)
- Bioresources Management Agency:** Artashes Ziroyan (Head)
- Environmental Inspectorate, MNP:** Artur Gevorgyan (Deputy Head)
- Forest Research and Experimentation Center, MNP:** Andranik Ghulijanyan (Director), Araik Mezhlumyan (Deputy Director)
- Khosrov Forest State Reserve:** Director, Hovik Tamazyan (Deputy Director)

NGOs

- WWF:** Karen Manvelian (Country Director) and Anna Matevosyan (Project Coordinator)
- Armenian Tree Project:** Mher Sadoyan (Director), Areg Maghakian (Associate director)
- IUCN/FLEG:** Luba Banyan (Program Coordinator), Arshaluys Muradyan (Communication - Coordinator)
- Transboundary Joint Secretariat for the Southern Caucasus:** Armen Gevorgyan (National Coordinator)
- Regional Environmental Center Caucasus –** Nune Harutyunyan (Director)
- Association for Sustainable Human Development NGO:** Karine Danielyan (Chairperson)

Donor Agencies

- World Bank:** Artavazd Hakobyan (Operations Officer), Renaat Van Rompaey (Forestry Consultant)
- GTZ:** Tomas Eberher (Team Leader)

Academic Institutions

- State Agrarian University of Armenia:** Mr. Hovik Sayadyan (Chair of Forestry)