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ENVIRONMENTAL INFORMATION IN CENTRAL ASIA 2022

LESSONS LEARNED FROM THE IMPLEMENTATION OF SHARED ENVIRONMENTAL INFORMATION SYSTEM (SEIS) PRINCIPLES

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Environmental information in Central Asia 2022

Lessons learned from the implementation of Shared Environmental Information System (SEIS) principles

TABLE OF CONTENTS

INTRODUCTION AND GLOBAL PERSPECTIVE

To be relevant and well informed, environmental decision making needs to be supported by credible data, state of environment reporting and agreed policy goals as well as by integrated environmental assessments. Such assessments — like UNEP's Global Environment Outlooks, the UNEP/UNECE Pan-European Environmental Assessments, the UNECE Environmental Performance Reviews (EPRs), the European Environment Agency Thematic Assessments, and similar national reports — combine and interpret data, information and knowledge from across a wide variety of themes and sectors. They can facilitate understanding of the state of the environment and of environmental trends, as well as of progress towards agreed goals of environmental and Sustainable Development Goals. Examining the state of the environment requires the use of a gender lens to better understand the human-environment interactions which are embedded in social, cultural and economic systems and arrangements. Environmental sustainability requires the adoption of gender equality and human-rights based approaches which are crucial towards the formulation of effective policies.

The preparation of reports is dependent upon the availability of reliable and regularly updated data and information that constitute a solid knowledge base. But in many countries, the development and use of numerous databases and knowledge portals that are often poorly connected and difficult to find has become an obstacle in making environmental information readily accessible for reporting and assessment, both at the national, the regional and the global levels. In addition, in many countries environmental data and information is not easily accessible by the public or, if available online, not easily discoverable or accessible in an easy-to-understand format. Similarly, data on the gender-environment nexus is hard to find and there is no standardized collection of data across countries. Various UN Member States have however pledged to support the collection of such data through the endorsement of SDGs, the Paris Agreement and the UNEA Resolution 4/17 on 'Promoting gender equality and the human rights and empowerment of women and girls in environmental governance'.

There is a need in all regions for strengthening the knowledge base of integrated environmental assessments and reporting on the state of environment by linking relevant data and information and making it easily available and accessible in line with the principles of the Shared Environmental Information System — SEIS: notably, among others, that open access to data should be provided; that data are managed as close as possible to source: and that they are collected once and shared for many purposes. In line with the principle of 'Leave No One Behind', environmental data should include data on the human-environment nexus disaggregated by age and sex with specific efforts made to collect data on groups that are most vulnerable and who are often left furthest behind.

Often, in many countries, the same data and information gets collected multiple times by different agencies for multiple reporting and assessment processes as well as for other purposes because of insufficient knowledge management and sharing. Insufficient cooperation and exchange of information between national stakeholders can thus result in duplicated efforts and high and unnecessary costs. Combined with a lack of reliable, timely, accessible and comparable data and information, reporting obligations and assessments become a burden and are unable to effectively support decision-making. Furthermore, once an assessment is completed, usually the social processes and networks created in its support cease to exist and gaps in knowledge sharing occur. In the intervening period new issues emerge that are not always captured in an effective way.

Finally, while all UN member states have adopted the 2030 Agenda for Sustainable Development and accepted the task of monitoring the SDGs, few countries, especially developing countries, have undertaken a thorough analysis to determine which areas of environmental information to prioritize given the numerous policy demands at the national level as well as reporting requirements arising from multilateral environmental agreements.

There is a need in all regions for strengthening the knowledge base of integrated environmental assessments and reporting on the state of environment by linking relevant data and information and making it easily available and accessible in line with the principles of the Shared Environmental Information System — SEIS: notably, among others, that open access to data should be provided; that data are managed as close as possible to source: and that they are collected once and shared for many purposes.

The reporting burden to MEAs as well as to national and regional bodies is enormous and often further exacerbated due to shortage of human resources and sub-optimal institutional structures for sharing data at national level. In addition, to regularly report on the environmental dimension of the SDGs, countries need to improve and coordinate their current data sharing processes, in addition to strengthening their capacity to produce environmental indicators and statistics.

In the Pan-European region, countries from Eastern Europe, Caucasus and Central Asia have reviewed and agreed to commonly apply a set of environmental indicators agreed by the Joint Taskforce on Environmental Indicators and Statistics under the United Nations Economic Commission for Europe. They cover the major environmental themes: air, climate change, water, biodiversity, land and waste and socio-economic sectors, such as transport, energy, agriculture and environmental financing. By agreeing on the same set of core indicators, countries can be compared with one another to identify challenges and encourage sharing of best practices in the production of environmental data and statistics. The set of environmental indicators is being regularly discussed and revised.

SEIS and its principles

SEIS and its principles

SEIS aims to create an improved environmental information system for Europe and Central Asia. It is a key driver for the growth of knowledge base and it integrates a wealth of information from networks and partners, citizen science, crowd sourcing, and new environmental information gathering initiatives. These goals are underpinned by a network of public information providers that share their environmental data and information. SEIS helps simplify, streamline and modernise existing systems and processes, and makes them web-enabled. It is a decentralised yet integrated system that improves the quality, availability, accessibility and understanding of environmental information.

SEIS is also about a shift in approach, from individual countries or regions reporting data to specific international organisations, to their creating online systems with services that make information available for multiple users — both people and machines. Such a shift happens in a stepwise way, ensuring that SEIS remains a driver for access to environmental information and its integration in the knowledge-based economy. SEIS is based on seven 'principles': information should be:

- Managed as close as possible to its source
- Collected once and shared with others for many purposes
- Readily available to easily fulfil reporting obligations
- Easily accessible to all users
- Accessible to enable geographical comparisons and the participation of citizens
- Fully available to the general public and at national level in the relevant national language(s)
- Supported through common, free, open software standards

Reinforcing and building upon the SEIS principles, EEA established three pillars defining the core elements needed for an effective and functional SEIS. These pillars are content, infrastructure and cooperation.

Abridged from eea.europa.eu/about-us/what/shared-environmental-information-system

At sub-regional level in the Pan-European region, Central Asian countries were involved in SEIS-related activities during 2013–2015 under the scope of the EU funded project FLERMONECA (Forest and Biodiversity Governance, Including Environmental Monitoring), which was implemented by the Regional Environmental Centre for Central Asia, the German Corporation for International Cooperation and the Environmental Agency Austria in cooperation with Zoï Environment Network. MONECA, one of three components of the project, aimed at enhancing regional cooperation and partnership with Europe in the fields of environmental monitoring and information, including support to the implementation of UNECE recommendations regarding the production and sharing of environmental indicators, and the development/improvement of national webpages aimed at promoting public sharing of environmental data. The project supported capacity-building in these fields in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan in line with broader regional efforts to implement SEIS principles in the Pan-European region.

During 2016–2019, with continued EU funding, the United Nations Environment Programme (UNEP) has provided further technical support and capacity-building to SEIS in Central Asia. Building upon the results of FLERMONECA, project activities facilitated the population of country webpages with environmental indicators, the development or improvement of national portals for online sharing of environmental data, the preparation of the new generation of state-of-environment reports, and, increasingly, on the improvement and use of environmental indicators to monitor progress towards Sustainable Development Goals.

This publication takes stock of the lessons learnt through implementing the EC GPGC ENRTP project “Capacity-building for environmental data sharing and reporting in support of a shared environmental information system (SEIS)”, and subsequently through other UNEP and UNECE initiatives until 2022, and outlines a way forward to make SEIS everyday reality and essential tool for environmental stewardship in Central Asia.

CONTEXT AND SEIS IN CENTRAL ASIA

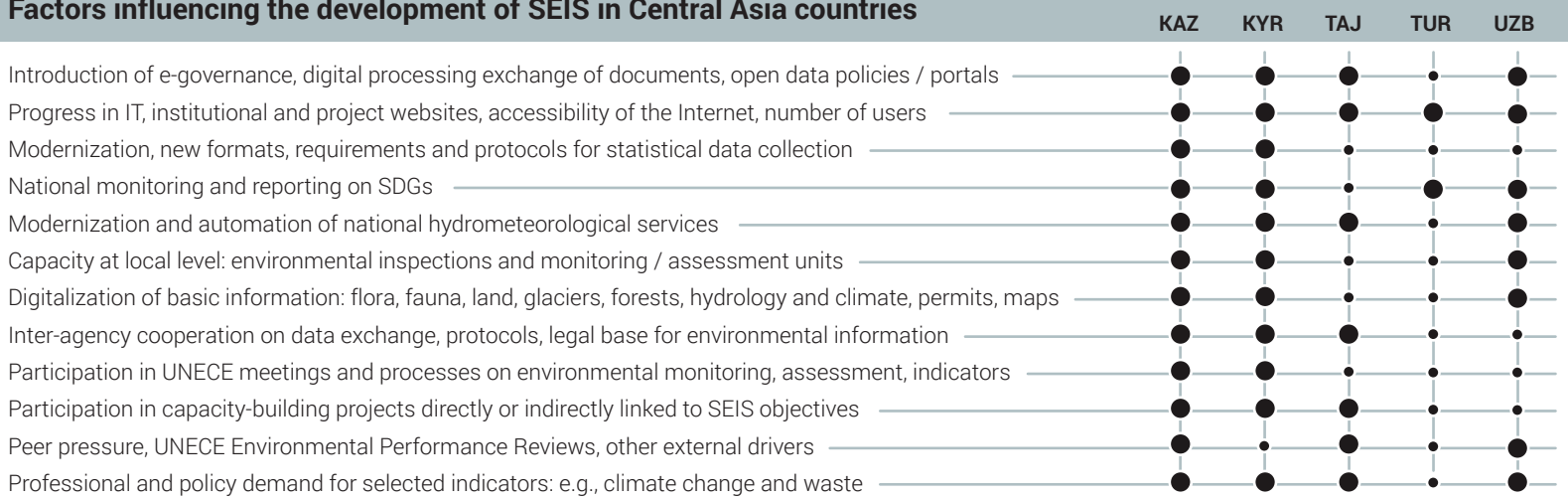
During 30 years of independence and transition to a market economy, five Central Asia states — Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan — developed their own environmental governance systems and established and maintained regional platforms for cooperation, dialogue and information exchange on environmental issues of common interest. With the penetration of the Internet and information technologies, they also embraced to various degrees the collection, dissemination and use of environmental information online.

Considering that environmental and statistical data providers, formats and procedures for data collection often have roots in the common Soviet past, so that the basic systems, such as hydrometeorological or biodiversity monitoring or air pollution reporting, and data flows resemble each other. There are nonetheless significant differences among the countries in terms of penetration of the Internet, the availability and open accessibility of environmental and other data. There are also new, emerging and quickly evolving areas of indicators and reporting — such as on climate change (GHG emission inventories, climate change analysis), waste (industrial and municipal waste, POPs and mercury inventories), and Sustainable Development Goals (SDGs) — that countries address differently.

A combination of the active and regular engagement of Central Asia countries with UNECE work on environmental monitoring, assessment and indicators; the implementation of EU-funded FLERMONECA in 2013–2015; further support by UNEP, UNECE and others — in addition to the gradual growth in IT capabilities and introduction of country-wide e-governance systems — have helped to achieve notable, though unbalanced, progress in Central Asia towards SEIS and improving public accessibility of selected environmental indicators and online environmental reporting.

And while IT progress, growth in open data and e-governance traditions in the countries define the broader and thematic legal settings for online data sharing and dissemination, the supply of and demand for environmental information from local and international users is equally important.

Factors influencing the development of SEIS in Central Asia countries



Driver weigh: • marginal to moderate, ● significant to top political or technical driver.

Thematic data flows

While air quality is increasingly measured automatically, labour-intensive procedures are still widespread, and limit the spatial coverage and timing of such information. Water quality data are more complete in Kazakhstan, Uzbekistan and Turkmenistan, while in Kyrgyzstan and Tajikistan — the headwaters of the main Central Asian rivers — they are patchy. In rare cases information about high levels of air or water or soil pollution triggers political decisions or technical responses, which are dependent on financial means and technologies. At the same time, lack of robust, timely, accessible and understandable information may lead to misunderstandings and disputes — be it cross-border water-sharing or the environmental footprint of mining projects.

Academies of science and national biology institutes along with state forestry organizations and nature parks and reserves are responsible for biodiversity monitoring that includes numbers of species and the state of ecosystems, protected areas and forests. Such work, however, is highly labour-intensive, and most of the available data are still paper-based and either refer to the Soviet period or 10–20 years ago. Due to the diversity of definitions and sources of information, the dynamism of natural processes, and the limited data exchange between institutions, there are inconsistencies in the official data on protected areas, forest cover, number of species, status of species and their habitats. The recent application of the Global Standard for Key Biodiversity Areas in the mountain ecosystems of Central Asia clearly demonstrated a lack of spatially precise data on endangered and endemic species and the delineation of protected areas, migratory bottlenecks and consistent classifications of land cover and ecosystems.
Waste is one of the most complex indicators. While the basic data on waste generation are available at least in Kazakhstan and Kyrgyzstan, there are still major gaps on how waste is actually measured and defined, and even greater gaps in measuring specific waste streams (food and construction) or recycling rates. Many actors, including the private and informal sectors, are involved in waste management, so good coordination is one of the challenges. Industrial waste tends to be better documented, but both Tajikistan and Turkmenistan have significant information gaps in that respect.

National statistical offices are often key holders of underlying data for such indicators as greenhouse gas emissions, use of ozone-depleting substances, water use, transport, energy, waste, fertilizer use and more. In the past five years, there has been clear progress in the willingness to cooperate with environmental data providers and users (hydrometeorological services and environment and forest agencies). Kazakhstan and Kyrgyzstan have established inter-agency working groups and agreements to formalize such cooperation and followed up the commitments to publicly share the core set of UNECE indicators available in the countries. Tajikistan is on the same track, but for the moment it is less advanced due to gaps in data and to underdeveloped inter-agency coordination and data exchange. In Turkmenistan, the public use of statistical information tends to be restricted. Environmental data disclosure in Uzbekistan despite the absence of formal restrictions and recent progress in the disclosure of monitoring data online, remains a complex issue. Disaggregated and province-level data are rarely disclosed.

Use of environmental information

Users of environmental information per country vary depending on the socio-political and geographic context. For example, in Uzbekistan, Tajikistan and Kazakhstan, parliamentarians are among key political users of such information since "green" movements and assemblies are not insignificant in these countries. In Tajikistan, international projects and institutions working on climate, water and natural resource management boost demand for selected indicators. In Kazakhstan and Kyrgyzstan, high profile species — such as the snow leopard and saiga — or economic sectors, such as mining, catalyse public debate and demand for reliable and up-to-date information. In all of the countries' waste information is limited, and, at the same time, public and political interest in a clean environment and cities is growing, as is the need for waste information.

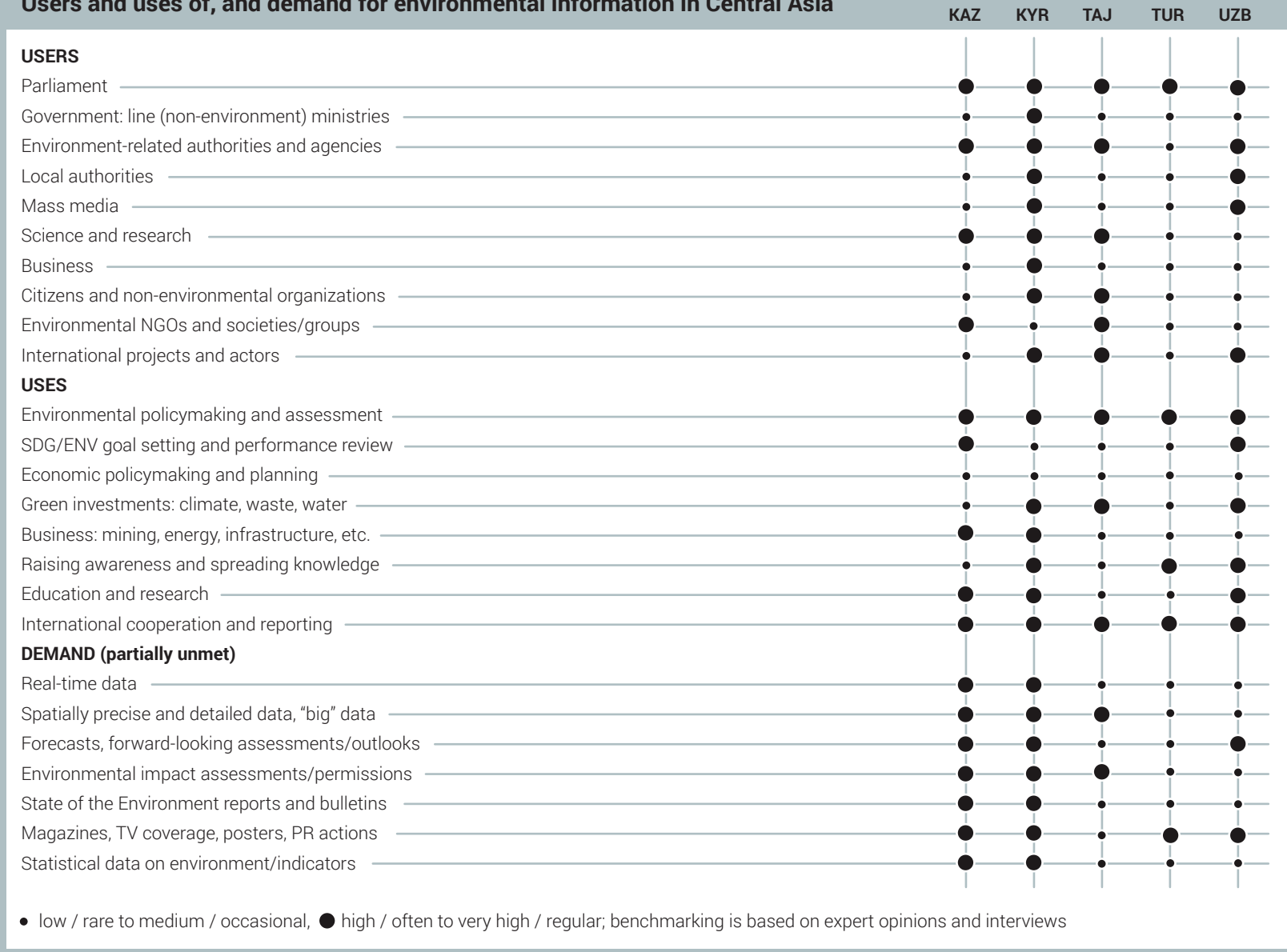
Real time and detailed data seem to fall under a narrow niche of users, uses and demands. Such data are among the most labour-intense and costly to produce, but they serve as a backbone for numerous data aggregations. With the development of spatially precise climate models, the valuation of ecosystem services, water planning and near real time air and water quality communication, the demand for detailed and real time data will likely grow.

Environmental data, maps and visuals especially on "hot" themes — climate change, water, waste and biodiversity are used in communications to the public, while environmental impact assessments are used in business and infrastructure planning. Recently, sustainable development goals increased political and public interest in a broader range of environmental data and climate change investments, and commitments increased the demand for climate change data.

Data disclosure policies of providers of environmental information affect the entire chain of information dissemination and sharing. All Central Asia hydrometeorological services release air and water quality data (in the form of daily, monthly or seasonal bulletins) along with weather forecasts, but they remain reluctant to publicly disclose historical observation data (time series) or lack capacity to compile and publish annual yearbooks on hydrology, climate and environmental quality. Exceptions are KazHydromet and Uzhydromet, which publish near-real time air quality monitoring data through their web-portals and Apps, while KyrgyzHydromet uses social media. Climate services are poorly developed (too "conservative") considering modern society needs and national commitments on climate adaptation and mitigation.

On the other hand, the growing access to the Internet, availability of information online, and networks of data brokers such as OSCE-supported Aarhus Centres have been instrumental in increasing environmental awareness and access to environmental data in the region.

Users and uses of, and demand for environmental information in Central Asia



Regional exchange of environmental data

While most of the generated environmental data are demanded and used domestically, cooperation in the field of environmental information exchange is growing at the regional level too via Central Asia environmental forums organized by CAREC and international partners, stronger dialogue and synergies between the two interstate commissions under the International Fund for Saving the Aral Sea, and cooperation in selected transboundary river basins. Exchange of information with the neighbouring Afghanistan and China is also increasing.

Regional environmental information sharing by theme in Central Asia

Intensity: • marginal to moderate, ● significant to very significant.

There are themes and geographies where cross-border information plays an important or even crucial role such as water information in cross-border rivers — the Amu Darya, the Syr Darya, the Zeravshan and the Chu-Talas River system. The most difficult situation exists on the Amu Darya River due to a combination of little or no reliable and regular water data on the Panj River shared by Afghanistan and Tajikistan (no water flow data and no water forecasts) and tensions over water use. The Syr Darya River data situation and information exchange is better, but water cooperation here is complicated due to a higher degree of water regulation by dams and to more parties being involved. The situation in the Chu-Talas basin shared by Kyrgyzstan and Kazakhstan is more advanced, but the lack of timely and reliable forecasts and hydrological data is evident there too.

The situation with data exchange in the basin of the Chu (Shu) and Talas rivers, shared by Kyrgyzstan and Kazakhstan, is satisfactory: there are working groups and a joint commission, a transboundary diagnostic assessment (TDA) was prepared by the GEF-UNDP project, and a Swiss water accountability project in the Kyrgyz part of the basin introduced innovative methods of water monitoring and accounting, including at the farm level. Users in the basin expect improved water flow forecasts and greater openness and data quality.

Cross-border sharing of biodiversity data is less important politically and economically, but it can be crucial to the survival of globally endangered and endemic species, sound spatial planning with consideration of migratory sites and coordinated conservation efforts in shared ecosystems. While conservation groups try to maintain exchange via global partnerships (e.g., BirdLife IBAs), or species initiatives (e.g., Global Snow Leopard Programme, Central Asian Mammals Initiative, IUCN Red List), regular data exchange through regional platforms is missing.

A similar situation exists in the waste sector, where certain types of recyclable waste — such as paper, plastics, tires, e-waste — are crossing borders with no reliable data about these waste flows. In 2017, UNEP facilitated production of a Central Asia Waste Management Outlook that follows the methodology and main themes of the Global Waste Outlook and proposes recommendations. Given the importance of the topic, the countries of Central Asia are discussing establishment of a Regional Waste Centre.

The Interstate Commission for Sustainable Development (ICSD) has a website, but much of the environmental information on this site needs to be updated. Kazakhstan's leadership of the ICSD for 2022–2024 provides an opportunity to apply its technical skills and experience in preparing state of the environment reports to improve regional environmental information. The Tajik branch of the ICSD has its own website with news, compilations of environmental laws, programmes and assessments initiated by Jalil Buzrukov. This example can be used by other countries for their national ICSD websites. Non-governmental organizations are in favor of updating the modalities of the ICSD and greater involvement of NGOs in decision-making.

The Scientific-Information Centre of the Interstate Commission for Water Coordination based in Tashkent has accumulated a wealth of data and knowledge, and has designed models on the environment and water resources of the Aral Sea basin, but the most useful parts of the information and online tools are password-protected and only available to a limited number of registered users.

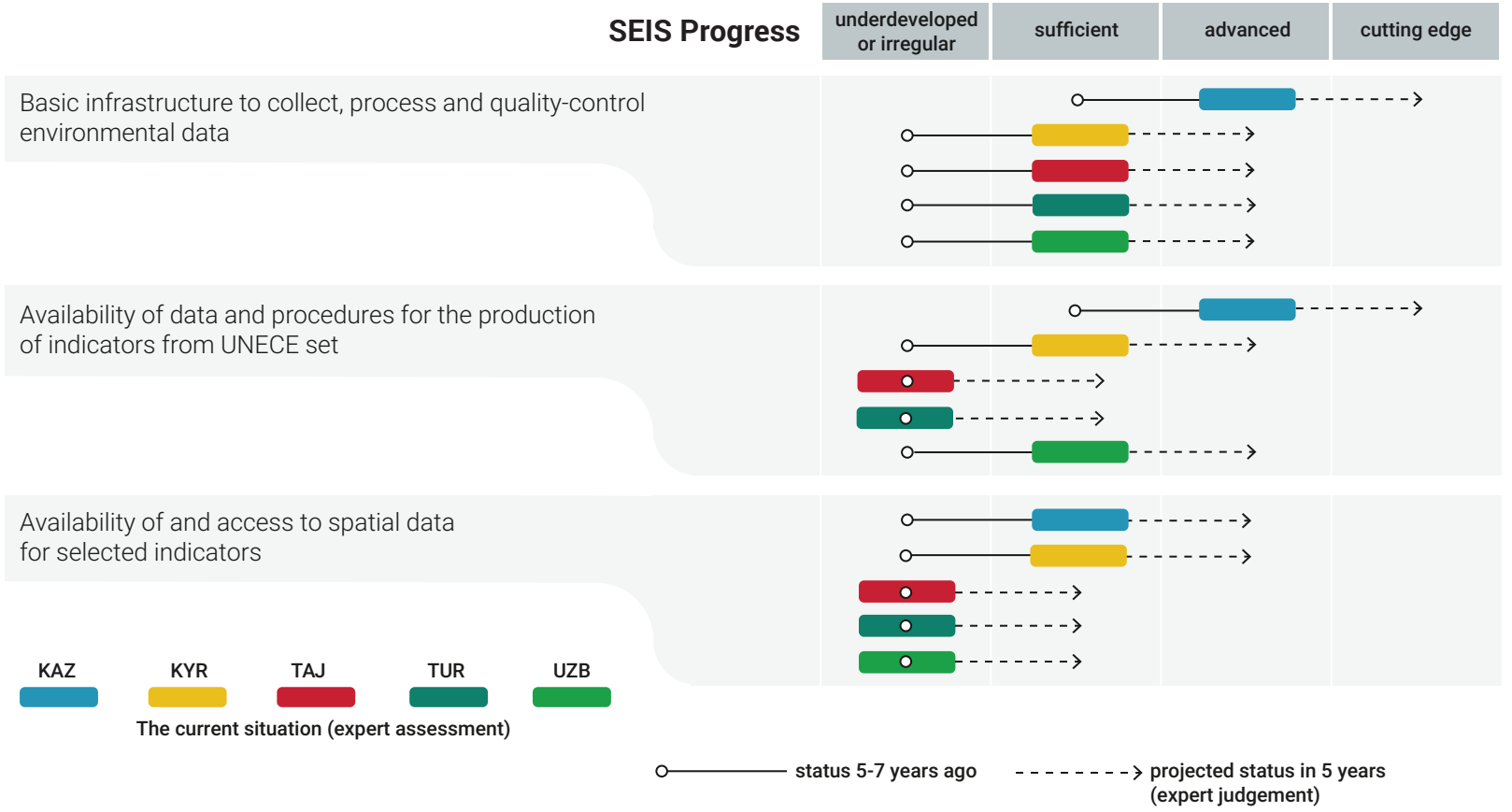
The IFAS reform discussions are ongoing, and include its structures and topics that cover water, energy, environment and socio-economic issues. Countries have an understanding of the need to include energy issues in the regional context and pay more attention to the environment, but there are different positions on how to implement reforms in organizational and political terms.

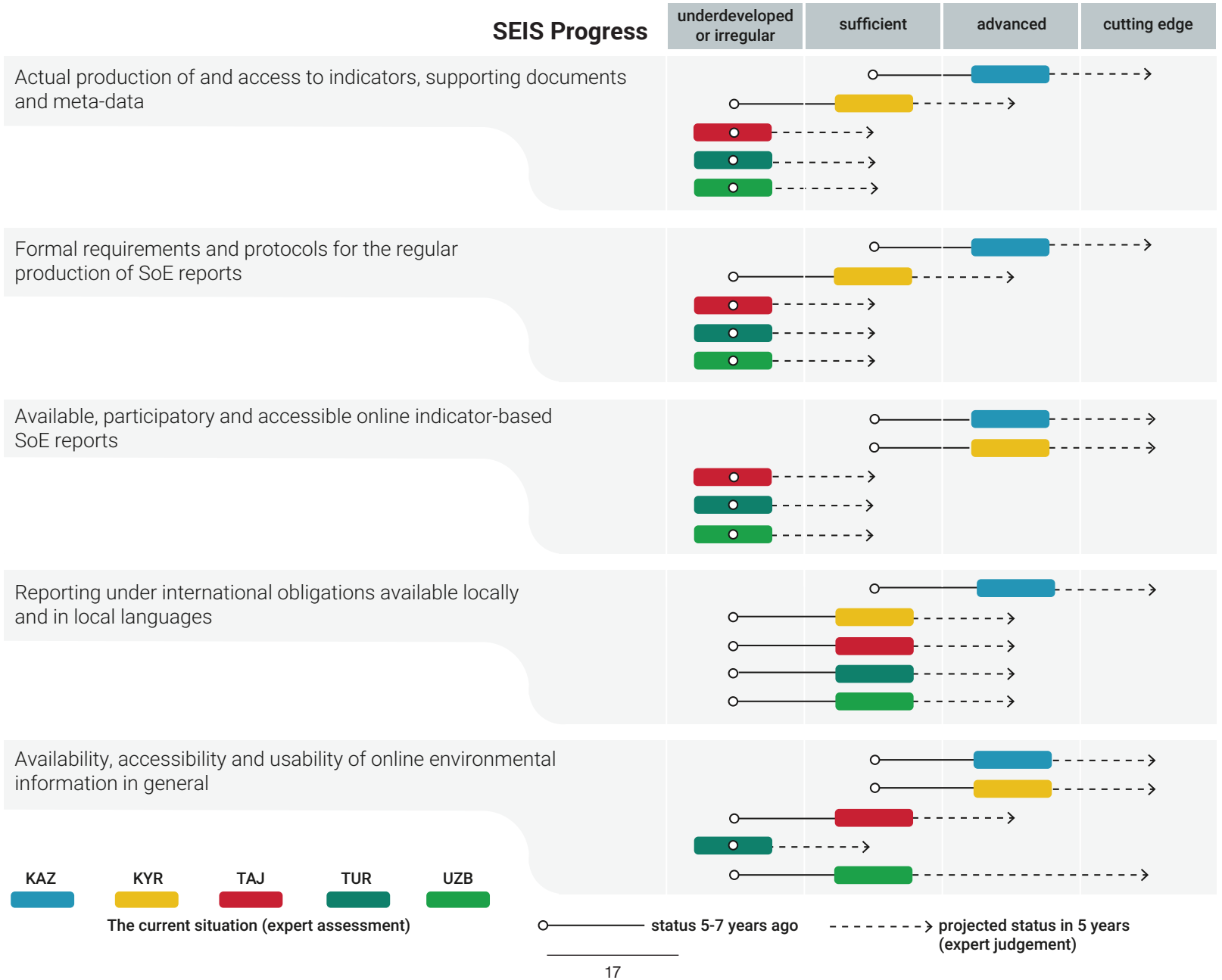
The Regional Environmental Center for Central Asia (CAREC), pursuing its goal of transformation into a Regional Knowledge Hub, designed a regional climate change information platform (CACIP) in 2021 under the CAMP4ASB project. CAREC welcomes partners in Central Asia to use CACIP as a tool to promote or develop other regional and national environmental information systems. CACIP is funded by the World Bank, the Green Climate Fund, the Swiss Agency for Development and Cooperation and other donors.

SEIS in Central Asia: where are we moving?

The figure shows a qualitative assessment of how far some of the dimensions, which are important for implementing SEIS principles in Central Asia, have evolved in the individual countries and are expected to evolve further.

Benchmarking primarily shows the situation in terms of data availability, production and sharing, rather than the underlying legal and technical bases. Advancing the latter through the countries' own efforts and with the continued support of the international community, however, will be key to bringing SEIS in Central Asia to full implementation.




SEIS Progress
underdeveloped or irregular
sufficient
advanced
cutting edge
Actual production of and access to indicators, supporting documents and meta-data
Formal requirements and protocols for the regular production of SoE reports
Available, participatory and accessible online indicator-based SoE reports
Reporting under international obligations available locally and in local languages
Availability, accessibility and usability of online environmental information in general
KAZ
KYR
TAJ
TUR
UZB
The current situation (expert assessment)
status 5-7 years ago
projected status in 5 years (expert judgement)


Kazakhstan

SEIS highlights

Kazakhstan, with its ambitious modernization projects and long-term development goals to 2050, is introducing e-governance that also covers the environmental sector and statistics. The development of SEIS at the national level is facilitated by:

- the gradual introduction of electronic management, processing and exchange of official digital documents, open data policies and data portals at the national level;

- general IT progress, development of institutional and project websites, growth of Internet accessibility and of the number of Internet users;

- digitization of source information such as inventories of flora, fauna and soil, forests, historic hydrological and climate time series.

For GHG emissions inventory, land degradation and waste data Kazakhstan applies more advanced approaches than its Central Asia neighbours and can serve as a learning and experience exchange platform.

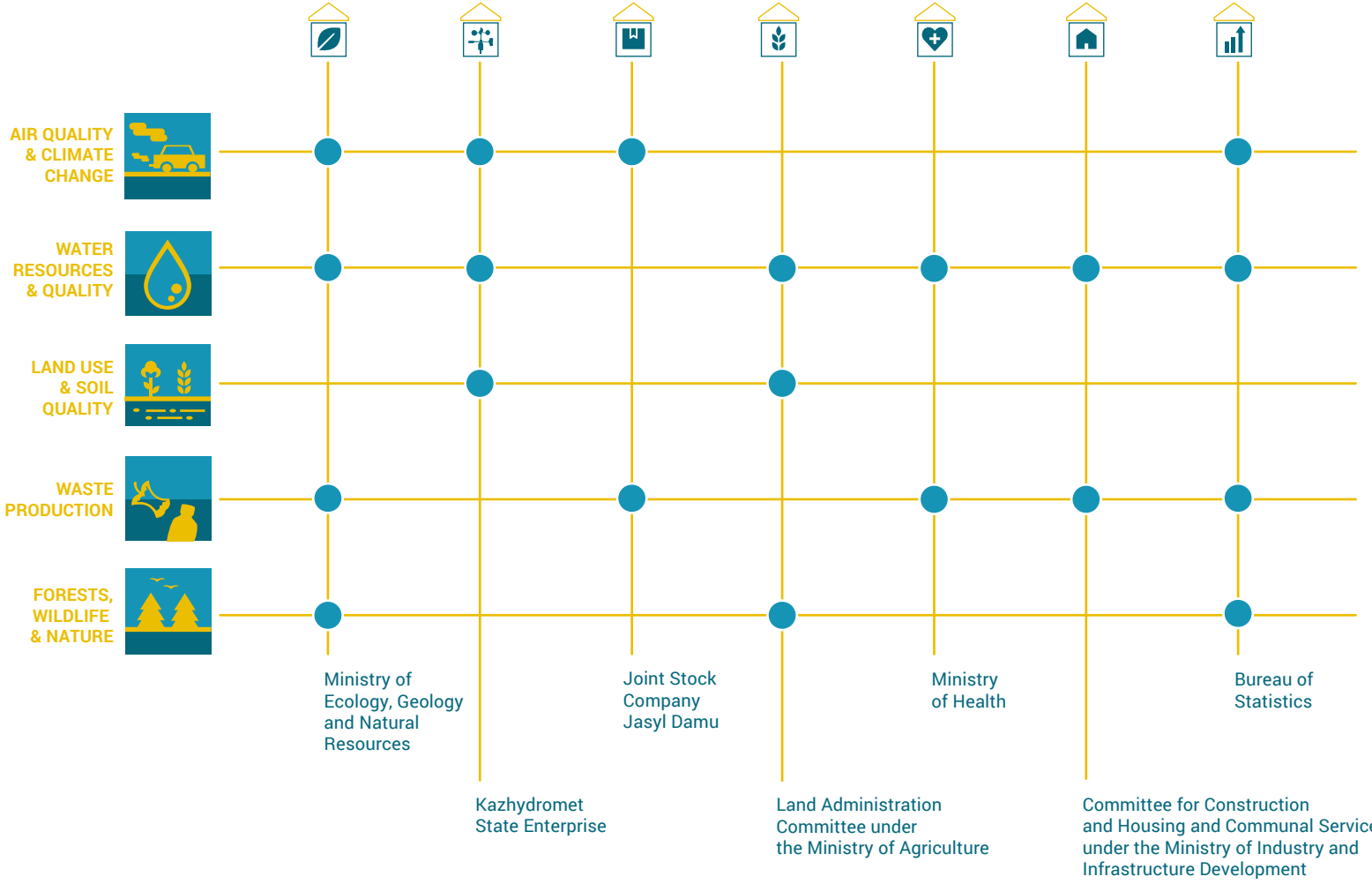
Environmental information is increasingly present online: water and air quality maps, national state of the environment reports and environmental indicators are increasingly available in interactive formats.

The recent comprehensive revision of the Environmental code of the Republic of Kazakhstan (not yet in force) includes comprehensive provision for the management and dissemination of environmental information. Its articles address monitoring, national SoE reporting, presentation of SoE findings to the broad public in an interactive online format, and the regular preparation of a national environmental atlas.

In 2019, the Parliament issued legislation to approve the adherence of Kazakhstan to the PRTR protocol under the UNECE Aarhus convention.

Citizen monitoring of environmental quality is gaining speed, for instance air quality monitoring in Almaty received in 2018 a prestigious Tereshkevich award for young environmentalists. Environmentally aware civil society and mass media are active users of environmental data.

Environmental information landscape



* In addition, organizations and institutions under the Academy of Science make research and collect soil, wildlife and glacier data.

Key sources of environmental information

The **Ministry of Ecology, Geology and Natural Resources** annually publishes an integrated report on the state of the environment and environmental policy. With UNEP support, it has prepared several editions of its interactive indicator-based online version. The Ministry commissions the regular preparation of the National Environmental Atlas. The Information and Analytical Center for Environmental Protection jointly with Committee on Forests and Wildlife under the Ministry produce the environmental reports and maintains databases.

Kazhydromet publishes monthly to annual bulletins on air, water and soil quality, both for the whole and for selected areas, in print and online. Near real-time data from automated monitoring stations are available too.

Environmental (air emissions, water use, waste generation and use) and natural resource statistics (land-use, forests, wildlife, fish — *sensu stricto* falling outside of the domain of environmental statistics in Kazakhstan) are regularly published by the **Bureau of Statistics under the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan**. Also accessible are environmental indicators from the UNECE core-set.

State Fund of Environmental Information managed by the **Information Analytical Centre** of the Ministry of Ecology, Geology and Natural Resources provides on-request access to cadastres (registers) of natural resources and other environmental information, including the Pollution Release and Transfer Register. The Centre also maintains a dedicated web portal for Kazakhstan's state of the Environment report.

Greenhouse gas emission data are not available directly from their holder **JSC Jasyl Damu**, however they are regularly reported to UNFCCC and are easily accessible there (the same is true for many other datasets reported to FAO, WMO as well as the secretariats of various other **international organizations**, processes and MEAs). The World Bank has supported the design of Kazakhstan's greenhouse gas electronic reporting platform to facilitate corporate reporting and its verification.

The Institute of Geography and Water Security of the **National Academy of Science** has played a key role in the preparation of the National Environmental Atlas. Other parts of the Academy collect and systematise data on soils, glaciers, and endangered species data for the regularly published Red Data Book.

The network of national **Aarhus centres** maintains a large collection of electronic environmental information, including previous state of the environment reports.

The **Open Government** platform, initiated in 2013, publishes governmental agencies' data in various areas including the environment — waste, biodiversity, fisheries, water and air quality, etc.

Earlier Kazakhstan provided IT support and overall coordination on the regional environmental exchange through a website of the **Interstate Sustainable Development Commission** (ICSD). The country hosts Regional Environmental Center and Regional Hydrological Center of Central Asia.

Environmental indicators

Kazakhstan's environmental reporting, assessment and use of indicators are more advanced than in the neighbouring countries of Central Asia, and may serve as a basis for sharing knowledge and experience. In addition to national statistics, the Bureau of Statistics produces and makes available the core set of UNECE environmental indicators and OECD green economy indicators. In 2022, 46 UNECE indicators were available online along with extensive list of green economy indicators. In the 2021 UNECE SEIS performance review, Kazakhstan demonstrated top performance scores for most data streams, comparable to Sweden or Slovakia.

Kazakhstan - **Environmental indicators**

AIR

- A1 — air emission
- A2 — air quality
- A3 — ozone-depleting substances

CLIMATE CHANGE

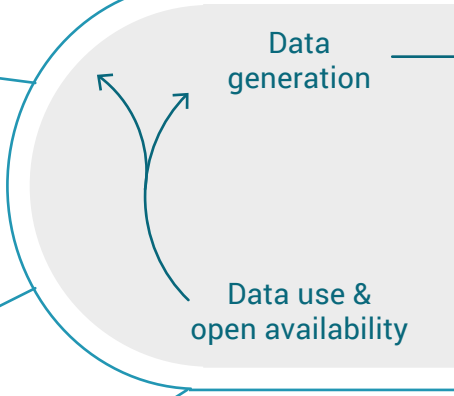
- B1 — air temperature
- B2 — atmospheric precipitation
- B3 — greenhouse gas emissions

WATER

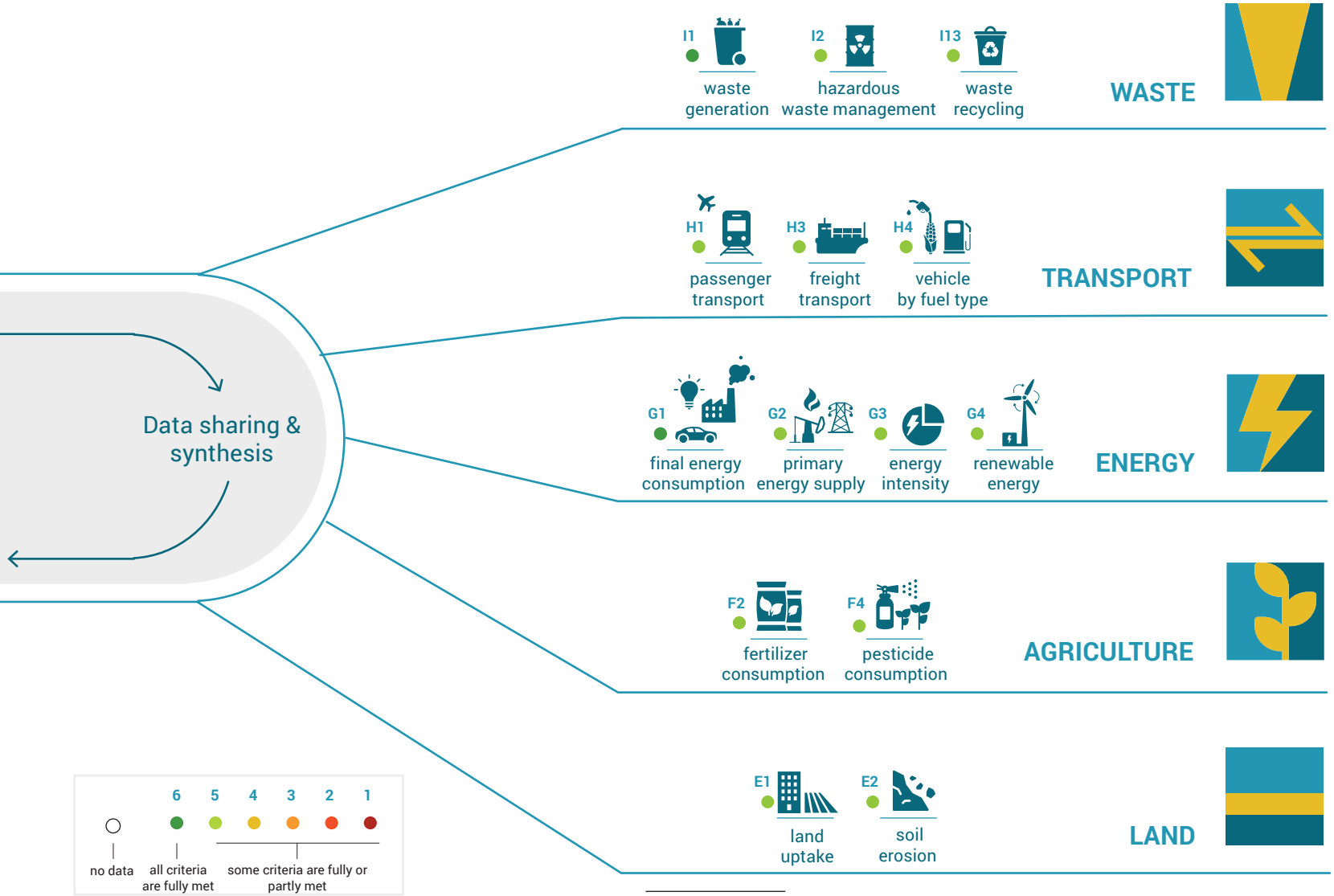
- C1 — water resources
- C2 — water abstraction
- C3 — water use
- C4 — household water per capita
- C5 — water supply
- C7 — water losses
- C8 — reuse & reclycling water
- C9 — drinking water quality
- C10 — BOD and NH_4 in rivers
- C11 — nutrients in water
- C12 — nutrients in coastal seawaters
- C14 — pop. connected to WWT
- C15 — WWT facilities
- C16 — polluted wastewater

BIODIVERSITY

- D1 — protected areas
- D3 — forests & woodland
- D4 — protected species
- D5 — selected species

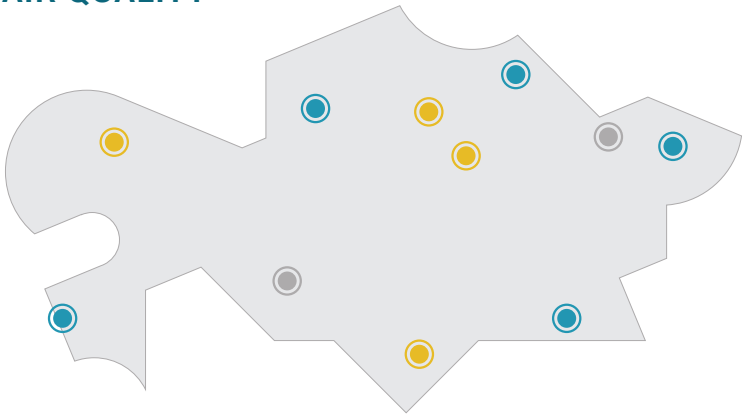


Kazakhstan - **Environmental indicators**



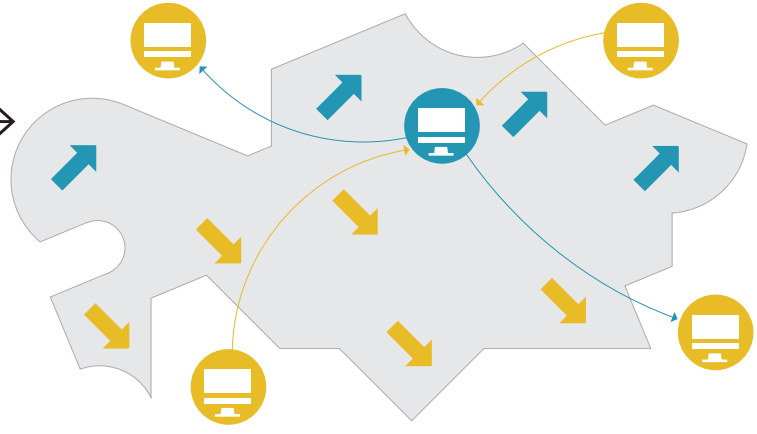
Spatial dimension of environmental data

AIR QUALITY



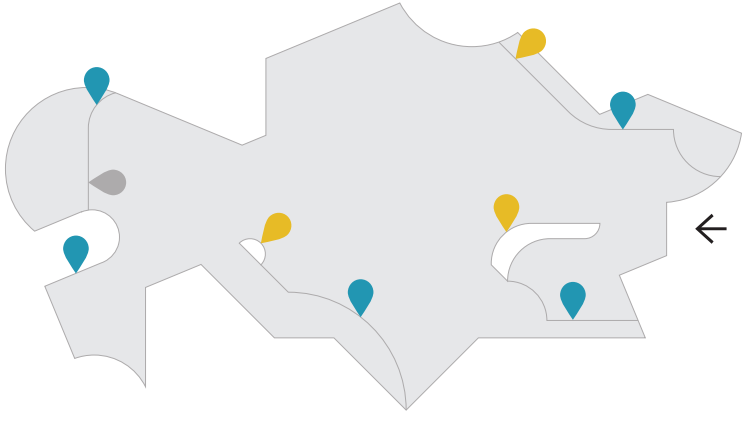
Kazakhstan's air quality monitoring covers 67 major and industrial cities, and data for 170 sampling points, including 123 automated stations, are available online in real time. The data are available as an integrated pollution index and by specific pollutants. The public demand for air pollution data, including citizens observations, is high. The pollutant release and transfer register open data are piloted in several provinces and are being scaled up. An automated system for real-time monitoring of air emissions at stationary sources is planned to be introduced in 2023.

CLIMATE CHANGE



Well-established climate monitoring. Regular annual climate status surveys with spatial information on climate trends throughout the country. Analysis and detailed data on climate change and greenhouse gas emissions are contained in UNFCCC reporting and national communications and summarized in statistics.

WATER QUALITY



Well established water quality monitoring, including cross-border cooperation and data exchange with Russia, Uzbekistan, Kyrgyzstan and China. Water monitoring network covers 130 water sites and consists of 358 sampling points. Spatial data are available both as an integrated water quality index and as pollutant-specific values.

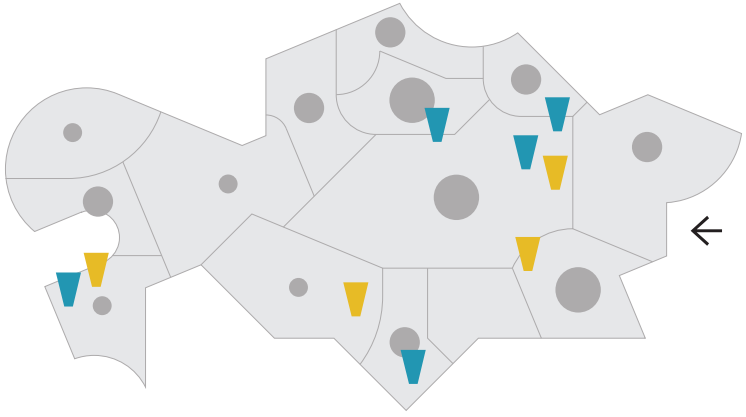
FOREST

The forest cadastres of Kazakhstan are complete, the data are regularly updated and available in national atlases and upon request from the authorities.

PROTECTED AREAS

Spatial information is available in national atlases and maps and environment reports, and is regularly updated. Diverse classifications of protected areas and their spatial coordinates exist. But there are some data gaps in spatial information for buffer zones or multi-zone reserves. Spatial information is available for flagship species and groups (e.g. saiga, birds).

WASTE



There exist spatial inventories of pollution hotspots, including hazardous waste. Information could be found in environmental reports, atlases and cadastres. Hazardous waste generation and treatment statistics per province and data by enterprises and industries are available.

Lessons and recommendations

While the environmental information system of Kazakhstan is arguably one of the most advanced in Central Asia, the large size of its territory, its rapidly evolving legislation and institutional structures and the associated high workload and turnover of officials create challenges for implementation and enforcement. Information and coordination gaps exist in the waste sector, where local authorities, the private sector, sectoral ministries, statistics and NGOs and associations play various niche roles and have different data.

More complete and robust information can help to direct investments and optimize environmental solutions. The rapid pace and ambitious targets of socioeconomic development in Kazakhstan and their environmental footprint requires information to be up-to-date and useful for various purposes, so the State of the Environment report and associated products and datasets need to be well designed and efficiently maintained to reflect the actual development and to increase the impact and usefulness of environmental information for society, policymaking and sustainable development.

RECOMMENDATIONS FOR DATA COLLECTION

Increase automation of observations (e.g., air and water quality), including automated systems for measurement of fine particles in emissions and atmospheric air

Increase the use of modern international methods of analysis and big data, including environmental monitoring

Develop an effective system of accounting and reporting of waste

Promote the collection of data on the human-environment nexus disaggregated by sex, age and vulnerable groups to inform environmental policies

RECOMMENDATIONS FOR ENVIRONMENTAL INDICATORS

Continue to produce and share online the full set of UNECE environmental indicators (including the revised set approved in 2021 under the scope of the UNECE Joint Task Force on Environmental Statistics and Indicators) along with the complete metadata — description and explanation of indicators, information on methodology and units, brief interpretation of data flows and trends

Increase the use of available environmental indicators (including those on the human-environment nexus) for reporting on conventions and intergovernmental agreements and improve access for local users

RECOMMENDATIONS FOR ENVIRONMENTAL COMMUNICATION

Build further capacity for state of the environment reporting, including the use of indicators, forward-looking scenarios (mega-trends), better data management and visualization

Continue to produce an online national state of the environment report with interactive links to the latest data, smart data visualizations, and multilingual versions (Kazakh, Russian, English)

Develop and regularly update oblast-/city-level online resources on local-scale environmental issues

Update the National Environmental Atlas for online publishing in openly accessible format

Support Kazakhstan in promoting SEIS-compatible data exchange solutions at the Central Asian level (ISDC and other platforms) and for bilateral cooperation (Chu-Talas water commission and Syr Darya River, and others)

Consistently analyse and utilise data on human-environment nexus in order to improve understanding of these important linkages. Environmental sustainability can only be achieved through the consideration of both 'people and planet'


Kyrgyzstan

SEIS highlights

Kyrgyzstan is open to many international projects on sectoral reforms, and civil society is the most active and involved in environmental issues among the Central Asian states. In Internet technologies and environmental management, significant changes have occurred in the country over the past three years (2020–2022). In 2018–2022, the country adopted concepts and programmes on a "green" and "creative" economy. Public environmental monitoring is booming, new Aarhus Centres and new ministry change the environmental information landscape.

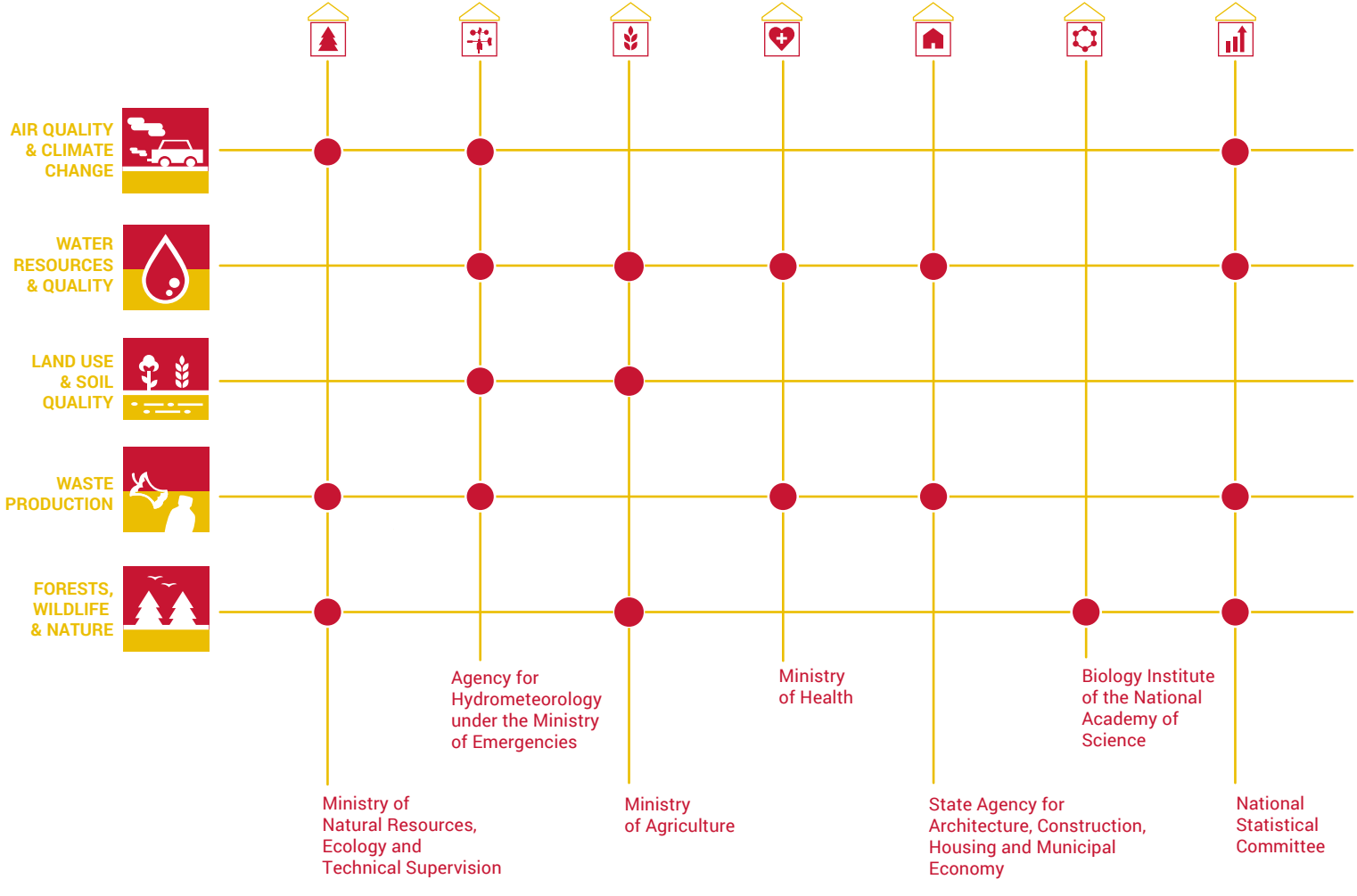
These reforms, on the one hand, expand the possibilities of e-governance and data exchange, and on the other hand, their rapid pace is not conductive to a solid formation of regular preparation of the state of the environment reports and indicators.

The national state of the environment report covering 2015–2018 was published in 2020 in three languages, and is available online at ecoreportkg.info and at the website of the Aarhus Centres of Kyrgyzstan at aarhus.kg.

Statistical environmental datasets are gradually improving, and most recent environmental statistics yearbooks are well designed and contain many indicators from the UNECE set. Kyrgyzstan is active in developing national SDG indicators, which are used to track progress on implementation of its national sustainable development strategy 2040. In 2020, Kyrgyzstan submitted its first National Voluntary Review on SDGs.

Citizen monitoring of the environment is gaining recognition, and is taken seriously by the authorities, especially on air quality in Bishkek in cold periods of the year, when pollution levels are high. Innovative monitoring methods implemented at the farm and district levels improve the efficiency of irrigation water management in the Chu River basin.

Environmental information landscape



* Data on wildlife are collected by state protected areas and state and private hunting reserves. The state of pasturelands is monitored by Kyrgyzgiprozem institute. The Ministry of Emergencies maintains a register of mining sites, waste legacies and tailings.

Key sources of environmental information

Environmental data are stored by the organizations and agencies responsible for their collection in hard copy and increasingly in digital format. The exchange of environmental data and their availability in digital format is improving, but this practice is not yet well established.

State of the environment reports were previously prepared by the **State Agency for Environmental Protection and Forestry** every 3–4 years and were subject to agreement and approval by the government. The Agency was re-structured in 2021 and part of its functions were delegated to the new Ministry of Natural Resources, Ecology and Technical Supervision. The latest state of the environment report was published in 2020, covering the period 2015–2018, in Kyrgyz, Russian, English and at three levels of information presentation: detailed report (PDF format), condensed report and online database. In view of ongoing reforms and changes in staff, the environmental web-portal is currently maintained by the Aarhus Center in Bishkek.

The **Agency for Hydrometeorology** issues and distributes regular bulletins with the results of environmental monitoring to approved agencies. Monthly reports and daily data on urban air quality are available online. With the support of international projects, the number of monitoring devices has increased significantly over the past three years. Data on the quality of water in the Chu and Talas Rivers, as well as Issyk-Kul Lake are available online, and so are weekly data on radiation in the country.

The **National Statistical Committee** publishes statistical series and yearbooks with environmental indicators, including those from the UNECE set.

Cadastres of flora and genetic resources of Kyrgyzstan are published online and in a hard copy by the Biology Institute of the **National Academy of Science** and the Central Asian Institute for Applied Geosciences (CAIAG). Websites of these institutes have maps, atlases and inventories of disasters, glaciers, and natural resources (mainly in PDF format). The Kyrgyz Data Cube (KDC) compiles remote sensing data — on pastures, vegetation, snow cover and drought for 18 years — that complements the existing information on the state and trends of the environment of Kyrgyzstan. Scientists maintain their own meteorological network of stations at high altitudes and in glacier areas (Abramov Glacier, Enylchek Glaciers, the Naryn River upstream sections), but these data are not integrated into other networks and are little known or used outside of the scientific community.

The **Aarhus Centres** , Osh, Cholpon-Ata (Issyk-Kul Lake) and Naryn publish and maintain links to environmental information sources, including some on hazardous and radioactive waste and biodiversity.

MoveGreen, a youth-led movement, the winner of a Tereshkevich award for young environmentalists and United Nations Champion of the Earth 2021, publishes data from citizen monitoring of air quality in Bishkek and promotes Central Asia's Air Quality dialogue platform (AQCA). Other environmental NGOs in Kyrgyzstan — BIOM, UNISON, Eco-MiR — are engaged in dissemination of environmental information and knowledge. A joint effort of civil environmental activists and photojournalists resulted in a design of ecomap.kg.

Environmental indicators

Environmental indicators are produced and published by the National Statistical Committee through its annual compendium of environment statistics, **Environment in the Kyrgyz Republic**, including some indicators from the UNECE list. In addition to PDF format some indicators available as dynamic tables.

The use of UNECE set of environmental indicators in the national **state of the environment** reporting increased from 36 indicators in the 2006–2011 SoE report to 49 indicators in the 2015–2018 report.

Kyrgyzstan closely works with the Organisation for Economic Co-operation and Development on green economy and applies about 50 green growth indicators.

The National Statistical Committee is gradually introducing the System of Environmental-Economic Accounts (SEEA) with focus on forest accounts. While no SEEA accounts have yet been published by, a report on forest accounts will soon be published and a pilot exercise on land and ecosystem accounts is underway. Data currently available are not sufficient to demonstrate dynamics since forest and land cadastres are not updated.

Kyrgyzstan - **Environmental indicators**

AIR

- A1 — air emission
- A2 — air quality
- A3 — ozone-depleting substances

CLIMATE CHANGE

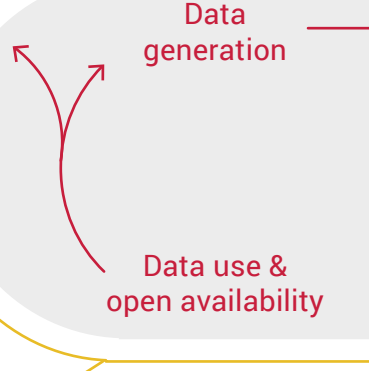
- B1 — air temperature
- B2 — atmospheric precipitation
- B3 — greenhouse gas emissions

WATER

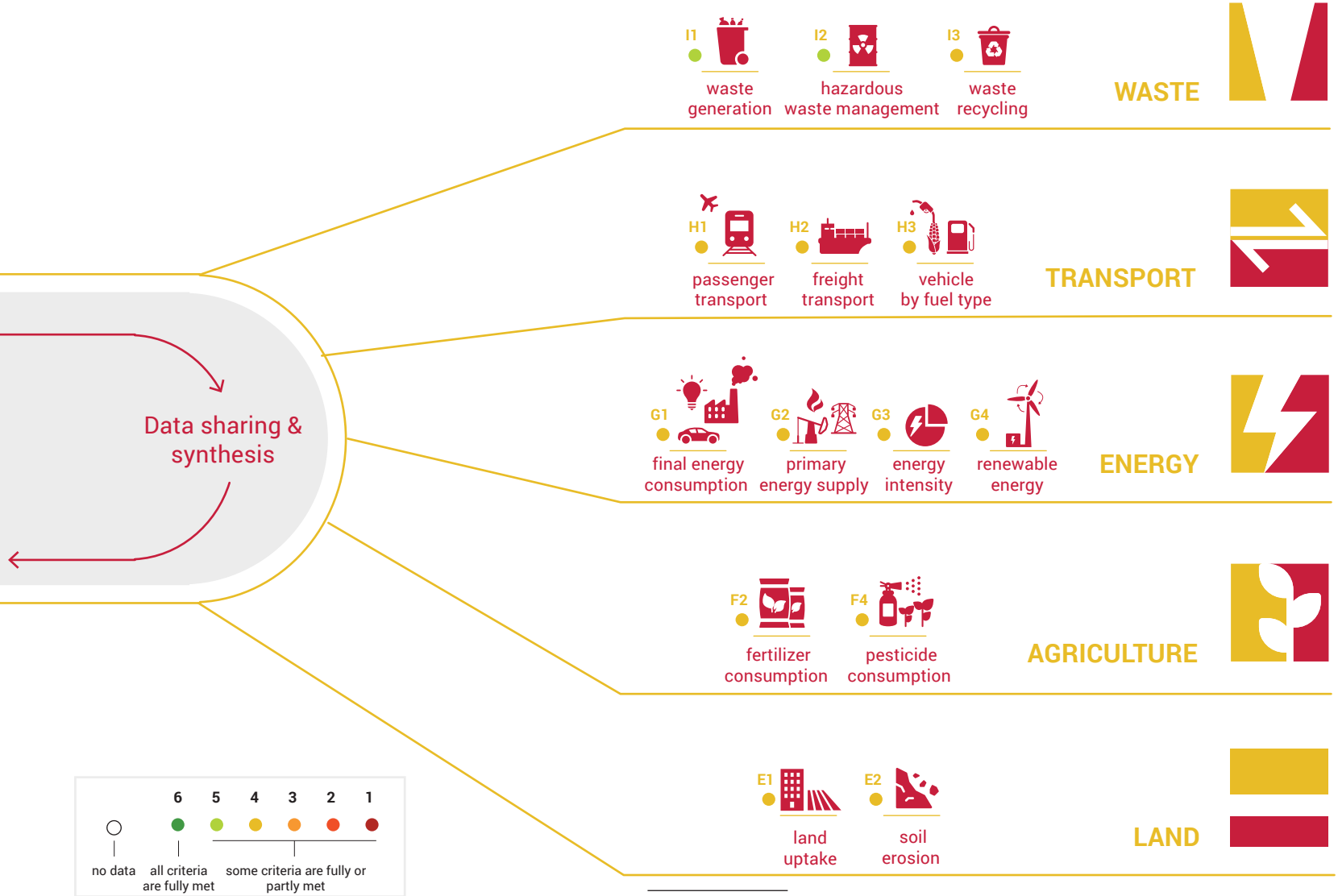
- C1 — water resources
- C2 — water abstraction
- C3 — water use
- C4 — household water per capita
- C5 — water supply
- C7 — water losses
- C8 — reuse & reclycling water
- C9 — drinking water quality
- C10 — BOD and NH_4 in rivers
- C11 — nutrients in water
- C12 — nutrients in coastal seawaters
- C14 — pop. connected to WWT
- C15 — WWT facilities
- C16 — polluted wastewater

BIODIVERSITY

- D1 — protected areas
- D3 — forests & woodland
- D4 — protected species
- D5 — selected species

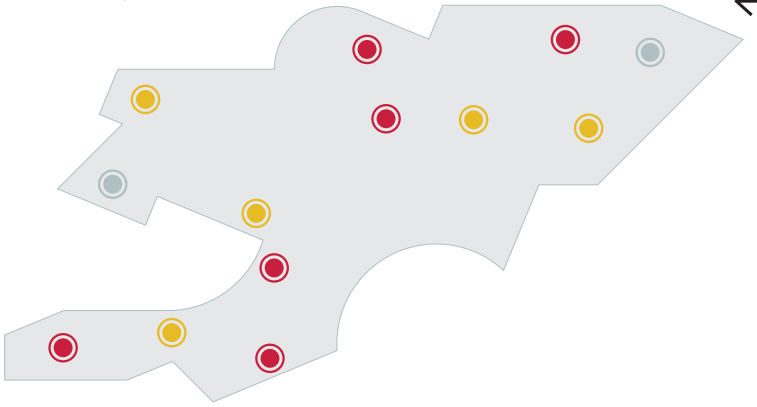


Kyrgyzstan - **Environmental indicators**



Spatial dimension and review of environmental data

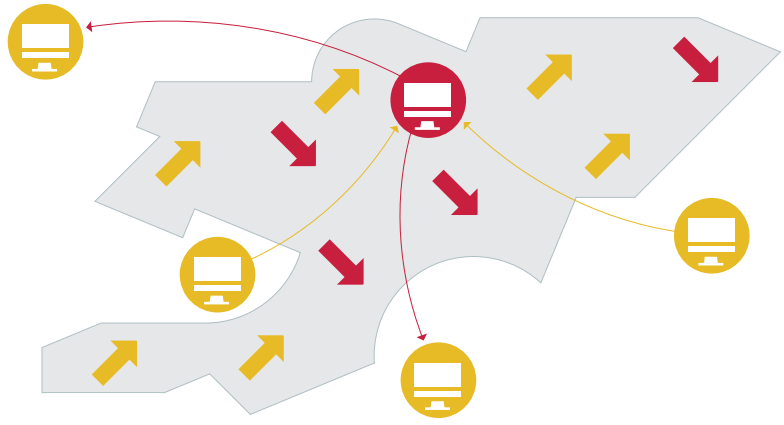
AIR QUALITY



← Air quality monitoring is conducted in five cities of Kyrgyzstan: Bishkek, Osh, Kara-Balta, Tokmok, and Cholpon-Ata and consists of 14 manual sampling stations, 1 reference-grade automatic station (installed and operated by the US Embassy in Bishkek, jointly with Kyrgyzhydromet). In 2020, the ADB procured for Kyrgyzhydromet up to 50 sensors to measure particulate matter and nitrogen dioxide in the Almaty-Bishkek Economic Corridor and supported online air quality map for Bishkek. In addition to government-run monitoring, around 100 low-cost sensors have been deployed by civil society groups and volunteers mostly in Bishkek. Data is available both from governmental organizations and public groups, including visualization. Public demand in air quality information is high in winter months, when air quality is at its worst due to heating and urban air inversions.

CLIMATE CHANGE

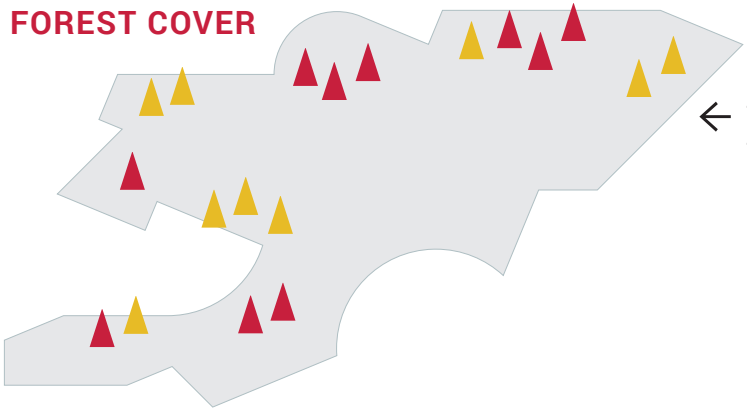
Analysis of the state and trends of climate change is carried out by Kyrgyzhydromet mainly in connection with the international climate change projects and reporting, including national communications to the UNFCCC, which contains spatial information. →



WATER QUALITY

← Sampling is mainly focused in the northern parts of the country nearby Bishkek, along the Chu and Talas Rivers, and Issyk-Kul Lake, while water monitoring gaps persist in southern parts.

FOREST COVER

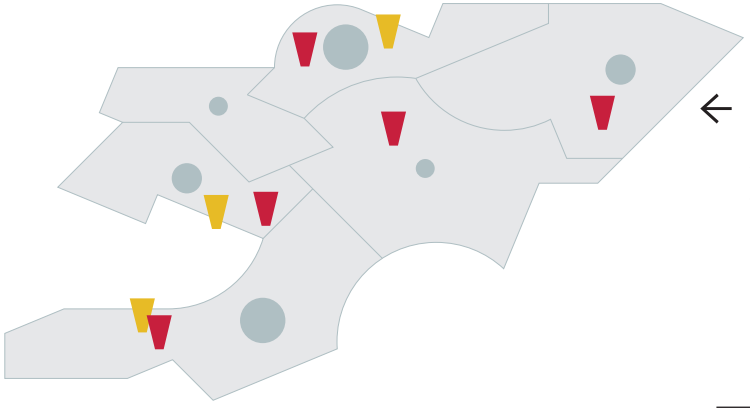


The national forest inventory is well maintained and updated, and details are available upon request from the authorities. Forest maps are published in environmental reports and an online platform for visual depictions of national forest inventory is currently in preparation.

PROTECTED AREAS

Spatial information is available, but institutional changes, along with unclear boundaries of protected areas, periodically create problems for land allocations and licensing, including for mining. In 2020, a web portal on protected areas and biodiversity was designed. Spatial data on habitats of unique and endangered species of flora and fauna is available at the Academy of Sciences, but rarely used in decision-making.

WASTE



Locations of legacy mining and radioactive waste sites are well known and spatially described. The Ministry of Emergencies maintains an inventory of abandoned and active hazardous waste sites. Statistics on waste management are available per province.

Lessons and recommendations

While public and inter-agency information sharing is growing, the environmental monitoring capacities in the country remain weak and geographically unbalanced (more in the north, little in the south). Donor countries are helping Kyrgyzstan plan and gradually introduce automated systems for measuring environmental parameters, but in most cases, organizations and departments store environmental data on paper. The remaining limitations in human capacity and institutional continuity, incompatible software and the lack of digitalized data mean that results achieved under international projects are not always fully sustained.

Kyrgyzstan seeks to make progress in the production of environmental indicators in accordance with the revised UNECE Guidelines and SDGs, and recently has made good progress in state of the environment reporting.

RECOMMENDATIONS FOR DATA COLLECTION

Modernize national hydrometeorological service, fully adopt modern methods of analysis and automated systems of environmental monitoring including, in the case of air quality, by expanding the monitoring of priority pollutants across the country and notably by prioritising the automatic monitoring of particulates (especially PM2.5 and PM10). Promote the utilization of available cost-effective air quality monitoring technologies, such as low-cost sensors and passive sampling, to expand networks, combined with additional reference-grade equivalent automatic monitoring stations in selected cities

Re-initiate the monitoring of groundwater quality, which has been discontinued since 2015

Strengthen environmental monitoring capacities in southern, western and central parts of Kyrgyzstan

Improve inter-agency cooperation in environmental data exchange and IT systems

Gradually transfer environmental data and their use to electronic format

Promote the collection of data on the human-environment nexus disaggregated by sex, age and vulnerable groups to inform environmental policies

RECOMMENDATIONS FOR ENVIRONMENTAL INDICATORS

Continue to produce and share online the full set of UNECE environmental indicators (including the revised set approved in 2021 under the scope of the UNECE Joint Task Force on Environmental Statistics and Indicators) along with the complete metadata — description and explanation of indicators, information on methodology and units, brief interpretation of data flows and trends

Take steps to update environmental indicators annually and set specific deadlines

Increase quantity and completeness of data flows underpinning UNECE and SDG environmental indicators

Promote online publishing of interactive maps using geodata data already available: protected areas, forests and wildlife, industrial and legacy waste sites, air and water quality

RECOMMENDATIONS FOR ENVIRONMENTAL COMMUNICATION

Re-initiate the regular production of national state of the environment report and promote the active dissemination of the report and its key messages to the public

Develop a sustainable and resource-efficient mechanism for state-of-the-environment reporting, including training in indicator-based assessments, data management and visualization. Improve the production of environmental information at the local level

Improve accessibility for local users of Kyrgyzstan reports on international environmental obligations and information about outcomes of international projects

Consistently analyse and utilise data on human-environment nexus in order to improve understanding of these important linkages. Environmental sustainability can only be achieved through the consideration of both 'people and planet'


Tajikistan

SEIS highlights

Tajikistan is active in international projects and assessments on climate change and biodiversity. In the past (2000–2018), preparation and dissemination of good quality information contributed to international awareness about country's vulnerabilities and attracted donor attention to Tajikistan's environmental priorities. Due to staff rotations and weak institutional memory, the quality of reporting has declined, but continued international support and growing number of stakeholders involved contributed to the increase in diversity of data

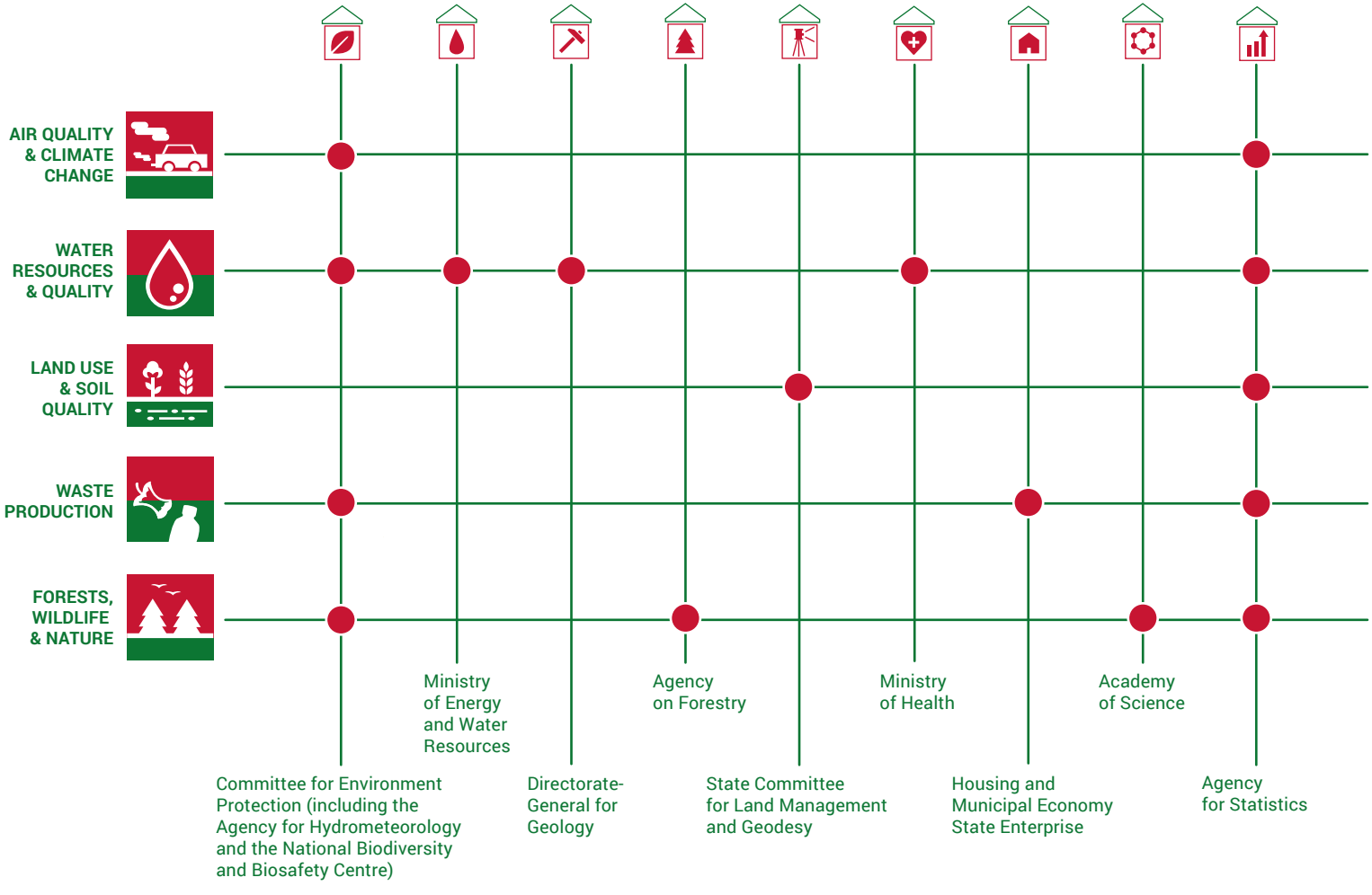
Recent international projects and reforms of the state system of statistics, modernization of the hydrometeorological network, climate resiliency and GHG biannual reporting, and forest and natural resources management have paved the way for improving information flows, but so far the availability and quality of information has not changed.

In 2018, based on the 3rd Environmental Performance Review by UNECE (2017) and with the support of UNEP and technical facilitation by Zoï Environment Network, Tajikistan produced a compact environmental report in online and printed formats containing a number of UNECE indicators. At the same time a UNDP-GEF project on improved environmental monitoring system was completed. After institutional changes (2020–2022), including the update of the official website, environmental reports and monitoring and information system are unavailable.

E-governance gradually unfolds in Tajikistan, including state electronic registries and financial services. Environmental services are however yet to enter e-governance platforms.

Up until August 2021, tangible progress has been achieved in exchanging environmental and water-related information with Tajikistan's southern neighbour, Afghanistan. Environmental cooperation with Uzbekistan and China is growing, but cooperation with Kyrgyzstan, including shared mountain ecosystems and water, has weakened.

Environmental information landscape



Key sources of environmental information

Two decades ago (in 2000–2002) Tajikistan became a Central Asia's leader in the emerging area of digital environmental reporting — on CD-ROMs and the Internet, and received UNEP's award on this. Around the same time, the initial international environmental reports — on climate change, biodiversity, desertification and other themes — were successfully prepared and submitted.

A lot has changed since then in the technology and digitalization of data, and in the increased speed and availability of the Internet, but the production of environmental reports and indicators following modern formats has not progressed equally.

Environmental data are stored by organizations and agencies responsible for their collection, in most cases in hard copy. In general, there is no mechanism for accumulation and exchange of environmental data in electronic form. With international help (World Bank, UNDP-GEF) steps are being taken to introduce automatic meteorological and hydrological stations, environmental monitoring systems, cadastres of greenhouse gas emissions, and land and mineral resources.

Committee for Environment Protection maintains a website with news and information. Changes in personnel and IT provider and the revision of the website structure resulted in some loss of information, including the latest 2018 edition of the environmental report and a selection of UNECE environmental indicators. The Committee also publishes environmental bulletins and a newspaper, but regular preparation of an environmental report has not been instituted.

The **Agency for Hydrometeorology** prepares air quality and weather information and water availability forecasts, which are generally available on the agency website. Annual reviews of air and water quality are produced, and hydrology yearbooks, weather and climate reports are available upon request. Data on climate change, including UNFCCC international reporting, are available online, and the digitization of old climate data is ongoing. Part of the hydrometeorological data has been digitized (though it remains inaccessible to most users), and part is still in paper format.

The **National Biodiversity Centre** reports to the secretariat of the Convention of Biological Diversity (national reports are available on the Convention's website) and maintains inventories of flora and fauna online. Much of the data has been digitized and is available. A major contribution to the quality, accessibility and digitalization of biodiversity information was made by centre founder and long-time director, Dr. Neimatullo M. Safarov (passed away in 2021).

The **Agency on Forestry** keeps records of forests mainly focusing on the state forest lands.

The **Ministry of Energy and Water Resources** with international support has designed a Water Information System (WIS), while the **General Directorate on Geology** is responsible for monitoring and control of groundwater sources.

The **Agency of Statistics** publishes environmental stats in yearbooks, but the completeness of data is limited.

The **Tajikistan branch of SIC ICSD** has an online collection of environmental information, bulletins, and strategies. A major contribution to environmental information availability at the Tajik ICSD website was made by its long-time director Jalil Buzrukov (passed away in 2020).

Aarhus Centres operate in seven localities, and cover all major environmental issues of the country and are active in raising people's environmental awareness. In Khujand special emphasis is placed on uranium waste, and in Khorog to cooperation with Afghanistan.

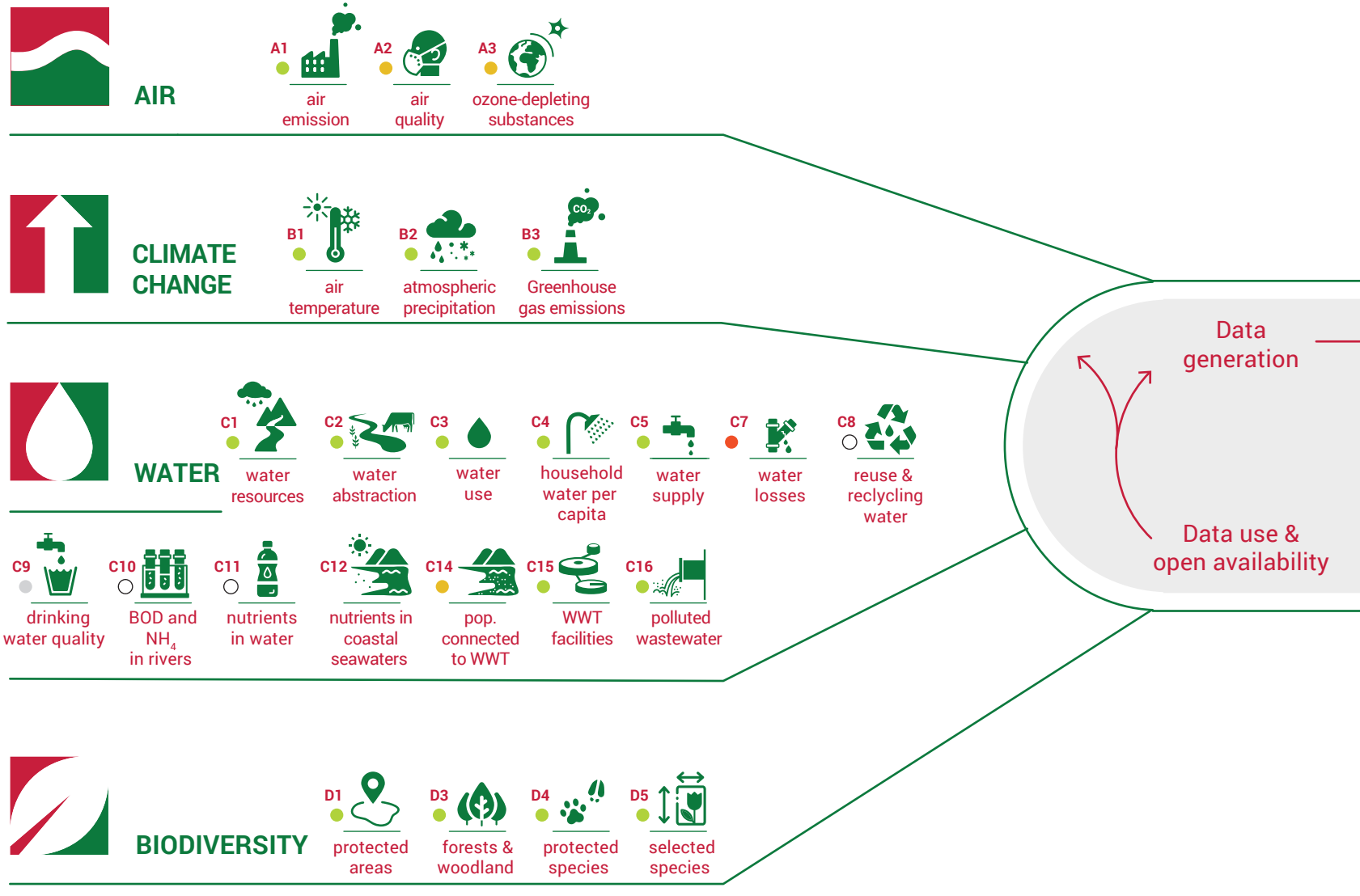
Since 2010 (de-facto since 2015), Tajikistan has been supporting data exchange and holding regular meetings to develop cooperation in the field of hydrology and ecology with **Afghanistan** on the Panj/Amu Darya River. An Atlas of Environmental and Hydrological Cooperation was published in 2013. After the socio-political changes in Afghanistan in summer 2021, cooperation was suspended. There is also an agreement on environmental cooperation with **China**, including a branch of the Regional Ecology Centre of the Chinese Academy of Sciences in Dushanbe and an air and climate monitoring station in the Kondara area. Cooperation with **Uzbekistan** is growing, but ties with **Kyrgyzstan** are restricted.

Environmental indicators

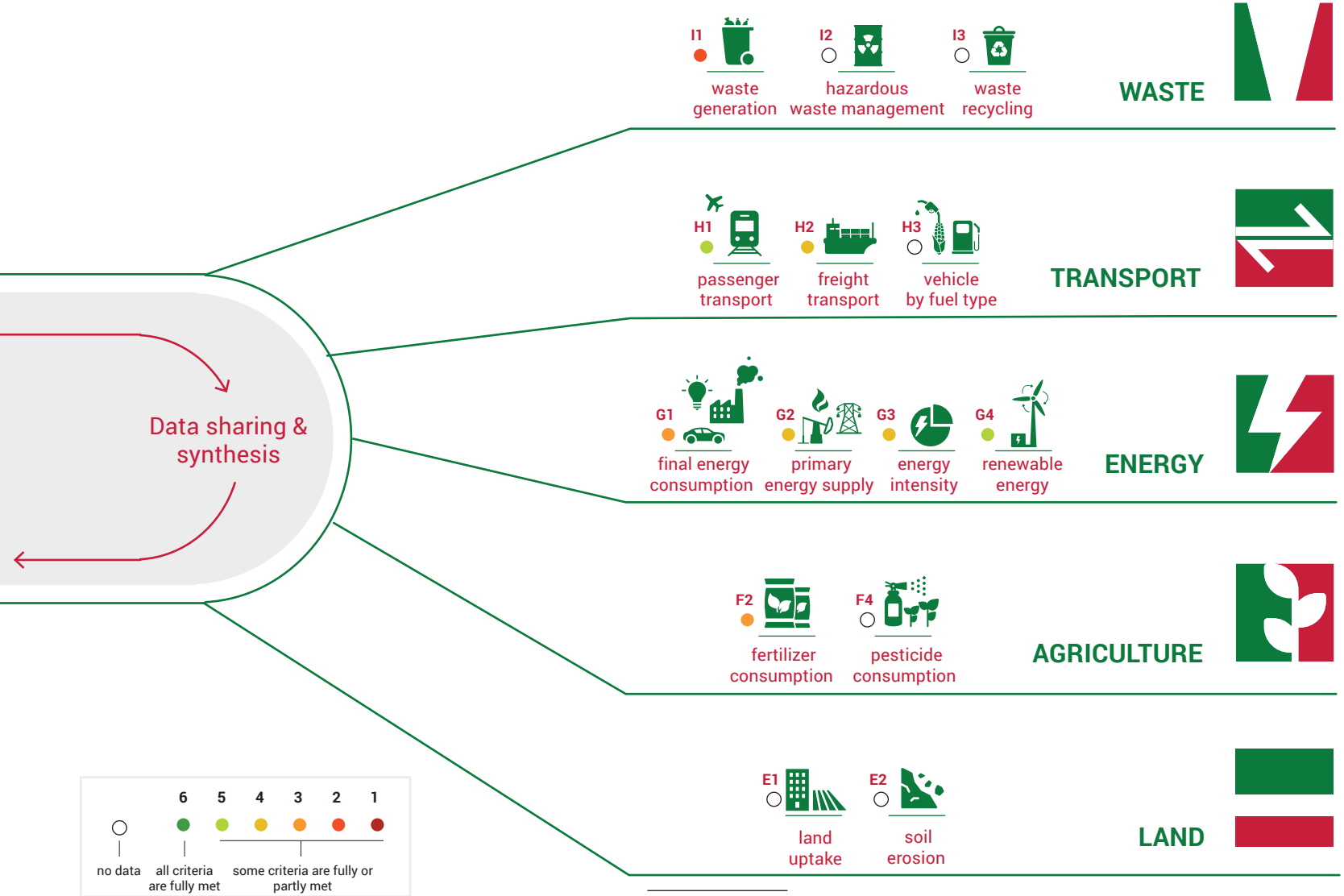
Tajikistan seeks to achieve progress in the production of environmental indicators and reports. While international partners invest in the design of water, climate and environmental information systems, Tajikistan has not yet established an open and regular platform for the collection and dissemination of environmental indicators and information. The Agency on Statistics collects statistical data on environmental protection from other agencies and economic entities and publishes statistical compilations, which, however, lack interpretation and integration.

A 2018 environmental report based on the 3rd UNECE Environmental Performance Review contained 28 indicators. Digital version and visuals are currently not available. The indicators characterizing water quality and waste management remain the most problematic.

Tajikistan - **Environmental indicators**

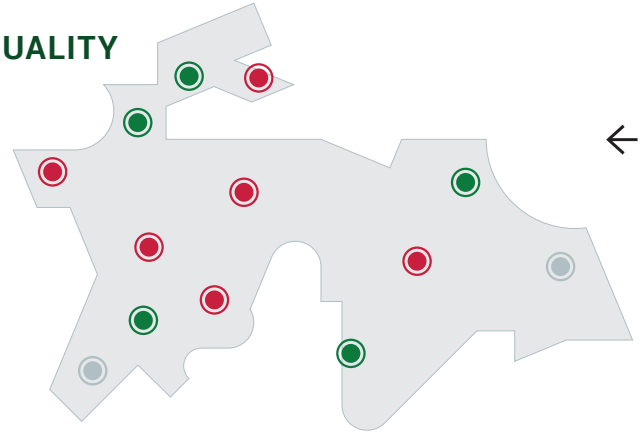


Tajikistan - **Environmental indicators**



Spatial dimension and review of environmental data

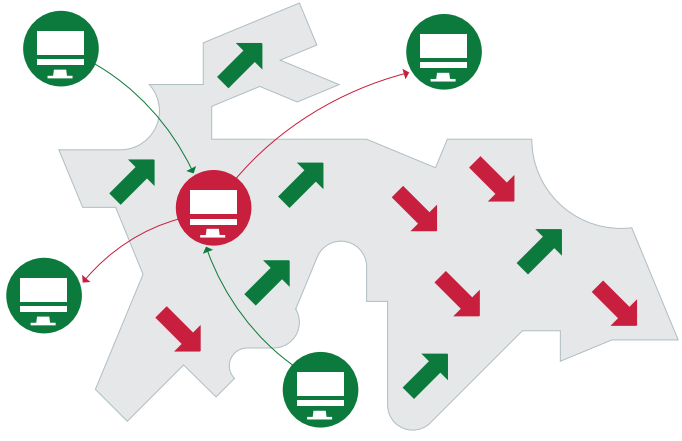
AIR QUALITY



← Very limited spatial coverage (4 cities) and number (19) of air quality sampling points. Manual and automated air monitoring is practiced, but no official data are presented visually on maps. Youth environmental groups also monitor air quality using publicly available sensors and real-time data is visualized on global online platforms.

CLIMATE CHANGE

Spatial data on climate change trends and projections exists, but local users may not find such information easily →



WATER QUALITY

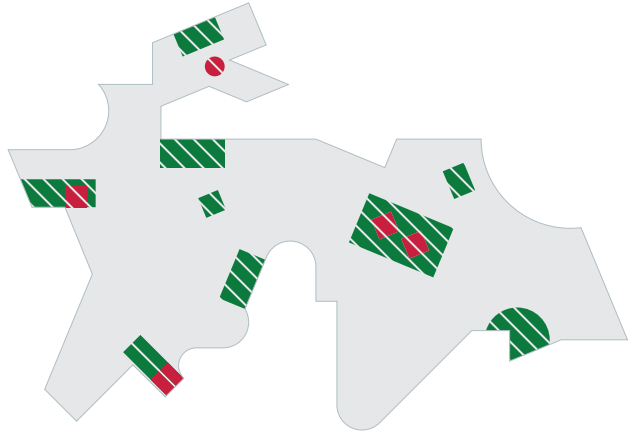
← Limited spatial coverage and number of water quality sampling locations. Manual observations prevail.

FOREST

← Lack of current spatial data on the state of forest cover. Overview maps are available from biodiversity reports

PROTECTED AREAS

Spatial information exists, but the buffer zones and outlines of several protected areas are not well defined, while international sources contain duplicate or obsolete layers. Data on selected species are available in biodiversity reports and from the national biodiversity centre. →



WASTE

← Data on the generation and locations of hazardous waste are not collected. Some spatial data on locations of obsolete pesticide dumps and uranium mining waste sites are available in international reports and projects. In 2019–2021 under the UNECE TEIA Convention project, a risk assessment for selected tailings, including spatial information, was produced.

Lessons and recommendations

Tajikistan has always been active in international projects and reporting on climate change and biodiversity, and the good quality and credibility of that information contributed to international recognition of its vulnerabilities and brought additional investment to environmental protection in the country. On the other hand, low capacity, limited inter-agency collaboration and a poor data situation require a major effort in environmental information management. Recent international projects and reforms of the state system of statistics, modernization of the hydrometeorological network, climate resiliency and GHG biannual reporting, forest and natural resources management pave the way for the basic infrastructure upgrade and better information flow. While preparation of the State of the Environment report is not new for Tajikistan, this practice is irregular, not formalized, and subject to donor support or dependent on outside funding. In addition, some key themes — such as water, waste, land, energy and GHG emissions — have rather poor underlying data. The lack of legal and administrative provisions for the production and exchange of environmental information precludes the systemic use of the information.

RECOMMENDATIONS FOR DATA COLLECTION

Complete the process of modernization of national hydrometeorological service, fully adopt modern methods of analysis and make data from automated systems of environmental monitoring — water quality and quantity, climate conditions and air quality — publicly available

Expand the monitoring of water quality and the publication of related data

Develop and implement monitoring, accounting and reporting systems for waste

Integrate and optimize data flows on protected areas, forest, wildlife, water resources

Improve inter-agency cooperation in data exchange and information systems

Gradually transfer environmental data and their use to electronic format

Promote the collection of data on the human-environment nexus disaggregated by sex, age and vulnerable groups to inform environmental policies

RECOMMENDATIONS FOR ENVIRONMENTAL INDICATORS

Continue to produce and share online the full set of UNECE environmental indicators (including the revised set approved in 2021 under the scope of the UNECE Joint Task Force on Environmental Statistics and Indicators) along with the complete metadata — description and explanation of indicators, information on methodology and units, brief interpretation of data flows and trends

Increase the number of data sets consistent with the UNECE list of environmental indicators

Maintain regular publication and open access to online and printed environmental indicators, reports and statistics

RECOMMENDATIONS FOR ENVIRONMENTAL COMMUNICATION

Make decisions on regular preparation and publication of national state of the environment reports, and support their production through building institutional capacity

Improve environmental information produced locally, support provincial, city- or district-level state-of-the-environment assessments and online reports

Provide open access to environmental information, cancel fees for its provision to interested organizations and the public

Consistently analyse and utilise data on human-environment nexus in order to improve understanding of these important linkages. Environmental sustainability can only be achieved through the consideration of both 'people and planet'


Turkmenistan

SEIS highlights

Turkmenistan maintains an established and functioning environmental governance system, although most of its data and statistics are generated and designated for internal use by state actors and agencies. On the other hand, the country has always maintained strong traditions of public awareness campaigns on environmental issues through magazines, TV, educational activities and nature protection societies.

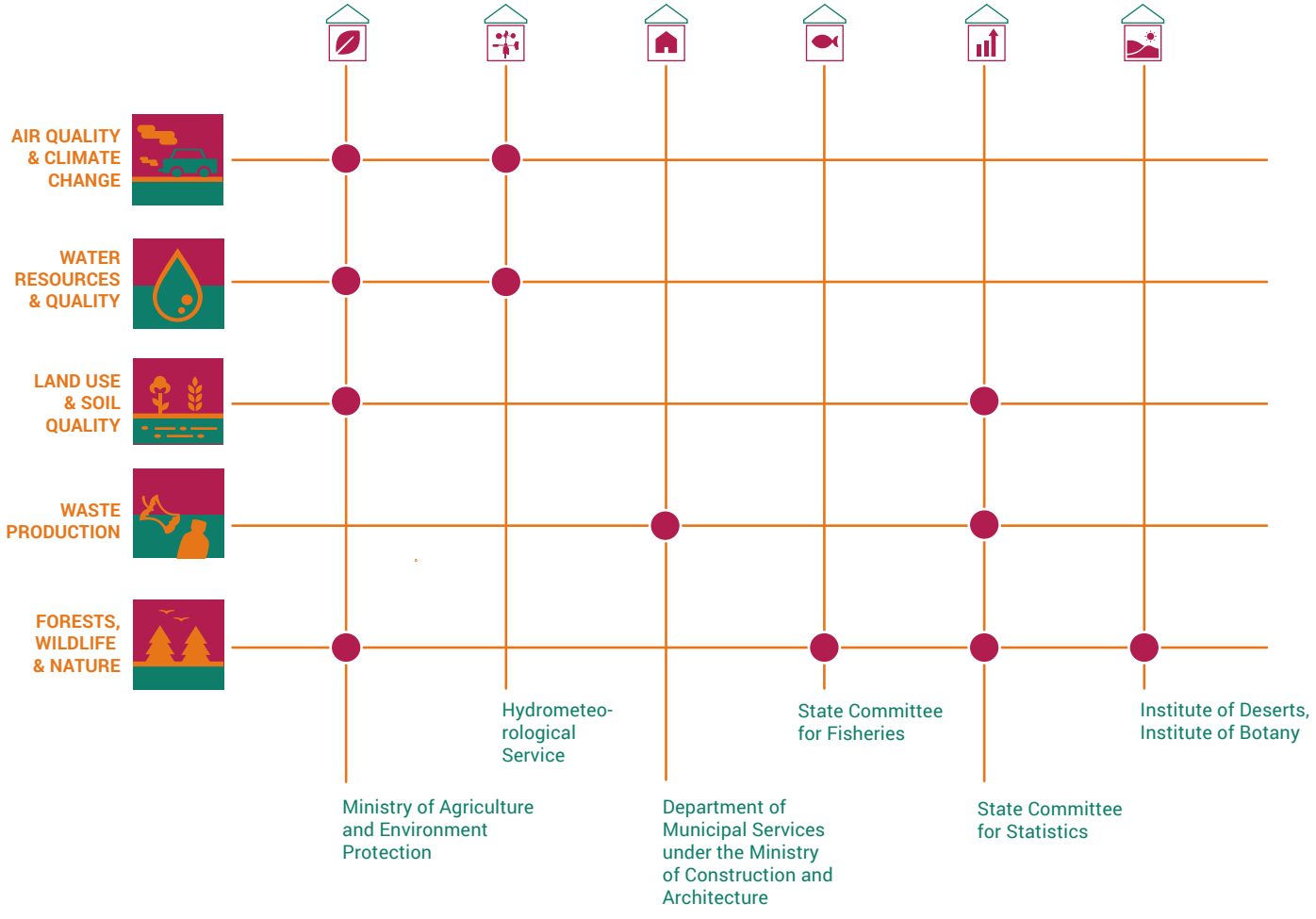
In 2018, Turkmenistan's President decreed the Concept of Development of Digital Economy for 2019–2025. The use of the Internet for environmental reporting is not yet common, but several electronic editions of the state of the environment report have been produced over the last 20 years with support of international projects.

The use of the Internet for environmental reporting is not yet common, however several electronic editions of the state of the environment report have been produced over the last 20 years, most recently in 2015 with the support of the EU, Switzerland and CAREC.

Turkmenistan fulfils international reporting obligations and participates in regional information exchange. The Ashgabat-based Scientific-Information Centre of the Interstate Sustainable Development Commission was instrumental in coordination and input to UNEP-sponsored regional environmental assessments. Turkmenistan also actively contributes to the Caspian Sea assessments and action plans.

The framework for monitoring SDGs has been set-up, with responsibilities defined and allocated among governmental and other actors, and methodologies for data collections, analysis and reporting under development.

Environmental information landscape



* The newly established State Enterprise for the Caspian Sea collects and manages respective data about the marine environment. The Ministry of Defence manages data related to emergency situation.

Key sources of environmental information

The **Ministry of Agriculture and Environment Protection** publishes information on the state of the environment in the quarterly magazine "Ecological Culture and Environmental Protection" ("Nature Bulletin"). State of the environment reports are not regular. An online demonstration version using some of UNECE environmental indicators was prepared in 2015 with the support of the EU FLERMONECA project, the Swiss Government and CAREC. Departments of the Ministry also produces environmental monitoring data: daily for air quality and monthly for water quality.

The **Hydrometeorological Service** produces and publishes weather and hydrological reports and forecasts.

Department of Municipal Services under the Ministry of Construction and Architecture is responsible for the data about municipal waste.

The **State Committee for Statistics** annually publishes compilations of environment-related indicators, primarily for inter-agency use. Respective statistics are also included into annual statistical yearbooks.

The **Desert Institute** maintains databases on protected areas, flora and fauna, and reports to the Convention on Biodiversity (the reports are publicly available on the Convention's website).

Scientific-Information Centre of the Interstate Commission for Sustainable Development of Central Asia has done a lot of work on the preparation of regional environmental assessment in cooperation with UNEP.

The **Aarhus Centre** in Ashgabat is active in disseminating environmental knowledge and information among the general public.

Environmental indicators

The State Committee for Statistics collects statistical data from respondents in the field of environmental protection and publishes statistical indicators. Local indicators are used, some of which are compatible with the UNECE-recommended set of indicators, but the statistics are available only within the country. At the time of this publication, none of NECE environmental indicators were yet available online.

Lessons and recommendations

While environmental information in Turkmenistan is generally available, it is mainly shared for internal governmental use. Turkmenistan fulfils international reporting obligations on climate and biodiversity and participates in regional information exchange, however reporting on waste and chemicals is lagging behind mainly due to the lack of data and to institutional changes. The use of international environmental information is limited, and further exposure and training is needed to better understand and use global information sources and improve their quality and completeness with up-to-date data. At the same time, state institutions are actively involved in environmental awareness-raising, and one of the channels for doing so is publication of popular information on the Internet.

RECOMMENDATIONS

Provide support to IT modernization of environmental authorities and to integrating environmental data flows and datasets

Further support national state-of-the-environment reporting and official environmental media, including the production of relevant environmental and SDG indicators

Build capacities of the Ashgabat-based ICSD secretariat for national and regional environmental assessment and reporting based on common regional indicators

Re-establish reporting under the Basel Convention (hazardous waste) and promote exchange of experience about waste and recycling statistics

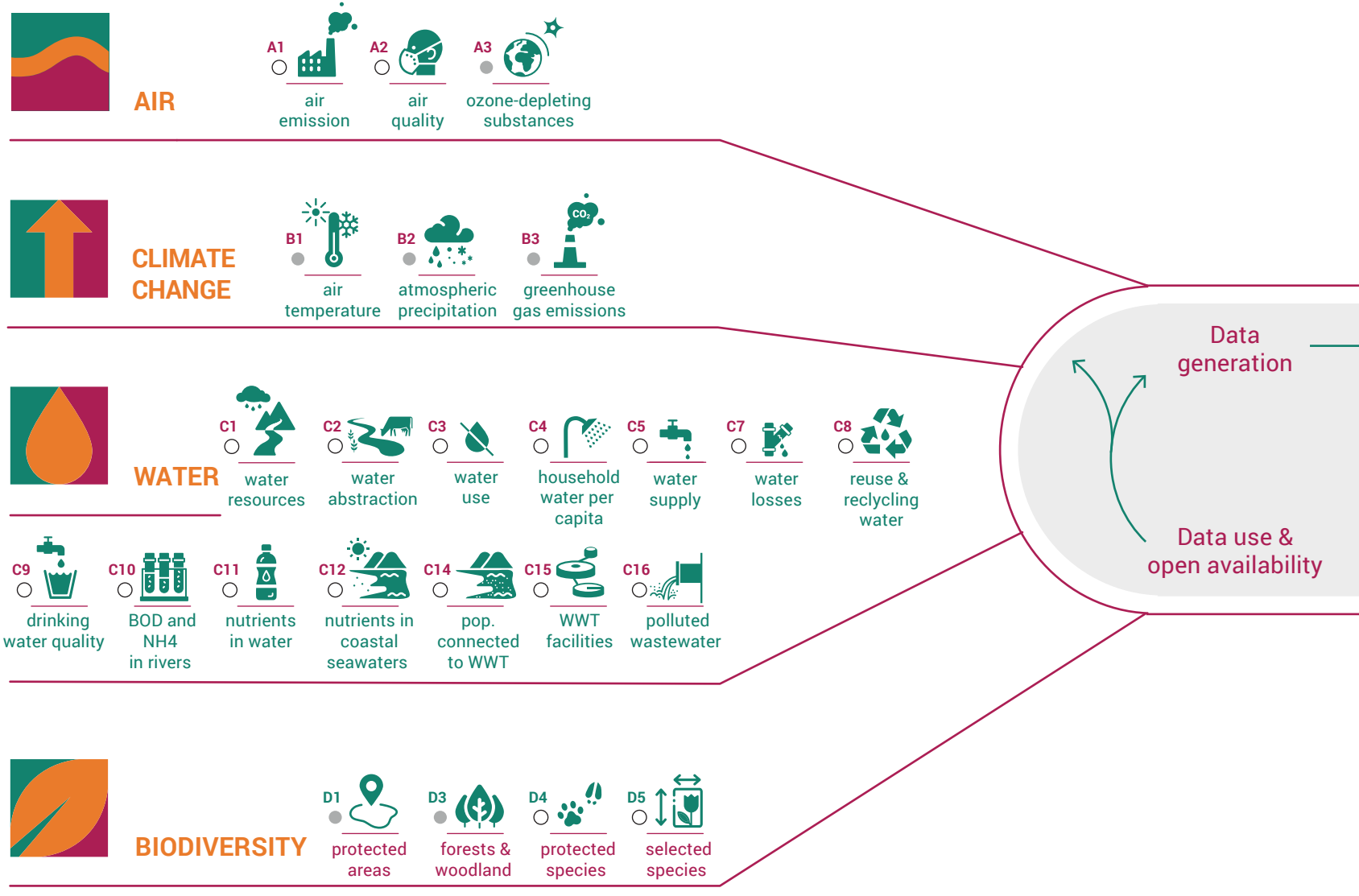
Provide training for modern international indicators and methodologies of assessing marine and terrestrial biodiversity (Red List index, key biodiversity areas, marine litter)

Support the production and broad dissemination of directories of environment information, e.g., through cooperation with the national Aarhus centre

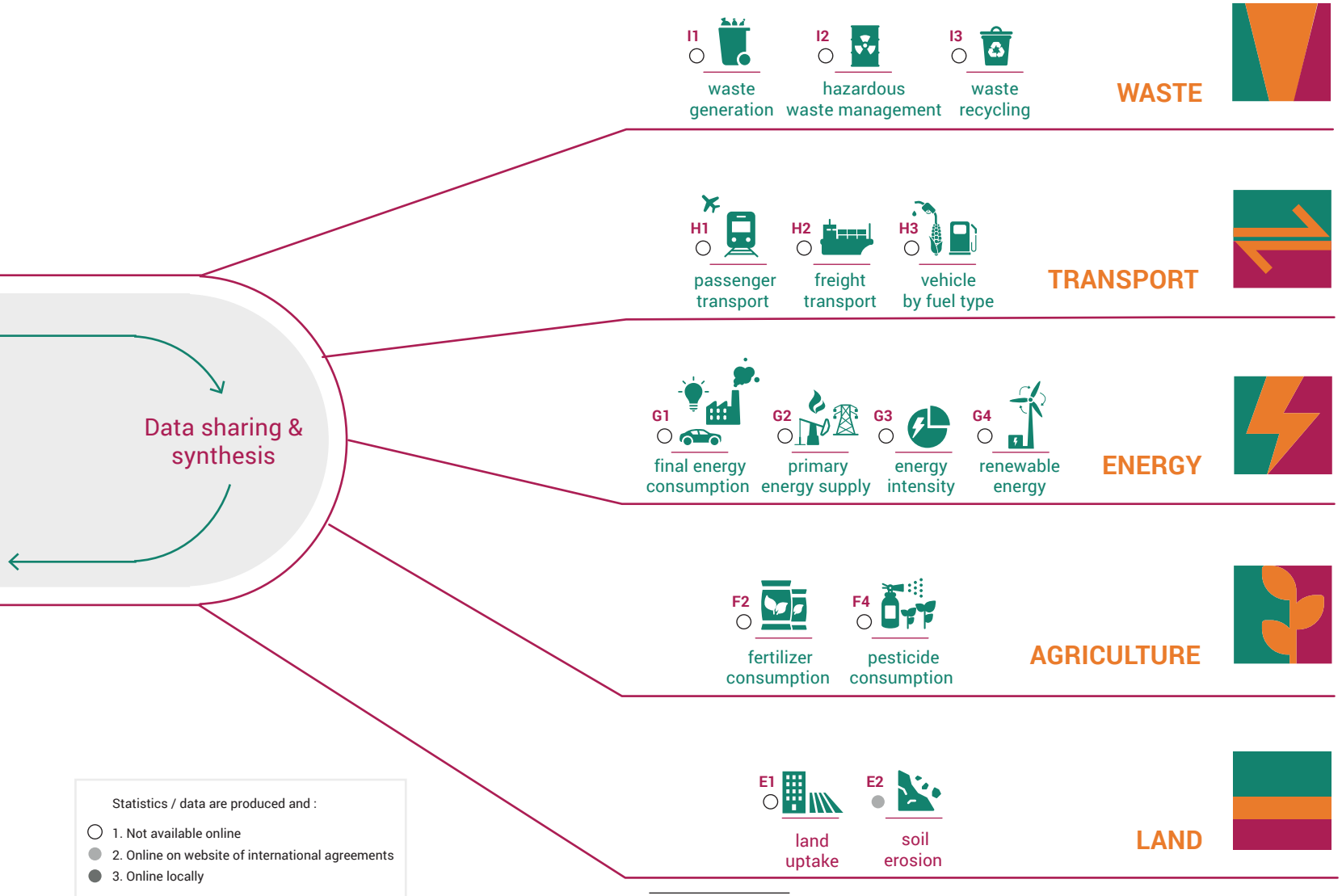
Promote the collection of data on the human-environment nexus disaggregated by sex, age and vulnerable groups to inform environmental policies

Consistently analyse and utilise data on human-environment nexus in order to improve understanding of these important linkages. Environmental sustainability can only be achieved through the consideration of both ‘people and planet’

Turkmenistan - **Environmental indicators**

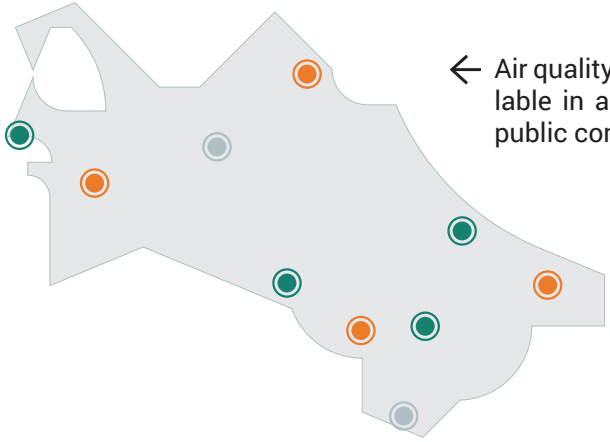


Turkmenistan - **Environmental indicators**



Spatial dimension and review of environmental data

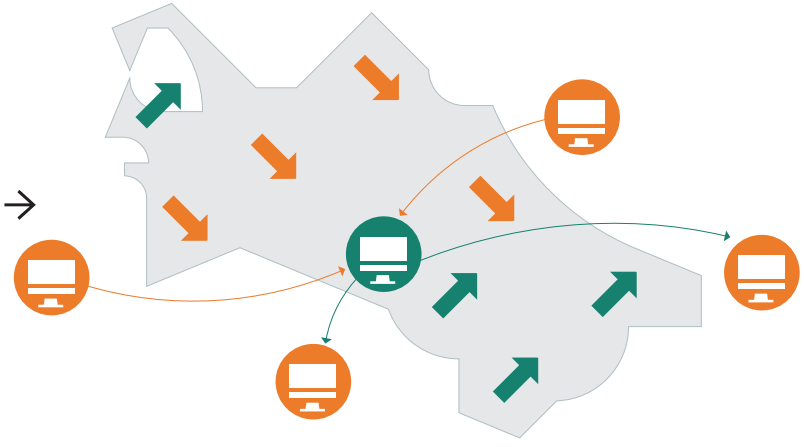
AIR QUALITY



Air quality monitoring is conducted in major cities, but data are not available in a spatial format. Modern methods of air quality ranking and public communication are not yet implemented.

CLIMATE CHANGE

Climate change analysis is carried out periodically, in connection with the preparation of national communications to the UNFCCC. Visual climate change information is available in the UNFCCC reports and the CIS Climate bulletins .



WATER QUALITY

Water quality monitoring covers the Caspian Sea and major rivers such as the Amu Darya. Spatial information exists mainly in local reports.

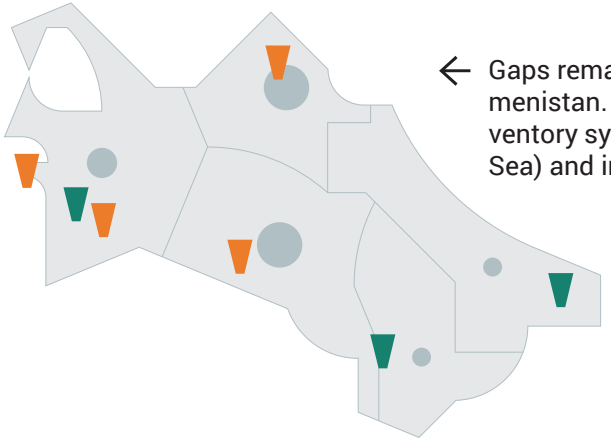
FOREST

Most forests of Turkmenistan are sparse saxaul tree natural forests and plantations. Saxaul forests are often not included in global databases and assessments because they are barely detectable by remote sensing, though they are very important in the local context. Spatial data on forests are available, but detailed information is not public.

PROTECTED AREAS

Good and regularly updated information on protected areas and selected species. Details available from the responsible institutions, general information can be found in public and international sources. International data on protected areas may be inconsistent with the current national data due to the lack of up-to-date spatial information.

WASTE



Gaps remain in the overall data collection on all types of waste in Turkmenistan. New legislation on waste introduces a classification and inventory system. Some spatial data are available from regional (Caspian Sea) and international sources.


Uzbekistan

SEIS highlights

Rapidly advancing e-governance reforms have led to the open publication of national and province-level data and meta-data on economics, population, institutions, transport and other themes. While the national Open Data Portal provides information on environmental permits, nature resources use and air pollution, a separate Unified Portal for Interactive Public Services also allows to directly obtain permits for the use of natural resources.

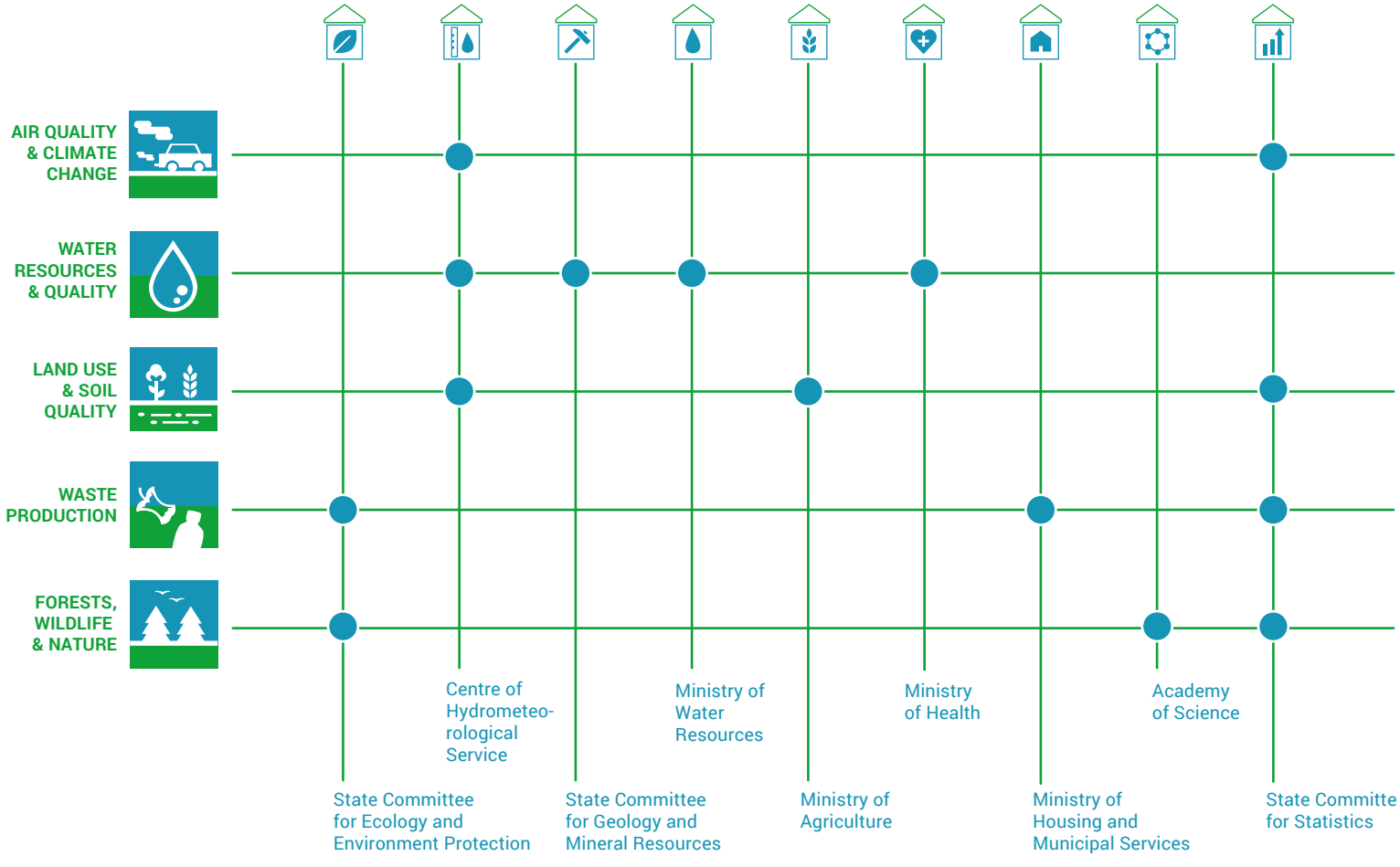
Increased production of environmental information being part of the state reform, Uzbekistan has in recent years digitized and upgraded many environmental datasets, and continues the modernization of its waste management system, hydrometeorological and biodiversity monitoring.

The national state of the environment report is expected to be published every 2–3 years, but in practice the last SoE report was produced in 2013. The previous SoE reports of Uzbekistan were quite comprehensive and included time series. In 2022–2023, UNEP and UNECE are supporting Uzbekistan in the preparation of a new environmental report.

The framework for monitoring environmental SDGs is under development and includes environmental indicators, partly drawn from the UNECE set.

Compared to other Central Asian countries green politics play stronger role in the national Parliament.

Environmental information landscape



* The State Committee for Land Resources, Geodesy, Cartography and State Cadastre maintains a national land cadastre, which is being converted into electronic format.

Key sources of environmental information

The collected environmental data are stored by the organizations and agencies responsible for their collection. Many modern data are stored electronically, but a significant proportion of historical data is still on paper. Public access to a number of datasets remains challenging.

The State Committee for Ecology and Environmental Protection maintains a website with news, institutional information and a limited set of open data. A national state of the environment report is produced every 3–4 years (the latest one however in 2013) and is made available online in PDF files, but irregularly. An annual environmental bulletin is published too. Inventories of waste, emissions into the atmosphere and greenhouse gases exist in electronic form.

The **Centre of Hydrometeorological Service** (Uzhydromet) prepares daily, monthly, half-annual, annual monitoring-based overviews of air, water, soils pollution and radiation, as well as forecasts/warnings about weather and water resources. The digitization of climatic and other hydrometeorological data is in progress, as is the gradual introduction of automated observations. Uzhydromet regularly provides socially significant information in the mass media, and is coordinating climate change activities. In 2022, a new law on hydrometeorology was approved.

The **State Committee for Statistics** publishes statistical yearbooks with environmental indicators, which are available on request. A limited set of statistical data (air pollution, protected areas) are made available on the Committee's website with links to open data of other ministries and agencies. A web portal with SDG indicators has recently been developed, where many SDG indicators, including on the environment, are available.

The **open data portal** (supported by the State Statistics Committee) on topics related to the environment provides information on permits for nature use, the use of natural resources, air pollution, etc. Through the public services portal, interested users can apply for some types of permits and participate in e-auctions.

The **State Committee for Geology and Mineral Resources** operates a groundwater database on the levels and quality of groundwater and publishes an annual Information bulletin, including information on trends in underground water reserves. Groundwater monitoring is lagging behind environmental impacts due to the growing number and operational depth of wells and the lack of reliable data. UNESCO supports cooperation between Uzbekistan and Kazakhstan on the Pretashkent transboundary aquifer.

The **Institutes of botany and zoology** under the Academy of Sciences maintain data on flora and fauna, provide inputs for the Red List, which is now available online (redbook.uz), and keep records on protected areas together with other responsible agencies.

SIC ICWC has collected water and environmental information on the regional scale (the Aral Sea basin), some which are in public domain.

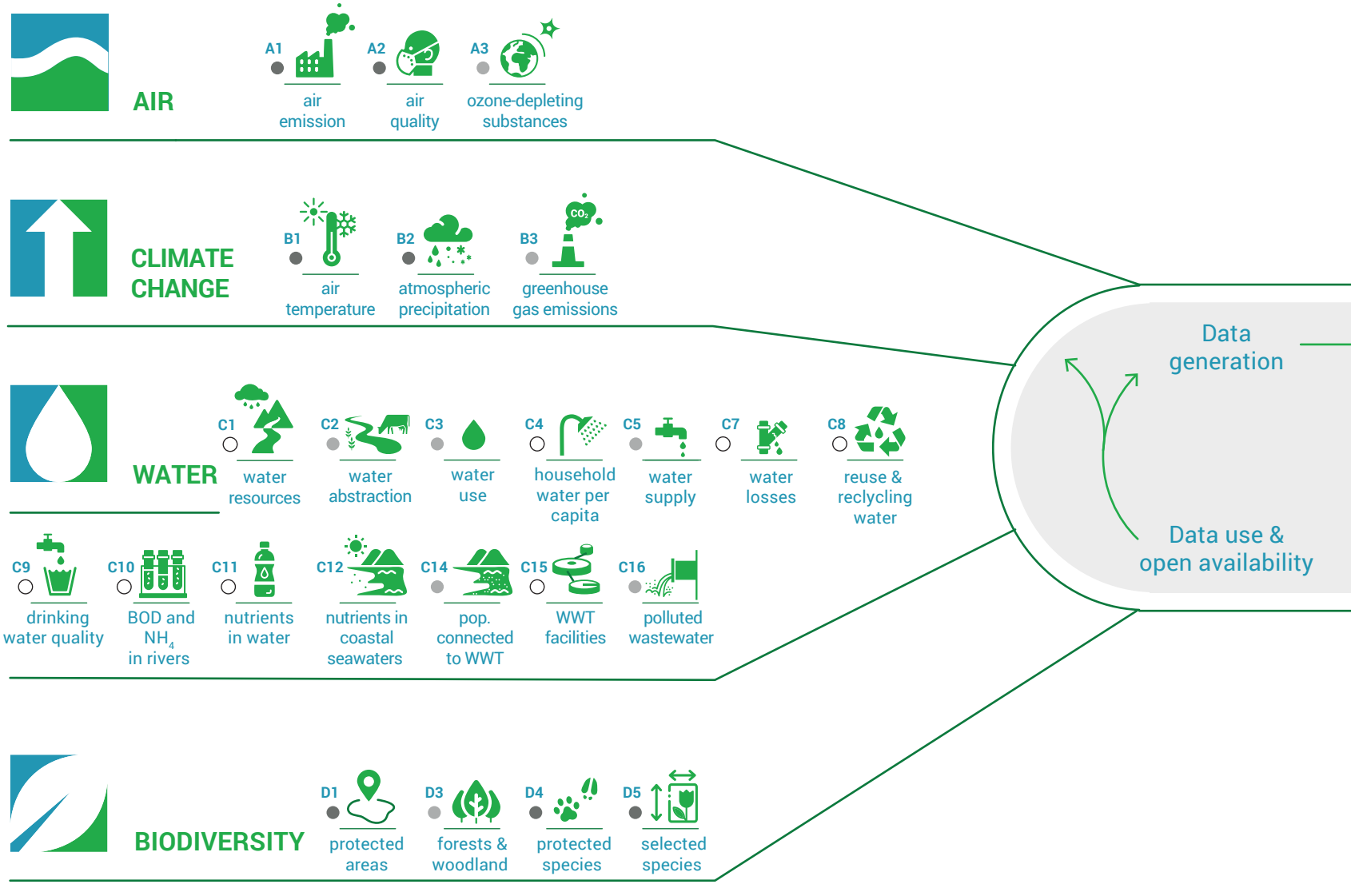
In addition to government agencies, public organizations are involved in the collection and dissemination of environmental information in Uzbekistan, for example, bird watching and protection groups and the ecological movement of Uzbekistan.

Environmental indicators

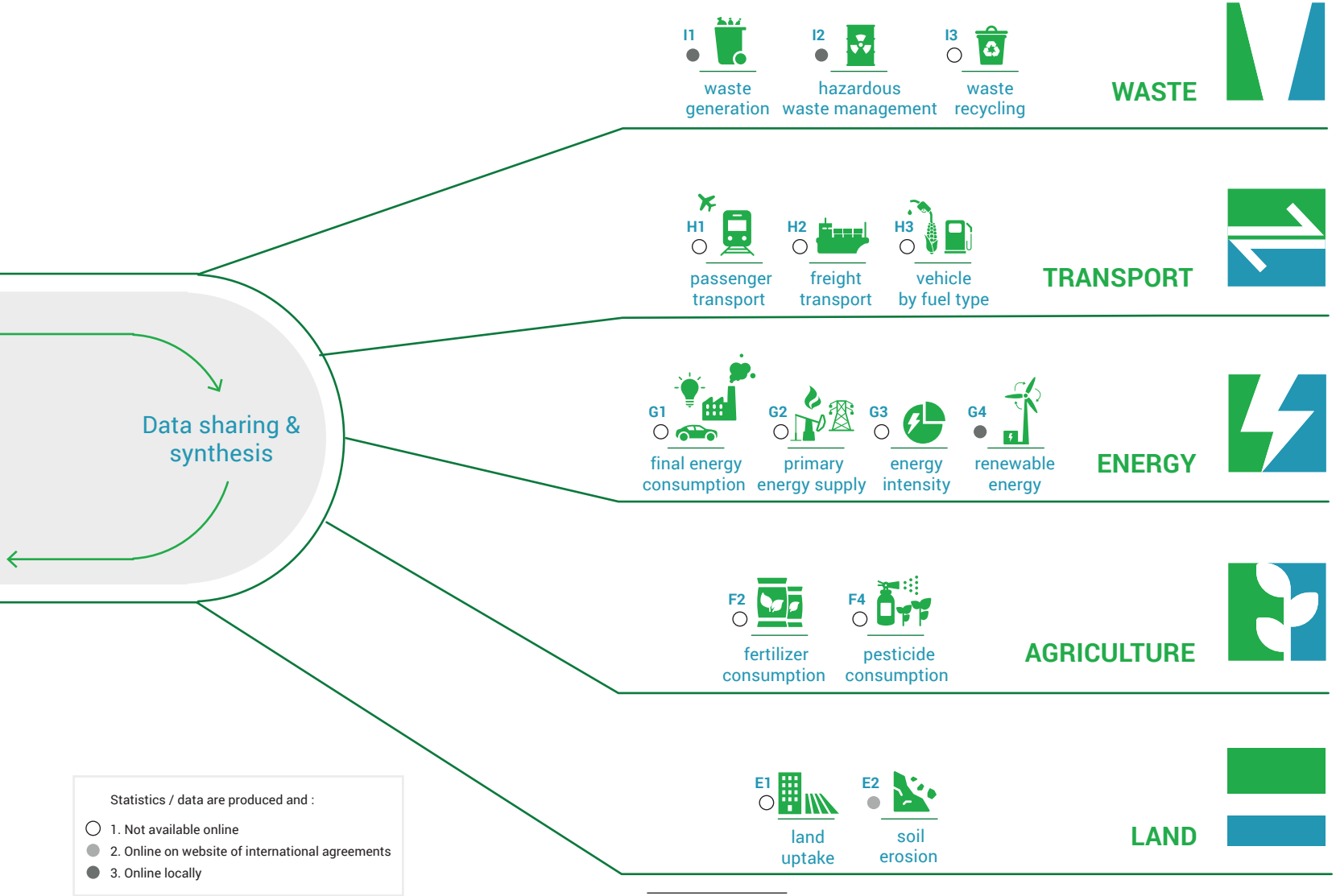
The State Committee for Statistics collects data from enterprises and other state agencies. Many of the environmental indicators are compatible with those in the UNECE and SDGs sets.

A comprehensive database prepared in 2010 included 100 environmental indicators (20 on atmospheric emissions, 25 on water resources, 14 on land resources, 9 on waste, 6 on biodiversity, 6 on climate change, 5 on public health, 4 on energy and 2 specifically related to the Aral Sea and other topics). There is no evidence that the database is still in use, however, while staff rotations and other changes disrupted its continuity.

Uzbekistan - **Environmental indicators**

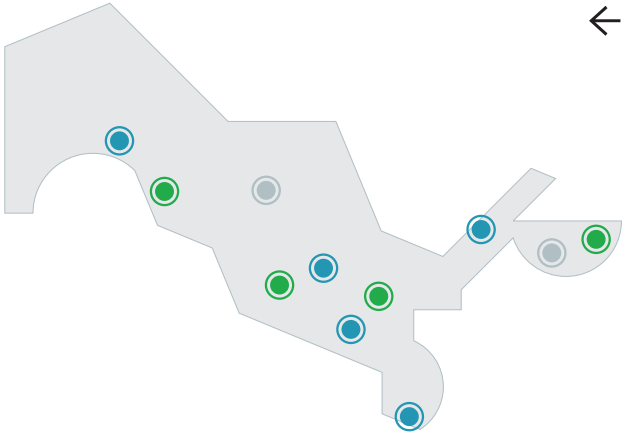


Uzbekistan - **Environmental indicators**



Spatial dimension and review of environmental data

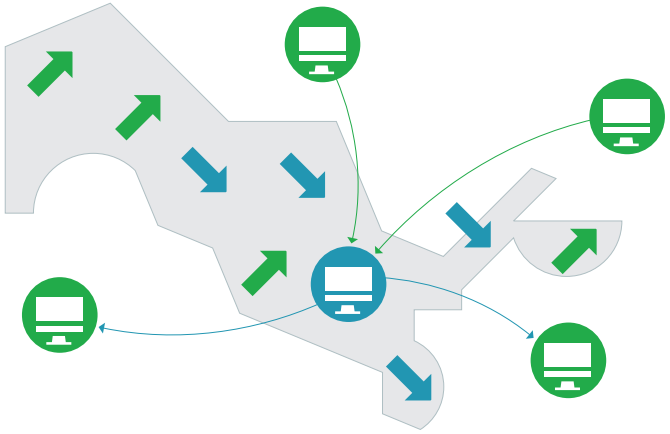
AIR QUALITY



← Air quality monitoring covers 25 major and industrial cities of Uzbekistan and is reported in absolute values and an integrated index. Data for Tashkent and major cities are available online on a daily basis, including on a map. The air quality monitoring network consists of 64 sampling points and includes 2 automated and mobile stations, with 6 additional automatic stations being procured in 2022–2023. Synthesized data are available in national atlases and environmental reports, and through Uzhydromet's new portal (monitoring.meteo.uz/en) and AirUz App launched in 2020 to make air quality data publicly available in Uzbekistan.

CLIMATE CHANGE

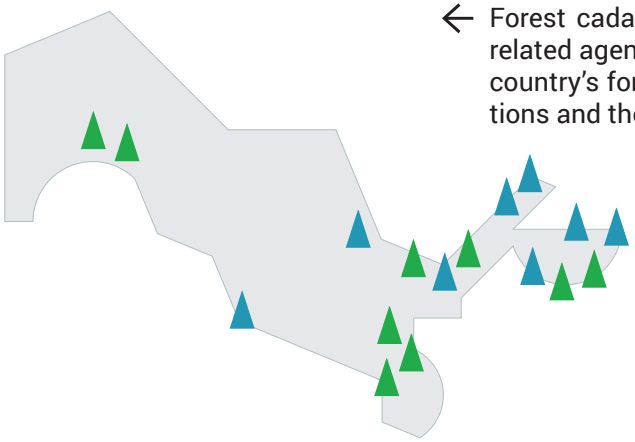
Climate monitoring is well established, and in 2019–2021 a network of automatic stations was introduced (at sites of manual stations). An annual state of the climate report is produced with spatial information on climate trends. Data on climate and emissions are available in national communications to the UNFCCC. Uzhydromet has the capacity and experience in creating maps and other spatial climate information. →



WATER QUALITY

← Well-established surface water quality monitoring. Occasional spatial data are available as integrated water quality index and pollutant-specific values, but are not open to the public.

FOREST

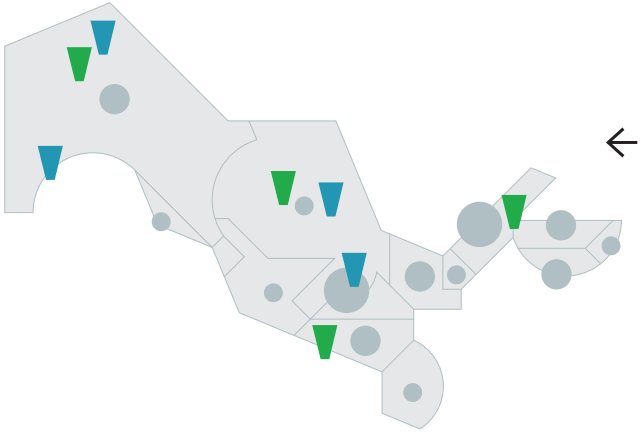


Forest cadastres are up-to-date and available upon request from the related agencies. Given the fast rate of increase in tree plantations, the country's forest area is increasing, but spatial data on new tree plantations and their characteristics are difficult to obtain.

PROTECTED AREAS

In 2019–2022, the protected areas in Uzbekistan increased by a million hectares, but spatial information on new protected areas, their boundaries and categories is difficult to find in the public domain. Due to different subordination, changes in protected area categories and their boundaries create ambiguities in spatial data for some protected areas. In general, data on protected areas are contained in national biodiversity atlases and reports. Spatial information is available for flagship and endemic species from scientific groups.

WASTE



Spatial data exist about polluted sites, including municipal and hazardous waste. Detailed information can be found in environmental impact assessment reports, the recent national waste strategy and related studies and the previous state of the environment reports or can be requested from the authorities. Waste generation and management statistics are available per province.

Lessons and recommendations

Uzbekistan is going through major governance reforms, including green economy reforms, open data and e-governance. Historically Uzbekistan maintained a relatively strong observation network and human capacity, but most of the environmental information generated was used and shared internally. In the past, Uzbekistan published several state-of-the-environment reports with time series, an indicator-based Environmental Atlas (2008), and has fulfilled its obligations on international reporting. Uzbekistan historically maintained extensive environmental monitoring and assessment capacities, and collected and analysed data on a large number of indicators, many of which are compatible with international and UNECE recommended formats. With support of international projects and through their own efforts, the country has digitized and upgraded many environmental datasets and continues modernization of its waste management system and hydrometeorological and biodiversity monitoring. However, while environmental assessment capacities are high, indicators are available primarily for internal use and inter-agency exchange, while open public data sharing is limited.

RECOMMENDATIONS FOR DATA COLLECTION

Promote further automation and digitalization of the state environmental monitoring, including real-time air (and other) pollution data. Initiate and integrate noise monitoring

Ensure accreditation of analytical laboratories participating in environmental monitoring, strengthen state agencies with water quality and soil pollution laboratory equipment and mobile laboratories

Introduce and develop monitoring of groundwater, considering its key role in public water supply and the multiple pressures and risks

Support digitizing and opening selected datasets (air and water quality, biodiversity), establish an integrated environmental information system interlinking databases of various authorities and supported by GIS technologies, common formats, metadata and interoperability requirements

Promote the collection of data on the human-environment nexus disaggregated by sex, age and vulnerable groups to inform environmental policies

RECOMMENDATIONS FOR ENVIRONMENTAL INDICATORS

Re-establish and continue with the regular production of the set of 100+ environmental indicators and develop a core set of environmental indicators compatible with UNECE recommendations (including with the revised set approved in 2021 under the scope of the UNECE Joint Task Force on Environmental Statistics and Indicators). Introduce routines for their regular update and availability online

Promote the development of indicators for environmental SDGs, increase their availability online and promote open data policies

RECOMMENDATIONS FOR ENVIRONMENTAL COMMUNICATION

Introduce the regular production of the national state of the environment report, and formalize (or update) the respective protocols, contents and inputs and inter-agency collaboration in light of recent and ongoing institutional reforms

Provide continuous online public access to the national state of the environment report, other reports and bulletins produced by various governmental agencies, and to available environmental statistics

Update and publish online maps from the 2008 Environmental Atlas

Pay attention to the media coverage and response actions on major environmental issues and violations, and to information provided by the public groups and the mass media

Develop information management systems to support the ongoing waste reforms and actions on waste

Promote the accession to the Aarhus Convention and the Protocol on Pollutant Release and Transfer Registers (PRTR)

Support further development of an open regional environmental information system and knowledge base at SIC ICWC

Consistently analyse and utilise data on human-environment nexus in order to improve understanding of these important linkages. Environmental sustainability can only be achieved through the consideration of both ‘people and planet’

MONITORING SUSTAINABLE DEVELOPMENT GOALS

The 2030 Agenda and its 17 Sustainable Development Goals are a once-in-a-generation opportunity to take bold and transformative decisions to put an end to extreme poverty, inequality and address environmental challenges by 2030. There are 17 sustainable development goals, 169 targets and 244 indicators, which are used to track overall progress, identify gaps and provide evidence for policy and action. The environment underlies each one of the global goals, demonstrating how the interdependency between humans and nature is at the core of sustainable development. As the world's leading authority on environment, UNEP plays a key role in supporting progress for achieving the goals and is the custodian for 26 indicators.

Central Asian countries actively pursue the 2030 agenda, and have set up comprehensive frameworks for SDG monitoring and reporting. Details of these frameworks and national processes are discussed below, while the figure illustrates the overall state of development of those national SDG indicators in Central Asian countries which fully or partially match indicators from the UNECE environmental set. Gaps in the figure indicate where environmental indicators from the UNECE set, once fully developed in the countries, will be able to provide additional opportunities for monitoring environmental progress towards SDGs.

Selected environmental SDG indicators

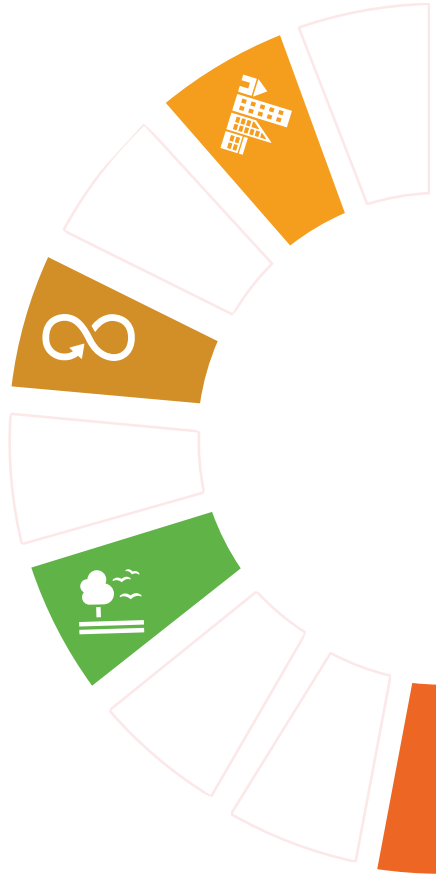
		KAZ	KYR	TAJ	TUR	UZB
2	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	●	●	●	●	●
3	3.9.1 Mortality rate attributed to household and ambient air pollution	●	●	●		●
	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene	●	●	●		●
	3.9.3 Mortality from unintentional poisoning	●	●	●		●
6	6.1.1 Proportion of population using safely managed drinking water services	●	●	●	●	●
	6.2.1 Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water	●	●	●	●	●
	6.3.1 Proportion of wastewater safely treated	●	●	●	●	●
	6.3.2 Proportion of bodies of water with good ambient water quality	●	●	●	●	●
	6.4.1 Change in water use efficiency over time	●	●	●		●
	6.4.2 Level of Water Stress: freshwater withdrawal as a proportion of available freshwater resources	●	●	●	●	●
	6.6.1 Change in the extent of water-related ecosystems over time	●	●	●	●	●
7	7.1.1 Proportion of population with access to electricity	●	●	●	●	●
	7.2.1 Renewable energy share in the total final energy consumption	●	●	●		●
	7.3.1 Energy intensity measured in terms of primary energy and GDP	●	●	●	●	●
9	9.1.2 Passenger and freight volumes, by mode of transport	●	●	●	●	●
	9.4.1 CO_2 emission per unit of value added	●	●	●	●	●

* Indicator definitions are available, while the availability of actual data is not confirmed
Analysis for Tajikistan is based on the SDG indicator framework conceptualized by UN ESCATO. The SDG framework in Turkmenistan in at an early stage of conceptualization, indicator definitions are preliminary.

Key:
* The definitions of the indicators in the column are global, the exact definitions and actual content of the respective national indicators may vary.
● – Published in the latest Voluntary National Reviews and/or national platforms on SDG
● – Under development, based on the information of the national platforms of SDG indicators (for Turkmenistan, on the basis of preliminary conceptualization, since the national platform of SDG indicators is launched in a pilot mode and is not available to the public).

Selected environmental SDG indicators

KAZ	KYR	TAJ	TUR	UZB		
●	●	●	●	●	**11.3.1** Ratio of land consumption rate to population growth rate	11
●	●	●	●	●	**11.6.1** Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban waste generated, by cities	
●	●	●	●	●	**11.6.2** Annual mean levels of fine particulate matter (i.e. PM2.5 and PM10) in cities (population weighted)	
●		●	●		**12.2.1** Material footprint, material footprint per capita, and material footprint per GDP	12
●	●	●	●		**12.2.2** Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	
●	●	●	●	●	**12.4.2** Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment	
●	●	●	●	●	**12.5.1** National recycling rate, tons of material recycled	
●	●	●	●	●	**15.1.1** Forest area as a proportion of total land area	15
●	●	●	●		**15.1.2** Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	
●	●	●	●	●	**15.2.1** Progress towards sustainable forest management	
●	●	●	●	●	**15.3.1** Proportion of land that is degraded over total land area	
●	●	●	●	●	**15.4.1** Coverage by protected areas of important sites for mountain biodiversity	
●	●	●	●	●	**15.5.1** Red List Index	
●	●	●	●	●	**15.8.1** Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	
●	●	●	●	●	**15.9.1** Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011-2020	



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Kazakhstan

In 2015, Kazakhstan launched the implementation of the 2030 Agenda and of the sustainable development goals. To coordinate the work in 2018, the Coordinating Council for Sustainable Development was established, headed by the Ministry of National Economy and the secretariat, whose functions are performed by the Institute for Economic Research. The Council includes five interdepartmental working groups with representatives from government agencies, civil society, the private sector, and independent experts.

In line with recommendations of the UN Statistical Commission, national statistics play a key role in SDG monitoring and implementation. The Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstanis actively involved in the implementation of the SDGs (it is a member of the Coordinating Council and heads the Interagency Working Group for monitoring of SDG indicators) and is making significant efforts to provide quality data for monitoring the goals and related targets of the 2030 Development Agenda.

Based on the UN global system of indicators, in close cooperation with public authorities responsible for SDG implementation, the non-governmental sector and international institutions, the Bureau of National Statistics designed a national list of SDG indicators, which includes global indicators as well as indicators reflecting national development priorities. The national list of SDG indicators contains 262 indicators, of which 190 are UN global indicators and 30 national indicators (in alternative to the global ones). In addition, 42 additional indicators reflecting national priorities for sustainable development were proposed in consultation with national stakeholders. More detailed information on SDG indicators is available at the national SDG reporting platform (kazstat.github.io/sdg-site-kazstat) maintained by the Bureau of National Statistics.

Kyrgyzstan

The sustainable development goals are included in state policy and reflected in the National Development Strategy of the Kyrgyz Republic for the period 2018–2040.

Working groups of experts from ministries and departments, civil society, business and the UN system, through consultations, identified priority topics for Kyrgyzstan. Of the 230 global indicators for 140 indicators, national counterparts have been developed and 150 additional national counterparts have been developed for SDG monitoring. In 2022, the National Statistical Committee released a compilation containing 99 indicators for 16 sustainable development goals, including 83 global and 16 national. The indicators are also published on the national SDG monitoring platform sustainabledevelopment-kyrgyzstan.github.io.

Tajikistan

The National Development Strategy 2030 and its alignment with the SDGs is the vision of the Government of Tajikistan in energy and food security, public access to water, and other development.

Tajikistan faces the challenges of introducing the SDGs into sectoral policy and cross-sectoral coordination. General information on the SDGs is provided at the web-page of the National Agency for Statistics (sdg.stat.tj) but the actual data is not yet available.

Turkmenistan

Turkmenistan became one of the first states that officially adopted the sustainable development goals, adapting them to national conditions and strategies for socioeconomic development.

Based on the results of consultations and analysis, in 2021 a list of 17 goals, 136 tasks and 180 indicators was approved, which will be implemented until 2030. A working group has been created from representatives of more than 50 ministries and departments, local authorities, public organizations and institutions. The Ministry of Finance and Economy is the coordinator, while the State Committee on Statistics is responsible for collecting and maintaining the SDG database. An SDG portal has been developed, but so far it is intended for departmental use.

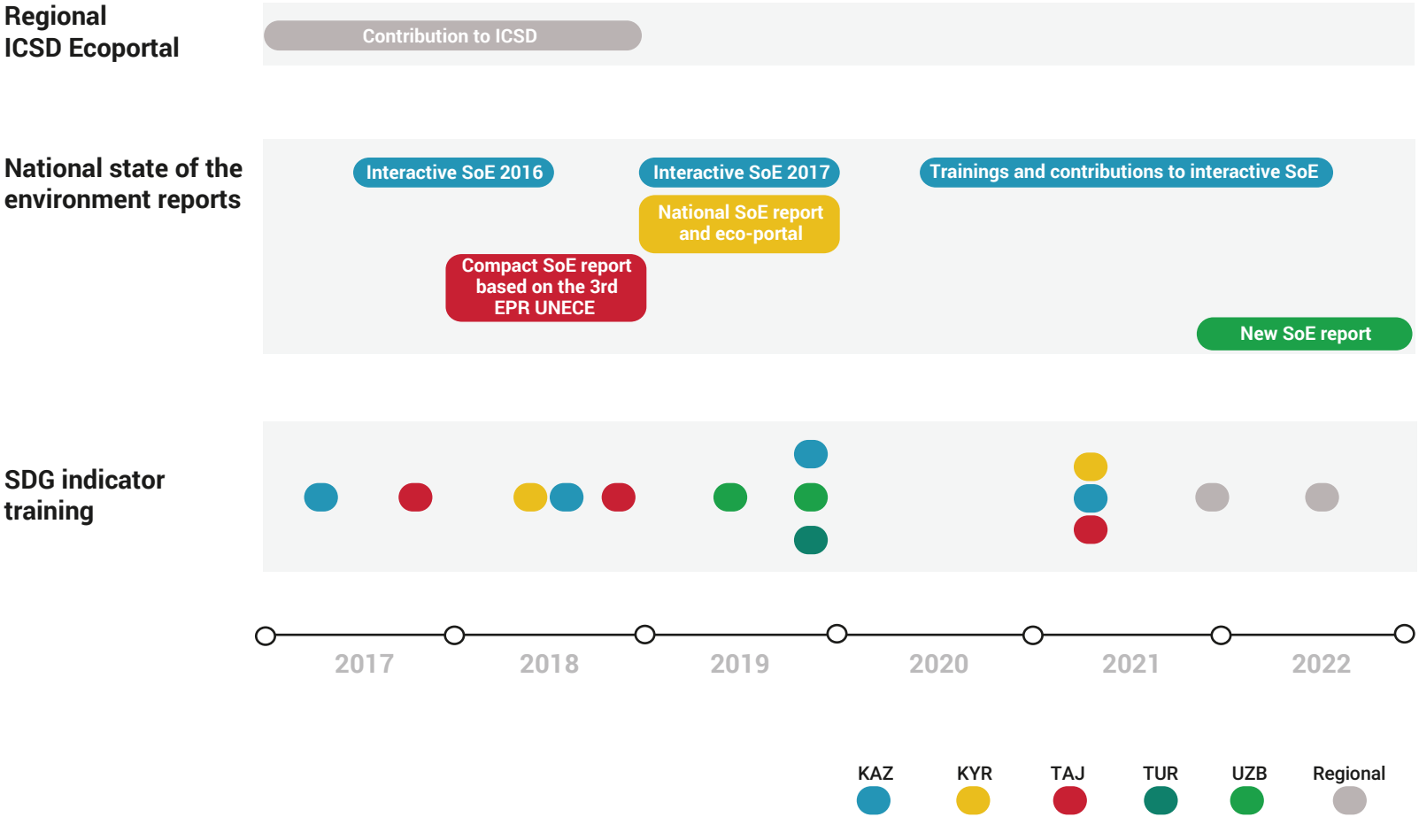
Uzbekistan

In 2015, Uzbekistan made commitments to implement the sustainable development goals until 2030. An interdepartmental coordination council has been created and an action plan for the implementation of national SDGs has been adopted. The Parliamentary Commission for Monitoring the SDGs and civil society are actively involved in this work.

In 2018, 16 national goals and 125 sustainable development targets were adopted. Based on the global system of indicators, a list of 200 SDG indicators for Uzbekistan has been compiled. The main tool for monitoring and disseminating data on SDG indicators is the national SDG reporting platform nsdg.stat.uz.

BUILDING CAPACITIES FOR SEIS

The UNEP project extended activities started by the EU under FLERMONECA, such as support to regional environmental information portals and national electronic indicator-based state of the environment reports, and opened new innovative areas, such as the environmental pillars of SDG monitoring and economic-environmental accounting.



Regional information exchange

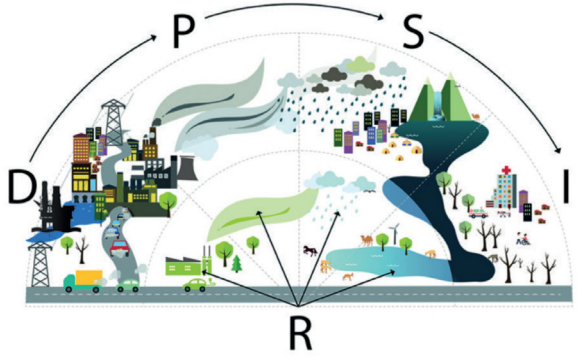
At the broader regional level, UNEP and UNECE are supporting the Interstate Commission on Sustainable Development in environmental assessments and information exchange. Another key partner of the UN organizations is the Regional Environmental Center for Central Asia (CAREC). In 2018–2021, with support from the World Bank, CAREC designed a regional climate portal — CACIP — as contribution to the Climate Adaptation and Mitigation Programme for the Aral Sea Basin (CAMP4ASB).

National environmental reports

In Kazakhstan, online interactive versions of national state of the environment reports (2016, 2017, 2018 and 2019) were produced with the UNEP project's support through from Zoï Environment Network, and made available online in Kazakh and Russian languages. A promotional video was also developed. The report was presented at several international and national meeting dedicated to the implementation of UNECE Aarhus Convention. Kazakhstan is the only country of the region annually producing SoEs.

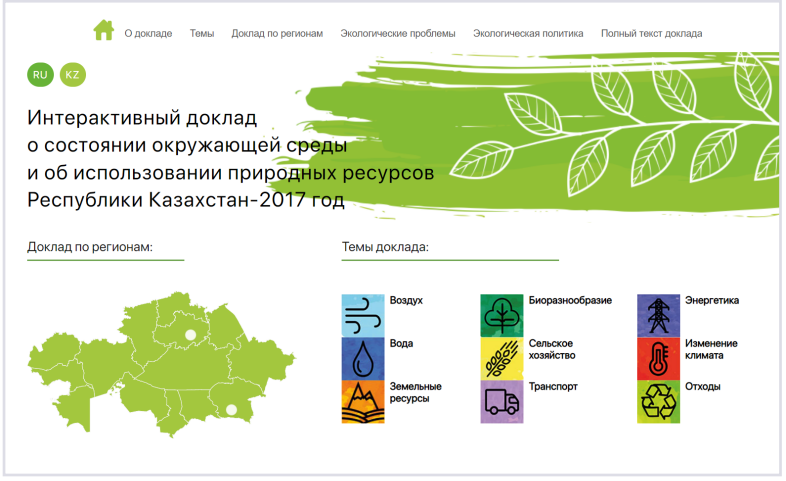
Gender Mainstreaming in SEIS

Increasingly, countries are recognizing the importance of collecting data on the gender-environment nexus and its centrality to the formulation of effective environmental policies. This is reflected in the SDGs, The Paris Agreement and in the adoption of the gender resolution 4/17 by UNEA Member States in 2019. The resolution calls for 'Promoting gender equality and the human rights and empowerment of women and girls in environmental governance.' National reports are also gradually adopting gender-responsive reporting as reflected in NDCs where 85% of reports submitted in 2021 made reference to gender. Guidance notes to support gender-responsive VNRs have recently been published to support integration at the country level. Although much work remains to be done, there remains little time to take action as we are in the SDGs Decade for action.



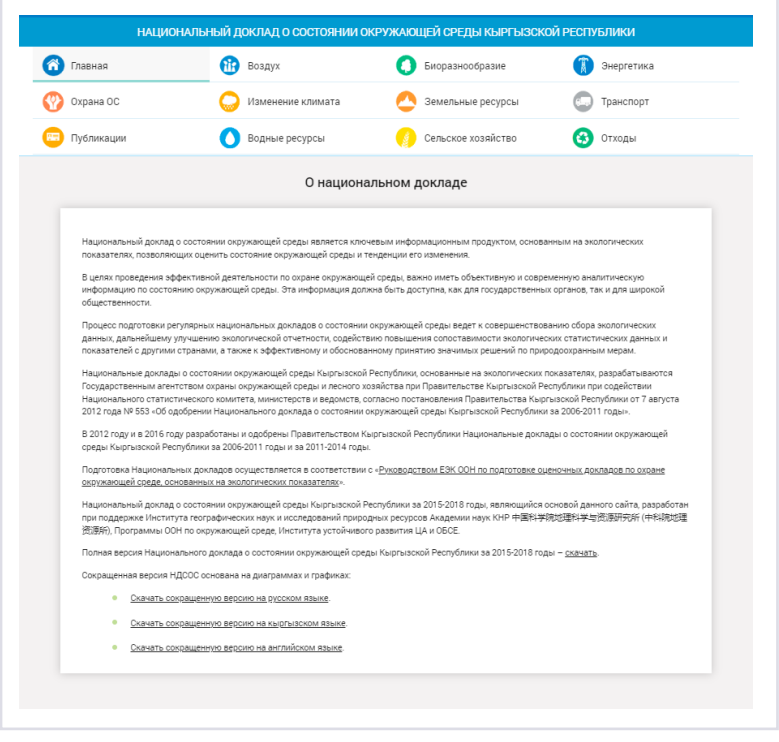
Interactive versions are data-rich summaries of the often 500-page long source reports, structured under a DPSIR approach that also integrates interactive tools for enhanced data visualization, covering environmental indicators out of the ECE list which are produced and published by the Committee on Statistics, as well as inputs from a variety of stakeholders organized by themes and by province. They also use innovative visualisation techniques, e.g. for provincial issues.

With support from UNEP and technical guidance from the Zoï Environment Network, and in collaboration with the Environmental Protection Committee and the Agency of Statistics of Tajikistan, production began on indicators from the UNECE list of environmental indicators and on a compact online version of the state of a environment report in Tajik and Russian, based on the recent 3rd UNECE Environmental Performance Review of Tajikistan. Following the restructuring of the website of the Committee for Environmental Protection, the report and indicators were no longer available.



Since 2010, Kyrgyzstan's former State Agency for Environmental Protection and Forestry released 3 NSoERs in collaboration with the National statistics Committee and other relevant agencies. The national reports produced in 2012 and 2016, covered the periods 2006–2011 and 2011–2014 and were approved by the Kyrgyz Government. In 2019–2020 a new report covering 2015–2018 was designed with support from UNEP, the Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences, the Central Asian Institute for Sustainable Development and the OSCE. In addition to the report, UNEP supported design of eco-portal with indicators, produced with technical guidance from Zoï Environment Network and with financial support from the EU. This eco-portal and state of the environment reports are currently hosted by the Aarhus Centres of Kyrgyzstan. They are not yet available at or linked with the web-site of the Ministry of Natural Resources, Ecology and Technical Supervision.

In 2022, UNEP and UNECE initiated support to Uzbekistan for the production of an indicator-based national state of the environment report which is expected to be ready in 2023.



SEIS and SDG training workshops

During 2016–2019, UNEP Europe Office and UNECE Statistical Division organized a series of capacity-building workshops in Central Asia with the aim to promote SEIS principles of open access to data and build national capacities to produce environmental statistics in support of national reporting on the environmental dimension of the SDGs. These workshops were mostly delivered in a true "One-UN" format in partnership with other UN agencies — notably UNDP, UNESCAP and FAO — and in close coordination with respective UN Country Teams to support national efforts to implement Agenda 2030 and develop national SDG monitoring frameworks.

In 2020–2022, several Central Asian states participated in the following regional and national trainings and workshops on SDGs:

- Pan-European regional training on SDG 12 (December 2021)
- Pan-European regional training on SDG indicator 12.1 on fossil fuel subsidies (May 2022)
- UNEP-UNECE workshop on health-relevant air quality data informing policy and public — SDGs 3, 11 (December 2020)
- UNEP-UNECE workshop on clean, renewable and efficient energy use — SDG 7 (February 2021)
- UNEP-UNECE workshop on waste management indicators and policies — SDG 12 (March 2021)
- UNEP-UNECE workshop on freshwater management indicators and policies — SDG 6 (April 2021)
- UNEP-UNECE workshop on informing biodiversity restoration policies — SDG 15 (May 2021)

Kazakhstan

April 2017: organised by UNEP and UNECE Statistical Division, and hosted by the National Statistical Committee of Kazakhstan, the workshop brought together representatives from the Ministries of Energy, Health, Agriculture, Economy, as well as regional statistics bodies in Kazakhstan. Other participants included environmental and statistics focal points from Kyrgyzstan, Tajikistan and Uzbekistan who joined this national workshop to benefit from the training and exchange experience from other countries in Central Asia. The main focus of the many expert presentations delivered by both international and national experts was on waste and water statistics, as well as mapping environmental data flows and gaps vis-à-vis the global list of SDG indicators to inform the development of Kazakhstan's SDG indicator framework.

July 2018: UNEP, UNECE and the National Statistical Committee organized another workshop aimed at advancing knowledge on environmental information systems and effective application of SEIS data sharing principles, and to improve capacity for the production of environmental statistics and information products for monitoring progress on the implementation of the SDGs. Focusing again on waste and water statistics, and introducing material flow accounts, the workshop also aimed at strengthening national capacities for the production of municipal, industrial and electronic waste statistics.

November 2019: a follow-up workshop on environmental SDG indicators took place at the request of the National Statistical Committee.

Kyrgyzstan

June 2018: UNEP, UNECE and UNDP Country Office in collaboration with UNEP-WCMC, UNESCAP, the State Agency of Environment Protection and Forestry, and the National Statistical Committee of the Kyrgyz Republic organized a workshop on environmental information systems and environmental statistics for SDGs to advance understanding on SEIS principles, management and reporting of biodiversity data, and the production of forest and energy environmental-economic accounts. Over 80 national experts attended the meeting.

Tajikistan

October 2017: UNEP, UNECE Statistical Division and UNDP Country Office convened workshop on SEIS and environmental statistics for SDGs. Participants included both staff from the Committee for Environment Protection and the Agency for Statistics in Tajikistan as well as participants from other Central Asian countries (Kazakhstan, Kyrgyzstan, and Uzbekistan). This workshop was linked up with UNDP Poverty & Environment Initiative and UNDP's GEF CCCD projects in Tajikistan, and integrated a particular focus on forest and water accounts and on mapping national data flows for the SDGs.

November 2018: UNEP and the Zoï Environment Network organized a training and experience exchange workshop for a joint group of national environmental and statistics experts about the methodological and theme-specific details of UNECE environmental indicators, and to identify ways for strengthening inter-agency collaboration on sharing information, reporting, and for the production of indicator-based state of the environment reports and environmental statistics yearbooks. A team of national experts, based on the new information and experience learned from this training workshop, further worked on a list of seven new environmental indicators in accordance with UNECE methodological recommendations.

Turkmenistan

November 2019: UNEP, UNECE Statistical Division and UNDP Country Office convened workshop on SEIS and environmental statistics for SDGs. Participants reviewed responsibilities for SDG reporting and for selected environment-related indicators including those on waste; life on land and under water; air; and climate change. The discussions the current advanced progress of Turkmenistan with several environment-related SDG sub-goals, while data for others still need to be collected and analysed.

Uzbekistan

June 2019: UNEP, UNECE Statistical Division and UNDP Country Office organized a training workshop together with the State Committee for Statistics of the Republic of Uzbekistan, focusing on methodologies and data collection for 29 environmental related SDG indicators. The workshop was also attended by UNESCAP, UNU, FAO, UNEP-WCMC and IUCN, national government agencies and other stakeholders who shared knowledge and experience about indicator methodologies and national data flows, and discussed the way ahead to address existing gaps and improve national reporting on environmental SDG indicators.

November 2019: a follow-up workshop was convened to discuss on SDG 6 (water) indicators, broadly attended by experts and organisations in Uzbekistan active in the areas of water resources, management and sanitation.

CONCLUSIONS

Central Asian countries are embracing new economic and infrastructural development initiatives, including mining and energy projects. These projects require environmental assessments based on compatible and up-to-date indicators and spatial datasets. Conservation of endangered and migratory species, preservation of cross-border ecosystems, and protection of the Aral Sea and of regional water resources depend on timely and open environmental data exchange. Improved regional data and knowledge on climate change and hazardous waste and tailings help to assess and address local and cross-border vulnerabilities and contribute to mitigation efforts.

Three years of fostering modern approaches to environmental information management in Central Asia following the principles of the Shared Environmental Information System have demonstrated clear advantages of the chosen approach, notably in terms of improved cooperation and sharing of lessons learned.

The one-UN approach by linking capacity-building with national projects, and by pooling together financial resources and expertise of different UN projects to finance capacity-building brings viable synergies, better results and stronger impact on the ground.

Fostering Regional cooperation by inviting representatives of other culturally close countries, both within and outside of Central Asia, to attend national workshops and to share experience, while at the same time benefitting from training themselves, is productive, cost-effective and culturally enriching.

Combining awareness and promotion of SEIS principles with hands-on technical training on such topics as environmental assessment, reporting, methodologies of environmental and SDG indicators and environmental-economic accounting brings the long-term vision of SEIS on a par with everyday life.

Facilitating dialogue about sharing environmental data and information and making them broadly available to the public in line with principles of open access to information not only brings close the future of SEIS in Central Asia, but also contributes to improved e-governance and eventually good governance at large.

Both international organizations and the countries of Central Asia look forward to continue this mutually rewarding partnership.

REFERENCES

The following key references were used in addition to expert analyses and consultations

United Nations Economic Commission for Europe. Current state and development of the Shared Environmental Information System (SEIS). Republic of Kazakhstan. Geneva, 2019

United Nations Economic Commission for Europe. Current state and development of the Shared Environmental Information System (SEIS). Kyrgyz Republic. Geneva, 2019

United Nations Economic Commission for Europe. Current state and development of the Shared Environmental Information System (SEIS). Republic of Tajikistan. Geneva, 2019

United Nations Economic Commission for Europe. Final review report on the establishment of the Shared Environmental Information System (SEIS), 2021. Available at: unece.org/sites/default/files/2021-04/2104042E.pdf

United Nations Economic Commission for Europe. Joint Task Force on Environmental Statistics and Indicators. Revised Guidelines on the Application of Environmental Indicators (October 2021): unece.org/statistics/events/joint-task-force-environmental-statistics-and-indicators-1

United Nations Economic Commission for Europe and United Nations Environment Programme (2022). Europe's Environment. The Seventh Pan-European Environmental Assessment. Available at: unece.org/sites/default/files/2022-10/2210919_E_pdf_web.pdf

Zoï Environment Network, Regional Environmental Centre for Central Asia, Environmental Agency Austria. The State of the Environment in Central Asia. EU FLERMONECA, Geneva — Almaty, 2015 zoinet.org/product/soe-ca

Zoï Environment Network, United Nations Environment Programme. Environmental information scorecards for Central Asian countries. Geneva, 2018

Zoï Environment Network, United Nations Environment Programme. Development of the Shared Environmental Information Systems in Central Asia. Regional synthesis. Geneva, 2018

Also consulted were:

- websites of project partners in the countries, such as environmental authorities and statistical offices
- available materials from SDG development processes in Central Asian countries (including national SDG websites), the latest Voluntary National Reviews of Kazakhstan (2019), Kyrgyz Republic (2020), Tajikistan (2017), Turkmenistan (2019) and Uzbekistan (2020)
- recently completed or drafted Environmental Performance Reviews of Central Asian countries unece.org/environment-policy/environmental-performance-reviews
- websites of international organizations including UNEP, UNECE, UN Stat
- websites of regional organizations and portals, including CAREC, SIC ICSD, SIC ICWC, Living Asia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