

TOWARDS A SHARED ENVIRONMENTAL INFORMATION SYSTEM
(SEIS) IN THE EUROPEAN NEIGHBOURHOOD

The ENPI-SEIS project

Building a SEIS for LAKE SEVAN, Armenia

Water resources indicators



What SEIS is



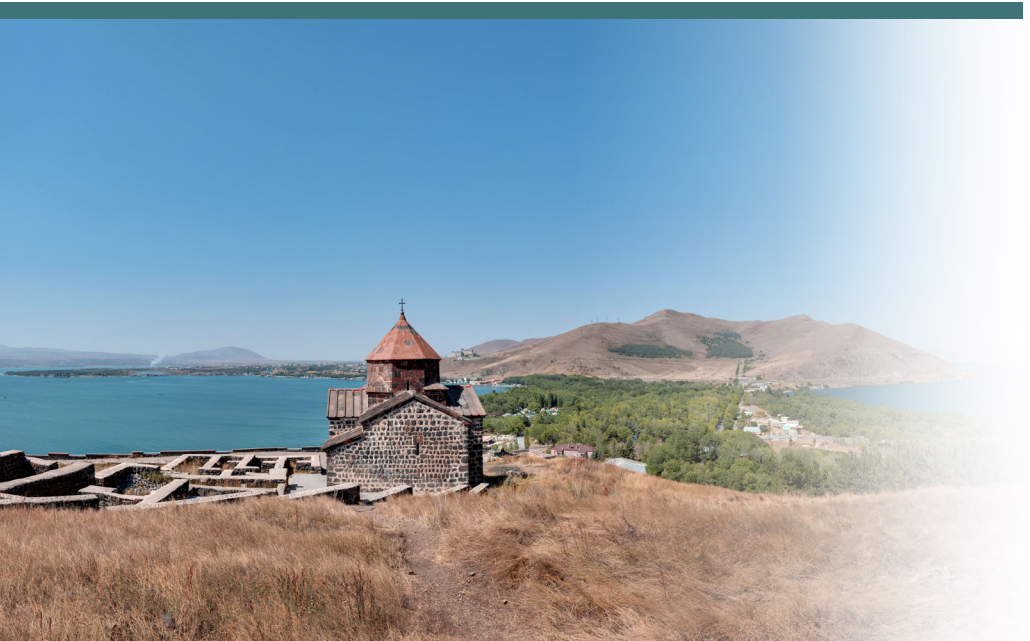
Since 2010, the European Union has been engaging the countries of the Eastern Partnership – Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine – in regional cooperation with the aim of improving national capacities for managing and sharing environmental data and information. This cooperation was funded by the European Commission and implemented by the European Environmental Agency under the framework of the project “Towards a Shared Environmental Information System in the European Neighbourhood” (the ENPI-SEIS project).

The overarching objective for building a Shared Environmental Information System (SEIS) is to establish a regular process for environmental reporting and assessments by sharing and using data and information

to design and implement environmental policy. Implementing SEIS helps target actions in three main areas:

- **Cooperation** – building partnerships between the providers and users of data and information
- **Common content** – generating policy-relevant and comparable information
- **Common infrastructure** – using shared and modern web-based information and communication technologies

As part of ENPI-SEIS, a pilot project was initiated in 2014 to develop a sustainable and regular data-sharing mechanism among the main data producers and data holders for the Lake Sevan basin in Armenia.



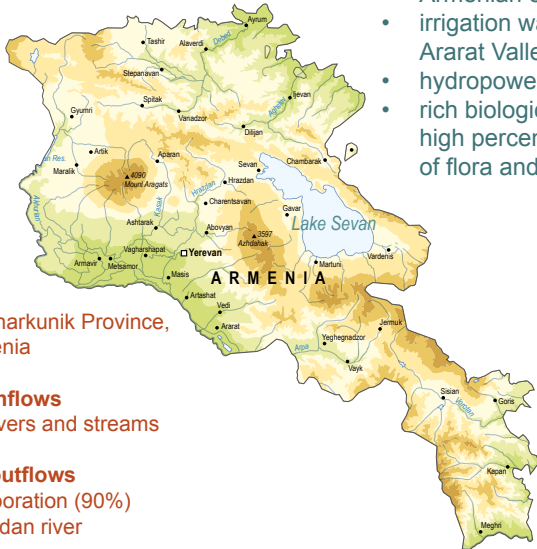
Lake Sevan and importance of a SEIS



As the largest lake in the southern Caucasus and one of the great freshwater high mountain lakes of Eurasia, Lake Sevan is an Armenian natural and cultural treasure. Among its many qualities,

Lake Sevan provides:

- the most important source of fresh water and freshwater fish in the South Caucasus region
- an essential contribution to the Armenian economy
- irrigation water for the croplands of the Ararat Valley
- hydropower, recreation and tourism
- rich biological diversity and a relatively high percentage of endemic species of flora and fauna



Location

- Gegharkunik Province, Armenia

Primary inflows

- 28 rivers and streams

Primary outflows

- Evaporation (90%)
- Hrazdan river

Max length

- 78 km (2005)

Max width

- 56 km (2005)

Surface area

- 1 245 km² (2014)
- 1 236 km² (2002)
- 1 416 km² (1933)

Water volume

- 37,7 km³ (2014)
- 58,5 km³ (1933)

The water volume and surface area of lake Sevan have varied significantly over the past century. In response to historical decreases in the lake level, Armenia took environmental protection and engineering measures to ensure the maintenance of an optimal water regime.

Lake Sevan ecosystem still faces such pressures as:

- water withdrawals from the lake for hydropower and irrigation
- development of small hydropower plants on the basin rivers
- agriculture and cattle-breeding
- untreated domestic wastewater discharges into the lake
- degradation of flooded forests and nutrient load into the lake

- mining in the basin
- solid waste from households and enterprises

Now, climate change is adding more stress: the reduced flows of the numerous rivers and streams that drain to the lake and the increasing air temperatures are likely to cause the water quality of the lake to deteriorate.

Adequate and timely environmental information on the state of Lake Sevan helps managers observe the changes and trends that guide proper management and decision-making.

An established Lake Sevan SEIS portal is an efficient tool for the collection, presentation, and dissemination of data on environmental indicators in the basin.

Water indicators for Lake Sevan

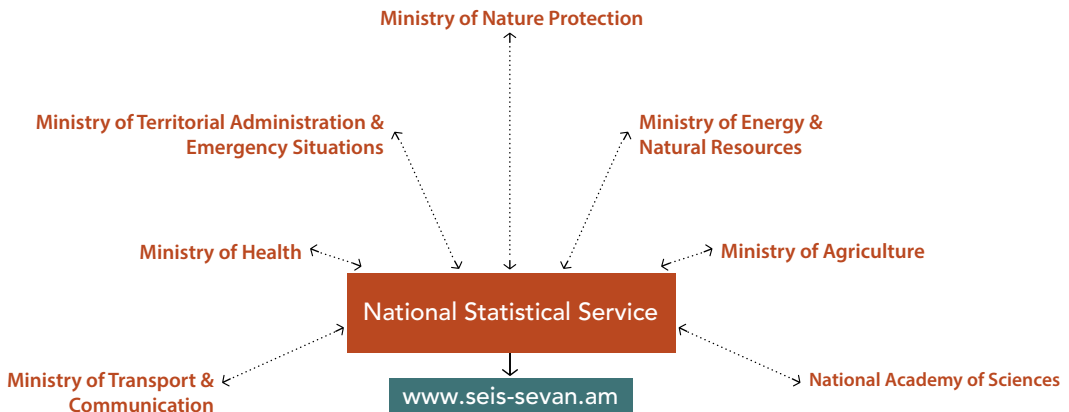


- Hydrometeorology and renewable freshwater resources
 - Temperature
 - Precipitation
 - Evaporation
- Renewable water resources
 - Inflow and outflow of surface waters and groundwater
 - Water balance of Lake Sevan
- Freshwater abstraction
 - The same by water abstraction purposes, marzes (administrative units), CTEA, water basin management areas
- Water use
 - The same by water use purposes, by marzes (administrative units), CTEA, water basin management areas
- Domestic water use per capita
- Centralized water supply
- Access of population to centralized water supply
- Water losses
 - The same by water use sectors, by marzes (administrative units), CTEA, water basin management areas
- Reuse and recycling of water
- Drinking water quality
- BOD and concentration of ammonium nitrogen in rivers
- Concentration of nutrients in fresh waters
- Concentration of pollutants in lake water and in bottom sediments
- Population connected to wastewater treatment
- Wastewater treatment facilities
- Untreated wastewater
 - The same by wastewater category, marzes (administrative units), CTEA, water basin management areas

Cooperation in Armenia

Various governmental organizations collect and hold environmental information, contribute to the content of the portal and provide information on selected indicators by reporting to the National Statistical Service of Armenia. The Statistical Service establishes the website

and the portal by gathering, updating and displaying data on environmental indicators for Lake Sevan. The Ministry of Nature Protection provides relevant information and analytical support. Data holders are responsible for quality control of the provided data.



Infrastructure



The Lake Sevan portal provides a common infrastructure that enables the main data generating agencies to share and update environmental information related to Lake Sevan. A separate access level allows the general public to review and use the same information. Eventually the portal will provide:

- definitions of 16 reported water indicators
- visual, textual and statistical material
- links to reporting organizations
- links to national legislation and international agreements

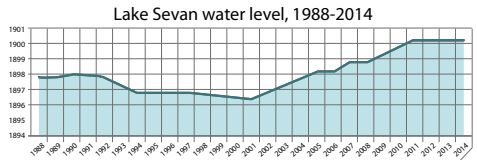
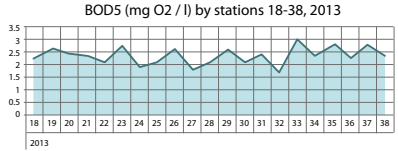
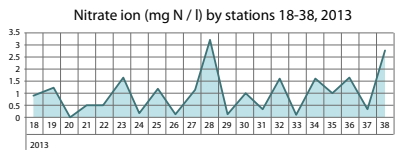
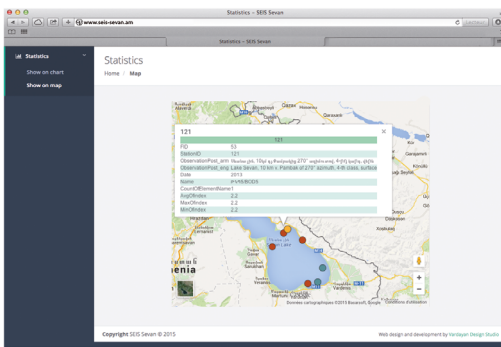
Users of the Lake Sevan SEIS portal may select the following information from the drop-down lists: indicator, sub-indicator, water object type (river, lake, reservoirs),

The Lake Sevan portal is available at : www.seis-sevan.am in Armenian and English

basin management area, year, month and monitoring station/observation point with location. The complete final dataset is available for download so that various stakeholders can use it for any further processing.

The data and related visuals meet international standards for geo-coding and classification. Data visualization options include tables, graphs, charts and maps. Maps will be possible to download in the .kml format using Google Earth support tools.

Regular updating of data will be done by respective reporting organizations depending on the monitoring and sampling timeframes prescribed by the relevant legal acts, and will be supervised by the entity responsible for the maintenance of the portal.



Looking to the future



The SEIS Lake Sevan pilot project is synchronized with the Armenian national plans on environmental data optimization concerning Lake Sevan – a dedicated Resolution was adopted by the Armenian Government in 2014. The expansion of the Lake Sevan SEIS may eventually include the development of

data and indicators in such areas as agriculture, biodiversity, energy, transport, emergency response, mining, waste and climate change.

The Lake Sevan SEIS is intended to contribute to the development of SEIS at the national level.



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More information on the ENPI-SEIS project is available at:
<http://enpi-seis.pbe.eea.europa.eu>