INDEPENDENT PUBLIC MONITORING OF FORESTS IN ARMENIA

“GEOINFO” Applied Research Center

Yerevan, 2015
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1. Introduction

From April 2014 through February 2015, Geoinfo LLC has been implementing an «Independent Public Monitoring of Forests in Armenia» project. The project is implemented within the frames of the ENPI East Countries FLEG II Program (European Neighborhood and Partnership Instrument East Countries Forest Law Enforcement and Governance II Program) which promotes sustainable forest governance, management, and protection of forests in 7 Eastern European countries: Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia and Ukraine. The program in Armenia is funded by the European Commission and is implemented by the World Bank, the International Union for Conservation of Nature (IUCN) and World Wildlife Fund (WWF).

The main objective of the program is to identify, record the illegal activities (forms of forest crimes) in Armenia’s forests and report them to the public. For the purpose of monitoring of forests in Armenia, Geoinfo implemented a series of training workshops on the Forms of Illegal Activities in Forests which took place in 6 Aarhus Centers in Armenia.

During the training the local groups were trained in identifying illegal activities in forest, in the use of GPS navigation system, photo uploading, interactive maps, data registration and transfer. During the practical part of the workshop the groups were trained in how to use GPS navigation system out in the forest, register and take photographic evidence of illegalities, use interactive maps and data transfer on the ground.

As a result of these training sessions local volunteer groups have been established in 6 regions of the Republic of Armenia which were composed of local community members, members of social and environmental organizations. Geoinfo has also acquired 6 special navigation devices - Trimble Juno 3B navigation systems and a desktop computer to manage database and data entry. An additional online portal www.afpm.am has been created to upload and post identified illegal forest activities and make them available online.

Data and cartographic materials on identified illegal activities in forest which were collected during public monitoring of forests in Armenia have been analyzed and posted on the website www.afpm.am. Website information is available on the Internet and allows citizens to download and upload materials on illegal activities in forest.

During the project implementation Geoinfo held meetings with the management of "Hayantar" SNCO in order to organize the public monitoring of forests in Armenia.
2. Methodology

The Objective

The general objective of the assignment is to support increased governance within the government in the forest sector and forest law enforcement. This activity will aim to:

- Strengthen the operation of the forest monitoring system(s) in Armenia;
- Raise the local voice and strengthen the capacities of local communities to monitor changes in forests and record violations;
- Ensure public access to information databases on forest violations and other aspects of forestry issues;
- Catalyze media coverage and report on issues of illegal logging and other forms of forest crimes.

The research was covering both the forestlands under the administrative management of the “Hayantar” SNCO and the forests forming part of the existing Protected Areas managed by the Ministry of Nature Protection of Armenia. For the purpose of independent monitoring of forests, series of training sessions – both classroom based and practical – have been organized in 6 different regions of Armenia. During these training sessions, local groups have been introduced the types of illegal activities in forest, techniques on using GPS navigation device, how to properly upload photographs, use interactive web maps, record and transfer collected data. As part of these sessions, training experts also gave interviews to local press media.

Geoinfo has established monitoring groups which are composed of representatives of local NGOs, local residents, forestry students, specialists of local forestry units who along with the experts have carried out the independent monitoring of forests.

Field investigations have been undertaken with or without the presence of any representative of the government. In order to promote a more independent citizen-sourced monitoring Geoinfo has developed an online database [www.afpm.am](http://www.afpm.am) which is available to all and features data related to illegal activities in forest.

Forest inspection has been undertaken using GPS and GIS tools, photographic, video documentation, interviews and other methods that were useful in investigating forest exploitation activity. The website is open to all citizens and allows to upload and submit their own observations.
3. Training Implementation

3.1 Preparatory Work

Geoinfo has conducted a preparatory work to organize the training sessions on identification of illegal activities in forest in order to ensure the independent public monitoring in Armenia [1, 2, 3].

- The following training materials and guidelines have been specifically developed and compiled targeting the following topics:
  (a) Identification of forest illegal activities, data collection and transfer,
  (b) GPS navigation system; site orientation in the field conditions, registration of identified illegality, data collection and transfer.
- Training schedule and agenda has been prepared
- Six (6) different forested regions of Armenia have been selected for organizing training and practical workshops on public monitoring of forests. The sessions have been announced on websites of Aarhus centers in Armenia.
- To ensure a wider public participation in training sessions, invitations have been sent to forestry employees, members of environmental and other NGOs as well as local community members, and contacts have been established with each of them.

3.2 Training Implementation

With a purpose to establish local monitoring groups and recruit local volunteers training sessions on identification of forest illegal activities were organized in the following 6 regions of Armenia: Ijevan, Vanadzor, Alaverdi, Kapan, Goris, Hrazdan.

- Ijevan - May 21-22, 2014
- Vanadzor and Alaverdi – June 6-7, 2014
- Kapan and Goris – June 26-27, 2014

During the training workshops, participants have been introduced general information about the structure of forests and forest lands, as well as forest management bodies (forests in Armenia are managed by the two state structures: Ministry of Agriculture, to which "Hayantar" SNCO (the forest state agency) belongs with
Figure 1. Forest cover in Armenia

Training sessions have addressed topics of forest use (timber harvesting, secondary forest harvesting, unauthorized use of the forest, forest use for managing wildlife reproduction and use, forest use for research and educational purposes, cultural, health, sport, recreation and tourism purposes of forest
use) and illegal forest activities and their types [1, 2, 3]. They have specifically introduced the difference between legal and illegal activities in forests and how these can be told apart in field (Figure. 2 and 3).

![Figure. 2. Legally cut tree](image)

![Figure. 3. Illegally cut tree](image)

In the forests of Armenia (except for State Nature Reserves) the wood harvest is done within the limits of the harvest levels and site allocations of the Annual Allowable Cut (AAC) determined by the Forest Management Plans, through sanitary and forest regeneration cuttings. According to the Forest Management Plan (FMP) each tree in a woodlot allocated for cutting is clearly marked at the base and numbered in color using the paint (see above); parallel to this, relevant characteristics of the marked tree (species, diameter and scale) are provided in the record book. The harvest of tree stands as well as secondary forest products, windthrown trees and fallen wood is carried out based on issuing of a special document – tree cutting permit or «ticket». Logging is considered illegal if there is no mark at the base of the tree and no color numbering on a tree stem.

Training participants have also been lectured on the various violation forms of forestry management stipulated by the Forest Legislation of Armenia and their main distinctions [1]. Some of the most common violations of forest legislation in Armenia are:

- Logging and eradication of trees, shrubs in forests and forestlands (Figure. 4 and 5).

![Fig 4. Unlawful logging](image)

![Fig 5. Illegal logging](image)
- Damage caused or destruction of the forest due to arson or human carelessness when handling fire (Figure 6).

![Figure 6. Forest fire caused by careless handling](image)

- Appropriation of trees that were fallen by wind, broken by snow storms and uprooted trees (Figure 7 and 8).

![Figure 7. Windthrown trees](image)  ![Figure 8. Trees broken by snow storm](image)

- Polluting forest with various substances, emissions, wastewater, waste and household residues (Figure 9 and 10).

![Figure 9. Household waste](image)  ![Figure 10. Solid waste](image)
Use of forestlands without a permit, illegal occupation, construction of roads, pipelines, buildings, mining operation, etc. (Figure 11 and 12).

Illegal construction

Illegal road

Illegal grazing in forest and forest lands (Figure 13).

Illegal grazing

Damage, destruction, removal of the forest topsoil (Figure 14)

Destruction of forest topsoil
- Unauthorized collection of wild fruits, nuts, mushrooms, berries, etc. in forest areas where it is prohibited (Figure 15).

![Unauthorized collection of berries in forest](image1.png)

**Figure 15. Unauthorized collection of berries in forest**

- Causing harm to forest wildlife (Figure 16)

![Illegal hunting](image2.png)

**Figure 16. Illegal hunting**

Participants were trained in site orientation using GPS navigation tools and in methodology of using interactive maps (Figure 17 and 18) [5, 6]. Site orientation navigation systems which were delivered during practical fieldwork were GPS, ArcPad, AiPad and Android mobile phones.
As part of the training sessions, participants were involved in field investigations of forests during which time some violations have been detected, "mostly illegal logging" and ways of their identification and interpretation have also been explained. Recording and transfer of data on identified illegal activities has also been part of this practical work.

**Training sessions in Ijevan**

From 21 to 22 May Geoinfo LLC organized a training workshop on “Independent Public Monitoring of Forests in Armenia”–a practical field program at Aarhus center in Ijevan (Figure 19). Training was attended by representatives of Ijevan and Sevkar forestry branch of «Hayantar» SNCO, representatives of the Department of Environmental Protection of Tavush Marz Administration, Ijevan Branch of Yerevan State University students, journalists, other environmental NGOs and activists.
Training in Vanadzor

From 5 to 8 June Geoinfo LLC organized a training workshop on “Independent Public Monitoring of Forests in Armenia” – field work program at Aarhus center in Vanadzor (Figure 20). The event was attended by representatives of Vanadzor and Yeghegnut forestry branch of «Hayantar» SNCO, other environmental NGOs and activists, students, journalists. Questions were raised about the overall situation in the forests of Armenia. Participants wanted to know if there are any old-growth forests in Armenia at all and if there are any specialists trained to perform sanitation cuttings in Armenia. A proposal was made to fund motivated citizens and organizations to travel and survey forests which in the long run may help identify illegal activities occurring in the forested.

Training in Alaverdi

From 5 to 8 June Geoinfo LLC organized a training workshop on “Independent Public Monitoring of Forests in Armenia” – field work program at Aarhus center in Alaverdi (Figure 21). Training was attended by
representatives of Stepanavan forestry branch of «Hayantar» SNCO, the Department of Environmental Protection of Alaverdi municipality, local environmental activists and journalists. Participants were interested in the current status of forests and key conservation issues. A proposal was made to sponsor the local activists to visit the forested area in order to conduct relevant activities.

Figure 21. Training on “Independent Public Monitoring of Forests in Armenia” in Alaverdi

Training in Goris

From 26 to 28 June Geoinfo LLC organized a training workshop on “Independent Public Monitoring of Forests in Armenia” – field work program at Aarhus center in Goris (Figure 22). Training was attended by representatives of Goris forestry branch of «Hayantar» SNCO, the Department of Environmental Protection of Goris Municipality, “Zangezur” Biospheric Complex” SNCO, activists, journalists, local environmental NGOs.

Figure 22. Training on “Independent Public Monitoring of Forests in Armenia” in Goris
Training in Kapan

From 26 to 29 June Geoinfo LLC organized a training workshop on “Independent Public Monitoring of Forests in Armenia” – field work program at Aarhus center in Kapan (Figure 23). Training was attended by representatives of the Department of Environmental Protection of Kajaran Municipality, “Zangezur” Biospheric Complex” SNCO, the Department of Environmental Protection of Syunik Marz Administration, other environmental NGOs and activists, students, journalists. Some participants mentioned that in Kapan no organizations initiate any tree planting or forest restoration activities. Participants also emphasized that the government must motivate young specialists to work as foresters in the forestry sector by offering jobs and acceptable salaries. This will allow the organizations operating in the forestry sector to employ suitably qualified professionals who can later use their expertise to contribute to sustainable management of the forests and may provide solutions to existing problems in the sector. During these discussions participants also raised an interesting question whether any of forest protection or conservation organizations in Armenia ever proposed a legal initiative to the National Assembly of Armenia proposing to legalize the public monitoring of forests in Armenia and include this activity in the national legislation.

Training in Hrazdan

From 11 to 12 July Geoinfo LLC organized a training workshop on “Independent Public Monitoring of Forests in Armenia” – field work program at Aarhus center in Hrazdan (Figure 24). Training was attended by representatives of Kotayk Marz Administration, environmental NGOs, students and local activists. Participants expressed desire to cooperate with Geoinfo LLC.
3.3 Participation and awareness-raising in «Public Monitoring of Forests»

Participation index of the training workshops on “Public Monitoring of Forests» held in 6 forested regions of Armenia:

- Vanadzor: 16 people – 10 men and 6 women
- Alaverdi: 13 people – 7 men and 6 women
- Goris: 12 people - 8 men and 4 women
- Kapan: 18 people – 9 men and 9 women
- Ijevan: 16 people – 10 men and 6 women
- Hrazdan: 10 people – 5 men and 5 women

Results of the series of training sessions on “Public Monitoring of Forests in Armenia” have been widely publicized:

- Aarhus center in Vanadzor

“Actually in forest there are activities which are legal”


Author Anush Bulghadaryan, reporter of Lori region, June 9, 2014

- Aarhus centers in Goris and Kapan

“In Syunik they trained to register illegal logging with the help of GPS navigation system”

Author Mery Soghomonyan, reporter of Syunik region, June 30, 2014

Media interviews have been provided in 3 out of 6 regions of Armenia:
Alaverdi: by “H+3” by TV journalist Lusine Parsadanyan, 07.06.2014
Kapan: by “Khustup” TV journalist Nona Baghdasaryan, 26.06.2014
Goris: by “Khustup” TV journalist Mery Soghomonyan, 27.06.2014
4. Data collection, development and compilation

In order to implement the independent public monitoring of forests in Armenia, the following infrastructure layers of Armenia have been prepared in Geographical Information System (ArcGIS): maps of forestry enterprises, human settlements, road network, water bodies and elevations along with their individual databases. Geographical coordinates of identified illegal forest activities have been entered into the maps of the Geographical Information System and as a result locations of illegal activities have been plotted on the forestry map (Figure 25).

Trimble Juno 3B navigation system, GPS devices and Landsat satellite images have been used during the forest monitoring research [5, 6, 7]. Landsat satellite images of maps dated 2013 and 2014 have been decoded by the expert team. The forest areas of decoded satellite images have been compared with each other and as a result areas where illegal logging was performed have been identified (through changes fixed in the forest cover). After decoding and comparing the Landsat satellite images, areas with illegal felling of
trees in Gugark and Idjevan forestry were revealed where significant changes in forest cover have been observed (Figure 26).

Figure 26. Satellite images of changes in forest cover in 2014 compared to 2013.

These forest maps and their geographical coordinates are entered into the Trimble Juno 3B navigation system and all further field visits to those forest areas are made based on these data. On-site research is then performed to determine the actual causes of changes that have taken place. It was confirmed that this was mostly an illegal felling of trees and after checking the logged tree stumps and making sure they bear no marks at all, these trees were recorded as illegally logged. When taking the measurements in the forest, cases of illegal activities were recorded using several devices to ensure good quality of the records and also to create a backup and avoid any potential loss of the data. Detection and record of illegal activities in the forest was also done using photo and video cameras, by preparing a written description of the terrain and fixing its geographic coordinates. All of the collected survey results were then entered onto a computer lodged in Geoinfo's premises, which are then studied, checked and analyzed. These data were uploaded on the recently created website (www.afpm.am) of the public monitoring. Submissions can be made by interested people on our website. There is also a guide describing how interested citizens can make their own submissions. The website allows all public users to submit their observations by submitting a story and a title in the ‘Stories’ section. The website also contains a guide which explains how the users can enter observations.
5. Website Creation

The website www.afpm.am consists of two main program sections: a section for the website administrator and a section for visitors (Figure 27). The website user has an opportunity to prepare and edit web-pages using multiple tools. The website content is available in three languages: Armenian, Russian and English.

Figure 27. Screenshot image of the website www.afpm.am
Sections intended for website administrator and editor:
- Creating, editing, deleting and viewing pages,
- Moving of web-pages in menu list,
- Inputting, editing, removing, activating and viewing of reportable cases/alerts,
- Opportunity to choose signs for marking locations on the map depending on the type of accident,
- Adding an event on the map using precise geographic coordinates,
- Uploading, editing, removing and viewing photos,
- Uploading, editing, removing and viewing news,
- Exporting the data in Excel or other formats.

Sections intended for web-site visitors:
- Viewing and searching pages,
- Viewing and searching for reported cases/accidents,
- Adding an event on the map using precise geographic coordinates,
- Sharing and discussion of reported cases on Facebook,
- Viewing and searching news and archives,
- Viewing photos,
- Contacting the web administrator,
- Viewing of the web map

On the website [www.afpm.am](http://www.afpm.am) you can find materials, data, images and maps on illegal forestry activities identified by local monitoring groups and the expert team. Thus, as a result of field investigations illegalities have been detected in Gugark, Dsegh, Ijevan forestry branches of «Hayantar» SNCO, as well as in “Dilijan” National Park (Figure 28). A brief account of identified illegal activities is given below.

**Yeghegnut Forestry.** As a result of field surveys, a large number of unmarked stumps of illegally cut trees have been discovered. No forestry related activities have been planned according to the forest management plans of the specified sites; also, these sites mostly include slopes that are 30 degree steep and even steeper, facing different direction where a mass felling of trees took place [3]. This, as a result can lead to natural disasters and cause irreversible losses.

**Ijevan Forestry.** As a result of field investigations of forests in Ijevan forestry a landslide measuring approximately 4 ha sections 1 and 9 of the first square have been detected. The soils in that section have run off and partly blocked the riverbed, while some 1 ha size pond originated at the top of it.

**Dsegh Forestry.** Field surveillance in Dsegh area were conducted in the 6th, 7th and 9th squares of Motkor Forestry No. 4. As a result of studies in the above mentioned areas, a large number of illegally cut tree
stumps that were not marked by foresters have been detected. No forestry activities are planned in the above mentioned area according to the forest management plan, and the map-scheme No. 8 in the plan shows that these areas mostly include slopes with a steepness of 30 degrees [3] and more and of various directions where mass logging took place.

“Dilijan” National Park SNCO. Forest monitoring was held in Dilijan National Park. The results of this survey revealed traces of a large number of wind fallen trees in sections 4, 8 and 10 of the 7th square in Haghartsin area, as well as illegally cut tree stumps in an area of about 2-3 hectares.

Figure 28. Several images featuring illegal activities detected in the forested areas in Armenia.
6. Results and Future Steps of the Initiative

6.1 Project Results

For the purpose of implementing an independent public monitoring of forests in Armenia, a monitoring initiative has been launched and identified illegal operations in the forests of Armenia, whereby relevant data have been collected, recorded and reported to the public. A series of training sessions have been organized in 6 forested regions of Armenia. During these training events, local monitoring groups were introduced all types of forest illegal activities, they have been trained in the use of GPS navigation system, technique of uploading photo images, use interactive maps, record and transfer collected data. In addition, as part of the practical field training the groups were trained in the use GPS navigation system on site in the forest, record cases and take photographic evidence of forest crimes, use interactive maps and transfer relevant data.

Local monitoring groups have been established in 6 forested regions of Armenia. These groups were composed of members of local NGOs, locals residents, students and other environmental activists. Together with the Geoinfo expert group, members of local monitoring groups carried out independent surveillance of forested areas of the country. As a result of such independent monitoring, a database of information on recorded illegal activities in forest has been created.

An online portal and web map has been created and is available at the afpm.am website for the news on public forest monitoring. All of the survey results featuring illegal forest operations have been made available on the website www.afpm.am.

6.2 Future Steps

In order to increase the capacity for independent public monitoring of forests in Armenia, the following actions are recommended to be carried out in immediate future:

- Continue training efforts on public monitoring of forests in Armenia in selected forested regions,
- Hands-on field training of local groups, field surveys and monitoring activities by the group of experts and local volunteer groups
- Technical enhancement and maintenance of the website www.afpm.am,
- Development and publication of educational films or visual tutorials on illegal forest operations,
- Creation of public monitoring branding: logotype and uniforms for local volunteer groups performing
independent forest monitoring,

- Acquisition of additional soft program in order to optimize the implementation of public monitoring activities.
- Catalyze local media using print, online and radio communications with the press;
- Promote the independent monitoring efforts among wide environmental networks using social media such a recently created official facebook page on Citizen Monitoring of Forests in Armenia.

The works began in spring of 2014 and lasted through the winter of 2015.
7. Conclusions

- Armenia holds a substantial human potential in order to maintain and implement an independent public monitoring of forests. Independent public monitoring of forests initiative is currently in its stage of formation and it is necessary to continue to develop this resource: continue efforts with public engagement, deliver training sessions on various forms of illegal operations in the forest, especially on-site experience, under forest conditions, and create motivators for better public engagement. For a more effective and organized implementation of independent public monitoring availability of funding sources is essential: donor organizations that will contribute to maintain these activities.

- During the project period, there have been some challenges with the involvement of the public. During the terms of monitoring activities it has not been possible to involve a greater number of local residents. We have also faced resistance on the part of the local forest management bodies. Employees of local forestry branches were reluctant to agree or did not wish to provide access to forest for public groups because each detection of an illegal operation leaves a negative impact on their work.

- There has been a positive response from "Hayantar" SNCO administration body which welcomed the pilot project on «Independent public monitoring of forests in Armenia». Neither negative nor positive feedback has been received so far from other stakeholders, however negative reactions can be anticipated in future because such illegalities are not few in number and oftentimes forest workers themselves are part of these processes.

- The pilot initiative on «Independent public monitoring of forests» is of great importance to our country, especially to the forestry sector. Through the current project, it was made possible to engage a certain swaths of the active public, reveal illegal activities occurring in the forest and make them available to the public.
8. References

1. The National Assembly's decision No. LA-211, November 26, 2005, Forest Code of Republic of Armenia
2. Government Decision No. 1412 - N of Republic of Armenia, September 7, 2006 on "Procedure of implementation of forest regeneration cuttings in manufacturing forests"
3. State Forest management plans of "Hayantar" SNCO
4. Official website of Hayantar" SNCO, Ministry of Agriculture of Republic of Armenia
   www.hayantar.am
About FLEG II (ENPI East) Program

The Forest Law Enforcement and Governance (FLEG) II European Neighbourhood and Partnership Instrument (ENPI) East Countries Program supports participating countries’ forest governance. At the regional level, the Program aims to implement the 2005 St. Petersburg FLEG Ministerial Declaration and support countries to commit to a time-bound action plan; at the national level the Program will review or revise forest sector policies and legal and administrative structures; and improve knowledge of and support for sustainable forest management and good forest governance in the participating countries, and at the sub-national (local) level the Program will test and demonstrate best practices for sustainable forest management and the feasibility of improved forest governance practices at the field-level on a pilot basis. Participating countries include Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia, and Ukraine. The Program is funded by the European Union. http://www.enpi-fleg.org

Project Partner

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WWF
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