PESC-RESPIN JOINT MEETING

Suitability Map for Solar Power Plant Installation Using Geographic Information Systems: The Case of Samsun Province

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Introduction

As global energy demands increase, countries like Türkiye rely heavily on fossil fuels, which contribute to environmental issues such as carbon emissions and climate change. In 2021, fossil fuels accounted for the majority of Türkiye's electricity generation, emphasizing the need for renewable energy sources.
Türkiye's geographical position makes it highly suitable for renewable energy development, particularly solar energy, due to its location between 36° and 42° North latitudes. Solar energy is an abundant, sustainable, and environmentally friendly resource. However, determining optimal locations for solar power plant installations requires careful consideration of various criteria.
This study focuses on identifying ideal locations for solar energy systems in Samsun province using Geographic Information Systems (GIS) and the Analytical Hierarchy Process (AHP). Factors such as solar radiation, sunshine duration, slope, aspect, land use, proximity to power transmission lines and roads, and additional meteorological data (cloud cover and snow cover days) were analyzed. The results will guide future renewable energy projects by providing a suitability map for solar energy installations in Samsun.

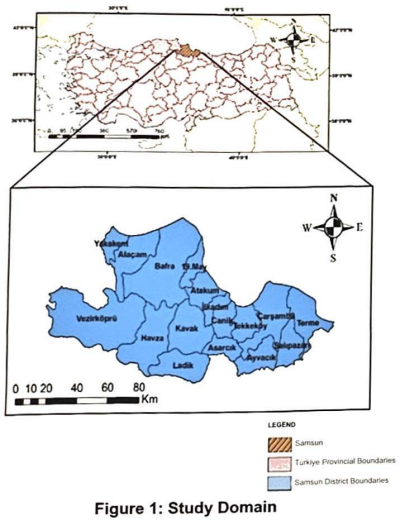

Figure 1: Study Domain

STUDY DOMAIN

The research focuses on Samsun province, located in the Central Black Sea Region of Türkiye, covering 9,579 km². The province's topography consists of mountains in the south, highlands, and coastal plains, including the Bafra and Canik plains formed by Kızılırmak and Yeşilırmak rivers. The climate varies due to topography; the coastal areas experience mild winters and warm summers, while the interior regions have colder winters with snowfall.

DATA AND VARIABLES

The study evaluates solar power plant site suitability using Geographic Information Systems (GIS) and various criteria obtained from meteorological stations and spatial datasets

Table 1: Data and Variables Used

Topographic and Spatial Data	Meteorological Data
Digital Elevation Model (DEM)	Global solar radiation
Aspect and slope maps	Sunshine duration
Land use data	Snow-covered days
Road networks	Cloud cover days
Power transmission lines and transformer stations	

All data were processed and visualized using ArcGIS for Desktop. Spatial interpolation techniques were applied to meteorological data to estimate values across Samsun. Weighted Overlay Analysis (WOA) was used to combine multiple factors into a final suitability map.

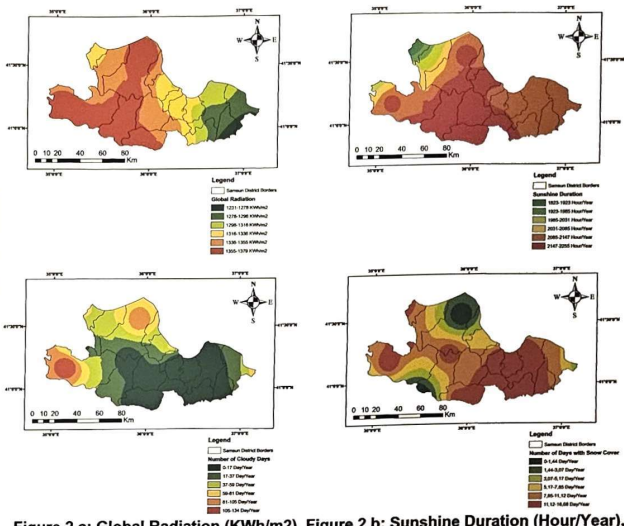

Figure 2.a: Global Radiation (KWh/m2), Figure 2.b: Sunshine Duration (Hour/Year), Figure 2.c: Number of Cloudy Days (Day/Year), Figure 2.d Number of Days With Snow Cover (Day/Year)

ANALYTICAL HIERARCHY PROCESS (AHP)

Analytical Hierarchy Process (AHP) determined the weight of each criterion. Reclassification of data was conducted to scale variables on a 1–6 scale (1 = least suitable, 6 = most suitable). This methodology helped create a solar power plant suitability map, highlighting optimal locations in Samsun for future renewable energy investments.

Figure 3: Steps in the analytic hierarchy process (AHP) algorithm.

Table 2: Calculation of Criteria Weights Using the Pairwise Comparison Matrix.

Criteria	Global Rad.	Suns. Dur.	Aspect	Slope	Cloudy Days	Snow Cover	Distance to Energy Lines	Distance to Roads	Land Use	Dist. to Trans. Cent.	Criteria Weights
Global Rad.	1	1.125	1.3	3	1.5	1.8	4.5	9	2.25	4.5	0.191
Suns. Dur.	0.889	1	1.3	2.67	1.332	1.6	4	8	2	4	0.172
Aspect	0.778	0.75	1	2.33	1.167	1.4	3.5	7	1.75	3.5	0.146
Slope	0.333	0.375	0.4	1	0.5	0.6	1.5	3	0.75	1.5	0.063
Cloudy Days	0.667	0.75	0.9	2	1	1.2	3	6	1.5	3	0.127
Snow Cover	0.556	0.625	0.7	1.67	0.832	1	2.5	5	1.25	2.5	0.106
Distance to Energy Lines	0.221	0.25	0.3	0.67	0.332	0.4	1	2	0.5	1	0.042
Distance to Roads	0.110	0.125	0.1	0.33	0.167	0.4	0.5	1	0.25	1	0.021
Land Use	0.443	0.5	0.6	1.33	0.667	0.8	2	4	1	2	0.085
Dist. to Trans. Cent.	0.221	0.25	0.3	0.67	0.333	0.4	1	2	0.5	1	0.042

RESULTS

The solar power plant suitability map for Samsun province was generated using GIS-based Weighted Overlay Analysis (WOA), incorporating Analytical Hierarchy Process (AHP) weightings. The results indicate:

- Most Suitable Areas: The districts of Kavak, Ladik, and Tekkeköy have the highest suitability for solar power plant installations due to favorable global solar radiation, sunshine duration, and lower cloud cover.
- Least Suitable Areas: Coastal regions were found less suitable or entirely unsuitable due to high land use for agriculture and residential purposes, as well as lower solar radiation levels compared to southern inland areas.
- Overall Suitability: The availability of suitable land for solar energy installations is limited due to Samsun's mountainous terrain and dense forest cover, restricting the number of viable locations.

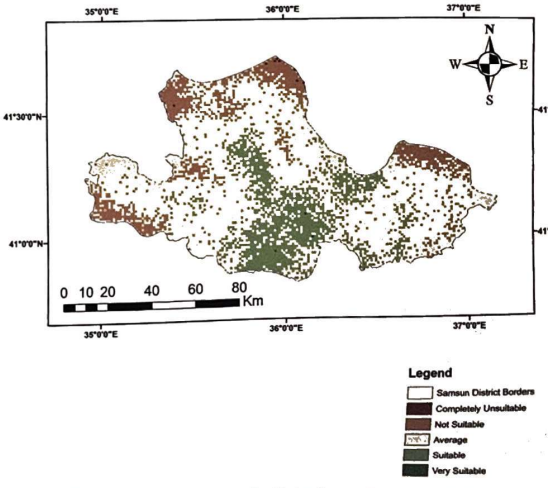

Figure 4: Suitability Map for Solar Power Plant Installation

CONCLUSION

Geographical Constraints: Samsun's topographic structure limits large-scale solar energy development, with most suitable land concentrated in a few inland districts.
Land Use Considerations: Coastal plains are unsuitable due to their dominant agricultural and residential land use.
Data Availability Issues: The lack of long-term solar radiation measurements in Samsun poses a challenge for precise solar energy assessments. Future investments should prioritize expanding meteorological data collection networks.
To advance renewable energy initiatives, further studies should integrate additional meteorological variables and land use planning strategies, ensuring optimal site selection for future solar power investments in Samsun and beyond.

PESC-RESPIN JOINT MEETING

Türkiye's Climate Projections

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Abstract

Climate change impacts require high-resolution projections to assess vulnerabilities and inform adaptation strategies. While Global Climate Models (GCMs) provide essential large-scale climate insights, their coarse resolution limits regional applicability. This study employs the Weather Research and Forecasting (WRF) model to dynamically downscale GCM outputs for Türkiye, enhancing spatial precision at resolutions of 27 km, 9 km, and 3 km. Building on previous national studies, six GCMs—including MPI-ESM1-2-HR and HadGEM2-ES—were selected based on historical accuracy. These high-resolution projections offer critical data for risk assessments and adaptation planning, supporting Türkiye's climate resilience and sustainable development efforts.

Study Domain

Variables

- Temperature
- Precipitation
- Atmospheric Pressure
- Horizontal Wind Components
- Specific Humidity
- Incoming Solar Radiation
- Direct Solar Irradiance
- Longwave Radiation
- Surface Runoff
- Subsurface Runoff
- Snow Water Equivalent
- Actual Evapotranspiration
- Soil Moisture & Temperature
- Sea Surface Temperature
- Albedo
- Cloud Fraction
- Geopotential Height
- Cloud Water Mixing Ratio
- Rainwater Mixing Ratio
- Snow Depth

Road Ahead

The high-resolution climate projections generated in this study will be a key resource for conducting vulnerability and risk assessments across multiple sectors, aligning with Türkiye's adaptation priorities. These assessments will integrate climate model outputs with socioeconomic and environmental data to evaluate exposure, sensitivity, and adaptive capacity at regional and sectoral levels. Using projected changes in temperature, precipitation, and extreme weather indices, the study will assess risks to water resources, agriculture, biodiversity, public health, and infrastructure. These assessments will support evidence-based decision-making, helping policymakers prioritize adaptation actions and develop targeted strategies to mitigate climate risks at national and local levels.

Global Climate Models (GCM) Selection → Weather Research and Forecast (WRF) Pyhsics Options → Downscaling ERA-5 Reanalysis Data → Projection Analysis → Vulnerability and Risk Assessments

GCM SELECTION

A total of 31 CMIP6 GCMs were evaluated based on historical performance and their ability to simulate key climate variables. The selection process involved comparing temperature and precipitation data against ERA5 reference datasets and assessing model performance using extreme climate indices.

Based on this evaluation, six GCMs—HadGEM3-GC31, EC-Earth3-Veg, MRI-ESM2-0, MPI-ESM1-2-HR, NorESM2-MM, and CMCC-ESM2—were chosen for their strong regional performance. While some models excelled in all categories, others performed better in specific variables, ensuring a balanced and diverse selection.

This rigorous selection process ensures reliable inputs for dynamic downscaling, forming the foundation for Türkiye's high-resolution climate projections.

Global Climate Models	Scenarios	
CMCC-ESM2 (Italy)	SSP2-4.5	SSP5-8.5
EC-Earth3-Veg (Europe)	SSP2-4.5	SSP5-8.5
MPI-ESM1-2-HR (Germany)	SSP2-4.5	SSP5-8.5
MRI-ESM2-0 (Japan)	SSP2-4.5	SSP5-8.5
NorESM2-MM (Norway)	SSP2-4.5	SSP5-8.5
HadGEM3 (UK)	SSP2-4.5	SSP5-8.5

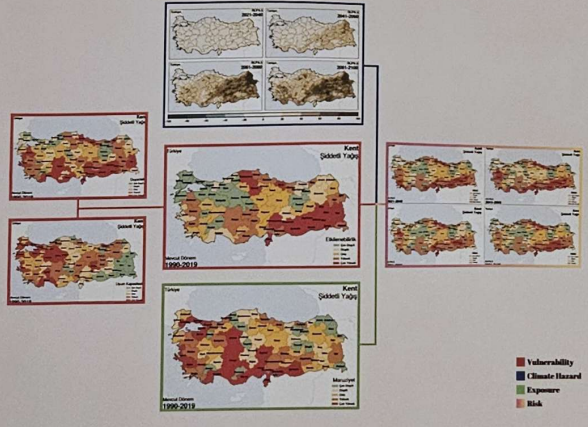
MODEL OUTPUTS

The study will generate high-resolution projections for key atmospheric and surface climate variables, essential for impact assessments across multiple sectors. To improve reliability, model outputs for the reference period will undergo bias correction using ERA5 reanalysis data and observational measurements from the Turkish State Meteorological Services.

This process will enhance accuracy by aligning model projections with observed climate conditions, ensuring robust future projections for Türkiye. In addition to primary climate variables, the study will analyze a range of climate indices to assess extreme weather events and long-term climate trends. These indices will provide valuable insights into shifts in climate extremes, supporting adaptation strategies in agriculture, water management, and disaster preparedness.

CLIMATE INDECES

- SPI 3, 6, 12, and 24
- Contribution of extremely rainy days (R99pTOT)
- SPEI 3, 6, 12, and 24
- Simple daily intensity index (SDII)
- Total annual precipitation from daily precipitation
- Days with frost (FD) (Daily Minimum below 0°C)
- Heat Wave Frequency (HWF) (>90th percentile)
- Icing days (ID) (Daily Max 0°C)
- Cold Wave Frequency (CWF) (>90th percentile)
- Summer days (SU) (>25°C)
- Wildfires Index (FWI)
- Tropical nights (TR)
- Extreme Wind Index (W98)
- Hot Period Duration Index (WSDI)
- Consecutive Dry Days (CDD) (<1 mm daily)
- Cold period duration index (CSDI)
- Consecutive Wet Days (CWD) (≥1 mm daily)
- Hottest daily maximum temperature (TXx)
- Number of days with heavy rainfall (R10mm)
- Coldest daily minimum temperature (TNn)
- Total annual precipitation on rainy days (R99p)
- Hottest daily minimum temperature (TNx)
- Maximum rainfall for 1 day (Rx1day)
- Average daily maximum temperature (TXm)
- Total rainfall on wet days per year (PRCPTOT)
- Average daily minimum temperature (TNm)
- Total rainfall from very rainy days (R95pTOT)



Moving forward, stakeholder collaboration will play a critical role in translating climate projections into actionable adaptation measures. To achieve this, working groups will be established, bringing together local authorities, private sector representatives, implementing bodies, academia, and local communities. These groups will assess regional vulnerabilities and determine the most effective adaptation actions to mitigate climate risks. Insights gained from these working groups will be incorporated into Türkiye's Climate Change Adaptation Strategy and Action Plan, ensuring that adaptation efforts are inclusive, science-based, and aligned with both local needs and national priorities. Strengthening these participatory mechanisms will facilitate a more resilient and proactive approach to climate adaptation, enabling communities to prepare for and respond effectively to future climate challenges.

THE IMPACT OF HYDROPOWER AND IRRIGATION DEVELOPMENT ON BIODIVERSITY IN CENTRAL ASIA HIGHLANDS UNDER CLIMATE CHANGE

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Introduction

The Highlands of Central Asia Biodiversity Hotspot consists of two of Asia's major mountain ranges, the Pamir and the Tien Shan within the Palearctic Biogeographic Realm. The hotspot's 860,000 square kilometers include parts of seven countries: southeastern Kazakhstan, most of Kyrgyzstan and Tajikistan, eastern Uzbekistan, western China, northeastern Afghanistan, and a small mountainous part of southeastern Turkmenistan. In addition to 1,500 endemic plant species, the region is home to 53 endemic species of mammal, bird, reptile, amphibian, and freshwater fish. Further, of the approximately 6,700 species occurring in the hotspot, 68 are classified by the International Union for Conservation of Nature as globally threatened.

The mountainous regions of Central Asia support a diversity of habitats for flora and fauna, with many valuable endemic species that until recently were less heavily impacted by human activity than their lowland counterparts. However, anthropogenic stress on them has also increased sharply since the early 2000s aggravated by climate change. At the same time, the aquatic ecosystems of mountainous areas suffered first and foremost, since it is here that many large, medium and small dams were built.

Since the 1960s, CA has developed large-scale irrigated agriculture and hydropower with a plethora of hydrotechnical infrastructure and water diversion. Only in Uzbekistan, the total length of the inter-farm and on-farm irrigation networks amounts to 27,868 km and 154,957 km, respectively (four times the length of the Earth's equator). Many dams are located in highland areas.

Since the 1960s, many species, including indigenous, have been extremely declined in population and area of distribution. Many previously common fish species are hard to find today. Three migratory species: *Salmo trutta aralensis* Berg, 1908; *Acipenser nudiventris*; *Schizothorax saltans* are extinct. Therefore, the last IUCN assessment has estimated more than one-third of fish fauna in the region as the DD.

The region is regarded as a "data-deficient region" regarding biodiversity and biogeography, especially aquatic ecosystems.

Map of Mountains of Central Asia Hotspot (CEPF, 2017)

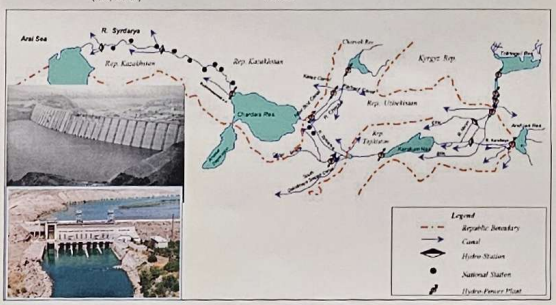
Freshwater species and ecosystems are among the most imperiled.

Irrigation and Hydropower Dams are a principal threat to freshwater diversity, and that threat is largely mediated through loss of habitat, frequently involving modifications to the natural flow regime and to blockage of migrations.

Trends of Irrigation Development in Uzbekistan (area, 000' ha)

Environmental impacts of hydroelectric power plants:

- obstruction or complete closure of migration routes for aquatic organisms,
- partial or complete fragmentation of habitats,
- changes in flow regime (redistribution, reduction, and rapid fluctuations)
- changes in the morphology and quality of river water



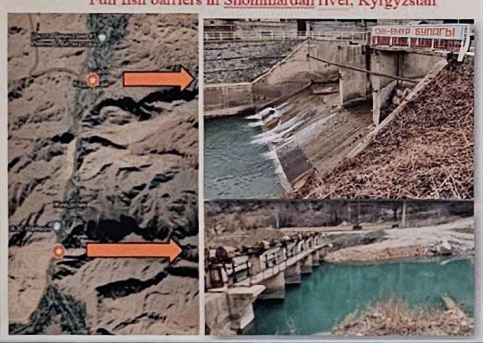
Conducting awareness raising seminars for professionals and decision makers on the importance of biodiversity and ecosystem services conservation

Regional and national seminars in the context of "Water-Energy-Food-Environment were conducted in the republics of Uzbekistan, Kazakhstan, Kyrgyzstan, and Tajikistan.

Open-source education and training materials on sustainable hydropower development taking into account biodiversity and ecosystem services conservation were produced for dissemination.

Habitat fragmentation in mountain rivers of Central Asia – full &part barriers

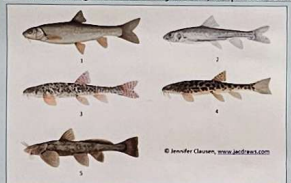
Full fish barriers in Shohimardan river, Kyrgyzstan



Fish diversity in the Central Asia highlands and the target species

Much of the biodiversity and natural ecosystems are in remote mountain areas and have still to be better studied. Any human impact directed on the change of aquatic habitat in these ecosystems has to be thoroughly assessed before implementation. including the 2 demonstration sites, Shakhimardan and Atbashy.

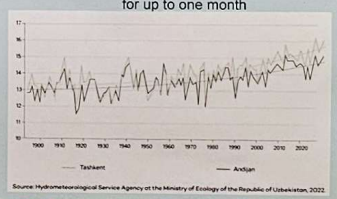
During 2021-2023 the ecological conditions and diversity of the ichthyofauna of mountain and foothill sections of rivers that are promising for the development of environmentally sustainable small-scale hydropower (SHP) have been studied. Special attention was paid to the conservation of the diversity of fish key species and other aquatic organisms. To assess this integral component of the sustainable functioning of river ecosystems, a special focus has been laid on the related habitat conditions.



One of the main steps to achieve sustainable SHP is to protect wildlife biodiversity. Collected field data on fish diversity, taxonomy, and ecology of more than 50 river catchments in Kyrgyzstan and Uzbekistan, which have allowed to identify for the first time the main key fish species in upstream sections of Central Asian Mountain rivers. Based on the study of the rivers of Central Asia, the following key species were identified: **1. Snowtrout, 2. Osman, 3. Stone loach, 4. Turkestan catfish.**

Climate change

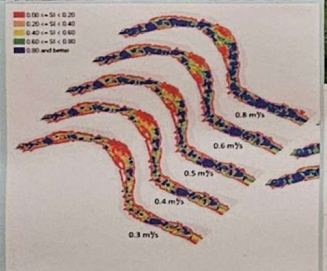
- Ongoing climate change will have significant impacts not only on water resources but also on aquatic life biodiversity and ecology in Central Asia. Glaciers and snow cover in the highlands are melting faster than expected, and this will result in natural habitat changes, in particular on migration and spawning as well as offspring development conditions.
- The Mountains of Central Asia hotspot consists of two of Asia's major mountain ranges: the Pamir, and the Tien Shan, with a total area covered of about 860,000 square kilometers. Much of the biodiversity and natural ecosystems are in the remote mountain areas and have still to be better studied.
- Mountain rivers and their aquatic life, above all fish fauna, are especially vulnerable to the negative consequences of climate change. Therefore, any human impact directed towards the change of aquatic habitat on these ecosystems has to be thoroughly assessed before implementation.
- The mean annual temperature in CA rose from 0.18 to 0.42 °C per decade during the last 60 years, but no clear trends were found for annual precipitation (Hijioka et al., 2014), which is higher compared to the global mean (Reyer et al., 2015; White et al., 2014).
- According to Dudovets et al. (2021) in most areas of Central Asia:
  - Mean annual temperature is projected to rise in all study areas for all scenarios
  - The mean monthly river discharge is projected to decrease, mainly in the summer months
  - It is expected to have a shift in the peak of river discharge for up to one month



Variation of air temperature by stations in Uzbekistan cities Tashkent and Andijan, respectively

International Field studies on fish diversity and migration barriers within the framework of Hydro4U project

Telemetry studies: Fish use various habitats to complete their life cycle such as spawning habitat, wintering sites and foraging areas. These habitats can be located at different parts of a river system and used by fish at different, seasonal-specific moments in time. We used radiotelemetry to tag and track (position) 59 snow trouts in October 2022 and 2024 to reveal their habitat use over the course of one year, so we could learn when they reside and Koksu and why.



Migration facilities and Eflow: The information for target species Schizothorax eurystomus has been used in Shakimardan for simulations with the habitat model CASiMiR to find a seasonally adapted E-Flow providing fish habitats in adequate quality and availability when the HPP is diverting part of the natural flow. The existing weir will integrate a state-of-the-art fish way and a bypass installation that enable up- and downstream migration for snow trout. Another artificial migration barrier within the river will be made passable as well. In Atbashy the modernized irrigation weir, equipped with a shaft turbine, will also integrate upstream- and downstream migration facilities. The attraction flow leading fish into the bypass channels and preventing them from entering the turbine inlet is investigated using a newly developed module of CASiMiR to possibly optimize the inflow conditions. The findings from these studies, together with the results from the monitoring of the HPPs that both go into operation during the project period, will deliver information for the adaptive management as part of the EIA.

SUMMARY

Research conducted within the framework of Hydro4U have revealed that sustainability and nature-based solutions are a crucial part of the developments in small-scale hydropower in Central Asia, particularly ecological sustainability. Ecological impacts of HP are for instance, hindered migration, altered flow regimes (reduced flow, fast flow changes), or changed river morphology (sediment retention, increased embeddedness).

Overall, this research underlines the high anthropogenic pressure on fish, particularly potamodromous species such as S. eurystomus. Management must prioritize fish passage and environmental flows as means of river restoration to protect aquatic biodiversity in Central Asia's mountain streams.

Based on the current population status of studied rivers, particularly the density of juvenile and sub-adult fish, likely, mature specimens likely migrate upstream for spawning, underlining the importance of longitudinal instream habitat connectivity.

Fish populations in highland rivers between the barriers exist but are highly likely only kept alive by colonization from upstream reaches.

Also, fish in the diverted river reaches are smaller than those upstream. Still, signs of early sexual maturity have been detected, hinting at a slow growth rate of snow trout and presumably other species downstream of the full migration barriers.

The present study was supported by the EU-funded Hydro4U Project & TIIAME National Research University of the Republic of Uzbekistan

UKRAINIAN HYDROMETEOROLOGICAL INSITUTE

Cooperation between the scientific community and decision-makers in Ukraine to contribute to the IPCC

Dr. Svitlana Krakovska, Vice NFP in Ukraine,
Ukrainian Hydrometeorological Institute,
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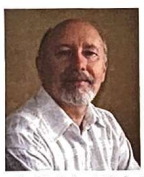
Round-table with Jonathan Lynn - Head of the IPCC communication team, and representatives of the Ministry of Environment of Ukraine, National Academy of Sciences of Ukraine and NGO communities in the leading Ukrainian Inform Bureau in Kyiv in October 2017 to promote the start of the IPCC AR6 nominations

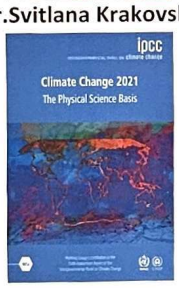
Press-conference in Kyiv during COP-21, 2015, and the panel discussion "Ukraine's Path to Net-Zero: From Challenges to Solutions", COP-29, 2024

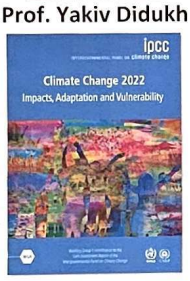
Dr.Svitlana Krakovska

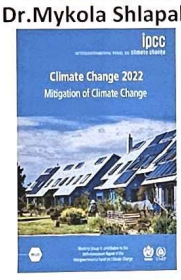


Prof. Yakiv Didukh

Dr.Mykola Shlapak







Working Group I: Physical science basis

Among 234 Lead Authors **one** is from Ukraine for **Chapter Atlas** and **Interactive Atlas**; 2 Expert Reviewers

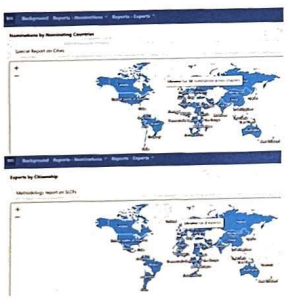
Working Group II: Impacts, Adaptation and Vulnerability

Among 330 authors **one** is from Ukraine who served as a Review Editor of **Chapter 2**: Terrestrial and freshwater ecosystems and their services, 2 Expert Reviewers

Working Group III: Mitigation of Climate Change

Among 239 Lead Authors **one** is from Ukraine for **Chapter 13**: National and sub-national policies and institutions; 2 Expert Reviewers

Ministry of Environmental Protection and Natural Resources of Ukraine and other Ministries regularly ask for consultation with experts who were and are still involved in IPCC, particularly the Green Transition Office of the Ministry of Economy of Ukraine



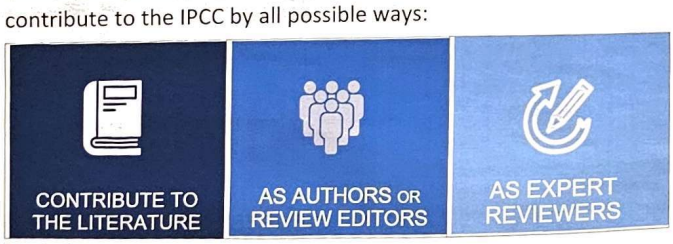
NFP in Ukraine has nominated 7 experts for 18 positions in the forthcoming **Special Report on Cities**, but unfortunately none succeeded. For **SLCF** both nominees were selected

TFI: The Task Force on National GHG Inventories

- 4 experts from Ukraine served as Lead Authors for *"The 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories"* in Volume 2: Energy, Volume 3: Industrial Processes and Product Use, and Volume 5: Waste (2017-2019);
- 2 experts were nominated and selected as Lead Authors to prepare *the 2027 IPCC Methodology Report on Inventories for Short-lived Climate Forcers* (late 2024 – ongoing);
- Ukrainian Expert is a *Member of Editorial Board* (Waste Sector) of the IPCC Emission Factor Database (2021-ongoing);
- Participation in *the IPCC Expert Meeting* to collect EFDB and Software users' feedback (2019) and in *the IPCC Workshop* on IPCC Software (2024)

CONCLUSIONS AND PERSPECTIVES

Ukrainian scientists were and still are active and willing to contribute to the IPCC by all possible ways:



Next steps:

(i) To nominate experts for the AR7 WG I, WG II, and WG III
(ii) To nominate experts to serve in the IPCC Task Group on Data Support for Climate Change Assessments (TG-Data)

We would like to express our deepest thanks to the Armed Forces of Ukraine, local Territorial Defense Units, Volunteers, as well as the entire Ukrainian nation for their bravery and courage in defense of peace and freedom in Europe and in the entire world from terrorussia and russism. International support is sincerely appreciated and welcomed

Scientists and PhD students of UHMI who were forced and decided to stop their research to be at the frontline to provide security of life and work for others

Republic of North Macedonia
Ministry of Environment and Physical Planning

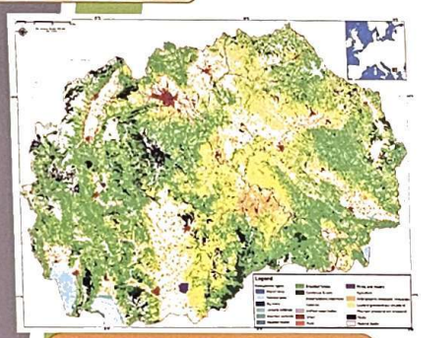
Ecosystem services approach in North Macedonia

Resmi Ejupi, Vlatko Trpeski, Isuf Fetai
Ministry of Environment and Physical Planning

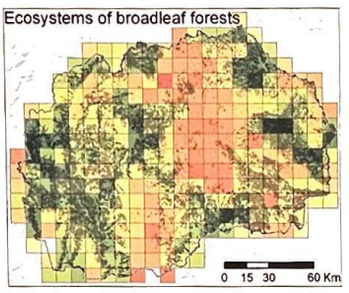
In 2018, the Republic of North Macedonia, began systematically establishing knowledge and practical base for the concept of ecosystem services on a national to local level.
The Ministry of Environment and Physical Planning has conducted the activities with national and international expert support within the framework of different donor-supported projects.

Systematic approach

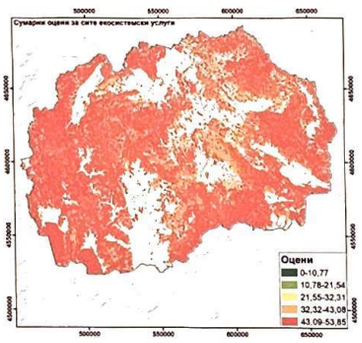
National level



Identification and mapping of ecosystem types
8 types, 22 subtypes



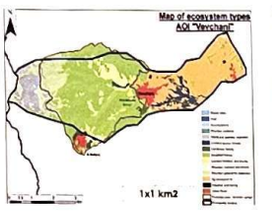
Mapping and assessment of condition of 15 subtypes of ecosystems (indicators)

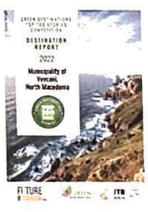


Mapping and assessment of 15 ecosystem services Tier I (capacity matrix)

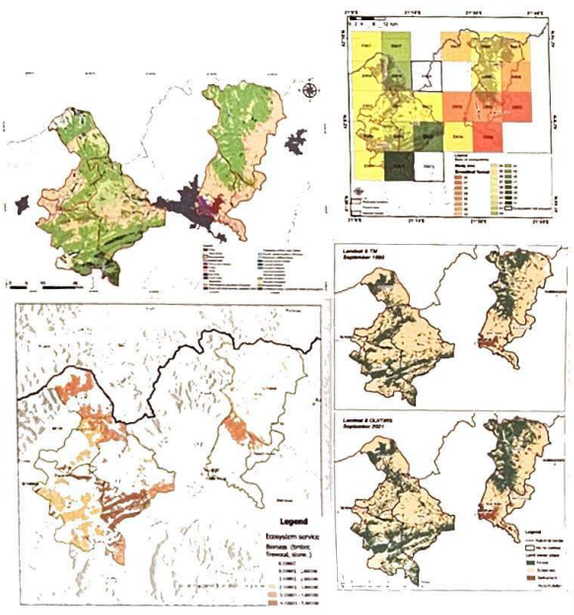
Local level

The Vevchani Springs Protected Area in North Macedonia embarked on a pioneering initiative to ensure its long-term financial sustainability through a Payment for Ecosystem Services (PES) scheme. This scheme aimed to leverage ecotourism to generate revenue while uniting local stakeholders, including service providers and the Municipality, under a common vision of promoting sustainable tourism through Green destination concept





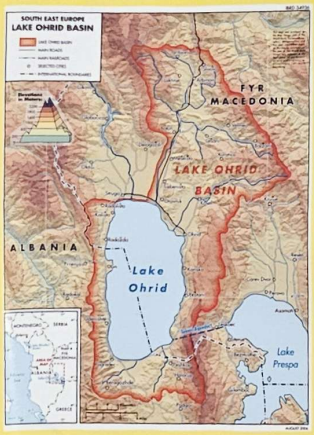
The concept of ecosystem services was also applied in the GEF UNEP Star 6 project as a tool for assessing and restoring the most vulnerable ecosystems—forests and grasslands—in six pilot municipalities in northwestern North Macedonia. The project conducted an integrated assessment of ecosystem conditions and services valuation, combining biophysical, economic, and sociological aspects. Through stakeholder consultations, scenario analysis, and mapping, it provided practical insights into sustainable practices, offering a strong evidence base for local governments to make informed decisions for future ecosystem planning and management



Lake Ohrid - biodiversity and assessed threats

D-r Orhideja Tasevska, *PSI Hydrobiological Institute, Ohrid*
R. N. Macedonia

Lake Ohrid (41°2'19"N, 20°44'13"E)

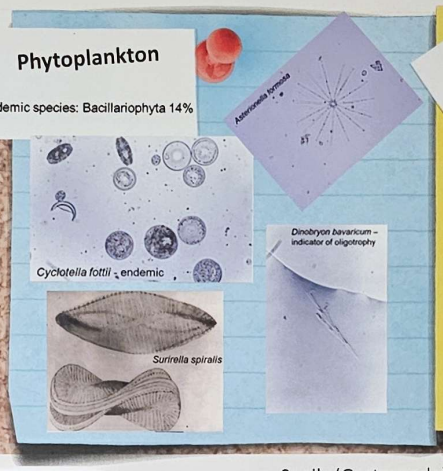


- ancient, long-lived lake
- have provided continuous freshwater habitats for more than 1 million years, and the only one in Europe.
- altitude: 695 m
- oligotrophic, deep (maximum depth 289 m; average depth 164 m),
- large (surface area 358 km^2),
- one of the most voluminous lakes (~55 km^3) in Europe.

•biodiversity hotspot of global importance.
-approximately 1,200 native species, at least 212 endemic
-adjusted rate of endemicity is estimated at 36%
•endemic biodiversity: 212 known endemic species + surface area of 358 km^2 = most diverse lake in the world
•"museum of living fossils"

Phytoplankton

endemic species: Bacillariophyta 14%



Zooplankton

Benthic fauna - High degree of richness and diversity

Sponges (Porifera) 80% endemic

Segmented worms (Annelida)

Leeches (Hirudinea) are characterized with a high degree of biodiversity and endemism (46%)

Bivalves (Bivalvia)

Dreissena-bed in the littoral of Lake Ohrid (photograph A. Kubicek)

Flatworms (Platyhelminthes)
21 endemic (74%)

crustaceans (Crustacea)
Ostracods (Ostracoda)
- 52 species, 33 endemic (63%)

Snails (Gastropoda)
72 species described, 56 endemic (78%)

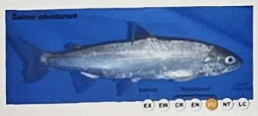
(photographs T. Hauffe & T. Wilke)

Isopoda
- 75% endemic species

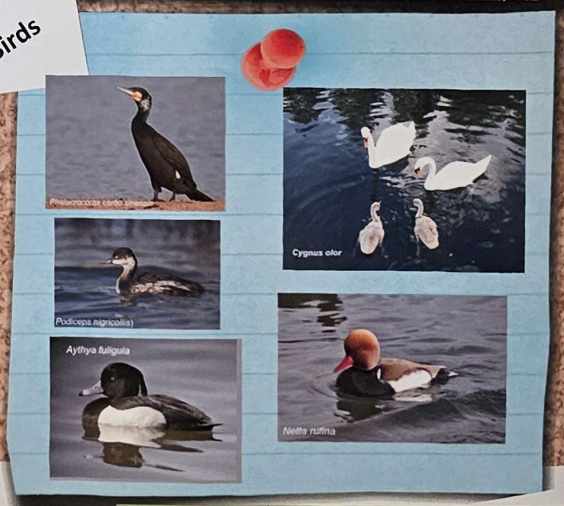
Amphipoda
- 12 endemic species

Decapoda

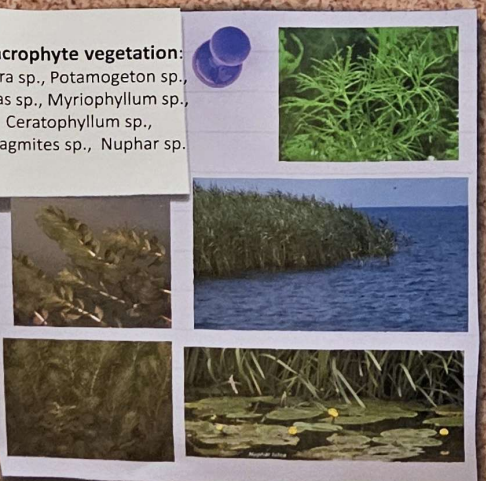
Fish



Birds

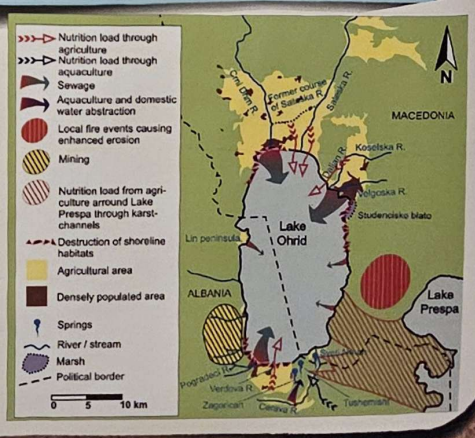


Macrophyte vegetation:
Chara sp., Potamogeton sp., Najas sp., Myriophyllum sp., Ceratophyllum sp., Phragmites sp., Nuphar sp.



The major threats:

- Eutrophication (intensive agriculture, industrial and domestic wastewaters, improper solid waste disposal);
- Urbanisation (habitat destruction; conversion of the wetlands to agricultural land and building plots);
- Water level decrease (inexistent or inappropriate water management);
- Tourism (increasing and uncontrolled tourism development);
- Introduction of alien species;
- Overfishing;
- Climate changes



PESC-RESPIN Joint Meeting, 10-13 March 2025, Brussels

Military Impact on Protected Areas of Ukraine, 2022-2024

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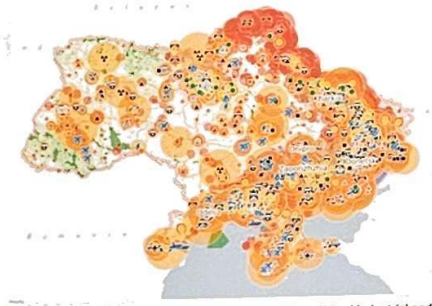
Introduction

At the outset of Russian Federation's military aggression in 2014, the housing sector, industrial facilities, life support systems and infrastructures, agricultural lands and complexes, as well as the natural environment in Ukraine was impacted by powerful military destruction in Eastern Ukraine. However, the full-scale military invasion of Ukraine by the Russian Federation, which began on February 24, 2022, was and still is especially devastating. The result of this unprovoked war is the death of thousands of people, destroyed residential infrastructure, ruined economy, colossal destruction of the environment.

Intense hostilities as well as missile and drones attacks on settlements and infrastructure facilities throughout the entire territory of Ukraine caused devastating and sometimes catastrophic consequences for the environment. The impact on the environment includes severe pollution, destruction of natural and human made ecosystems, and long-term indirect consequences. In many cases such consequences are detrimental to human, animal, and plant life and considered as an ecocide.

The Map of the Territories and Objects (green and brown color) of the Nature Reserve Fund. Occupied territories are marked in pink

The Map of Ukraine shows the territories occupied by RF (brown color) and liberated from RF occupation (green color) since full-scale aggression in February 2022 (*https://deepstatemap.live/#11/48.1498/37.7277*)



The Map of Ukraine demonstrates severe impact of demolished industrial and infrastructural object on the natural environment including protected areas (*https://ecodozor.org/index.php?lang=en*)

At the beginning of 2021, the Nature Reserve Fund comprised 8,633 territories and objects with a total area of 4.1 million hectares (6.8% of the country's area), as well as the marine reserve "Phyllophorous Field of Zernov" with an area of 402.5 thousand hectares. The Nature Reserve Fund included 5 biosphere reserves, 19 nature reserves, 53 national nature parks, 85 regional landscape parks, 3,398 reserves, 3,580 natural monuments, 802 protected areas, 28 botanical gardens, 13 zoos, 62 arboretums, and 588 parks-monuments of landscape art.

The war affected 900 territories and objects of the nature reserve fund with an area of 1.24 million hectares

State Cadaster of Territories and Objects of the Nature Reserve Fund, 2025

MORE THAN	**1,970**	TERRITORIES AND OBJECTS OF THE NATURE RESERVE FUND HAVE FALLEN INTO THE ZONE OF INVASION BY RUSSIAN FEDERATION TROOPS
THE WAR AFFECTED	**900**	territories and objects of the nature reserve fund with an area of 1.24 million hectares

EXPLOSIONS DISRUPT the geological and hydrological properties of territories, plants and animals die, ecosystems are destroyed, soils are polluted, and biodiversity is lost.

16 RAMSAR SITES, TOTAL AREA 600 THOUSAND ha	**160** SITES OF EMERALD NETWORK TOTAL AREA 2,9 MLN ha	AT THE RISK OF DESTRUCTION

As of February 2025, 514 protected areas are still under occupation (800 thousand ha), including:

2 BIOSPHERE RESERVES:

Chornomorsky, and "Askania-Nova" named after F.E. Falz-Fein

8 NATURE RESERVES:

Kazantypsky, Opuksky, Karadazsky, Ukrainian Steppe (partially), Luhansky, Cape Martyan, Yalta Mountain-Forest Crimean

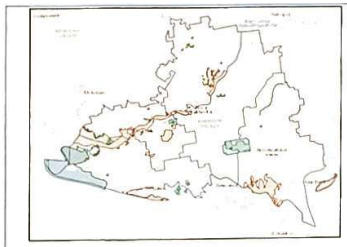
9 NATIONAL NATURAL PARKS:

Veliky Lug, Pryazovsky, Meotida, Kreminski Forests, Charivna Gavan, Azovo-Syvasky, Nyzhnyodniprovsky, Oleshky Sands, Dzharylhatsky

NATIONAL NATURAL PARKS

Hetmansky (Sumy region), Holy Mountains (Donetsk region), Dvorichansky (Kharkiv region), Kamianska Sich (Kherson region)

were LIBERATED by the Armed Forces of Ukraine, but still are under constant shelling by the aggressor



Map of the Kherson Region showing protected areas

Kherson region has the largest number of protected areas - 3412.88 sq. km, or ~12% of the area of the region.

All reserves in the region became victims of Russian aggression

NNP "KAMIAMSKA SICH" was under occupation from March to November 2022

AFTER SURVEYING THE TERRITORY OF THE PARK, IT WAS DETECED:

THE POTENTIALLY MINED AREA IS ABOUT 3.6 THOUSAND ha

657 ha ARE IMPACTED BY COMBAT ACTIONS

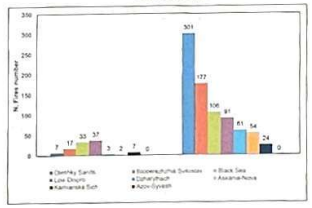
830 ha ARE IMPACTED BY SHOOTING

19 BIOTOPES protected by the Bern Convention have been destroyed or significantly transformed (meadow biotopes) as a result of the lowering of the Kakhovka reservoir level.

In the photo: the destroyed building of the Kamianska Sich administration, as well as the director of the National Park Serhiy Skoryk, who participated in the liberation of the National Park.

https://uncg.org.ua/terytoriia-natsparku-kamianska-sich-povnistiu-zvilnena-vid-rosijskykh-okupantiv/

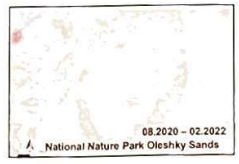
The most destructive factor affecting natural systems was and still is fires caused by hostilities and shelling

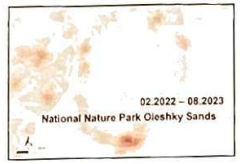


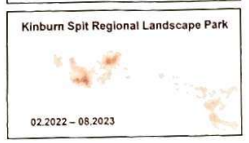
Fires in protected areas of the Kherson region before the Russian aggression (left) and after (right)

When comparing the two periods - pre-war (01.08.2020 - 01.02.2022) and war (01.02.2022 - 01.10.2023) - there is a noticeable increase in the number of fire incidents after the start of the full-scale invasion

Source: NASA FIRMS

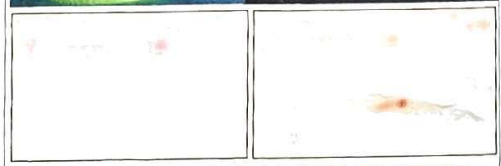






Fire heat maps based on FIRMS data

Karamushka V.I., Shmaiko A.I. Remote monitoring of fires in protected areas of Kherson region 2021-2022., 2024. https://science.lpnu.ua/ecoengress-2024/preliminary-abstracts-2024



National Nature Park Dzharylhatsky: above left – island before aggression; above right – fires detected by FIRMS; Fire heat maps: 08.2020 – 02.2022 on the left, 02.2022 – 08.2023 on the right

The fire on the island lasted for more than a week in August 2023. 16 km² reserved are burned

MARCH 20–21, 2023, THE RUSSIAN FEDERATION OCCUPIED THE ASKANIA-NOVA BIOSPHERE RESERVE named after F.E. FALTZ-FEIN

Fire heat maps, 02.2022 – 08.2023

During the occupation of the Reserve, about 6 thousand hectares of the territory burned down, including more than 2 thousand hectares of protected steppe, which are its main value. The Russian Federation illegally exported animals from the collection of the ASKANIA-NOVA to Russia, including the Przewalski's horse, a species listed in Appendix I of CITES.

Protected areas in other regions have also been affected by fires. In March 2022, hostilities caused a fire in the Drevlyansky Nature, Zhytomyr Region, Reserve, which burned over 2,000 hectares of forest.

In time, nature will heal its wounds. And we will help it.
Key stages of the process of the environmental rehabilitation in Ukraine:

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Boychenko, S., Kuchma, T., Karamushka, V., Maidanovych, N., & Kozak, O. (2025). Wildfires and Climate Change in the Ukrainian Polissia During 2001–2023. Sustainability, 17(5), 2223. https://doi.org/10.3390/su17052223

Karamushka V., Boychenko S.G., Khoriev M.Yu., Kozak O.M. Destruction of the natural environment caused by the war in Ukraine: impact on land, water, and forest ecosystems. Book of Abstracts 14th Annual International Scientific Conference on Establishment of Cooperation Between Companies and Institutions in the Baltic Sea Region and the World, Jelgava, 19 – 20 November 2024, p. 92. https://btutb.lbtu.lv/conference/ECOTECH/EcoTech_Abstracts_Book_2024.pdf

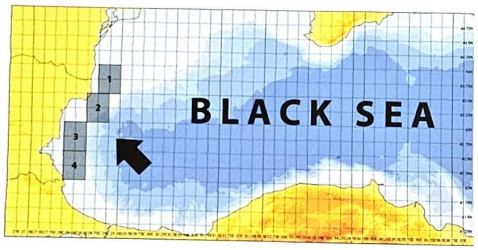
Karamushka V., Boychenko S., Nazarova O. Climate impact drivers provoke fires in protected areas of Polissia. In: XVI International Scientific Conference "Monitoring of Geological Processes and Ecological Condition of the Environment", 15–18 November 2022, Kyiv, Ukraine. 2022, V.1, p.1-5. DOI: https://doi.org/10.3997/2214-4609.202280238

Atmospheric circulation changes and their impact on some climatic elements in the area of the Balkan Peninsula

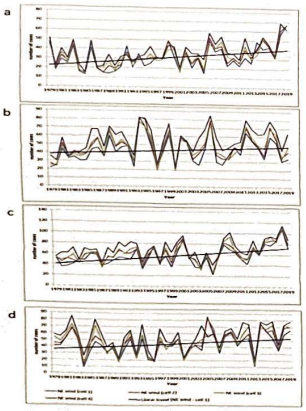
Prof. Peter Nojarov, Climate, Atmosphere and Water Research Institute, Bulgarian Academy of Sciences

Impact of climate change on atmospheric circulation, wind characteristics and wave in the western part of the Black Sea

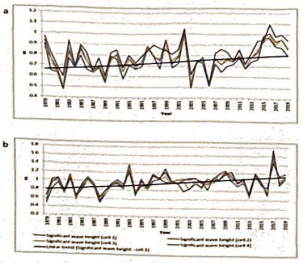
This study reveals changes in atmospheric circulation over the western part of the Black Sea during the period 1979–2019 and related changes in wind conditions and sea wave in the active tourist season, which at the Bulgarian coast spans from June to September. There has been a significant increase in the number of cases and the speed of the northeasterly wind. This has led to an increase in the wave. The most significant changes in the studied elements are observed in August and September. The causes for these changes are the change in atmospheric circulation, expressed in the north-northeastward shift of the Azores High. Thus it exerts a greater impact on the western part of the Black Sea. The rise of sea level pressure north of the Black Sea along with the low pressure south of it increases the horizontal baric gradient, which leads to stronger and more frequent northeasterly winds. The main economic activity affected by these trends is tourism. Revealed tendencies in the studied climatic elements and wave in the last decades represent an immediate threat and an obstacle to the development of tourism along the Bulgarian Black Sea coast.



Location of the study area in the western part of the Black Sea. The 4 rectangles show the 4 grid cells (first cell 43.5–44°N, 28.75–29.25°E; second cell 43–43.5°N, 28.5–29°E; third cell 42.5–43°N; 28–28.5°E; fourth cell 42–42.5°N, 28–28.5°E).



Variations of the number of cases with northeasterly (NE) wind in June **a**, July **b**, August **c** and September **d** in the four cells during the period 1979–2019. Linear trend of the northernmost cell (cell 1) is also shown in the figure.



Variations of significant wave height (in m) for the cases with wind from northeastern quarter of the horizon in August **a** and September **b** in the four cells during the period 1979–2019. Linear trend of the northernmost cell (cell 1) is also shown in the figure.

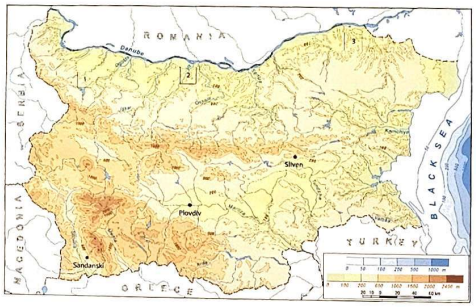
Spearman correlation between drownings (per 100 000 people), and significant wave height - all wind directions, number of cases with NE wind, wind velocity - NE wind and significant wave height - NE wind for the period 2005 – 2022 by gridcells and by districts. Statistically significant numbers are bolded.

Gridcel	Parameter	drownings per 100 000 people		
		Dobrich district	Varna district	Burgas district
1	Significant wave height - all wind directions (m)	−0.39		
	Number of cases with NE wind	−0.24		
	Wind velocity - NE wind (m*s⁻¹)	−0.25		
	Significant Wave Height - NE wind (m)	−0.22		
2	Significant wave height - all wind directions (m)	−0.40	−0.02	
	Number of cases with NE wind	−0.30	−0.10	
	Wind velocity - NE wind (m*s⁻¹)	−0.14	0.10	
	Significant Wave Height - NE wind (m)	−0.22	−0.02	
3	Significant wave height - all wind directions (m)		−0.12	**0.59**
	Number of cases with NE wind		−0.27	**0.58**
	Wind velocity - NE wind (m*s⁻¹)		0.01	0.30
	Significant Wave Height - NE wind (m)		−0.08	0.27
4	Significant wave height - all wind directions (m)			**0.61**
	Number of cases with NE wind			**0.47**
	Wind velocity - NE wind (m*s⁻¹)			**0.45**
	Significant Wave Height - NE wind (m)			**0.47**

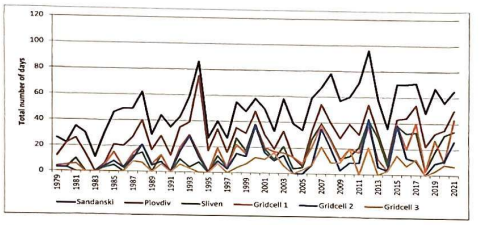
Reference: Nojarov P. 2021. Impact of climate change on atmospheric circulation, wind characteristics and wave in the western part of the Black Sea. Natural Hazards, 109: 1073-1095. https://doi.org/10.1007/s11069-021-04869-5

Heat waves in Bulgaria

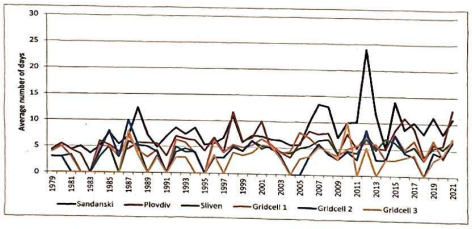
This study reveals the dynamics in the number and intensity of heat waves in Bulgaria in the late 20th and early twenty-first century. Over the last four decades, there has been a statistically significant trend of increasing number of days belonging to heat waves. There is no significant trend (except in southwestern Bulgaria) in the average maximum temperatures of heat waves in the period 1979–2021. This is due to a change in the atmospheric circulation over Bulgaria in the twenty-first century toward increased transport of air masses from northeast in summer.



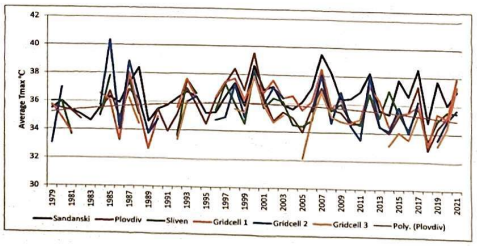
Location of the three meteorological stations in southern Bulgaria and of the three gridcells (1 having coordinates of the center 43.5°N, 23.2°E, 2 having coordinates of the center 43.6°N, 24.7°E, and 3 having coordinates of the center 44°N, 27.1°E) in northern Bulgaria.



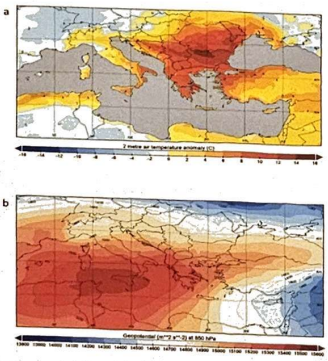
Variations of the total number of days of heat waves in a given year in the six regions for the period 1979–2021.



Variations of the average number of days of heat waves in a given year in the six regions in Bulgaria for the period 1979–2021.



Variations of the average maximum temperature of the heat waves in a given year in the six regions for the period 1979–2021. The polynomial of station Plovdiv is included in the figure.

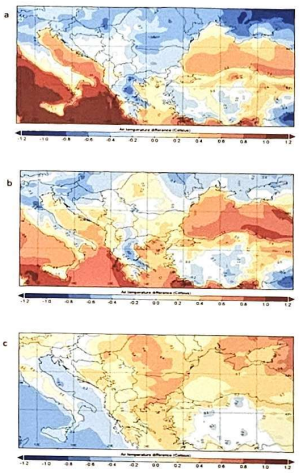


2 m air temperature anomaly (°C) (**a**) and geopotential (m^2*s^{-2}) at 850 hPa level (**b**) at 1200UTC on 05.07.2000 (the day with the highest air temperature in Bulgaria).

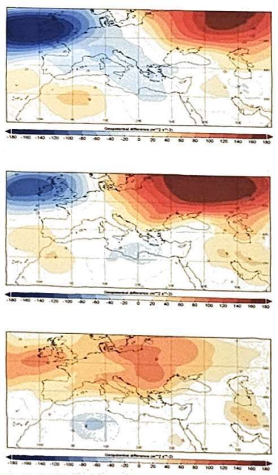
Reference: Nojarov P, Nikolova M. 2022. Heat waves and forest fires in Bulgaria. Natural Hazards, 114: 1879-1899. https://doi.org/10.1007/s11069-022-05451-3

Strengthening of the maritime influence on the Balkans in summer as a result of changes in atmospheric circulation

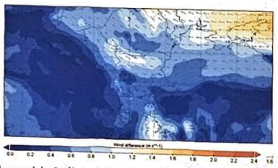
This study focuses on the strengthening of the maritime influence on the Balkan Peninsula in summer in the period 1979–2020. The results show that in the beginning of the twenty-first century in southeastern Europe there is a tendency of faster increase in the average August air temperatures compared to the increase in average July air temperatures. Thus, the temperature in August is already higher than that in July. The causes for these changes are changes in atmospheric circulation in summer. Over the last two decades, the transport of air masses from east and southeast has been strengthening, which for the Balkan Peninsula means a transport from water basins toward land. The intra-annual course of air temperature above a water basin, which has a maximum in August, is now becoming typical over land. This feature is not yet present in the entire studied region.



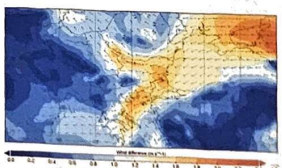
Difference (in °C) between the average August and average July temperatures for the period 1979–1999 (**a**), for the period 2000–2020 (**b**), and difference in air temperatures between the August difference (period 2000–2020 minus period 1979–1999) and July difference (period 2000–2020 minus period 1979–1999) (**c**) for the study area according to ERA5 reanalysis data.



Difference in geopotential (m^2*s^{-2}) at 850 hPa between the period 2000–2020 and the period 1979–1999 in July (**a**), in August (**b**), and difference in geopotential at 850 hPa between the August difference (period 2000–2020 minus period 1979–1999) and July difference (period 2000–2020 minus period 1979–1999) (**c**) according to ERA5 reanalysis data.



Difference in wind speed ($m*s^{-1}$) and direction at 850 hPa between the period 2000–2020 and the period 1979–1999 in July according to ERA5 reanalysis data.



Difference in wind speed ($m*s^{-1}$) and direction at 850 hPa between the period 2000–2020 and the period 1979–1999 in August according to ERA5 reanalysis data.

Reference: Nojarov P. 2023. Strengthening of the maritime influence on the Balkans in summer as a result of changes in atmospheric circulation. Climate Dynamics, 60: 3225-3239.

FRB
FONDATION POUR LA RECHERCHE SUR LA BIODIVERSITÉ

IPBES & IPCC meetings Paris 2024

FRB event organised regularly since 2014

IPBES-IPCC meetings bring together researchers, public and private decision-makers and various stakeholders to strengthen collaboration between the biodiversity and climate research communities, improve the processes of the two intergovernmental platforms and pool recommendations to guide political decisions. Another key objective is to mobilise more experts and involve more stakeholders, taking into account their concerns and knowledge.

1 Context, Objectives

- ***Bringing together biodiversity and climate research communities*** and exchange experiences.
- ***Improving the international processes*** of the IPBES and IPCC.
- Improving the content of IPBES and IPCC reports, in particular by ***better mutual integration of biodiversity and climate issues***.
- Pooling IPBES and IPCC recommendations in order to ***inform decision-making with recommendations that are relevant to biodiversity and climate.***
- Improving the processes for ***mobilising experts and organisations/institutes*** to increase the involvement of the French expert community in these Platforms.
- Improving the ***integration of stakeholders*** and the ***use of local knowledge*** in intergovernmental assessments and decision-making processes.

Focus on the ocean in 2024

For the 2024 edition, a number of partners joined the adventure to highlight the convergence of biodiversity and climate issues, with particular emphasis on recommendations concerning the ocean: the International Platform for Ocean Sustainability (Ipos), The Intergovernmental Oceanographic Commission of UNESCO (IOC/UNESCO) the French Ministry of Ecological Transition, the French Ministry of Europe and Foreign Affairs and the European RESPIN project.

2 Content and discussions

The workshops and discussions provided an opportunity for passionate and exciting exchanges on many of the notions and concepts discussed in the biodiversity, climate and oceans circles: ***socio-cultural systems, ocean-based solutions, non-human human rights, integration of indigenous peoples, protection of cultural heritage, education, sustainability of ocean food systems****, etc., a major step towards the United Nations Conference on the Oceans in June 2025, in Nice.*

3 Results and recommandations

Workshop on IPBES and IPCC recommendations on the ocean

- An opportunity to debate ***key concepts*** such as the notion of 'socio-cultural systems', 'ocean-based solutions', 'non-human rights', etc.
- Discussions on the ***integration of indigenous and local knowledge***, the protection of cultural heritage linked to the ocean, and the inclusion of human and non-human rights in sustainable management initiatives.
- Highlighting the fundamental ***role of education*** in raising awareness of the relationship between ocean ecosystems and human well-being.
- Identifying needs to ***promote ecological and responsible practices in the fishing*** and aquaculture sectors.

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www.fondationbiodiversite.fr

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LEPL NATIONAL ENVIRONMENTAL AGENCY

PESC-RESPIN Joint Meeting
Brussels, Belgium, 10th-13th March, 2025

ACTIVITIES ADDRESSED TO REDUCE THE RISKS OF CLIMATE-DRIVEN DISASTERS IN GEORGIA

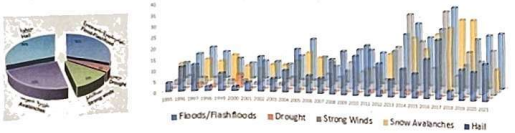
Irakli Megrelidze, Lia Megrelidze, Ioseb Kinkladze
National Environmental Agency of Ministry of Environment Protection and Agriculture of Georgia

Background

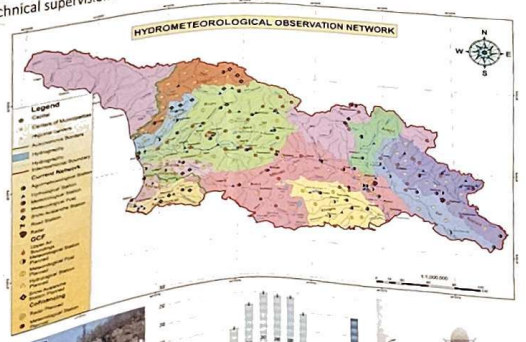
Due to the geography and the natural conditions, Georgia is exposed to various climate-induced hydrometeorological and geological hazards including floods, flash floods, landslides, mudflows, debris flows, droughts, soil erosion, strong winds, hailstorms and avalanches. According to Georgia's 3rd and 4th National Communications, the intensity and severity of those hazards are expected to increase as a result of climate change effecting economic sectors, ecosystems, and infrastructure.

UNDP Georgia is implementing a program on Reducing Climate-Driven Disaster Risks, funded by GCF, Government of Georgia and co-financed by Swiss Development Cooperation (SDC) and Swedish International Development Cooperation Agency (Sida), aiming at reducing exposure of Georgia's communities, livelihoods and infrastructure to climate-induced natural hazards through a well-functioning nation-wide multi-hazard early warning system and risk-informed local action. The program will achieve transformative change in disaster risk reduction and risk management in Georgia through provision of critical climate risk information that would enable the Government of Georgia to implement number of nation-wide transformative policies and actions for reducing exposure and vulnerability of the population to climate-induced hazards.

Outcome 1: Expanded hydro-meteorological observation network and modelling capacities secure reliable information on climate-induced hazards, vulnerability, and risks

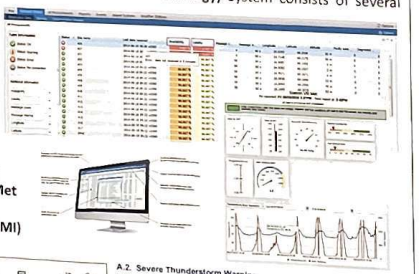


Activity (2019-2026): **Procurement, installation and operationalization of new hydro meteorological monitoring equipment** - i) design and expansion of the hydrometric monitoring network to include the purchase and installation of the following equipment: ~150 hydrometeorological stations/posts, 1 upper air sounding equipment, 2 meteorological radars (co-financed); 3 drones and additional corpus; drone for flight control and thermal camera; visual computing appliance (VCA) for processing aerial photos; geo-positioning equipment; the High Performance Computer (HPC) for the forecasting center; ICT system upgrade; ii) technical assistance in the expansion of the network in the form of training, technical supervision and O&M; iii) ECMWF membership (2021)



Outcome 2: Multi-hazard early warning system and new climate information products supported with effective national regulations, coordination mechanism and institutional capacities

The proposed **ICT (Information and Communication Technology)** System consists of several components:



- ✓ **Communication and Dissemination System (CDS)**
- ✓ **Forecasting system - SmartMet Workstation (FMI)**
- ✓ **Alert system – SmartAlert (FMI)**

To prevent and mitigate potential damage from extreme weather and climate events related to climate change and variability in the agricultural sector of Georgia, an agromet database and service system called the **Georgia Climate Services for Agriculture (GECSA)** is being established.

GECSA consists of an:

- ✓ agromet **database management system,**
- ✓ agromet **information production system,**
- ✓ and **service delivery system.**

Outcome 3: Improved community resilience through the implementation of the MHEWS and priority risk reduction measures

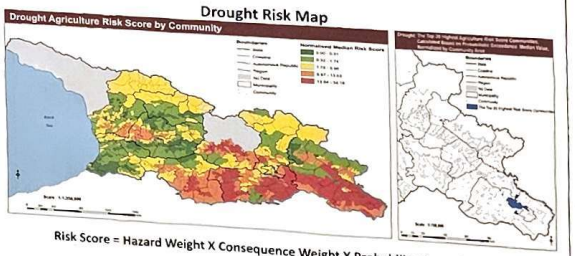
Activity (2019-2026): The major objective of the SDC funded project "**Strengthening Climate Adaptation Capacities in Georgia**" under the program, is the development of a well-established system for multi-hazard risk knowledge to ensure effective climate risk management of all hydro-meteorological and geological hazards in Georgia

Geographical coverage of the project interventions is nation-wide, particularly 11 major river basins in Georgia, focusing on the following hazards: **floods, landslides, mudflows, avalanches, hailstorms, windstorms, and droughts**. Among others, development of unified methodology for **multi-hazard mapping and risk assessment** and subsequent development of individual and multi-hazard and risk maps and profiles for the above-mentioned river basins in Georgia is envisaged.

Drought Risk Map

CDI (Composite Drought Index) modelled for every 5 km x 5 km resolution

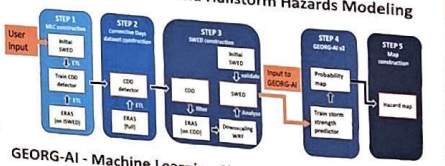
- Drought Model Output Data
- Drought severity by community



Risk Score = Hazard Weight X Consequence Weight X Probability Exceedance

Windstorm and Hailstorm Hazards Modeling

- **GEORG-AI** is an AI-based software tool that predicts the probability of observing a convective event, and its intensity, for a specific day at a given location under certain climatological conditions.
- GEORG-AI is used first to create a convective day's detector (CDD) that can identify days with a high probability of having a convective storm.



GEORG-AI - Machine Learning Classification (MLC) Models

- The final output of GEORG-AI is a probability per day and per range of **hail diameter/wind speed of observing a hail/wind storm** at a given latitude, longitude combination.

References

1. Reducing the risk of climate-driven disasters in Georgia: https://www.undp.org/georgia/projects/climate-change-disasters
2. Methodologies for Hazards Assessment, Modelling and Mapping: https://www.undp.org/georgia/publications/climate-change-hazard-modelling (2021)

8th PESC-RESPIN Joint meeting, 10th-13th March 2025, Brussels, Belgium

Bulgarian Community of Practice and capacity building under the IPBES topics

Kalina Stoyanova[1], Hristina Prodanova[2], Vanya Stoycheva[2]

[1]Ministry of Environment and Water (MOEW), [2]National Institute of Geophysics, Geodesy and Geography – Bulgarian Academy of Sciences (NIGGG-BAS), Sofia, Bulgaria

1

Bulgaria supports the idea of establishing the IPBES Platform since 2008, when it was proposed by the French Presidency. Since its establishment in 2012, IPBES has received on its trust fund financial contributions from different Governments, including Bulgaria – with small but regular contributions. Bulgaria's first participation in an IPBES Plenary session was in 2018 in parallel with the first Bulgarian Presidency of the Council of the European Union.

TIMELINE

2016
First Bulgarian IPBES expert – Stoyan Nedkov as a Reviewing Editor | Scenarios and models assessment (4th IPBES Plenary) – Feb.

2018
Bulgarian EU Presidency and organization of the IPBES 6 plenary

4 Bulgarian participants at the IPBES Capacity Building workshop in Chisinau, Moldova – Oct.

2022
2 Bulgarian participants at the IPBES Capacity Building workshop in Yerevan, Armenia – May.

New NFPs – Aug.

2023
Stakeholder session at the 1st SELINA project workshop in Sofia, Bulgaria – Mar.

First Lead authors from Bulgaria | Business and biodiversity assessment (ongoing)

PESC 7 – Jul.

IPBES 10 – Aug.-Sep.

First BBA author meeting

2024
Establishment of the Bulgarian Community of Practice – Jan.

First IPBES workshop in Bulgaria – Mar.

Educational activities with students at the BG Geographical Festival – Apr

Concluding capacity building workshop in Tbilisi, Georgia – Jun.

IPBES 11 - Dec

2025
PESC-RESPIN Joint meeting – Mar.

Second National meeting of the Bulgarian CoP – upcoming Jun.

IPBES 12?

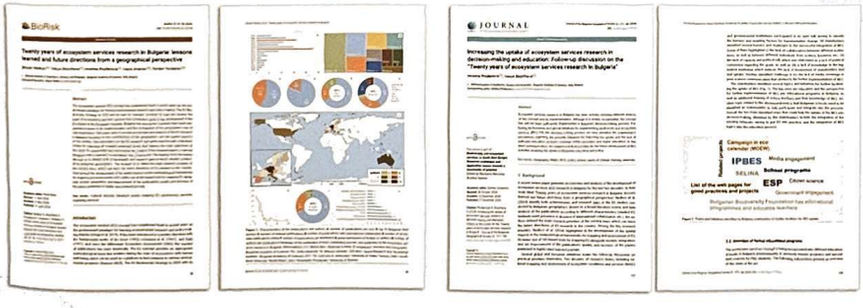
2

Current actions and progress in Bulgaria are related to building a sustainable Community of Practice.
The Bulgarian CoP was established in January 2024. The core membership is built on already well-connected working groups and initiatives in Bulgaria including ESP, YESS, BGS, IPBES; past and ongoing EU-funded projects – ESMERALDA, MAIA, and SELINA. IPBES activities and relations take central place in the BG CoP while the two Bulgarian IPBES NFPs are coordinating it (one from the Ministry – MOEW, and second from the NIGGG-BAS).

Bulgaria → Member Eastern European States 12 Jun 2017

3

Bulgarian CoP activities in 2024. A bilateral IPBES Capacity building workshop for Bulgaria and Romania (March 2024, Sofia, Bulgaria) where 27 participants from both SELINA CoPs shared experience on different IPBES activities–lead authors, editors, MEP-members, secretariat. Educational activities for secondary school students took place in April 2024 at the Bulgarian Geographical Festival in Burgas, where an experimental mapping and assessment of coastal and wetland ecosystems involved 20 students and their teachers.
The third major activity is publishing a review paper of the 20 years experience on the ES research in Bulgaria (Nedkov et al. 2024).



4

Suggested priorities for development of BES activities enabling the uptake in Bulgarian education and policy.
Stakeholder consultation among the Bulgarian CoP and a literature review enabled an analysis of the visibility of the ES concept in the Bulgarian educational system and policy-making (Prodanova and Stoycheva 2024).

Further reading:

- Nedkov S, Stoycheva V, Prodanova H, Ananiev I, Yordanov Y (2024) Twenty years of ecosystem services research in Bulgaria: lessons learned and future directions from a geographical perspective. BioRisk 22: 33-52. https://doi.org/10.3897/biorisk.22.125194
- Prodanova H, Stoycheva V (2024) Increasing the uptake of ecosystem services research in decision-making and education: Follow-up discussion on the "Twenty years of ecosystem services research in Bulgaria". Journal of the Bulgarian Geographical Society 51: 177-186. https://doi.org/10.3897/jbgs.e142535

5

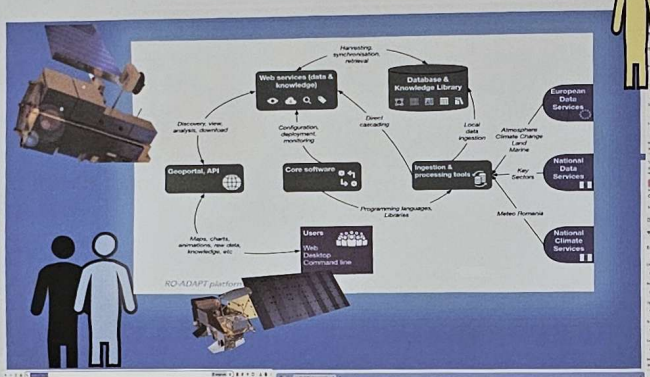
Expectations for the PESC-RESPIN Joint meeting, 2025. The forum will help us understand IPBES and IPCC linkages, to strengthen Bulgaria's participation in the process of the implementation of the 2030 Agenda. Such forums are important for the fulfillment of the commitments made by the MOEW, the scientific community, NGOs, and experts from various sectors. IPBES and IPCC products support the preparation of national action plans and assessments to mitigate the nature loss globally.

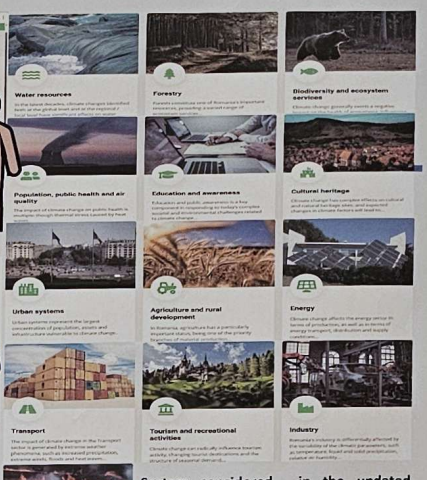
Acknowledgements:
Most of the activities for building and maintaining the national Community of Practice in Bulgaria are being funded by the EU Horizon project SELINA, the Biodiversa+ project TransWILD, and the INES project of the NIGGG-BAS team; and the Ministry of Environment and Water.

FOLLOW US!

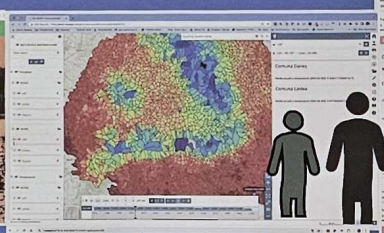
RO - ADAPT a support web tool for climate adaptation

Roxana Bojariu and Roxana Diana Burcea
National Meteorological Administration, Romania



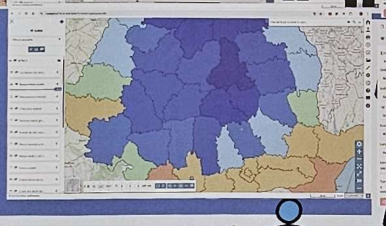


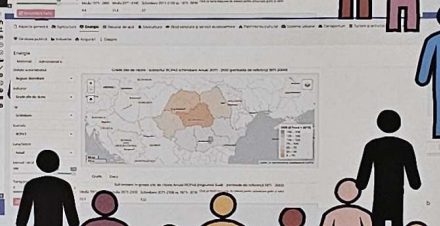
Sectors considered in the updated national adaptation strategy for which RO-ADAPT platform provides climate data and indicators (2024)



The advanced mapping application includes complex data management functionalities for RO-ADAPT

The list of functionalities of the application includes:
- ✓ Cartographic representation of raster and vector elements (point, line, or polygon);
- ✓ Querying attributes of displayed entities;
- ✓ Displaying attribute tables for vector datasets;
- ✓ Measuring distances and areas on the map;
- ✓ Filtering datasets based on associated attributes;
- ✓ Saving the context of a map and loading it in another session (Web Map Context);
- ✓ Managing multi-dimensional data (e.g., time series, multiple levels of height/depth);
- ✓ The layer list allows interactive selection of layers to compose the main map representation;
- ✓ Grouping layers into groups and subgroups;
- ✓ Reordering layers within a group through drag-and-drop;
- ✓ Creating interactive charts;
- ✓ Viewing information in a 3D environment using the standard WebGL technology;
- ✓ Loading data directly from compatible services provided by other institutions in Romania and Europe.





The RO-ADAPT catalogue is an interactive application that enables the identification of spatial data sets and services based on the content of associated metadata. The catalogue has been implemented according to the OGC CSW (Catalogue Service) standard and provides a simple mechanism for classification, registration, description, search, management, and access to information about the resources available in the RO-ADAPT platform.

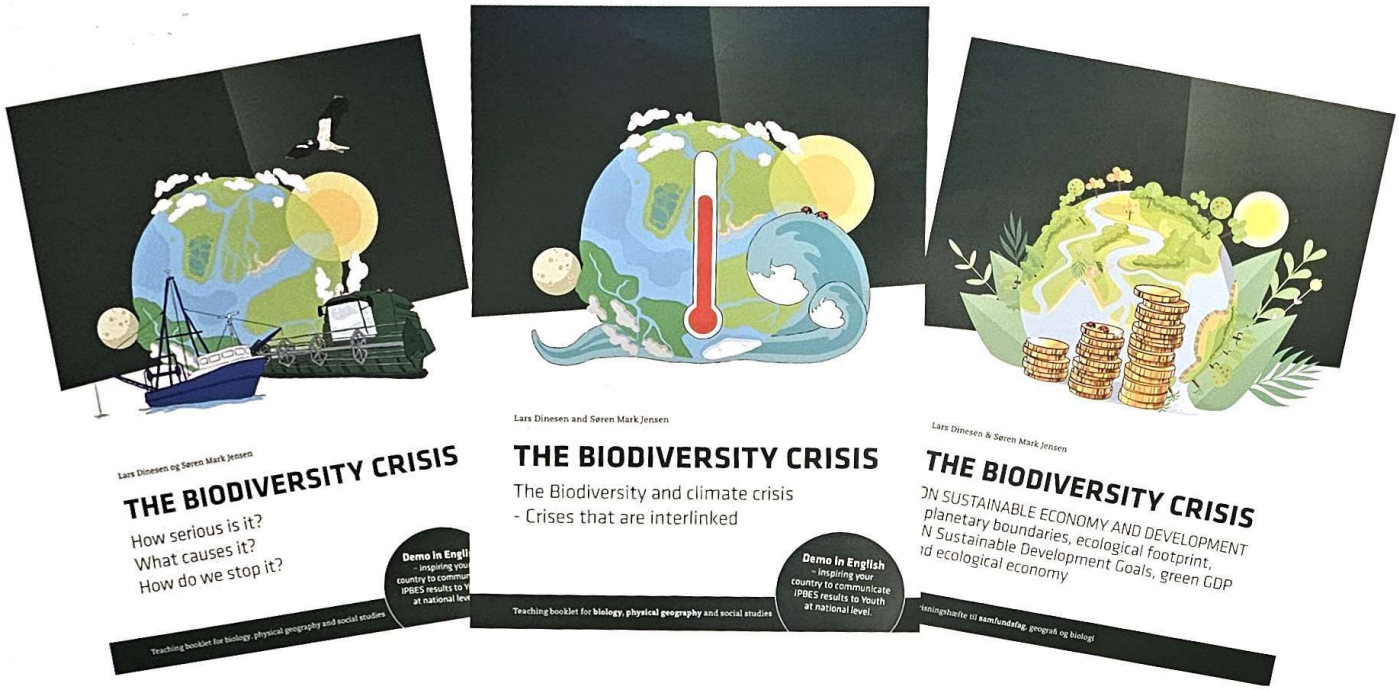
The list of functionalities of the catalogue application includes:
- ✓ Searching for climate and non-climate data in local or distributed catalogues;
- ✓ Downloading and uploading geospatial datasets;
- ✓ An interactive web mapping application that allows the combination of geospatial layers using the WMS (Web Mapping Service) standard. This application can also be used for spatial criteria input in data search;
- ✓ Online generation of maps and reports and exporting them in PDF format;
- ✓ Online editing of metadata using a powerful template-based system;
- ✓ Scheduling metadata harvesting sessions from distributed servers compatible with CSW (Catalogue Service for the Web);
- ✓ Synchronizing metadata between distributed catalogs;
- ✓ Managing users and user groups;
- ✓ Defining data access policies based on user levels.

https://www.roadapt.ro/?lang=en

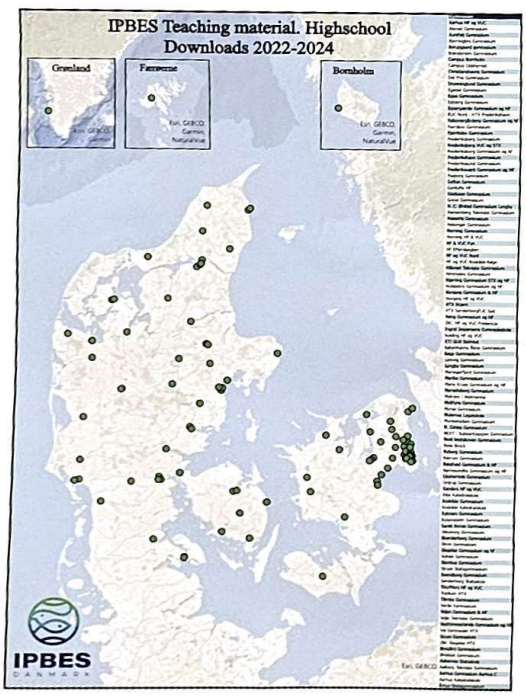
ACKNOWLEDGEMENT

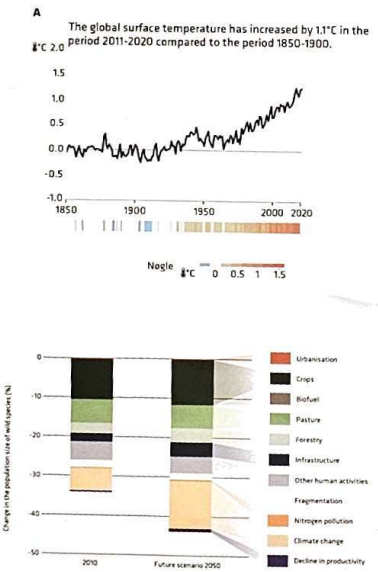
This work has been supported by the PESC-RESPIN Joint Meeting Programme (Grant No. 101135490) and the ECA Network and Biodiversa+, financed by the European Union's Horizon 2020 Research and Innovation

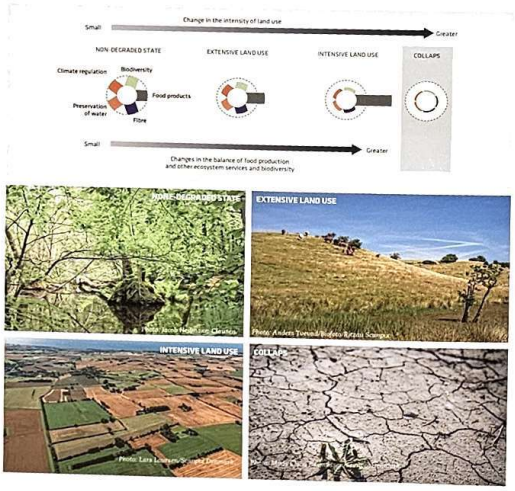
Teaching material for high schools

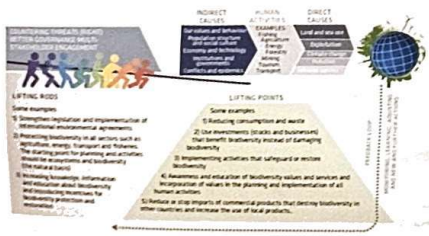


IPBES
DANMARK









- Downloaded over 1,000 times.
- Used by 250 high school teachers and 30,000 students.

Droughts and traditional herding practices in the alpine pastures of Kyrgyzstan

Emil Akymbaev, Indigenous practitioner

Background

Kyrgyzstan is a mountainous country in Central Asia, known for its stunning landscapes, rich nomadic heritage, and deep cultural traditions. Over 90% of its territory is covered by mountains, including the Tien Shan range, which hosts glaciers, high-altitude pastures, and diverse ecosystems. Historically, Kyrgyz people have practiced nomadic pastoralism, moving with their livestock across seasonal pastures (jailoo). Today, while many Kyrgyz still rely on herding, agriculture, and traditional crafts, the country is also adapting to modern economic and environmental challenges. With a history shaped by Silk Road trade, Soviet influence, and post-independence transformation, Kyrgyzstan remains a land of resilience, hospitality, and strong community ties.

Photo 1. Map of Kyrgyzstan and the study site

In Kyrgyzstan, *jailoo* refers to the lush, high-altitude summer pastures where herders take their livestock for grazing.

This seasonal migration, known as *köç*, is a centuries-old tradition that ensures the sustainable use of mountain grasslands while maintaining the health of animals and ecosystems.

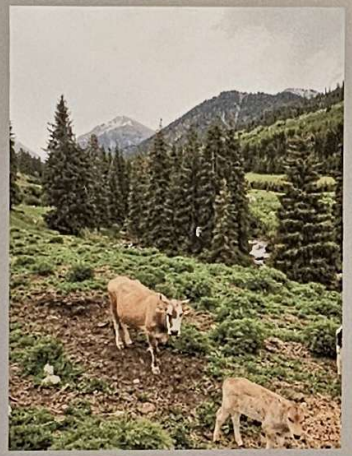
Each spring, herding families move their livestock such as sheep, goats, horses, and cattle from lower valleys to the alpine *jailoo*, where fresh grasses provide abundant nourishment. Some families also own yaks.

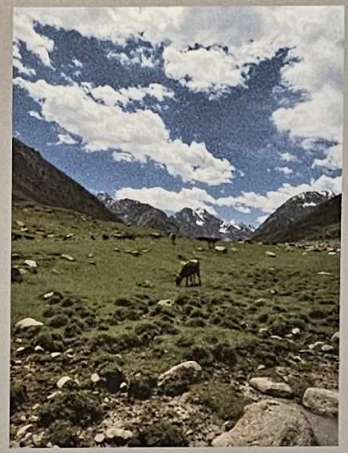
They set up yurts (traditional felt tents) and remain in these pastures throughout the summer, following a rhythm dictated by nature. In autumn, as temperatures drop, they return to lower-altitude *kyshtoo* (winter pastures), where animals are sheltered and fed on stored fodder.

This practice of rotational grazing helps prevent overgrazing and soil degradation while allowing pastures to recover. Traditional knowledge of weather patterns, water sources, and pasture conditions plays a crucial role in determining migration timing and routes.

However, climate change, land use pressures, and shifting socio-economic conditions are challenging this way of life, making it essential to support community-led pasture management and sustainable herding practices.

Summer pasture (jailoo)





Droughts and its impact on pastures

Droughts are becoming more frequent and intense in Kyrgyzstan, threatening the health of mountain pastures (jailoo) and the livelihoods of herding communities.

Reduced rainfall, higher temperatures, and shifting seasonal patterns are leading to drier soils, decreased grass growth, and water shortages, making it difficult for livestock to find sufficient food and hydration.

As pastures dry out, overgrazing becomes a risk, accelerating land degradation and desertification. Springs and rivers, which are critical water sources for herders, are shrinking, forcing longer migrations and increasing competition over remaining resources.

Traditional rotational grazing systems, which rely on predictable seasonal conditions, are becoming harder to maintain.

These changes are not only ecological but also socioeconomic. Herders face rising costs for fodder, livestock losses, and pressure to abandon traditional livelihoods. In response, some communities are reviving traditional drought indicators, restoring water sources, and adopting adaptive grazing strategies.

However, sustainable pasture management, climate adaptation programs, and policy support are essential to help herding communities cope with worsening drought conditions and protect Kyrgyzstan's fragile mountain ecosystems.

Tuloo ritual in spring. Local communities pray for an abundance of water

One important way communities reinforce these practices is through rituals like Tülöö—a ceremonial offering and collective prayer for nature's well-being. Held during times of drought, extreme weather, or important seasonal transitions, Tülöö involves gathering at sacred sites, making food offerings, and praying for rain, livestock health, and pasture regeneration. These ceremonies are deeply spiritual but also serve a practical function: they bring the community together to discuss environmental challenges, reinforce shared responsibilities, and pass on traditional ecological knowledge (TEK) to younger generations.Through storytelling, elders teach how to read climate patterns, recognize pasture health indicators, and manage livestock in harmony with nature. These gatherings ensure that ancestral knowledge, land stewardship values, and resilience strategies are transmitted across generations, helping local communities navigate modern environmental challenges while preserving Kyrgyzstan's rich cultural heritage.

Local (indigenous) indicators of climate change around Lake Ysyk-Kol

Aisuluu Samakova, Aigine Cultural Research Center

Background

Several climate change scenarios for Kyrgyzstan have been developed by international and regional organizations, including the IPCC, CAREC, GIZ, UNDP, and ICIMOD. These scenarios assess potential impacts based on greenhouse gas emissions, socio-economic trends, and technological developments.

Key Climate Change Scenarios

- Warmer & Drier Future: Temperatures may rise by 2–4°C by 2100, reducing snow cover, lowering river flow, and increasing droughts and extreme weather events.
- Mountain Ecosystem Changes: Warming threatens high-altitude species and alters snowmelt timing, impacting downstream water supply.
- Glacial Melt: Accelerated glacial retreat increases the risk of floods while reducing long-term water availability for agriculture and hydropower.
- Health Impacts: Rising temperatures could expand the range of vector-borne diseases like malaria and tick-borne encephalitis. world).

Figure 1: Study area: the Ysyk-Kol Biosphere Reserve

- CAREC (RegCM4, RCP8.5): Predicts higher temperatures and decreased precipitation under a high-emission scenario.

Regional Climate Models & Assessments

- GIZ (Climate Change Scoping Study): Highlights reduced snow cover, glacial melt, and changing precipitation patterns, recommending improved water and agricultural management.
- UNDP (Climate Change Risk Atlas): Forecasts a 1–4°C temperature rise and 5–15% lower precipitation by mid-century.
- ICIMOD (Hindu Kush Himalaya Assessment): Warns of increased glacial melt, raising flood risks and long-term water shortages.

Key Climate Indicators Used in Scenarios

- ❑ Temperature: Rising annual, maximum, and minimum temperatures.
- ❑ Precipitation: Changes in seasonal patterns and total annual rainfall.
- ❑ Snow Cover: Shorter snow cover duration and declining snow water equivalent.
- ❑ Glacier Dynamics: Shrinking glacier mass and volume, affecting downstream water resources.
- ❑ Extreme Weather Events: Increased frequency and intensity of heatwaves, droughts, and heavy rainfall.

Methods

From January 20 to February 20, 2023, our research team interviewed 220 respondents from more than 20 villages and settlements of the southern and eastern coast of Ysyk-Kol.

The age distribution was as follows:

- 7.7% were 66-80 years of age
- 57.7% were people between 36-65 years of age
- 32.7% were 18-35 years of age, and
- 1.9% were younger than 18

Gender-wise, most of the respondents (almost 65%) were women.

Figure 2. Data collection process

Results: local indicators of climate change

Local communities in Ysyk-Köl province observe climate changes beyond standard models, noting shifts in sunlight intensity, precipitation predictability, cloud characteristics, air moisture, and wind patterns. They also report seasonal irregularities, lake and soil quality changes, and altered wave and tide levels. Changes in wildlife, plant species, livestock health, reproduction, and disease patterns further indicate environmental shifts. These locally observed indicators provide critical insights into climate impacts often overlooked in regional models.

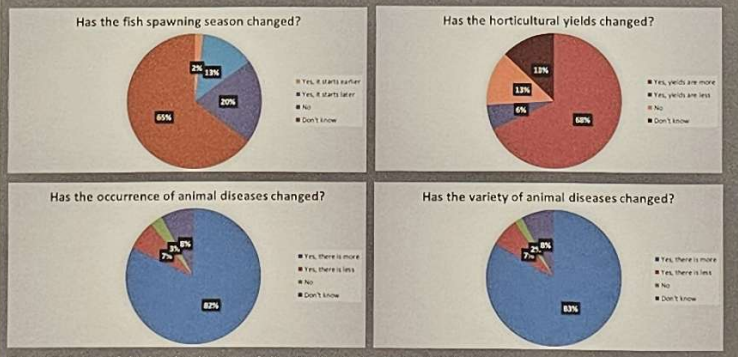


Figure 3. Some of the local indicators of climate change in the Ysyk-Kol region

Discussion

During the field study the research team noticed that local communities do not talk about climate change in isolation from cultural and spiritual changes in society. In other words, climate change is perceived as a socio-ecological process, in which climatic changes are nature's response to cultural and spiritual changes in humanity as a whole.

This idea, derived from traditional ecological knowledge of local communities, provides a different perspective on climate change scenarios, in which climate change is presented as a purely natural process that has socio-economic and ecological consequences.

Also during the research, a hypothesis was formed that the state of sacred places can become an indicator of socio-ecological (including climatic) changes in the Ysyk-Kol region (as well as in any other location where there is a phenomenon of sacred places). Indeed, some local practitioners have expressed the opinion that the oblivion of sacred places by some local communities is one of the underlying causes of climate change. It should be noted that this hypothesis needs to be tested by collecting additional qualitative data through in-depth and semi-structured interviews and other qualitative data collection

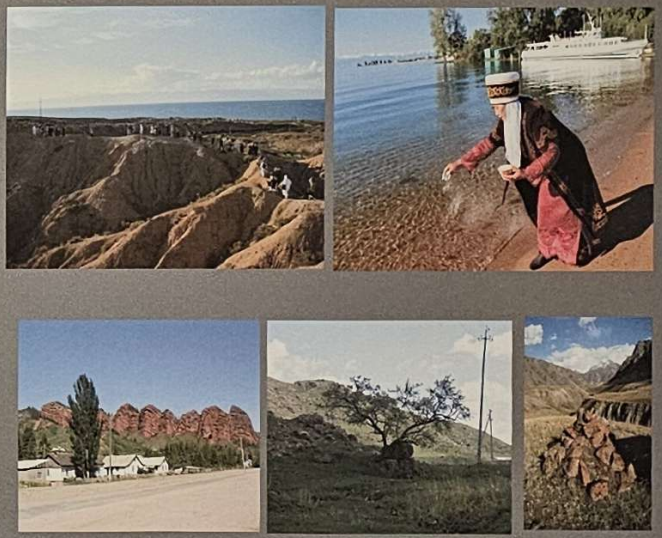


Figure 4. Sacred sites located in the Ysyk-Kol region

Acknowledgements

We thank Pawanka Fund and Aigine Cultural Research Center for supporting this research. Photo credit: Aisuluu Samakova and Aigine Cultural Research Center

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Science and Policy for People and Nature

Become an IPBES fellow!

Invitation to outstanding early-career individuals: Apply to participate as a fellow in the IPBES second global assessment

The IPBES fellowship programme:

- The IPBES fellowship programme provides an opportunity for outstanding early-career individuals from all backgrounds and disciplines working on biodiversity and ecosystem services to fully participate in IPBES assessments.
- Read more about the fellowship programme here, including the benefits of being an IPBES fellow, as well as the selection process and criteria.

How to apply?

1. Contact your organisation and/or the IPBES national focal point in your country to express your interest in becoming a fellow in the IPBES fellowship programme and ask them to be your nominator
2. Fill out the application form and attach your curriculum vitae through the dedicated web portal (you need to have/create an user account on the IPBES website).

Application form and call for nominations: **EM/2025/04**.

Online information meeting: **12 March 2025**
Application deadline: **28 March 2025**
Nomination deadline: **06 April 2025**

IPBES second global assessment

The overall objective of the second global assessment is to assess relevant knowledge that has become available since the publication in 2019 of The Global Assessment Report on Biodiversity and Ecosystem Services and to assess progress towards achieving the goals of sustainability and living in harmony with nature.

What is IPBES?

The Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) is an independent body established in 2012 with 147 members. IPBES provides policymakers with objective scientific assessments about the state of knowledge regarding:

- The planet's biodiversity, ecosystems and their contributions to people
- Tools & methods to protect and sustainably use these vital natural assets.

You should:

- Be an early-career individual, indicatively not older than 35 years of age and preferably not more than 5-7 years after having completed your academic degree.
- Have multidiciplinary or interdiciplinary background relevant to the second global assessment in one or more disciplines within natural science, social science or humanities, and/or be an indigenous and local knowledge expert or have expertise in indigenous and local knowledge systems.

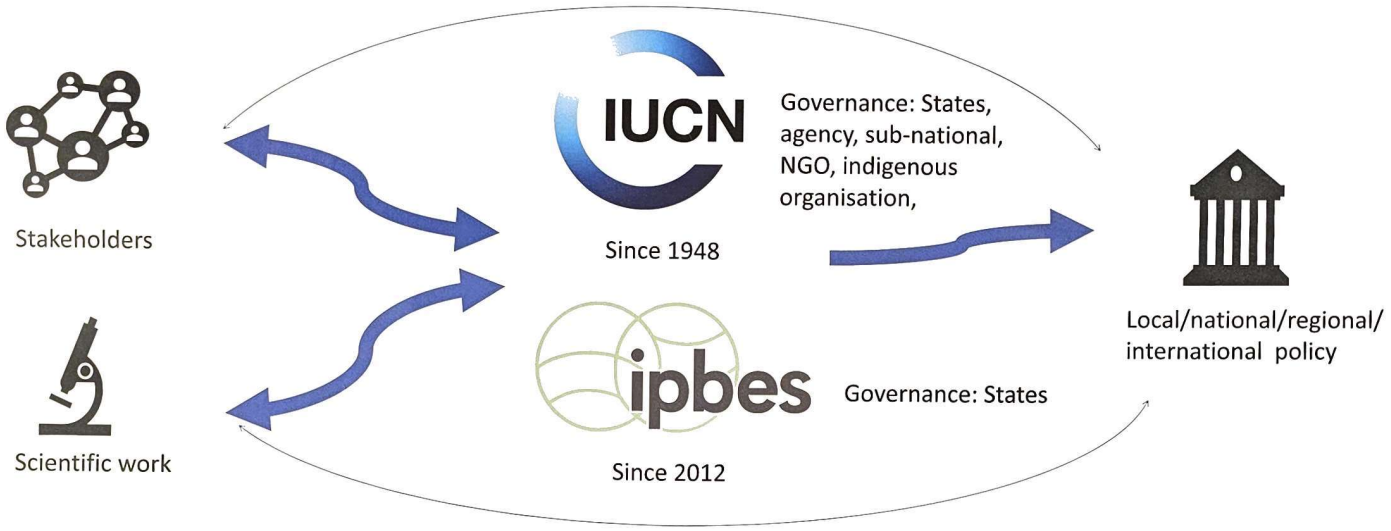
Commitments - You should ensure that you:

- Are able to make a commitment of 15 % of your time in the assessment period.
- Have discussed your application and have it approved by your organization/institution before applying.
- Are available to attend meetings and training workshops throughout the assessment period.

UN environment programme
unesco United Nations Educational, Scientific and Cultural Organization
Food and Agriculture Organization of the United Nations
UNDP

Author: Laure Denos – IUCN

How can I channel my science to impact conservation policy and practice? Scientific and stakeholder engagement with IUCN and IPBES



Contribute as an IPBES Stakeholder! (individuals)

Register on IPBES website and IPBES stakeholder registry

Stakeholder webpage

Apply to serve as an expert when your expertise fit the call for nominations

External review periods

Informal dialogues with stakeholders

Stakeholder Day prior to each Plenary

Use and help disseminate key findings and outcomes of the assessment

IPBES you Tube channel

Impact Tracking Page

Become an IPBES Observer! (Organisations)

Any organization qualified in matters covered by the Platform

Participate in the Plenary without the ability to cast votes or join or block consensus.

Observer registration page

Join an IUCN Commission! (individuals)

15,000 scientists and experts

7 IUCN Commissions for a wide range of expertise.

Generate and disseminate knowledge,

Mobilising influence, promoting the conservation science

IUCN Commission webpage

Become an IUCN Member! (Organisations)

Benefit from extensive networking opportunities & implement projects

Influence the conservation agenda, use IUCN data, assessments and guidelines

IUCN Member webpage

Join the umbrella network of IPBES Stakeholders!

ONet

Open-ended Network of IPBES Stakeholders

Bring together a diversity of potential users and providers of information including volunteer from IUCN, SSH, YESS...

ONet webpage

Given their similarity in objectives but differences in governance, IUCN and IPBES work closely together through a strategic partnership.

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REINFORCING SCIENCE-POLICY INTERFACES FOR INTEGRATED BIODIVERSITY AND CLIMATE KNOWLEDGE AND POLICIES

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Climate and Biodiversity Knowledge for Policy Impact

Highlighting engagement activities across multiple levels

RESPIN's Vision for Science-Informed, Inclusive Policy-Making

RESPIN bridges the critical gap between climate and biodiversity knowledge and actionable policy. We aim to engage stakeholders across multiple levels - local communities to national policymakers - to co-create solutions that integrate climate and biodiversity considerations.

Completed Workshops and Surveys for Evidence-Based Policy Support

RESPIN has conducted surveys and workshops to understand how knowledge is accessed, disseminated, and applied across sectors and regions.

Our EU-level workshop highlighted pathways and barriers to knowledge uptake for policy and practice. Key barriers include fragmented knowledge structures and misaligned timing between science and policy. Sector-specific, timely, and accessible science-policy interfaces are essential for bridging climate and biodiversity knowledge.

Ongoing Efforts

Knowledge Holder Engagement Survey

Exploring barriers, incentives, and capacity-building needs for knowledge holders in IPBES and IPCC processes. This survey identifies opportunities to strengthen engagement and capacity, ensuring more effective contributions to biodiversity and climate efforts.

Social Network Analysis (SNA)

Targeted at participants and stakeholders in IPBES and IPCC processes - such as researchers, policymakers, and advocacy groups - this survey examines the barriers and incentives influencing global environmental participation, aiming to identify ways to enhance engagement and support for knowledge holders.

EU-Level Workshop

Key EU level SPI actors exploring synergies between latest reports and inputs from IPBES and IPCC.

Subnational Workshop in Colombia

Participants discussing key goals, exploring biodiversity-climate policy integration, and developing tools for sub-national governments in Colombia.

Funded by the European Union

This project receives funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101135490. Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the EU nor the REA can be held responsible for them.

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REINFORCING SCIENCE-POLICY INTERFACES FOR INTEGRATED BIODIVERSITY AND CLIMATE KNOWLEDGE AND POLICIES

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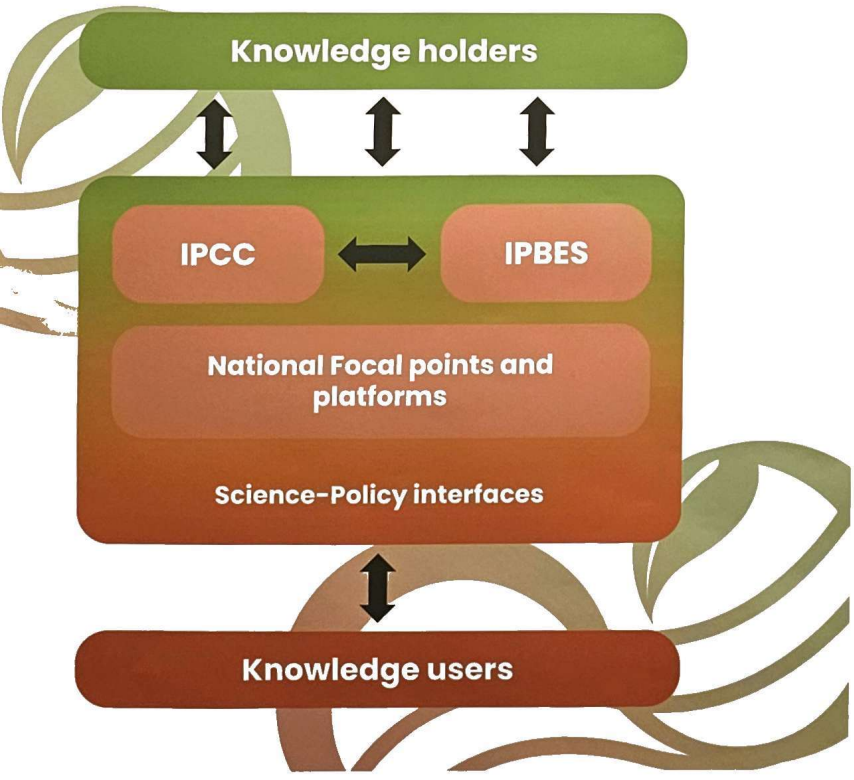
Vision

Strengthen global decision-making by integrating and utilising knowledge from IPBES and IPCC processes, ensuring that all regions, especially underrepresented ones, benefit from enhanced networks, capacity and targeted information.

Mission

Identify knowledge gaps, enhance engagement with diverse knowledge holders, including in Central Africa, Central Asia, and Latin America, and support the uptake of IPBES and IPCC outputs in decision-making processes.



Project structure

The RESPIN project is structured into five functions, combining work packages to streamline workflow, focus on objectives, and enhance collaboration. The five functions are:

- **F1** Empowering Knowledge Holders
- **F2** Empowering Knowledge Users
- **F3** Strengthening SPIs at the EU Level
- **F4** Upscaling and Communication
- **F5** Coordination and Consolidation

The different functions aim to foster synergies both within the project and with related external expertise. Each function includes an analytical component to identify and assess existing knowledge and capacities. We are building regional networks of potential multipliers across Europe, Central Asia, Africa, and Latin America. These networks will have access to resources and training to amplify and scale RESPIN's efforts in achieving our Vision.

Funded by the European Union

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CO-OP4CBD – COOPERATION FOR THE CONVENTION ON BIOLOGICAL DIVERSITY

Strengthening Central and Eastern European Contributions to the Convention on Biological Diversity

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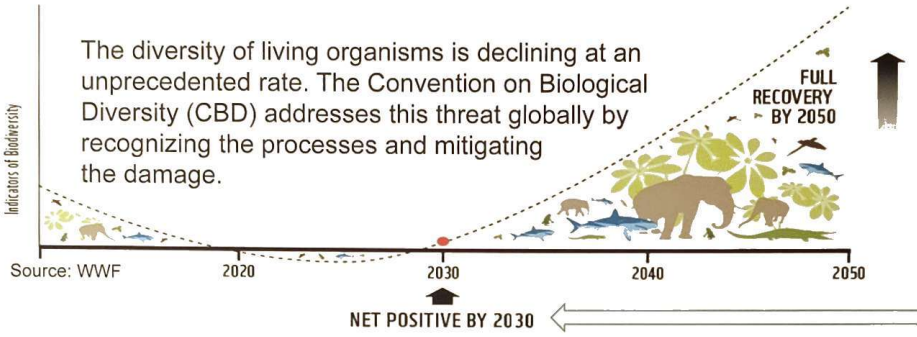
Background



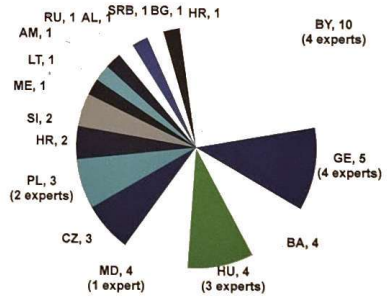
Methods

Results

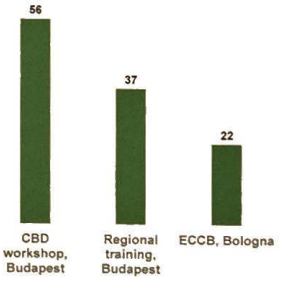
a) Hungarian experts in 3 **CBD expert groups**

1. Indigenous Peoples and local communities
2. KMGBF Indicators
3. Technical and Scientific Cooperation

b) So far organisation of **3 international workshops**



a. Membership of 14 CBD expert groups



b. Number of participating experts

c) **Hungarian and polish experts** were **prepared** for the EC presidency 2024 and 2025, and the 16th United Nations Biodiversity Conference (COP16)

HU24EU

COP16 COLOMBIA

Further information

nemeth.timea@ecolres.hu https://coop4cbd.eu/

Our long-term goal

The practical knowledge and networking gained should strengthen the participation of the region and Central and Eastern Europe, so that the specific aspects of our region can be better reflected in the EU and global CBD processes.

Special thanks to the staff of the Biodiversity and Gene Conservation Department of the Ministry of Agriculture for their professional cooperation and logistical support.

EU-H2020, 101081778 – CO-OP4CBD

#COP17
Armenia will host the "Seventeenth Meeting of the Conference of the Parties to the Convention on Biological Diversity"

Convention on Biological Diversity

REPUBLIC OF ARMENIA
MINISTRY OF ENVIRONMENT

ARMENIA IS AMONG TOP 10TH OF THE WORLD'S SAFEST COUNTRIES

YEREVAN IS RANKED AMONG 20TH SAFEST CITIES AMONG 352 CITIES AROUND THE WORLD.

FLEXIBLE VISA REGIME
43 RESIDENT EMBASSIES AND 37 REPRESENTATIONS OF INTERNATIONAL ORGANIZATIONS ACCREDITED TO THE REPUBLIC OF ARMENIA.

TWO OF THE WORLD'S
36 BIODIVERSITY HOTSPOTS
CONVERGE IN ARMENIA

3 STATE RESERVES, 27 STATE SANCTUARIES AND 4 NATIONAL PARKS IN ARMENIA (13,1% OF COUNTRY'S TERRITORY)

MORE THAN 200 MONUMENTS OF NATURE.

ABOUT 500 ANIMAL SPECIES (ABOUT 3% OF THE FAUNA) AND 144 PLANT SPECIES (3.8% OF THE FLORA) ARE ENDEMIC OF ARMENIA.

ARMENIA OCCUPIES ONE OF THE LEADING PLACES IN THE WORLD WITH VASCULAR PLANT DENSITY (ABOUT 107 SPECIES GROW ON AN AREA OF 1 KM2)

ZVARTNOTS INTERNATIONAL AIRPORT

KAREN DEMIRCHYAN COMPLEX

Inequalities in regional representation of IPBES European work

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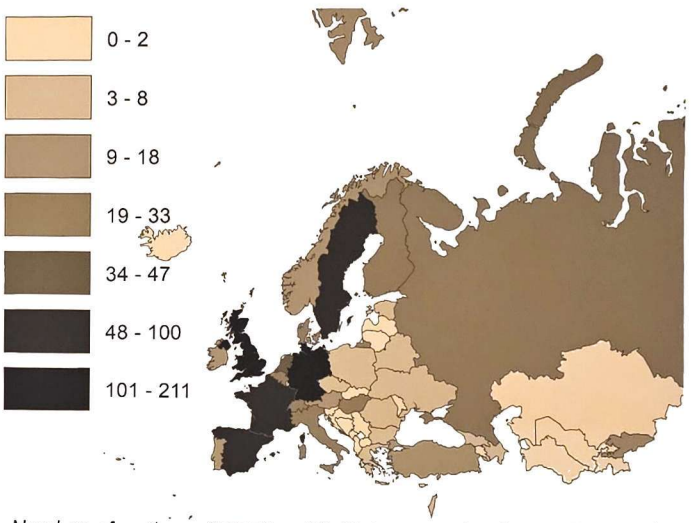
Background

IPBES is dedicated to conserve biodiversity, involving thousands of experts worldwide. It pursues geographical balance to ensure credibility and the effective implementation of conservartion objectives.

Methods

To find out whether and to what extent this balance is achieved, we inspected the affiliations of the authors of the Europe and Central Asia (ECA) regional assessment and IPBES-related papers on the Web of Science (WoS).

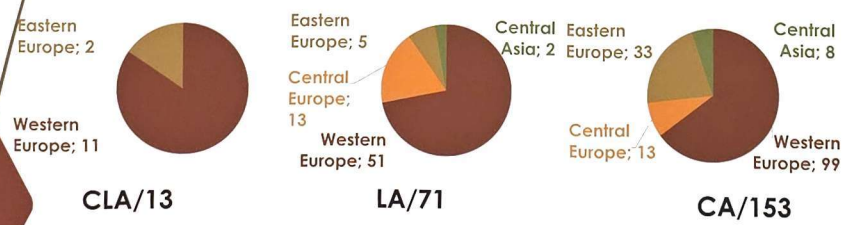


Number of authors (IPBES + WoS) by countries in the ECA region

Results

Distribution of authors is uneven between subregions and countries. From the four subregions in ECA, two-thirds of contributors affiliated in WE, 12% in CE, 16% in EE, and 4% in CA. At the country level, affiliations belonged to 42 countries, with the first ten countries' experts providing 62% of all authors. Nine belong to WE, though Russia gave the most experts (25). Regarding WoS articles, we identified 759 authors from ECA countries, of which 95% were from WE.

Authors of the IPBES ECA Regional Assessment by subregion



CLA: coordinating lead author
LA: lead author
CA: contributing author

Behind Russia (25), Kyrgyzstan (8), Hungary (6), and Turkey (6) delegated the most experts to the ECA Assessment from the EE, CE, and CA subregions (i.e., the UN EE region), while the most WoS papers were produced by Hungarian authors (15), followed by Estonia (5), and Turkey (5).

Authors of IPBES-related papers on WoS by subregion

CORR-AU: corresponding author
ALL-AU: all authors

Recommendations

- Allocate resources to increase the capacity of less active subregions and countries
- Strengthen links between subregions
- Make better use of IPBES network
- Engaging local knowledge through dialogues and workshops
- Establish programmes to combat „brain drain"
- Free publication in prestigious international journals

The study is supported by the RESPIN – HORIZON 2023 project.

Báldi A. Palotás B. (2020): „How to diminish the geographical bias in IPBES and related sciences"
https://doi.org/10.1111/conl.12786

Harnessing the Hungarian ecosystems' mapping and assessment results for novel scientific results

András Báldi & Eszter Tanács

Centre for Ecological Research, Vácrátót, Hungary

Mapping and Assessment of ES (MAES-HU):

- 236 stakeholders participated in the 5+ years project.
- The results (national ecosystem type, condition and services maps) provide the base for new national strategies, and widely used across different sectors (Fig. 1)
- Low visibility at the international level as the results were Hungarian reports;
  → low chance to be used in international assessments, e.g. by IPBES.

Increasing international visibility via:

- English, peer reviewed publications.
- International meetings, congresses.

It needed:

- Funding for the scientific afterlife of the project (2 grants of the Hungarian Scientific Research Fund (OTKA)).
- Change of thinking and approach from national report to academic writing.

Benefits:

- MAES-HU experts get international recognition through the papers.
- National results (at least some) reach international visibility.

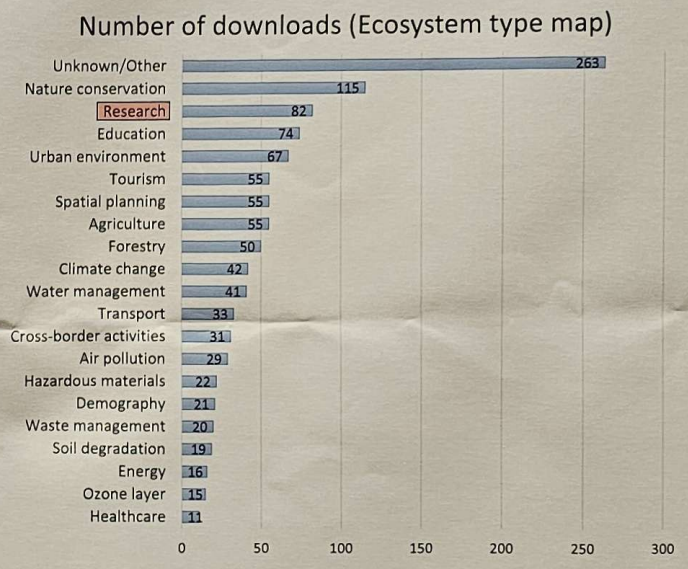


Fig 1. Distribution of the downloads of the Ecosystem Map of Hungary according to planned use in the first 6-months after the publication of the map in November 2019 (source: Tanács and Belényesi et al. 2021)

Conclusion:

- MAES-HU produced high quality national results, which can be harnessed for academic papers.
- Not all knowledge and data, however, are used in publications.

There is a need to map available national knowledge and data, and provide ways to utilize these to fill knowledge gaps in IPBES and IPCC assessments.

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The study is supported by the RESPIN – Horizon Europe 2023, and the Hungarian Scientific Research Fund OTKA/ 134329 projects.