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Specially protected nature areas of Armenia for conservation of forests and biodiversity

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Forest cover in Armenia

According to the clarified data obtained by GIZ in 2011 through remote sensing method the forest cover of the Republic of Armenia makes 332.333 ha or 11.17 % of the total territory of Armenia.

75% of the forests of Armenia is managed by "Hayantar" SNCO under the RA Ministry of Agriculture and 25% (forests in specially protected nature areas) – by the RA Ministry of Nature Protection.



Pressure on forests of Armenia

The main anthropogenic pressures on forests includes:

- * overuse of forests
- * irregular loggings
- * grazing
- * hay-making
- * land occupations and others



Consequences

In the result the valuable forest areas are being reduced, the changes in species composition and forest structure are registered in forests and the stands loss the capacities of natural regeneration with reduction of their productivity.

In the result of various natural and anthropogenic impacts the natural seed regeneration of the main valuable forest species such as oak and beech is not satisfactory. The stands dominated by *Pinus kochiana, Taxus baccata, Corylus colurna* and other rare tree species have reduced; at present they occur in the form of patches and sporadic trees. The steppe-meadow vegetation types are often replacing valuable forests.











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Loggings

Due to various socio-economic problems and high demand for wood the forest loggings still exceed the rates of natural regeneration of forests. The accessibility of wood, increasing prices of power-bearing substances and low solvency of socially insecure population contribute to that. Fuelwood is still the main source of fuel for the forest adjacent population. According to the surveys implemented by the SFMC SNCO in 2010, the demand for fuelwood made 709851cubic m, which exceeds more than 20 times the volume of legally harvested wood.

Over the recent years in the logged forest areas and adjacent territories the instability of ecosystems has been observed with increase of wind-fallen or snow-fallen areas, activation of soil erosion, landslides, avalanches, drying of springs, formation of dust clouds and other processes, which cause serious damage to communities and areas of agricultural significance.



Forest fires

The cases of forest fires have increased. In 2003 fires were registered on 3.92 ha of forest lands and in 2013 – on 91.575 ha. By the statistical data during 1998-2013 the highest rates of forest fires were observed in 2006, 2010 and 2011. In total, the forest lands damaged by fire during 1998-2013 made 2875.3 ha, out of which 2323.9 ha were the areas covered by forest. By official information, 198 cases of forest fire were registered during 2009-2013, totally on a territory of 1616.721 ha.

The main cause of the majority of forest fires is the burning of adjacent agricultural areas. The complex relief, poor condition of forest roads, absence of respective technical equipment for fire control and others cause obstacles for implementation of efficient fire control measures.









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Red Book of Armenia: plants and animals (2010)

The Red Book of Plants of Armenia:

452 species of vascular plants (11,89% of the flora of Armenia) and 40 species of fungi (1,05% of the biota of Armenia). The categories: Critically Endangered (CR) - 143 species, Endangered (EN) - 249 species and Vulnerable (VU) - 60 species.

The Red Book of Animals of Armenia:

155 species of vertebrates153 species of invertebrates.



Forest biodiversity of Armenia

Typical forest species:

90 species of vertebrates (6 amphibians, 25 reptiles, 42 birds, 17 mammals) - out of total 549 species)

2212 species of invertebrates (95 molluscs, 85 arachnids and 2032 insects) – out of total 17154 species

About 870 species of higher plants occur in forest communities (out of them 23 are endemics) – out of total 3800 species.



Importance of (forest) biodiversity for Armenia

Edible plants – about 200 species.

Wild fruits and berries – about 120 species (about 40% of dendroflora of Armenia).

Honey plants – about 350 species.

Edible mushrooms – 290 species.

Wood from forests is used as fuel-wood and construction wood.

Medicinal plants (about 10 percent of the flora of Armenia).

More than 2000 species of fodder plants.

Wild relatives of a large number of cultivated plants (cereals, fruity tree species and others); among fruits and berries about 30 species of wild relatives occur on the territory of Armenia.











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Main threats to biodiversity of Armenia

Loss of habitats conditioned by: open mining, constructions, agricultural practices, loggings, development of hydropower production sector, recreation and tourism

Overuse of biological resources

Impact of alien species

Climate change



Mining industry

According to the RA land balance in 2011 the lands of industrial, underground resource exploitation and other production purposes made 33.0 thousand ha, in 2012 – 33.6 thousand ha, in 2013 - 34.9 thousand ha and in 2014 - 36.4 thousand ha, which means that the area of used territories is gradually increasing especially at the expense of the lands under exploitation of mineral resources.

The main geoecological implications of the mining industry include disturbance of soil cover, expansion of tailings ponds and accumulation of waste, which cause fragmentation of populations and communities of plants and animals on thousands hectars, disturb migration routes of animals and threaten the existence of some rare species. Open mining in forest areas is of the greatest concern, with implementation of the works on deforestation, construction of tailings ponds, establishment of new infrastructures and others.









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Construction

Due to reduction of the total volume of construction works during 2010-2014 at present the risk of their impact on ecosystems is not high.

The most significant damage is caused by establishment of irregular roads in the areas, where the works on geological exploration are implemented and installation of respective technical means requires establishment of a dense road network.

At the same time usually the previous state of the landscape is not recovered after completion of the exploration works.



Loggings

Due to various socio-economic problems and high demand for wood the rate of forest loggings still exceeds the rates of natural regeneration of forests.

The accessibility of wood, increasing prices of power-bearing substances and low solvency of socially insecure population contribute to loggings.

Loggings result in intensive unfavorable changes of forest composition, such as reduction of tree density, replacement of economically high value oak and beech by low value hornbeam, elimination of species (including Red Book listed ones) in the lower forest zone. The areas of forests of seed origin have been reduced and instead the proportion of coppices and secondary tree and bush species has increased.



Hydropower production

In Armenia the construction of small hydropower plants (SHPP) is considered a leading direction in development of the renewable energy sector. As of January 1, 2014 the licenses for hydropower production were issued by the RA Committee on Regulation of Public Services to 150 SHPPs.

The analysis has revealed, that the planning and exploitation of SHPPs basically do not consider the needs of water fauna. The SHPPs constructed on the rivers, which serve as spawning grounds for fish, basically do not have appropriate fish passes and fish protection constructions and directly threaten the existence of mature individuals of fish species, which move up by rivers to get to their spawning grounds.

Besides, some SHPPs do not observe the rates of maximum allowable water use, which also results in ecosystem degradation.



Recreation and tourism

The impact of recreation and tourism on ecosystems is mainly connected with recreational trampling of plant cover.

Pollution of picnic sites with domestic waste also causes problems, especially if such sites are not adjusted for recreation with provision of respective services.

Collection of decorative flowers especially in recreational areas is risky for reduction of the resources of some plant species and for change of species composition of flora in these areas.



Overuse of biological resources

The main consequences of overuse of biological resources include increasing anthropogenic impact on natural landscapes, disturbance and degradation of forest, semidesert, meadow and steppe ecosystems, disturbance of terrestrial and water communities and populations, change of their species composition, disturbance of plant cover in pastures, reduction of productivity of fodder plants, reduction of economically valuable species as well as rare species and those under the threat of extinction.

The threats include also poaching and violation of hunting regulations.

The lack of a comprehensive information database on biodiversity in its turn excludes actual assessment of the impact of anthropogenic and natural factors on biodiversity, estimation of the caused damage and most importantly decision-making based on accurate information. The stock-taking, inventory and monitoring as the main necessary elements of effective bioresource management are still not implemented at appropriate level and scale.



Impact of alien species

The analysis of dissemination of invasive and expansive plant species of Armenia shows that in recent years some of them have considerably widened the limits of their distribution (probably connected with the change of climatic conditions and expansion of degraded habitats). The density of their populations has increased with their penetration and establishment in natural ecosystems. By the recent assessment s 77 alien invasive and locally expansive species have been listed, which at present are disseminating in degraded habitats and have already penetrated natural ecosystems with causing threats to wild biodiversity.

The studies on distribution of invasive species are not sufficient. The works on observation of distribution of the aggressive species such as Ambrosia artemisiifolia, Silybum marianum, Ailanthus altissima and Robinia pseudoacacia have started only in recent years.

Intensive dissemination of the mentioned species has been observed, however no measures on control are implemented. The legislation on introduction of alien species is not regulated.



Alien species



Robinia pseudoacacia, in southern Armenia



Ailanthus altissima, in southern Armenia









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Climate change

According to the recent studies (2010) the climate change will bring to expansion of arid ecosystems, reduction of the areas covered by forests and sub-alpine and alpine landscapes and increased vulnerability of forests.

Ecologically most unstable forests on southern slopes will become more xerophilous and arid open woodlands will shift vertically up. In the lower timberline it is expected to have worsened conditions for seed regeneration of forests along with penetration of semidesert species as well as shift of the lower timberline up.

In the lower forest zone of the central and southern Armenia an impact of the mountainous-steppe vegetation will be observed and the stands of coppiced origin will retreat. The expansion of the arid ecosystems with high surface flow will result in intensification of erosion and mudflow processes and flow of forest soils, worsening of the qualitative and quantitative characteristics of the surface flow and disturbance of the water balance. The activation of erosion processes due to aridization in the absence of preventive measures in its turn will result in the worsening of forest growth conditions and reduction of forest cover in the lower forest zone and the forests on southern slopes in the central and southern Armenia.



The impact of biodiversity changes on ecosystem services and their socio-economic and cultural consequences

Ecosystems are the basis for human well-being and economic development of the country. They ensure food, clean air and water and other needs. The maintenance and restoration of ESs should become an important component of economic activity, which requires changes of the norms and rules of economic behavior and political decision-making.

At the same time even partial recovery of ecosystems and their services is usually much more expensive than implementation of the measures aimed at their protection.

According to international classification the services provided by ecosystems are classified as provisioning, regulating, cultural and supporting services.









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Reports and strategic documents adopted recently in the field of (forest) biodiversity and PAs in Armenia

- 1. Fifth National Report of the RA to the UN CBD (2014)
- 2. Strategy and Action Plan of the RA on Conservation, Protection, Reproduction and Use of Biological Diversity (Dec 2015)
- 3. Strategy and State Program of Conservation and use of SPNAs of the RA (Sept 2014)









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The goal and directions of the Strategy of the Republic of Armenia on Biodiversity Conservation and Use

The main goal of the Strategy of the RA on Biodiversity Conservation, Use and Reproduction is to prevent the loss of biodiversity and degradation of natural habitats through conservation and sustainable use of biodiversity and ecosystems to ensure their diversity and human well-being. Based on this goal the following directions of the strategy of the RA on biodiversity conservation and use have been formulated:

- 1. Improvement of legislative and institutional frameworks related to biodiversity.
- 2. Enhancement of biodiversity and ecosystem conservation and restoration of degraded habitats.
- 3. Reduction of the direct pressures on biodiversity and promotion of sustainable use.
- 4. Elimination of the main causes of biodiversity loss through regulation of intersectoral relations and public awareness raising.
- 5. Enhancement of scientific research, knowledge management and capacity building in the field of biodiversity conservation and sustainable use of natural resources.



Strategic Plan 2011-2020 of the Convention on Biological Diversity

The Strategic Plan 2011-2020 is aimed at taking effective and urgent actions to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication. Biodiversity provides for food security and human health, it ensures clean air and water as well as economic development of countries.

Five main goals of the strategic plan:

- 1. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- 2. Reduce the direct pressures on biodiversity and promote sustainable use
- 3. Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- 4. Enhance the benefits to all from biodiversity and ecosystem services
- 5. Enhance biodiversity conservation and use through participatory planning, knowledge management and capacity building

These strategic goals are addressed in detail in twenty Aichi Targets (Nagoya 2010)



Specially protected nature areas of Armenia (in-situ conservation)

3 State Reserves (1.19% of the total territory of Armenia)

4 National Parks (7.96% of the total territory of Armenia)

27 State Sanctuaries (3.95% of the total territory of Armenia)

232 Natural Monuments

1 Protected Landscape (6010 ha, community managed area)

The PA's coverage in Armenia makes 393065 ha or 13.2% of the total territory of Armenia.

PAs

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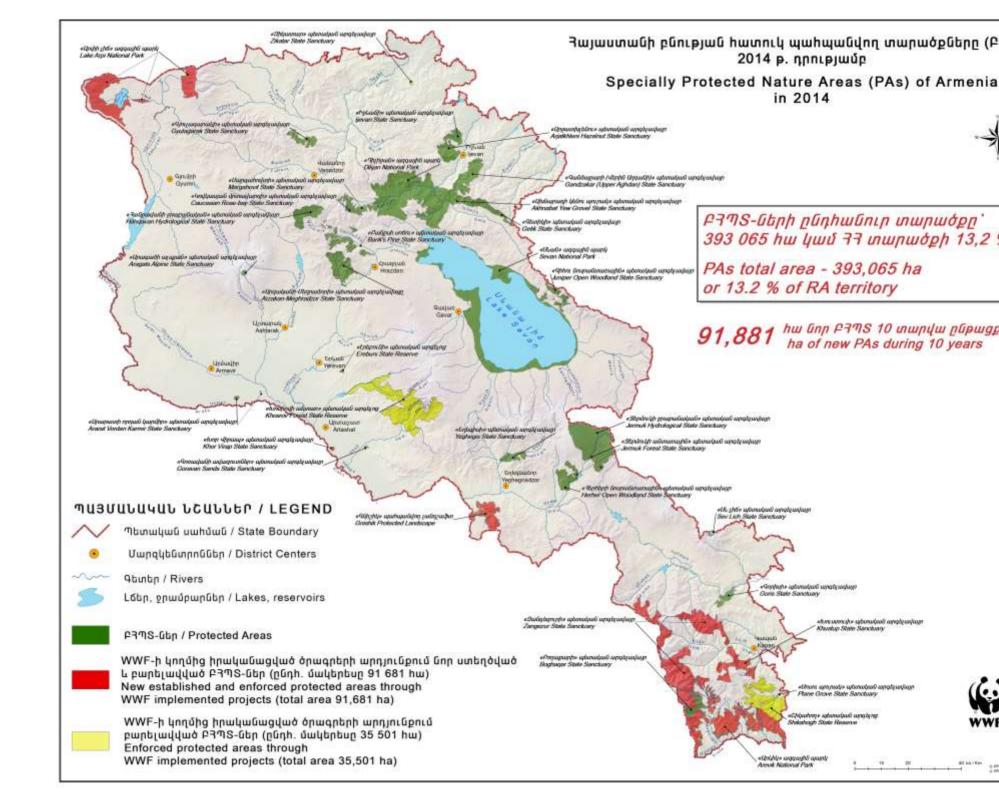
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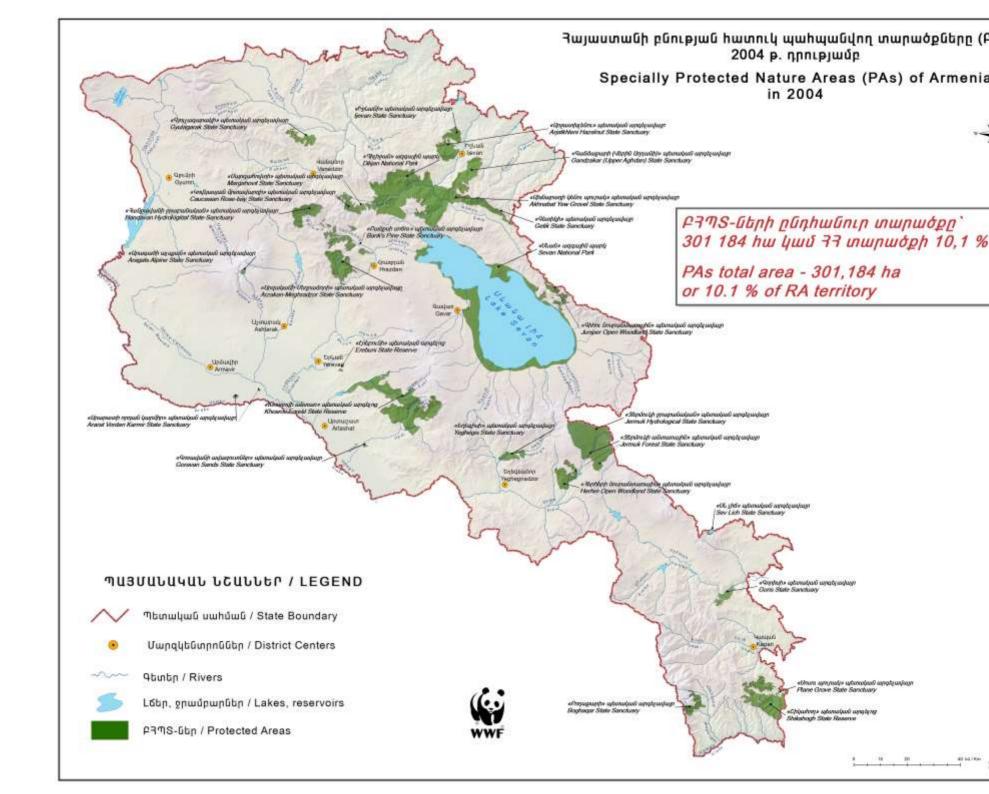
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Red Book listed species in the PAs of Armenia

166 (out of 452 species of plants) or 36.7% of Red Book listed species

145 (out of 155 species of invertebrates) or 93.5% of Red Book listed species

96 (out of 153 vertebrates) or 62.7% of Red Book listed species

Insufficient studies and lack of data especially in forest sanctuaries.









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Forests in SPNAs of Armenia

Forests in Armenia are protected in a number of SPNAs, including Khosrov Forest and Shikahogh State Reserves, Dilijan, Sevan and Arevik National Parks and state sanctuaries, where forest landscapes occupy 110 269.2 ha, which makes 28.5 % of the total territory of SPNAs.



Biodiversity considerations during forest management planning and in forest sanctuaries

No proper consideration so far, poor biodiversity sections in the MPs

14 sanctuaries in the structure of FEs of "Hayantar" SNCO mainly without clear boundaries, information on biodiversity, management plans









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Optimization of 3 forest sanctuaries in Tavush region of Armenia

3 existing sanctuaries in the structure of Ijevan and Sevqar FEs of "Hayantar" SNCO:

- *Ijevan Sanctuary
- *Hazel-Nut Sanctuary
- *Gandzaqar-Upper Aghdan Sanctuary

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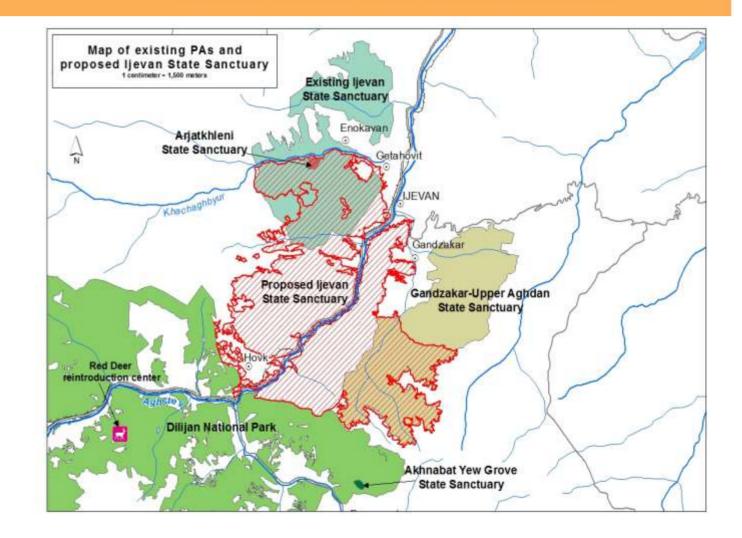






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Proposed
boundaries
of the
optimized
Ijevan
sanctuary in
Tavush
region of
Armenia





Steps towards improvement of Ijevan sanctuary

- * Clarification of boundaries and mapping
- * Field inventories, socio-economic studies, surveys on tourism and recreational opportunities of the area
- * Management planning (includes consultations with engaged 5 communities)
- * Development of draft documentation on governmental approval of the map, MP, charter of the sanctuary and others
- * Technical capacity building for the Department on PAs Management in "Hayantar" SNCO and optimized Ijevan Sanctuary
- * Human capacity building (training on PAs, biodiversity, monitoring)









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The concept of High Conservation Value Forests as a tool to improve forest biodiversity conservation in Armenia

The concept of HCVFs (Principle 9 of FSC forest certification – Proforest, 2003)

6 generic categories of HCVFs

Categories 1 and 3 deals with biodiversity, valuable ecosystems and PAs.







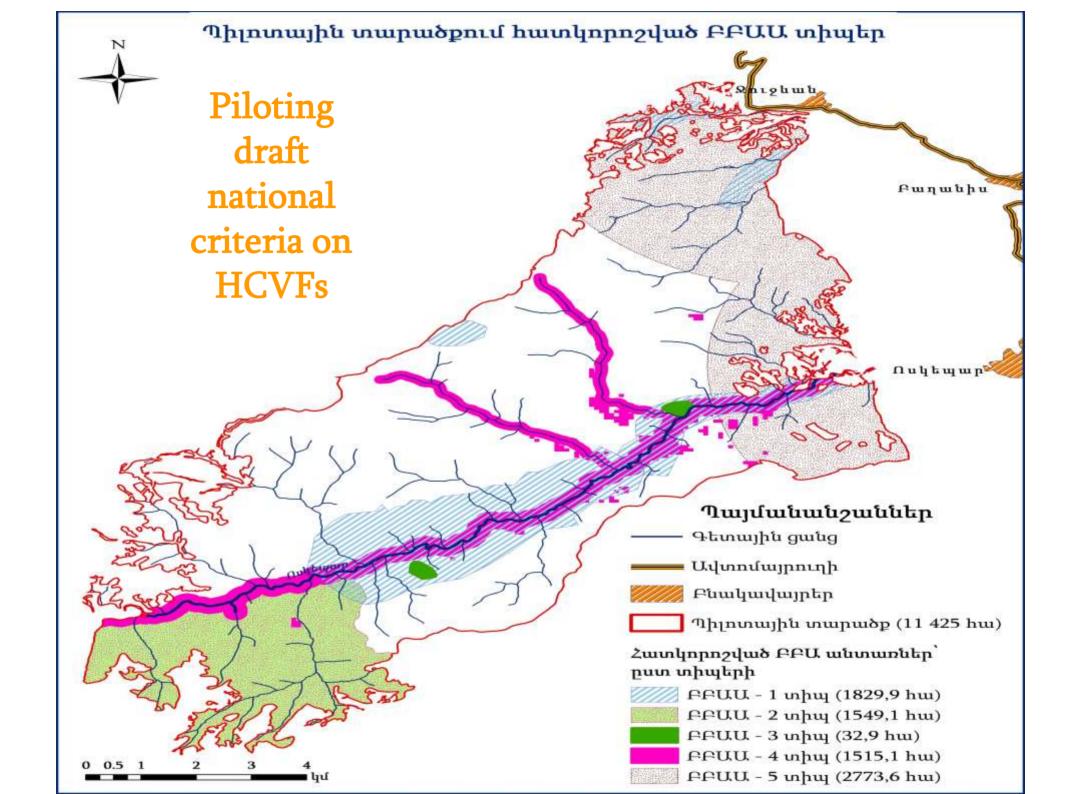


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Promotion of the concept on HCVFs in Armenia

- 1. Analysis of national policy, strategy, legislation and management frameworks in terms of reflection of the concept of forests with HCVs;
- 2. Development of national guidelines on identification and management of forests with HCVs (based on the six international categories for HCVs);
- 3. Consultations (individual meetings with stakeholder ministries/organizations and a national level workshop);
- 4. Testing draft national criteria on identification of forests with HCVs in a selected forest unit; and
- 5. Capacity building in forests with HCVs through publication and training for respective stakeholders.

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School forestry in Syunik Region of Armenia

- * Schools of Tatev, Svarants, Tandzatap and Halidzor communities
- *Up to 30 schoolchildren and teachers
- *Syunik FE of «Hayantar» SNCO
- *Educational seminars, field work and trips
- *Forest cleaning event
- *School contests
- *Communication products and donor visibility

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Thanks for attention!