

# **Integrated Biodiversity Management, South Caucasus**

**Ecosystem Services in Armenia: Overview of different activities  
on ecosystem services implemented by the Government of  
Armenia and different organizations in the period of 2011-2017**



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**Report**

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## **Preface**

In the recent years, the public interest in the role and value of ecosystems and how their services contribute to the quality of life has grown exponentially. Applying an ecosystem approach to decision making processes over natural resources can help governments, local communities and other stakeholders to assure multiple benefits for land users, land owners, and the public. In Armenia there is not yet a coherent understanding of the Ecosystem approach and promising management practices are not yet in place.

On the 4th of November 2016, the RA Ministry of Nature Protection (MoNP) in cooperation with Yerevan State University (YSU), “Young Biologists Association” (YBA) NGO and with the support of the GIZ Integrated Biodiversity Management, South Caucasus Programme (IBiS) organized a round table discussion with the aim to raise awareness and initiate a public discussion on the topic of ecosystem services among relevant stakeholders. One of the outcomes of the discussion was the common agreement that there is lack of information among stakeholders in Armenia on past, ongoing and planned (pilot-) projects on the topic of ecosystem services, which would serve as a ground for future activities and future pilot projects, would allow to take lessons learned into account as well as to avoid duplications.

The purpose of this study is to provide an overview of past, ongoing and planned (pilot-) projects on the topic of ES in Armenia, including achieved results and a compilation of lessons learnt, in order to close the information gap among stakeholders in Armenia on the activities related to ES.

The study has been carried out by a national consultant, Nane Shahnazaryan and its implementation has been funded by GIZ IBiS. Mr. Ashot Harutyunyan have contributed to the compilation of the report. The report does not contain any personal viewer attitude of GIZ.

The information on projects presented in this report is obtained from public sources and interviews with the representatives of national authorities, international organizations, NGOs and national and international experts.

## **Executive summary**

Although Ecosystem Services (ES) concept is still in its infancy in Armenia and its use in the legislation is limited to description and some details on certain types of ecosystem services presented in laws and other regulatory acts relating to biodiversity conservation, during the past period, the RA government has approved a number of strategic programs envisaging activities related to the introduction of ideology of ecosystem services and payments for ecosystem services.

This report provides an overview of the legislation on ES and payments for ecosystem services in the Republic of Armenia, as well as actions, steps and results achieved by the Government of the Republic of Armenia in the field of ecosystem services. It includes an analysis of projects performed by international donor organizations aimed at the introduction and inclusion of the ES and Payments for ecosystem services (PES) ideology into the national legislation and thus decision making process. Some recommendations and insights are also given.

The report also includes further opportunities, recommendations and approaches for the achievement of progress in the process of incorporation of the ideology of ecosystem services.

The report can serve as a good information and baseline source for both governmental agencies and international donor organizations for the initiation of activities and projects and implementation of relevant studies on ecosystem services.

Although the legislation of the country can greatly facilitate the implementation of PES programs, it should be noted that many of the techniques of PES are highly effective without such legislation. Buyers may be interested in the number of non-legislative factors, among which are

- Reduction of running and maintenance costs
- Risk reduction (by ensuring the supply of essential natural resources)
- Strengthening of investor confidence
- Improving the image

The balancing and thoughtfulness of PES schemes is an absolute prerequisite for its success without any dependence on the presence or absence of legislation. The Agreement on PES will almost certainly be successful if:

- The provision of ecosystem services is threatened, but financially valuable to one or more buyers,
- The special resource management measures can improve the quality and / or volume of the service and
- The results of these measures can be checked.

Integrated Biodiversity Management in the South Caucasus (IBiS) programme commissioned by German Federal Ministry for Economic Cooperation and Development (BMZ) and co-funded by Austrian Development Cooperation aims to develop strategies to support the sustainable management of biodiversity and ecosystem services across sectoral and administrative boundaries, based on solid data.

GIZ IBiS in cooperation with its partners:

- Works on the development of cross-sectoral policies, strategies and laws in sustainable biodiversity management and ecosystem services.
- Contributes to the development and establishment of monitoring systems for biodiversity and ecosystem services and facilitation of interministerial dialogue.
- Pilots integrated and coordinated approaches to the sustainable management of biodiversity and ecosystem services, draws lessons learned in pilot regions and adopts at local level.
- Supports the improvement of wider public awareness of the importance of biodiversity by supporting the capacity development of training institutions, conducting national campaigns and improving environmental education centers.
- Encourages greater sharing of technical expertise in the field of biodiversity and ecosystem services among the three countries.

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## **List of Abbreviations**

NC Natural capital

CICES Common International Classification of Ecosystem Services

CBD Convention on Biological Diversity

SPNA Specially protected nature area

SEM Sustainable ecosystem management

TEEB The economics of ecosystems and biodiversity

ES Ecosystem service

GEF Global Environmental Facility

UNEP United Nations Environment Program

UNDP United Nations Development Program

PEI Poverty and Environment Initiative

IBiS Integrated Biodiversity Management, South Caucasus

IUCN International Union for Conservation of Nature

NBSAP National biodiversity strategy and action plan

WB World Bank

WWF World Wide Fund for Nature

PA Protected area

UN United Nations

FMP Forest management plan

PES Payments for ecosystem services

RA Republic of Armenia

EUWI European Union Water Initiative

IWRM Integrated Water Resources Management

EU European Union

ENPI European Neighborhood and Partnership Instrument

FLEG Forest Law Enforcement and Governance

BMZ German Federal Ministry for Economic Cooperation and Development

## 1. Introduction

Ecosystem Services (ES) are the benefits people obtain from ecosystems. Different categories of ecosystem services that ecosystems provide include provisioning services such as food, water, timber and fiber; regulating services that affect climate, floods, disease, wastes and water quality; cultural services that provide recreational, aesthetic and spiritual benefits; and supporting services such as soil formation, photosynthesis and nutrient cycling.

“Ecosystems” are a dynamic complex of plant, animal, and microorganism communities and their non-living environment interacting as a functional unit. “Ecosystem services” are the direct and indirect contributions of ecosystems to human wellbeing.<sup>1</sup> The concept “ecosystem goods and services” is synonymous with ecosystem services. The valuation of these goods and services in monetary terms is what is meant by “ecosystem services valuation.”<sup>2</sup>

Ecosystem management – is a strategy for the integrated management of the environment and natural resources that promotes effective conservation and sustainable use, based on the application of appropriate scientific methodologies focused on ecosystems that encompasses the processes, functions and interactions among organisms and their habitats, and recognizing that humans, with their cultural diversity, are an integral part of ecosystems.

Payment for ecosystem services (PES) – is an arrangement between buyers and sellers of environmental goods and services in which those that pay are fully aware of what it is that they are paying for, and those that sell are proactively and deliberately engaging in resource use practices designed to secure the provision of the services. A broader scheme suggests that those who benefit from the ecosystem services pay (usually indirectly) to those who provide the services.

It is not a secret that globally important biodiversity of the South Caucasus is currently under threat. While existing national biodiversity strategies and action plans allow for managing biodiversity and ecosystem services these cause conflicts of different sectors due to insufficient coordination between various parties.

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<sup>1</sup>The Economics of Ecosystems and Biodiversity (TEEB) is a leading approach to defining ecosystem services. TEEB identifies four broad types of ecosystem services: provisioning services (such as water, nutrition, biomass, pharmaceuticals, etc.), regulating services (such as carbon sequestering, water purification, pest and disease control, etc.), cultural services (such as intellectual or spiritual inspiration, recreational experience, etc.), and habitat services (such as providing habitat for migratory species helping sustain a diverse gene pool, etc.).

<sup>2</sup> <http://www.teebweb.org/>

The use of the term “ecosystem” occurs only a few times in RA national legislation. It occurs in the Article 3 of RA Forest Code<sup>3</sup> and Article 1 of the RA Law on Specially Protected Areas<sup>4</sup>. It also occurs in the Laws on Flora and Fauna. But in all these instances no adequate definition is provided for the term “ecosystem.”

Current RA legislation does not define any valuation methodology for either natural resources used or their protection. More specifically, natural resource uses are valued per unit of the resource used.

There are international and regional efforts directed to the standardization of ecosystem services which will facilitate the adoption of ecosystem services valuation as an environmental accounting tool. At the international level, a new classification of ecosystem services under development is called the Common International Classification of Ecosystem Services (CICES).

Among the international environmental agreements Armenia has ratified, the Convention on Biological Diversity (CBD) is the one most often referenced with respect to an ecosystem approach. The term “ecosystem” is used in the text of the Convention and defined in its Article 2. The terms “ecosystem services” and “ecosystem services valuation” do not appear directly in the text of the CBD, although within the framework of CBD implementation, there is strong emphasis on the ecosystem approach. One of the 12 implementing principles of the CBD, for instance, states: “Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.”<sup>5</sup>

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<sup>3</sup><http://www.arlis.am/DocumentView.aspx?DocID=21354>

<sup>4</sup><http://www.arlis.am/DocumentView.aspx?docID=29624>

<sup>5</sup>See Principal #5 in [www.cbd.int/ecosystem](http://www.cbd.int/ecosystem). The series of CBD Conferences of the Parties decisions placing emphasis on an ecosystem services approach is also available from the same site.



## **2. Actions, steps and results achieved by the Government of the Republic of Armenia in the field of ecosystem services**

**Step 1:** The process of introduction of the ideology of ecosystem services in Armenia was initiated with the participation of a representative of the RA Ministry of Nature Protection in a meeting entitled “The TEEB project - Economics of Ecosystems and Biodiversity: prospects of participation of Russia and other NIS countries” organized by WWF Russia in Moscow on March, 2011.

**Step 2:** In 2011, the action plan for implementation of tasks stipulated in the concept of development and implementation of environmental programs was developed by the RA Ministry of Nature Protection and approved by the Government Protocol decree N 19 from May 20, 2011, Item 13 of the mentioned action plan intended the introduction of draft protocol decision “On the approval of the concept of creating innovative financial mechanisms”.

**Step 3:** The introduction of new financial and economic mechanisms in the environmental sector was ensured by the RA Government protocol decree N 16 dated April 25, 2013 “On the approval of the concept of creating innovative financial mechanism”. The main cornerstone of the concept was the introduction of ecosystem services based on the international experience, including:

- Different approaches-definitions of classifying ecosystem services,
- Payments for ecosystem services,
- Determination of value of ecosystem services
- Examples of ecosystem conservation benefits,
- Existing problems and solution algorithms in the field of ecosystem services.

And most importantly the following was enshrined in the concept:

Most of the ecosystem services have not been adequately valued yet.

Currently, important contributing functions necessary for the maintenance of other functions and services (photosynthesis, soil formation, etc.) are not integrated into the real economy as compared to resource-providing, regulating and cultural services.

Underestimation of biodiversity and ecosystems is associated with the following:

- a. Low awareness: Very often, ecosystem services are perceived solely as resources available in ecosystems,
- b. As a rule, ecosystem services are not integrated in market relations,
- c. The value of ecosystem services very often is not considered during economic assessments and decision-making,
- d. Natural factor is reflected neither in the national economy nor in the leading macroeconomic indicators.

As a result:

- incompetent decisions due to inferiority of information base necessary for the decision making process,
- weak political will and beliefs impeding the expansion of the respective processes,
- Continued loss of biodiversity and destruction of natural capital.

Under these conditions, it is no coincidence that the need of understanding "biodiversity value" is emphasized in Biodiversity Strategic Action Plan for period of 2011-2020 approved during the summit in Nagoya, Japan in October 2010.

TEEB reports also stress that decision-making entities of all countries are facing two major issues:

- Understanding and learning to evaluate the natural capital and include appropriate assessments in the decision-making process.
- Developing effective and equitable management approach.

**Step 4:** In 2013, the action plan for implementation of tasks stipulated in the concept of creating innovative financial mechanism in the field of nature protection was developed by the RA Ministry of Nature Protection and approved by the Government Protocol decree N 47 from November 14, 2013. The first and the second items of the action plan envisage the following:

1. Introduction of the RA government draft law "on ecosystem services"
2. Submission of the RA government draft decision "on approval of methodology of economic valuation of natural capital and ecosystem services".

**Step 5:** The first stage of development of the Republic of Armenia draft Law "On Ecosystem Services" (2015) included the revision of RA legislation and current key issues relating to ecosystem services.

Currently the concept of "ecosystem services" is not used in the legislation, but the description and other details on certain types of ecosystem services are presented in laws and other regulatory legal acts relating to biodiversity conservation.

The provisions relating to direct and indirect benefits of ecosystem services (the ES) provided or received in the result of conservation and rational use of biodiversity are missing in the existing legal acts. However, there are some provisions that describe certain types of services in question or their components.

**Step 6:** In 2015, within the framework of the Action Plan for Implementation of Tasks stipulated in the concept of creating innovative financial-economic mechanisms in the field of nature protection the draft Law "On Ecosystem Services" was elaborated by the Ministry of Nature Protection of the Republic of Armenia. The main objective of the law was to ensure the introduction of the ecosystem approach, conservation and effective management of ecosystems. Its main topic was to regulate relations in the sphere of provision of ecosystem services.

The issues relating to lack of understanding of the concept of ecosystem services, as well as different or unclear approaches of legal regulation of relations under question were brought up during the discussions with decision makers, middle and higher level government representatives including;

- Legal regulatory issues
- Cultural ecosystem services
- Increasing the tax burden and other issues.

Given the above discrepancies, as well as taking into account the following:

a) Armenia is not yet ready for the adoption of draft Law on Ecosystem Services. Introduction of concept of ecosystem services and payments for ecosystem services must be further clarified and covered with adjustments to conceptual approaches based on the results of more in-depth study of the characteristics of payments for ecosystem services and international experience.

b) On the other hand, the introduction of the system of ecosystem services under the current conditions of Armenia's economic development can create additional financial burden for the users of ecosystems. Thus, the elaboration of concept for introduction of ecosystem services to replace the law was sought appropriate for 2017 aiming to solve existing issues and step-by-step progress.

**Step 7:** Starting from 2011 the RA government has approved a number of strategic programs, which envisage activities related to the introduction of ideology of ecosystem services and payments for ecosystem services, including:

- Strategy in the field of conservation, protection, reproduction and use of biological diversity of the Republic of Armenia /protocol decision N 54 from December 10, 2015/
- Strategy of Armenia's specially protected natural areas, state program on their conservation and use /decision N 1059-A from September 25, 2014/
- Strategy and the National Action Plan to Combat Desertification in the Republic of Armenia /protocol decision N 23 from May 27, 2015/

Although the implementation of the above measures will contribute significantly to the introduction of ideology of ecosystem services and payments for ecosystem services, it is clear that the current key issues cannot be completely solved. The adoption of RA draft law "on ecological policy" will greatly contribute to the regulation of the existing issues. It also envisages primary or general legal regulation of introduction of the discussed ideology.

### **3. Projects and programs implemented by international organizations**

#### **3.1 UNEP/UNDP: “Economic valuation of ecosystem services in Armenia”**

##### **Overall objective**

The overall objective of the project was to incorporate Ecosystem Services (ES) approach into existing decision-making processes and plans linking poverty reduction and environmental sustainability through provision of necessary tools to the decision makers and other stakeholders. It aimed at mainstreaming the environment into national development processes through contributing to poverty reduction and improved well-being of poor and vulnerable groups.

The project was based on the Millennium Ecosystem Assessment approach that expands the focus beyond how development affects ecosystems to include how development depends on ecosystems. The project was implemented during 2011-2013.

It was funded under the umbrella of United Nations Environment Program (UNEP) and the United Nations Development Program (UNDP) joint global Poverty and Environment Initiative (PEI).

##### **Specific objectives**

- Elaboration of a compendium of user friendly materials and establishment of a communication platform between relevant stakeholders and partner institutions working in similar research in Armenia to enhance collaboration and synergies with transferring research results and environmental economic information to policymakers.
- Develop tools and guidance materials for sustained P-E mainstreaming into national, regional and local strategic planning, monitoring and budgeting processes, including the design and use of indicators.
- Develop a capacity building programme for key stakeholders based on pilot study results in mainstreaming ecosystem services within sectoral development plans and poverty reduction strategies.

## **Main activities**

1. Capacity building and coaching:
  - Establishment of an Expert Group and Capacity building of the Expert Group on ES concepts,
  - ES valuation methodologies,
  - Identification of direct and indirect drivers of ecosystem change,
  - Identification of ES risks and opportunities,
  - Identification of policy options that will most effectively sustain the capacity of ecosystem services to meet the needs of poor and in doing so strengthen the Sustainable Development Strategy of Armenia, and
  - Establishment of ES monitoring and feedback mechanisms with particular emphasis on methodologies for undertaking the valuation exercise to enhance the Expert Group's capacities to conduct detailed economic valuation.
2. The economic valuation case study
  - Implementation of a case study by the Expert Group in a selected area in Karaberd, North Armenia under the facilitation and technical assistance from an international consultant and UNEP/UNDP PEI Regional Team through multi-stakeholder consultative processes
  - Organization of stakeholder workshops at various stages
  - Introduction of provisioning and regulating services and informing policy/strategy/programme makers on the importance of maintaining/conserving/improving them

Mining sector study in the spot surrounding protected area is targeted.

## **Lessons learned**

- A lack of systematic cost-benefit analysis and alternative scenario development options during the development of infrastructure projects, business models and development plans at all levels is a major challenge.
- Results of Pilot project should be linked to relevant strategies at subnational and national levels and have the potential for replication.

- While the ES valuation method is not specifically designed to address poverty, as a consequence of the fact that many of Armenian rural poor live in and around valuable ecosystems, it does have the potential to make a positive impact on poverty in these communities.

## **Results**

1. Conducted pilot study in mining sector with introduction of new approaches and methodologies enabling assessment of economic activity's and related environmental degradation impact onto human development and poverty, as well as providing necessary methodology and approach for sectorial planners to elaborate and compare different development alternatives (for instance mining as it is or business as usual, sustainable mining, and no mining option – in our case agriculture vs mining). Karaberd gold mining site in Northern Armenia (Lori region) was selected for pilot assessment and valuation exercise. Application of the ESA was innovative and required a comprehensive understanding of how changes in human activities will result in changes in ecosystem services and the associated benefits to people. Several tools were piloted to proceed with comprehensive socio-economic and environmental analysis for site assessment and monetization of ecosystem services in the selected region to the extent possible. It could help to better understand in practice key questions related to possibilities and challenges for integration of environmental and social concerns into development assessment framework.
2. Increased awareness among related national authorities, NGOs and local communities and improved understanding of major policy holders on the linkages between ecosystem services, natural capital, economic development and human development as a whole. Through consultations and workshops a platform for sharing experience and getting a better understanding of political approaches towards the introduction of economic instruments in the country in general and accessing the actual impact into environment for developing based on pilot study result was ensured for more than 60 representatives from national government (major leading ministries such as Ministry of Economy, Ministry of Energy and Natural Resources, Ministry of nature protection, etc.), scientific institutions and NGOs (American University of Armenia, State Engineering University, State Economic University, Caucasus Research Resource Center, Economy and Values Research Center, Association for Sustainable Human

Development, Armenian Environmental Network), international organizations (World Bank, USAID, OSCE, GIZ, WWF, REC Caucasus, etc.).

3. Strong political support to the process was generated through extensive consultations with key government partners, namely the Ministry of Nature Protection and the Ministry of Energy and Natural Resources. In the result of increased recognition the concept of ecosystem services was introduced into the outline of new draft framework law on environmental protection. Further support on elaboration of chapter on Ecosystem services has been provided. It is worth to mention that this is the first time when the term “ecosystem services” and “ecosystem services valuation” have been used in RA legislation since independence in 1992.
4. In parallel to the project activities, the new "Concept on Establishing Innovative Economic and Fiscal Mechanisms in Environmental Sector” was elaborated by the Ministry of nature protection and approved by the Cabinet<sup>6</sup> in April, 2013 with a separate chapter on ecosystem services. As a follow up action, the RA Government adopted decision<sup>7</sup> “On approval of list of measures is necessary for implementation of the "Concept Concept on Establishing Innovative Economic and Fiscal Mechanisms in Environmental Sector".
5. Country has also benefited from an increased local knowledge and capacity by addressing and building expertise on ES valuation methodologies. Around 30 master and postgraduate level students and experts on environmental economics and EIA) get acquainted with pilot mining case valuation results and were trained on methodological approaches and steps for proper assessment and valuation of ecosystem services and impact into environment of other industrial operations (hydro energy, etc.).

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<sup>6</sup> Protocol decision # 16 on 25.04.2013 of the Government of RA. /www.gov.am/

<sup>7</sup> Protocol decision # 47 on 14.11.2013 of the Government of RA



### **3.2 REC Caucasus: “Support Development of Biodiversity Conservation Policies and Practices in Mountain Regions of the South Caucasus”**

#### **Overall objective**

Distinguished diversity and endemism together with specific evolutionary processes and unique historical floral and faunal development of the Caucasus Eco-region are of great significance in terms of environmental and biodiversity preservation aiming at halting the biodiversity loss due to unsustainable logging, overgrazing, poaching, infrastructure development, and pollution. In this context immediate actions and long-term Eco region-based conservation strategies can guarantee the protection of the forest and high mountain ecosystems of Caucasus Eco-region.

Regional Environmental Center for Caucasus initiated the implementation of a project under the title “Support Development of Biodiversity Conservation Policies and Practices in Mountain Regions of the South Caucasus” aiming to fulfill the abovementioned goal. The Project started on December 2011 and was accomplished in 2014. It aimed to enhance the capacity of local communities and authorities so that the biodiversity loss in forest ecosystems of mountain regions of South Caucasus could be addressed through the improvement of participatory biodiversity management.

The project was funded by the Norwegian Ministry of Foreign Affairs and focused on three mountain regions of the South Caucasus including The Racha region in Georgia, the Yeniyol and Shehriyar regions in Azerbaijan and the Koghb and Jujevan regions in Armenia.

#### **Specific objectives and planned activities**

The identified project objectives included:

1. Raising the awareness and knowledge of local communities, authorities and decision-makers on values of forest ecosystems services and biodiversity, as well as benefits of conservation and sustainable use at the national level,
2. Introducing practices of participatory biodiversity management planning at local level
3. Demonstrating practical application through implementation restoration of degraded forest ecosystems and respective enhancement of their values.

The fulfillment of the abovementioned objectives included the implementation of the following actions:

Objective 1: economic assessment of ecosystems services and biodiversity values; implementation of awareness raising activities, including social events, media-tours, publications; organization of regional conference/meetings for knowledge and experience sharing.

Objective 2: implementation of forest resource use assessment; development of the GIS database/maps of forest ecosystems, gap analysis of existing regional / local policy, strategies, programmes in light of reflection issues related to biodiversity conservation, sustainable use and community forest management and elaboration of recommendations to mainstream biodiversity and community forest management issues into policy/regulatory documents in surrounding areas of selected target communities of the three focus mountain regions; assessment capacities at local level to mainstream biodiversity conservation, sustainable use and community forest issues into local development policies and development of recommendations to enhance respective capacities; trainings for decision makers and local population on the value of ecosystem services, biodiversity conservation and sustainable use planning, on-job trainings targeting practical needs of communities; and development of the local plans for biodiversity conservation and sustainable use, community forest management plans for target communities based on participatory approach.

Objective 3: Design and implementation of demonstration projects of restoration of degraded forest ecosystems to enhance their values.

### **Implemented activities**

TEEB Study for South Caucasus comprising methodological approaches on economic valuation of ecosystem services (forest) were elaborated and presented during national and regional meetings

Reports on forest resource use case study for pilot communities in Armenia (Koghb-Jujevan) and recommendations on economic valuation of forest ecosystem services, sustainable use of forests and community forest management were elaborated.

In order to increase capacities of local communities local population, foresters, local self government bodies were trained to recognize values of biodiversity, participatory planning of biodiversity conservation, sustainable use of forests and community forest management and planning;

More than 400 villagers participated in forest planting activities. Villagers were equipped with on-job practical skills and knowledge on forest planting and sustainable use of forests

In December 2011 project work plan, as well as upcoming activities for 2011-2012 have been elaborated. Relevant TORs for National Team Leaders in three countries were worked out.

Regional Expert Meeting was organized in December 2011 aiming to present project goals and objectives and planned activities, elaborate common methodological approaches, discuss the relevance of the project activities to national and regional needs, discuss implementation modalities and activities for 2012 work plan.

Within the framework of the mentioned meeting the following key recommendations were given:

- Dates and timelines for activities must be clearly defined
- Special trainings for specialists in TEEB should be conducted,
- Take into consideration recommendations from relevant institutions already working in the sphere
- Focus on national priorities. TEEB is new to eco-region and methodology should be adjusted to local needs
- Include elaborated biodiversity conservation plans in the regional development plan
- Influence decision making and elaborate practical applications.
- Request to select international expert for the TEEB assessment

In all three countries steering committees were formed and the relevant ministries and agencies as well as NGO representatives officially appointed their members. Steering Committee meetings were organized and the feedbacks were received.

## **Results**

1. Created knowledge on economic values of ecosystem services and biodiversity;
2. Raised public awareness on importance of biodiversity conservation encouraging the local population to use bio-resources in sustainable manner;
3. Enhanced local capacity to recognize values of biodiversity and ecosystem services ensuring sustainable use of biodiversity;
4. Raised qualification of the local government and community in participatory biodiversity management planning so that beneficiaries are able to independently administer the process.

### **3.3 “Introduction of Payment for Ecosystem Services schemes in Upper Hrazdan Pilot River Basin of Armenia” UN/ECE**

#### **Overall objective**

Within the UNECE component of European Union Water Initiative (EUWI) National Policy Dialogue in Armenia on Integrated Water Resources Management (IWRM) a pilot project was implemented in 2011 with the aim of introduction and application of a system of payments for ecosystem services in the river basins of Armenia. For that purpose a pilot area has been selected, which includes the Upper Hrazdan river basin till Qakhsi settlement along with the right hand tributaries – the Rivers Marmarik and Tsakhkadzor. A scheme of payment for ecosystem services has been proposed along with the further steps on its introduction.

#### **Legal basis and methodology**

The study proposed PES scheme to be applied based on RA Government Resolution No 1110-N of August 14, 2003 "On Approving the Order for assessment of the impact on water resources due to economic activities". Economic damage caused to Tsakhkadzor River by BOD during the winter and summer months in case of wastewater discharge in a volley has been calculated. Using the methodology according to the decree of the Minister of Nature Protection of Armenia "On calculation of marginal allowable concentrations of wastewaters discharged into water resources" the value of the marginal allowable concentration of BOD5 for Tsaghkadzor River is calculated, which is equal to 7.24 mg/l. Thus, for any discharge above the maximum allowable value concentrations, a special higher rate of fee is proposed to

be introduced as PES. For introduction of PES rates the principle polluters-pay has been applied, which is fixed in the Armenian water Code, together with the principle that the polluter shall cover the financial costs required to provide for pollution prevention and elimination measures.

The methodology for Calculation of Damage Caused to Economy due to Pollution of Environment was approved in 1986 by the Minister of Finance of Armenian SSR and the Chairman of the State Committee for Environmental Protection; and Order for assessment of the impact on water resources due to economic activities, approved by Government of Armenia Resolution No 1110-N of August 14, 2003).

Economic damage caused to Tsakhkadzor River by BOD during the winter-summer months in case of wastewater discharge in a valley (for non-official use) is calculated as follows:

Volume of wastewater:  $Q=0.030 \text{ m}^3/\text{second} \times 86,400 \text{ second} \times 182 \text{ days} = 471.6 \text{ thousand } \text{m}^3$

BOD concentration in wastewater –  $240 \text{ g}/\text{m}^3$

Mass of BOD discharged into river – T, T –  $471600 \times 240 = 113.2 \text{ ton}$

According to methodology, in case of discharge of 113.2 tons of BOD a damage of 27.8 thousand USD is caused to water resource.

## **Results**

The study also proposed to adopt a Republic of Armenia law "On Payment for Ecosystem Services", which will define the subject of regulation of the law, main concepts, including the concepts of PES payments, types, rates, calculation and payment procedures, methods for calculating the actual volumes of PES. It further presents what kind of changes will be required in other laws of the Republic of Armenia in line with the adoption of the law "On Payments for Ecosystem Services".

### **3.4 "European neighborhood and partnership instrument east countries forest law enforcement and second governance program" ENPI FLEG**

#### **Overall objective**

The European Union (EU) funded “European Neighborhood and Partnership Instrument (ENPI) East Countries Forest Law Enforcement and Governance (FLEG) II Program” (the “Program”) was aiming to support strengthen forest governance through enhancing their forest policy, legislation and institutional arrangements, and implementing sustainable forest management models on a pilot basis.

The Program was carried out over a four-year period, with end on December 31, 2016. The Program was supported by the European Commission was led by the WB, working in partnership IUCN and WWF.

The Program in Armenia was mainly focused on the works supporting legal and institutional review and reforms, building human resource capacity to address FLEG issues, public awareness and public monitoring of the forests, strengthening sustainable forest management through activities with model forest units such as forest protected areas and activities on sustainable use of forest resources with involvement of adjacent communities as well as improving the FLEG planning and monitoring at the national, regional (local) and international levels.

#### **Specific Objectives**

The Program has three Development Objectives:

- 1) making progress in implementation of the 2005 St. Petersburg FLEG Ministerial Declaration in the participating countries and supporting the participating countries commit to an action plan to ensure its implementation and follow-up activities in a timely manner.
- 2) Review of forest sector policies and legal and administrative structures; improvement of knowledge and support for sustainable forest management and good forest governance (including the impact of related EU regulations).
- 3) Testing and demonstration of best practices for sustainable forest management and the feasibility of improved forest governance practices at the field-level on a pilot basis.

## **Results**

In the framework of the FLEG II Program, a national scoping study for the forestry sector was conducted in Armenia. The aim of this TEEB scoping study was to outline thematic and policy questions that a full TEEB for the forestry sector of Armenia would answer as well as to provide an implementation roadmap for undertaking the full TEEB study in the future.

In the frames of the study a comparative analysis of the current forest management practice (business as usual/BAU) and sustainable ecosystem management (SEM) was implemented along with a preliminary study on possibilities for valuation of ecosystem services. Respective proposals were developed on promotion of SEM in the current forest management system and formation of an economic system of ESs. Based on the analyses a road-map was developed with respective proposals on revision of legislation, policies and management system as well as economic valuation of ecosystem services in future.

Later on in the frames of the Program the country scoping studies were analyzed and consolidated in a regional study document and a regional workshop was implemented.

### **Other studies**

In the mining sector only Lydian International Ltd has conducted studies relating to ecosystem services within the framework of Amulsar gold mine project aiming to gain an understanding of people's use of and dependence on ecosystem services and assess the impact of the project on the mining area. Although the studies are generalized this is an important example by other private organizations to be replicated<sup>8</sup>.

In February, 2012 an ecosystem evaluation was conducted by Geoteam aiming to gain understanding on how the population of Gorayk, Gndevaz and Saravan communities use herbs, berries and other crops. In 2014, stakeholder interviews and focus group meetings were held with local villagers (Gorayk, Saravan and Gndevaz), Jermuk residents and seasonal herders from the village of Xndzoresk as part of the social impact assessment process. The participants were asked to prioritize services and identify areas supplying priority services.

In 2015, follow-up interviews and focus group meetings were held with same focus groups which focused on improved understanding of land use change for people's ability to access

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<sup>8</sup> Page 210 <http://www.geoteam.am/images/amulsar/SHMAG.pdf>

ecosystem services, the extent to which specific mitigation measures might be needed and people's willingness to accept them.

Project activities and locations of infrastructure were mapped against ecosystems or natural vegetation types supplying services, as part of a scoping exercise to identify those for which significant changes might be expected as a result of the construction, operation or closure of the Project. Ecosystems might be affected because they are within the Project's physical footprint, or because the Project will induce biophysical or social changes that might alter their use or the extent to which people are able to benefit from them.



#### 4. Conclusions

Despite the incompetency and gaps in the legislation of the Republic of Armenia in the field of ES and PES some positive and tangible tendency of incorporation of ES and PES ideology in the national programs and plans is registered. The government and the relevant agencies work towards better understanding and thus prioritizing ES and PES also through awareness raising among the population on the importance of conservation of biodiversity and ecosystem services.

In summary, the studies revealed the following

1. The concept of "ecosystem services" is not used in the current legislation of the Republic of Armenia as such; issues related to these services are not regulated sufficiently.
2. Natural resources or natural capital use types, or functions provided by them or with their help do not have a clear classification or only partly comply with ecosystem services classification methodology or methods currently used in international practice; ecosystem services do not directly relate to the primary objectives of regulation of existing laws.
3. The RA current legislation does not reflect sufficiently or visibly the importance of the economic or cost valuation of functions provided in the result of use or by the help of natural ecosystems, natural resources or natural capital.
4. Methodology or methodological grounds for overall economic assessment of natural resources or natural capital, economic or value assessment of ESs are not sufficiently or clearly defined by the RA legislation or other legal acts.

The replication of the experience and the lessons learned will create grounds for further incorporation of ES and PES ideology and their successful application.

- Development of a complex and comprehensive regulatory reform may be needed to incorporate ecosystem services concept in legal instruments necessary for valuation of ecosystem services.
- Development of a strategy for the legal reform.

- Elaboration of a framework law for the environment incorporating basic rules on ecosystem services.
- Raising awareness level in the field of ecosystem services is a priority but courses and workshops can be made more influential and informative, if combined with a practical scheme of delivery of ecosystem services leading to conclusion of a contract on the provision of ecosystem services with defined services, providers, benefitors and incentives, including PES schemes can be in different formats because different types of stakeholders can operate as buyers, sellers or intermediates in the frame of a PES scheme. Thus depending on the nature of the organizations or people concerned by the payment flow, the common classification on PES proposes three different schemes:
  - **Public-public:** In some places, public organizations are ES providers, while the services are bought by a public structure too.
  - **Public-private:** It is the most common type of PES, In this case, the Government pays on its own budget,
  - **Trading scheme (private-private):** This type of scheme is based on the willingness of private structures to create a beneficial relation in order to improve the effectiveness of their activities.

#### **Issues related to the introduction of ecosystem service payments**

Since many ES are not sold in the markets, the markets cannot give appropriate signals that could contribute to the efficient allocation and sustainable use of these services. Therefore, PES can serve as an effective economic mechanism aimed at maintaining the ES.

Although existing economic mechanisms have their drawbacks, it does not mean that the PES can replace these mechanisms. An optimum combination of various economic mechanisms should be achieved, which implies that PES should play an important role in the set of economic approaches. The existing environmental legislation can serve as a basis for PES introduction, but other than that it is necessary to develop an understanding of the value of ecosystems and their services.

The way that buyers and sellers can be configured in scheme development can also vary. For example:

- **One-to-one:** for example, where a company enters into a contract with a single major land-owner to provide enhanced carbon sequestration;
- **One-to-many:** for example, where a water utility makes arrangements via a broker to pay many farm businesses for water-sensitive management practices in a key catchment;
- **Many-to-one:** for example, where multiple buyers together invest in the development and maintenance of urban green space; and
- **Many-to-many:** for example, where government pays farmers for sympathetic land management practices on behalf of the wider public Appendix 1.

### **Involved participants**

1. Firstly, the passive attitude of environmental NGOs and civil society representatives in the discussion of draft law "on the ecosystem services" of the Republic of Armenia is worth mentioning. Absence of suggestions or comments to be submitted so far.
2. Summarizing the lessons learned, it can be stated that in Armenia the following is necessary for the ideology of ecosystem services,
  - Attempt searching solutions to legal regulation and other issues within the framework of concept of introduction of ecosystem services system,
  - Organization of appropriate training courses for civil servants and decision makers,
  - Identification of solutions to the raised legal and other challenges and /or/ possibilities through implementation of one or more demonstration projects, including:
  - The main issues in the implementation of pilot projects must be demonstrate on specific examples
  - Legal basis, as well as financial mechanisms and economic instruments necessary for the provision of ecosystem services and implementation of payments /if their implementation is possible within the framework of existing legislation and if not, what is the possible solution/
  - Types and valuation purposes of received and expected benefits from the ecosystem services
  - ESs with the potential to be included in the market economy
  - Economic evaluation methods of ESs /for example, use and non-use value assessment, shadow pricing, cost and other methods/

- ES providers /preservers, "winners" and "losers", beneficiaries who receive significant flows of benefits and who can provide funding through various mechanisms
- Existence of possible schemes and possibilities of their use
- ES economic assessment /value determination- determination of total value of the benefits derived from ecosystems, actions leading to changes in ecosystem health/, determination of net benefits derived from influences, analysis of the distribution of costs and benefits
- Determination of funding sources for ecosystem conservation purposes
- Application of international experience in the field of ESs through identification of hindering or disturbing circumstances and causes.

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#### Interviews by phone

1. Nune Harutyunyan, Director of REC Caucasus
2. Siranush Galstyan, Project Coordinator of WWF Armenia
3. Mary Galstyan, Deputy Manager, Mining Legislation Reform Initiative, AUA Center for Responsible Mining, American University of Armenia
4. Benik Zakaryan, Director of Geoinfo
5. Kristina Tereshchatova, UNDP/UNEP PEI Projects Assistant
6. Erik Grigoryan, International expert on ecosystem Service
7. Luiza Gevorgyan, local expert on ecosystem services

## 6. Appendices

### Appendix 1 PES scheme principle

Ecosystem service(s):	For example water quality, climate regulation, habitat for wildlife, landscape aesthetics
Pilot Territory	Sevan National Park, Dilijan National Park, Khosrov Forest State reserve etc.
Aim of PES	Specific target for implementation of PES
Pes Scheme	Private-Private, Private-Public, Public-Public, Public-Private
Buyer(s):	Private company, government agency, environmental NGO
Seller(s):	Farmers, private woodland owners, protected area Administrations
Intermediary (where applicable):	Environmental NGO, government agency
Key knowledge providers:	Regulator, research centers, Academic Institutions
Payments information;	Nature, level and timing of payments
Geographical scale:	Catchment, sub-catchment, neighborhood
Contractual period:	Timing for example 10 years, 15 years, in perpetuity
Agreed interventions:	Buffer strips, hedgerows, tree planting, waste storage, facilities to promote public access
Measures to minimize trade-offs:	Monitoring framework
Any 'packaging' of ecosystem services:	One to one, one to many, many to one, many to many
Type of payment approach:	Direct payment indirect payment, cash, in-kind etc.



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