Tajikistan
Environmental Performance Reviews

Third Review – Highlights

Legal, policy and institutional framework

A number of new environmental laws have been adopted since 2010, with some of them tackling new issues for Tajikistan. These include, among others, the 2011 Law on Environmental Audit, which provides for mandatory and voluntary environmental audit to be performed by licensed environmental audit organizations. Significant amendments made to pre-2010 legislation included the introduction in 2012 of a new chapter on basin water management into the 2000 Water Code.

Progress has been achieved in integrating environmental considerations into sectoral legislation, although such integration is still at the initial stage. It can be observed at the level of laws and is almost absent at the level of subsidiary legislation.

The quality of environmental legislation has much room for improvement. There are a number of contradictions and inconsistences in the environmental legislation. There are cases of no action having been taken for years to align existing legislation with newly adopted laws or governmental resolutions.

Progress has been made in improving the accessibility of legislation, including environmental legislation, to governmental officials. However, the population has free online access only to laws and not to subsidiary legislation.

Integration of environmental considerations into sectoral strategic planning is still at the initial stage. Steps are being made to introduce strategic environmental assessment (SEA) into the national legislation.

The 2016 National Development Strategy for the period until 2030 aims to align the national development agenda to the 2030 Agenda for Sustainable Development. The environment-related measures include increasing access to water supply systems, sanitation and hygiene; strengthening incentives on environmental protection for the population and economic entities; and development of a natural hazards risk management system.

The low status of the Committee on Environmental Protection is the core reason for insufficient progress with integration of environmental requirements into sectoral policies and legislation. The current status of the Committee is not sufficient to ensure the implementation of the ambitious development agenda, set in the 2016 National Development Strategy for the period until 2030 and other strategic documents on environment and socioeconomic development.

No clear separation of management function and state control function exists in forest management as both functions are vested with the Forestry Agency. Moreover, the transfer of the protected areas competences from the Committee on Environmental Protection towards the Forestry Agency in 2013 raises concerns with regard to the inherent conflict of responsibilities of the Forestry Agency, which is entrusted to manage forests and at the same time ensure the observance of the protected area regime.

BOX 1: TOWARDS STRATEGIC ENVIRONMENTAL ASSESSMENT

The country is not a Party to the 2003 Protocol on Strategic Environmental Assessment to the ECE Convention on Environmental Impact Assessment in a Transboundary Context. SEA, as provided for in the Protocol or in Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment, does not exist in Tajikistan. Currently, the 2012 Law on Ecological Expertise provides that sectoral concepts, forecasts, programmes and schemes whose implementation may have an impact on the environment are subject to state ecological expertise (SEE). The 2012 Procedures for conducting SEE further clarify that draft territorial comprehensive schemes for use of natural resources and environmental protection are subject to SEE. A draft law on SEA has been prepared within a UNDP project in 2013–2014.

BOX 2: TRAINING AND IN-SERVICE TRAINING

There are provisions stating the need for training and in-service training of specialists on environmental protection in the 2011 Law on Environmental Protection and the 2010 Law on Environmental Education of the Population. In practice, training and in-service training of employees of the Committee on Environmental Protection on general (non-environmental) issues takes place in the Institute of Public Administration under the President, and on environmental protection issues through participation in various seminars and via training provided by senior staff to junior staff. Occasionally, brief seminars are conducted on new legislation.

No schemes of regular training and in-service training of civil servants on environmental issues are in place for the employees of sectoral ministries and agencies.

Recommended measures:

- **Strengthen the quality of environmental legislation;**

- **Ensure free online access to all environmental legislation;**

- **Ensure allocation of adequate governmental funding for implementation of strategic documents on sustainable development and environmental protection;**

- **Progressively introduce SEA;**

- **Implement the National Development Strategy until 2030 on the basis of the globally agreed Sustainable Development Goals;**

- **Entrust the competency on all specially protected natural areas to the Committee on Environmental Protection;**

- **Ensure separation of the state control and the management functions in forest management;**

- **Raise the status of the national environmental authority to a ministry.**

Note: The sections entitled "Recommended measures" represent an abridged version of selected recommendations from the EPR report and are provided for information purposes only. Please consult the text of the report for the full text of recommendations as adopted by the UNECE Committee on Environmental Policy.

Regulatory and compliance assurance mechanisms

Policy documents on compliance assurance are scarce. There are neither defined strategic priorities on environmental law enforcement nor targets on using different compliance assurance instruments to address those priorities at the national and subnational levels.

The regulated community is well identified, as there are multiple possibilities to receive relevant information about an enterprise. Sector-specific databases that contain relevant enterprise-level information exist in different ministries and agencies. However, an information system ensuring the interconnection of databases and registers on permits and inspection activity and with external partners does not exist.

Some improvements occurred in developing product standards. Quality requirements for marketed fuel were established. On energy efficiency, a few technical standards and regulations were developed, including new norms on the insulation of buildings. Other recent technical regulations set labelling requirements for food products and safety requirements for fodder.

The 2012 Law on Ecological Expertise, together with subsequently adopted procedures for conducting the state ecological expertise (SEE) and environmental impact assessment (EIA) streamlined the mechanism of environmental assessment of projects. However, several aspects (e.g. screening and scoping, or the role of the competent authority in EIA) still remain unclear. The lack of guidance materials on EIA and the lack of a publicly accessible information system containing data on previous EIAs are the drawbacks of the current assessment system. Transboundary aspects receive only a brief mention in the legislation on EIA/SEE.

The system of inspection went through a decade-long process of reform, launched by the enactment in 2006 of the Law on Inspections of Business Entities, later replaced with the 2015 Law. Compliance monitoring activity is shown to be very intense, but its focus is mainly outside the environmental performance of the industrial sector. Inspection checklists are used but they are rather generic; there are no environmental checklists for different sectors. Other sector-specific guidance materials are not available. Available information on inspection activities is not analysed.

Tajikistan is starting to use environmental-risk-based approaches for better planning regulatory and enforcement activities. In 2013, the list of facilities and types of activity subject to EIA introduced risk-based categories for environmental assessment purposes. Earlier, the 2006 Law on Inspections of Economic Entities introduced risk-based requirements for determining the frequency of compliance monitoring actions. However, a list of high-risk facilities based on health and environmental criteria was never developed, so environmental inspections are not planned based on the clear and objective criteria of risk.

Self-monitoring by the regulated community is an important challenge. Only about 60 facilities have established self-monitoring. Many of them are municipal wastewater treatment plants (WWTPs) that check a few routine parameters in effluents.

There is no legal obligation for operators to regularly report on the acquired data to the authorities.

Environmental compliance promotion activities remain sporadic. Only two companies, of which one industrial plant, are ISO 14001 certified. Steps to promote the private sector performance are taken mainly by non-state actors with support from international partners, sometimes outside environment-specific projects.

Corporate social responsibility and related reporting are at initial stage. Information disclosure by mining companies in Tajikistan is mainly oriented towards external audiences. Contribution to social issues is the most established form of corporate social responsibility.

The current environmental enforcement practices are biased towards petty offences. Monetary penalties are numerous but established and applied at low levels. The legally set level of fines is lacking proportionality in a number of cases. The court system exhibits low awareness about, and experience in, environmental cases.

BOX 3: FINES FOR ENVIRONMENTAL OFFENSES

In Tajikistan, the levels of fines are expressed in "calculation units", a means used for costing the punitive penalties, duties, social benefits and other mandatory payments. In the period 2012–2015, the calculation unit was established at 40 somoni. The level of fines established by the 2008 Code on Misdemeanours for environmental and natural resource use offences gives the impression of being sufficient for Tajikistan, rising to 40 calculation units for physical persons and 300 calculation units for legal persons. However, the actual level of fines applied is at the bare minimum possible. As a result, environmental enforcement most likely fails to provide a deterrent effect. For example, in 2013 and 2014, the average level of fine applied was about 3 calculation units (115–120 somoni). Also, the Code on Misdemeanours is lax on several types of environmental offences. For example, a fine of only 5–10 calculation units for individuals is foreseen for the violation of environmental requirements related to the management of toxic industrial waste or radioactive materials.

Recommended measures:

- **Establish strategic priorities and indicators for the compliance assurance system;**
- **Strengthen the involvement of competent authorities in the screening and scoping steps of EIA;**
- **Develop materials to help the regulated community to better understand EIA/SEE procedures;**
- **Further develop risk-based planning of environmental inspections;**
- **Equip inspectors with sector-specific guidance notes and checklists;**
- **Enhance the legal basis for and extend the practice of self-monitoring;**
- **Raise the environmental awareness of judges.**

Economic instruments, environmental expenditures and investments for greening the economy

The long-standing system of charges on emissions of air pollutants, discharges of water pollutants and generation of industrial waste has not undergone any significant changes since 2010. Charge rates, which have remained unchanged for some two decades in the presence of high cumulative inflation, are too low compared with the marginal abatement costs of any significant pollution reduction. The number of air and water pollutants subject to charge rates is high, which raises the issue of the resources required to administer this system relative to the environmental benefits.

The Government levies a tax on mobile sources of air pollution in the form of an excise duty on motor fuels. Although the tax rate was raised in 2014, it is still very low and unlikely to promote emission reductions from road motor vehicles. Rates are also not differentiated based on fuel quality, notably as regards the sulphur content of diesel.

Tariffs for services provided by municipal utilities (water supply and sanitation, waste collection) have been raised significantly for all customer categories since 2010. The significant feature of the tariff regime is, however, for tariffs applied to legal entities, notably enterprises, to be significantly higher than household tariffs. This points to a continuing system of cross-subsidies in favour of the population. Total revenues collected by municipal utilities are far from sufficient for recovering operating costs.

Although progress with the installation of water meters has been made in urban areas, most households are not yet equipped with water meters. Water meters are central to reforming the water sector on the demand side and a necessary condition for the introduction of cost-reflective household tariffs.

There have been attempts to establish differentiated irrigation fee rates for the two irrigation systems (gravity irrigation and pump irrigation) in order to improve cost recovery. However as of late 2015, a unique tariff for irrigation water supply at the level of 1.5 dirams/m³, excluding VAT, was in place. The unique fee rate allows for broadly covering the costs of operation and maintenance for the gravity system but not the corresponding costs for the pump system. This has contributed to the progressive deterioration of the irrigation and drainage network.

State budget funds allocated to environmental protection have remained quite limited and were mainly used for financing recurrent expenditures. A more or less predictable source of financing for environmental expenditures is the earmarked revenues from the collection of pollution taxes and other earmarked charges. However, in general, these resources are too small to finance significant investments. There is a lack of information concerning the kinds of projects and measures financed from these funds.

Foreign financial assistance has become the mainstay of efforts to promote the economic and social development of Tajikistan. The Government's annual Public Investment Programme is entirely financed by foreign donor funds. Foreign financial funds were allocated predominantly to the energy and transport sectors, which accounted for some 51 per cent of total disbursements during the period 2011–2014. Water supply and sanitation, together with other communal services, had a share of 5.2 per cent, while environmental protection (in the narrow sense) accounted for 2.3 per cent of total foreign aid.

Table 1: Foreign aid provided to Tajikistan (disbursements by sector)

Sector	2011	2012	2013	2014	Total, per cent 2011-2014
Agriculture and irrigation	3.7	15.3	15.0	12.8	6.3
Environment	4.3	3.5	5.2	4.5	2.3
Water supply and other communal services	11.3	8.0	13.5	5.8	5.2
Energy	54.8	18.2	13.3	33.1	16.0
Transport	111.9	39.9	60.1	46.9	34.8
Health	7.8	22.6	20.6	22.7	9.9
Education	8.2	9.9	14.2	12.9	6.1
Private sector and industry	2.6	7.3	16.4	16.4	5.7
Other, incl. multisector activities	17.6	15.5	40.7	28.1	13.7
Total	**222.2**	**140.1**	**198.9**	**183.3**	**100.0**
as per cent of GDP	3.4	1.8	2.3	2.0	

Source: State Committee on Investments and Management of State Property, Foreign Aid Reports, 2014, 2013, 2012, 2011.

Recommended measures:

- **Review and limit the number of pollutants subject to charges;**

- **Raise pollution charge rates to levels that create effective incentives for pollution abatement;**

- **Raise excise tax rates on motor fuels and differentiate them based on fuel quality standards;**

- **Support the installation of meters for household water supply services;**

- **Gradually raise irrigation tariffs over a well-defined time period;**

- **Support farmers who cannot afford to pay cost recovery irrigation tariffs during the transition period;**

- **Develop a system for the collection and analysis of information won revenues collected from earmarked taxes and other charges and on environmental expenditures.**

Environmental monitoring, information, public participation and education

The environmental monitoring networks are poorly equipped. In particular, this applies to the networks under the Committee on Environmental Protection, including Tajikhydromet, and the Ministry of Health and Social Protection of the Population. Due to poor equipment, and the lack of chemicals and fuel required to travel to monitoring points, monitoring covers limited monitoring points and monitored parameters on ambient air and water pollution. Forests and biodiversity are monitored using estimating methods.

Since 2010, the Agency of Statistics has suspended the collection of statistical reporting data on water. Comprehensive data on water use and water pollution are no longer available.

In general, the current environmental monitoring system is not indicator based. The report on the state of the environment was last published in 2010. In early 2016, the Agency of Statistics began to establish an online state of the environment report.

Environmental information is used mostly for reporting to higher levels. It is rarely used by public authorities as a tool for development and implementation of environmental policy, monitoring and evaluation of environmental performance.

Dissemination of environmental information has improved as compared with 2010; this applies in particular to the Committee on Environmental Protection. Other public authorities actively disseminate environmental information on a more limited basis.

Public requests for access to environmental information ("passive" access) are not common. The annual average number of public requests for environmental information submitted to the central office of the Committee on Environmental Protection is less than one hundred.

The Committee on Environmental Protection and the Forestry Agency cooperate actively with a number of environmental non-governmental organizations (NGOs). This includes undertaking joint public environmental awareness campaigns and joint actions such as planting trees and conducting training on environmental issues. Other public authorities are less used to cooperation with environmental NGOs and activists.

In the current EIA/SEE system, public participation as a mandatory element of the procedure is envisaged only at the EIA stage. At the SEE stage, the possibility of public participation is provided through the so-called public ecological expertise, which is rarely conducted in practice. Public participation in EIA continues to be limited and is mainly organized as part of the projects co-funded by international financial institutions.

The public seldom takes up opportunities for access to justice on environmental matters. NGOs have sometimes challenged in the courts the denial of requests for environmental information. More common is the practice of administrative review of complaints by representatives of the public on environmental matters.

Tajikistan has achieved progress on environmental education. It has not yet moved towards integration of the elements of Education for Sustainable Development (ESD) into its educational system. Some initiatives to promote ESD take place within the framework of international projects; however, there are no specific legal and policy frameworks to support ESD. Textbooks and guidance materials for teachers on ESD are almost non-existent.

Table 2: Measured pollutants and published data on air pollution

City	Measured pollutants	Published data on measured pollutants*
Dushanbe	SO_2, CO, CHOH, NO, NO_2, dust	SO_2, CO, CHOH, NO, NO_2, dust
Khujand	SO_2, CO, NO, NO_2, dust	SO_2, NO_2, dust
Kurgan-Tyube	SO_2, CO, NO, NO_2, dust	SO_2, NO_2
Spitamen	SO_2, CO, NO, NO_2, HF, dust	
Tursunzade		SO_2, NO_2, HF, dust

Source: Tajikhydromet, 2015.
Notes: * Observations on data published on the website of Tajikhydromet, December 2015.

Table 3: Monitoring points for quality of surface waters

Place	Number
Total	**31**
Khatlon-Vaksh River	6
Kayrakkum Reservoir	5
Sangiston	6
Yavan-Yavansu River	3
Pandema	2
Khushere-Varzob River	3
Pyanj River - Khirmanjo	2
Yahsu River - Karboztonak	1
Ziddi (Varzob River)	2
Kyzylsu River - Somonchi	1

Source: Tajikhydromet, 2015.

Recommended measures:

- **Strengthen the environmental monitoring networks;**
- **Adequately fund the modernization of the laboratories;**
- **Reestablish the statistical reporting on water use and pollution;**
- **Ensure the use of key environmental indicators;**
- **Ensure that future state-of-environment reports are indicator-based;**
- **Provide mechanisms in the legislation to ensure effective public participation;**
- **Develop legal and policy frameworks to support ESD;**
- **Enhance national educational capacities as regards teaching on sustainable development topics.**

Air protection

Data on total air pollution provided by the Agency of Statistics, which are mostly calculated by using emission factors, are of the same order of magnitude as the estimated data from the Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), with the exception of emissions of sulphur dioxide, nitrogen dioxide and carbon monoxide, which are four times higher in the EMEP data. In contrast with the EMEP data, which show a gradual increase in air emissions in the last 5–10 years, data from the Agency of Statistics show a small reduction in emissions from both stationary and mobile sources.

With greenhouse gas (GHG) emissions of 0.4 ton of CO_2 per capita, Tajikistan ranks 160th out of 200 countries. Since 2005, GHG emissions have been stable but, due to the future growth of the population, increased traffic, a growing economy and industrial and agricultural production, GHG emissions are expected to increase in the near future.

From 1990 to 2010, there has been an enormous shift in the sources of GHG emissions. In 1990, the energy sector was by far the largest source of GHG emissions (70.46 per cent) and CO_2 by far the most emitted GHG. In 2010, GHG emissions from the energy sector reached 7.47 per cent of those in 1990. Industrial emissions of GHGs in 2010 were 41.49 per cent of the 1990 level. GHG emissions from the agricultural sector increased since 1990 by 17.25 per cent.

Emissions of NH_3 have increased in the last 10 years due to the growth of livestock husbandry. Tajikistan has not yet assessed the emission abatement potential. Technical measures based on the application of best available techniques in stables and manure management can reduce the emission of reactive nitrogen compounds. Uncertainties in emission inventory lead to the limited accuracy of emission modelling.

Heat and power plants, the chemicals industry and manufacturing industries make an important contribution to the SO_2 emissions by their combustion of fossil fuels. Although the use of fossil fuels in Tajikistan is relatively low, growing use is possible because of the rapid population growth and uncertainties surrounding the future use of hydropower, due to climate change risks.

Many central heating systems in residential areas have boiler houses heated with natural gas or fuel oil, which are no longer working, since gas imports decreased after 2010. Heating of houses in these areas is now mostly achieved by electricity, bottled gas or coal-fired stoves. Such stoves contribute to a deterioration of the ambient air quality, as emissions are not abated and chimneys are relatively low.

Although at present the contribution of Tajikistan to global GHG emissions is very low, Tajikistan is highly vulnerable to the impacts of climate change. The rapid entry into force and effective implementation of the 2015 Paris Agreement is therefore beneficial to Tajikistan.

Tajikistan is not a Party to the Convention on Long-range Transboundary Air Pollution and its protocols. Participation by Tajikistan in the Convention would give the country better access to the necessary knowledge to develop a monitoring strategy on air pollution, a solid system of emission inventories and an air quality strategy.

Figure 1: GHG emissions, 1990–2010, Gg CO$_2$ equivalent
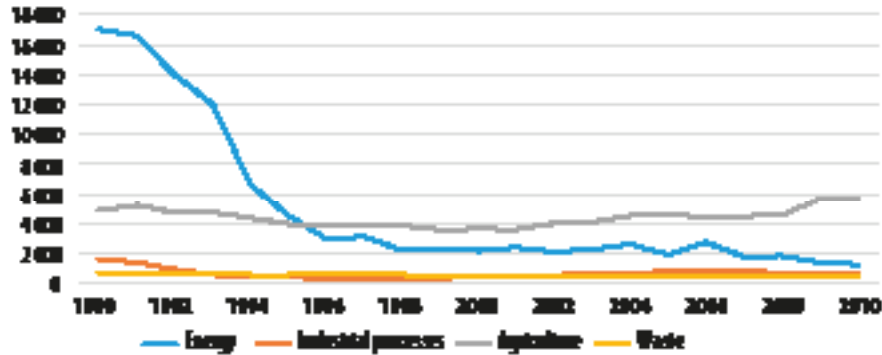
Source: Total National Communications to the UNFCCC, 2014.

Figure 2: GHG emissions from livestock, 2000–2014, Gg CO$_2$ equivalent

Source: FAO (http://faostat3.fao.org), 2016.
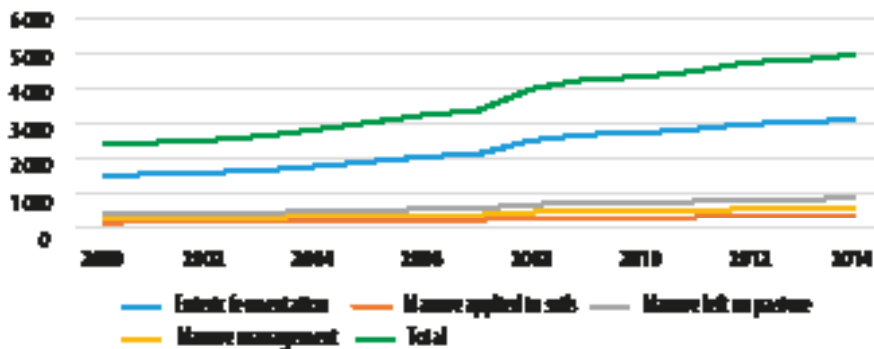
Recommended measures:

- Perform an emission data inventory of NH$_3$ and scenario projections for the NH$_3$ emission trends;

- Encourage the application of BAT in all industrial sectors and, in particular, to reduce SO$_2$, PM and other emissions;

- In areas not connected to functional central heating, promote the use of heating installations that have only limited effects on the ambient air quality;

- Ratify the 2015 Paris Agreement;

- Accede to the Convention on Long-range Transboundary Air Pollution and its amended protocols.

Water management

Irrigation is the main water use, accounting on average for 77 per cent of total consumption during the period 2009–2014. In the same period, each of the other economic sectors accounted for between 3 and 4 per cent. In 2014, the consumption of water by households was 330 million m³, which represents 3.73 per cent.

Progress was achieved with regard to improving access to water and sanitation in line with the Millennium Development Goals. With regard to access to an improved drinking water source (Indicator 7.8), there was a 23.3 per cent improvement in the period 2000–2015, from 60 per cent of the population in 2000 to 74 per cent in 2015. Most of the increased access was in rural areas (an increase of 39.6 per cent). Similarly, the proportion of the population using an improved sanitation facility (Indicator 7.9) increased by 5.6 per cent in the same period, from 90 per cent in 2000 to 95 per cent in 2015, with a 2.2 per cent increase in urban areas and a 6.7 per cent increase in rural areas.

The control of drinking water safety parameters and water quality monitoring in centralized and non-centralized systems is conducted by the Service of State Sanitary and Epidemiological Surveillance. Of over 40,000 facilities under its supervision, only 60 per cent are inspected, mostly due to the lack of human and financial resources.

Almost the entire sewerage infrastructure is in a deteriorated state and requires rehabilitation, with over 70 per cent of existing systems having high wear and tear. About 80 per cent of wastewater treatment facilities do not meet technical requirements, so wastewater in urban areas undergoes only partial biological or mechanical treatment prior to being discharged directly to water bodies. Since 2010, no major sewerage systems or WWTPs have been constructed, planned or rehabilitated.

The irrigation and drainage network comprises 384 pumping stations of various types and capacities, irrigation channels with a total length of 29,200 km, 11,400 km of drainage networks and other infrastructure. Annually, the pumping stations use 1.3–1.5 billion kWh of electricity to deliver 5–6 billion m³ of water. Most installations have been in use for 50 years and are obsolete, due to the lack of adequate repair and maintenance. Around 30 per cent of pumps have deteriorated and suffer from power failure.

The real condition of the assets of water companies, irrigation and drainage network and intra-farm pipeline network is not well known. Water-related data, including on water quantity and water quality, are spread among various public authorities and organizations. There is no shared platform or system that would provide an overview of the situation in the entire country. The state water cadastre has not been maintained since 2005.

As of early 2016, 417 water user associations (WUAs) were in operation to distribute water among their members and other users, collect funds for water supply services, and maintain and use on-farm irrigation facilities and other water infrastructure at the farm level. However, WUAs are rather unstable due to the fact that they do not have fixed assets on their balance sheets.

The 2015 Programme of Water Sector Reform for the period 2016–2025 provides a roadmap for the transition from administrative-territorial water resources management to river basin management. It triggers major reforms in

the institutional structure, the legislative framework and other areas. Its implementation is expected to be financed primarily through projects financed by development partners.

Climate change impacts on glaciers and water resources are already felt. The area covered by glaciers has declined by approximately one third since the 1930s. By the year 2050, the volume of glacial ice is expected to decrease by 25–30 per cent and river run-off to increase by 6–15 per cent. It is expected that the peak discharge in non-regulated rivers will shift to earlier months of the years, affecting economic sectors dependent on water supply. Climate change is also associated with siltation of the hydropower dams.

Figure 3: Water use by economic sector, 2014, per cent
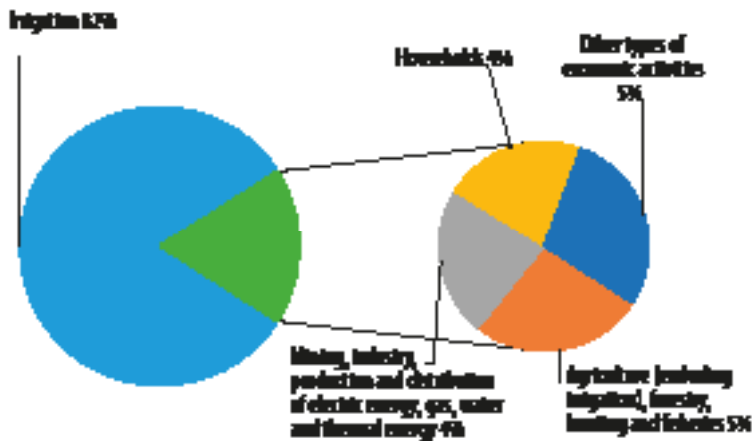
Source: Agency of Statistics, Environmental Protection in Republic of Tajikistan, 2015.

BOX 4: GENDER-RELATED DISPARITIES

Women and girls are heavily affected by poor access to water and sanitation. Poor access impacts on their time distribution, mobility, health and work burden. A gender assessment carried out in rural areas in Tajikistan in the framework of the Swiss Development Cooperation (SDC) Drinking Water Programme 2012–2015, which was published in 2013, showed that women and children under 14 spend an average 4–6 hours daily (in some cases, up to 8 hours) carrying water. Women are reluctant to venture from their own communities due to the lack of safe and secure sanitation facilities in public places. With the changing climate, inadequate access to water and poor water quality also affects agricultural production and the care of livestock and increases the overall amount of labour that is expended to collect and distribute water.

Recommended measures:

- **Attract investment in water supply and sanitation infrastructure, especially in rural areas;**
- **Carry out the inventory of all water infrastructure;**
- **Develop a publicly available water information system;**
- **Ensure proper implementation of the Programme for Water Sector Reform for the period 2016–2025;**
- **Reflect climate change concerns in the design of new water supply and sanitation infrastructure and water management infrastructure.**

Waste management

Tajikistan does not have a national waste management strategy and action plan for waste management. Such strategy is under preparation. Also, the country lacks waste management plans for regions, municipalities and individual waste generators.

National data on collected municipal solid waste (MSW) are reported in m³, but individual operators prefer collecting waste data in tons. Partial data are available on MSW collection in Dushanbe and Khujand only. In 2013 and 2014, Dushanbe generated 220,880 tons and 257,000 tons of MSW, respectively. Khujand generates around 52,000 tons per year.

In 2016, collection was provided to 38.25 per cent of the country's population. This collection coverage is low; modernization of waste services must aim at increasing the share of the serviced population and developing adequate disposal capacity.

MSW is collected from designated places, which may be equipped with containers. In some cases, waste is dumped on the ground, and a front loader is used to transfer the waste to a collection truck. Another option is large containers (skips) located at the entrances to housing areas.

MSW is disposed of to allocated areas, which lack basic measures for avoiding the dispersion of pollution from waste. The Committee on Environmental Protection identified 69 disposal sites in 2016 that are used for municipal waste disposal. Existing disposal sites at regional centres are overfilled and there is an urgent need to start developing a national network of landfills.

Waste separation has not yet commenced, although some progress has been made as the collection of fluorescent lamps started. The country generally lacks recycling infrastructure, except for recycling of scrap metals and paper.

There is little information on industrial waste, because regular reporting is not carried out. Industrial enterprises and organizations, based on agreement with the road maintenance units, transport their waste to the municipal disposal sites, where it is disposed of together with municipal waste. The Committee on Environmental Protection has begun to make an inventory of disposal sites used for industrial waste.

Understanding of hazardous waste is limited to radioactive waste and pesticides. These types of waste are a priority at present and, once their situation has been improved, it is expected that progress will be achieved by defining an approach to waste with other hazardous properties.

Medical waste management is improving under the influence of donor funded projects. However old management practices continue. Experience gained in pilot projects is not evaluated and good practice is not extended to all hospitals.

Adoption of the National Concept on Rehabilitation of Uranium Waste Tailings for the period 2014–2024 has been an important step towards improvement of the situation in radioactive waste management. International donors have begun to implement programmes and projects aimed at reducing the harmful impacts of radioactive waste mismanagement.

Tajikistan has upgraded the two facilities for disposal and long-term storage of obsolete pesticides. This opens up the opportunity to accumulate pesticides from the country's small storage facilities within the central ones and to export pesticides for final disposal.

In 2016, Tajikistan acceded to the 1989 Basel Convention on Transboundary Movements of Hazardous Wastes and their Disposal. The country is not yet a party to the 1998 Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trad e and the 2013 Minamata Convention on Mercury.

Table 4: Ranking of uranium tailing ponds by remediation priority

Rank	Site	Category	Level of physical destruction	Identified risks
1	Istiklol, poor ore plant	1, 2, 3	high	No cover, no fencing, close to river, land erosion, water erosion, structural damage, radon emissions, radiation, dust spreading.
2	Digmay, tailing pond, still used	1, 2, 3	high	No cover, no fencing, 1.5 km from village, close to river, land erosion, structural damage, radon emissions, radiation, dust spreading.
3	Kujand, ore heaps and mining water on the right riverbank of Syr Darya River	2, 3	medium	No fencing, within city limits, water erosion, mining water.
4	Chkalonsk, ponds 1–9	2, 3	medium	No fencing, insufficient cover, in industrial zone of city, radon emissions, rodents transport waste to surface.
5	Istiklol, ponds I–IV	2, 3	medium	No cover, no fencing, close to village, water erosion, close to river and village, radon emissions, mining water.
6	Istiklol, closed plant No.4	2, 3	medium	No fencing, within city limits, water erosion, mining water.
7	Adrasman, pond No. 2	2, 3	medium	No fencing, insufficient cover, close to river and village, radon emissions, drainage water.
8	Istiklol, waste from Sarymsakhlysayo	2, 3	medium	Close to village, no fencing, located in river branch, water erosion, risk for irrigation water, drainage and mining water.
9	Gafurov, pond from experimental plant	3	no	Rodents transport waste to surface, monitoring required.

Source: National Concept on Rehabilitation of Uranium Waste Tailings for the period 2014–2024.

Recommended measures:

- Finalize and approve the draft national waste management strategy and action plan;
- Introduce a system of waste management plans in national legislation;
- Further develop the system of regional disposal sites;
- Develop the system of separate collection of recyclable waste;
- Finance modernization and remediation measures for uranium waste tailings by involving international donors and owners of privatized companies in the mining sector;
- Ratify the Rotterdam Convention and accede to the Minamata Convention.

Biodiversity, biosafety, forestry and protected areas

The majority of available information on biological diversity, ecosystems and forests is outdated. Neither complex inventories nor systematic monitoring were conducted since 1991. Hence, the planning for nature conservation and forest management has been based on outdated inventories and rough estimates.

The forest cover is estimated at only 2.95 per cent of the total territory. The state forest fund accounts for 1.8 million ha, including 0.4 million ha of forests and 1.4 million ha of non-forested areas, e.g. pastures. The further decline of forests may result in accelerated desertification, landslides, mudflows and other natural disasters, limiting the profitability of agricultural practices and threatening human settlements.

The annual rate of deforestation caused by intensive livestock grazing and illegal firewood collection is higher than the natural forest biomass increment and regeneration ability. It is estimated that, due to logging and intensive cattle grazing, the area of juniper forests declines at the rate of some 2 to 3 per cent per year. Due to intensive livestock grazing in pistachio light forests, their natural regeneration is no longer possible. Mitigating the current pressures on existing forests and intensive reforestation are one of the most urgent challenges.

Some rare and endangered animal species, considered particularly attractive for trophy hunting, are subject to legalized "limited hunting", including inside protected areas. The determination of annual quota for hunting game species is based on rough estimates as reliable information on the actual size of species populations is limited.

No data on poaching and illegal trophy hunting are publicly available. The 2014 Fifth National Report to the Convention on Biological Diversity reports on the dynamics of hunting on wild species of animals and illegal hunting for 2012, and data on authorized and unauthorized hunting are presented by one aggregated number for each species.

The three million ha of protected areas accounts for about 21.58 per cent of the territory of Tajikistan. Improving the management effectiveness of the existing 20 protected areas is much more urgent than establishing any new protected areas. The only exception is the designation of small state nature reserves to protect rare or endangered flora species and communities.

The five-year management plans for several protected areas have been prepared. The area of the Tigrovaya Balka state nature reserve, previously encompassing 49,786 ha, was extended in 2011 by an additional 12,462 ha.

In 2013, the protective status of 12 out of 13 nature preserves (zakazniki) expired. It was extended only in late 2015. In 2013–2015, the unclear status of these areas resulted in growing pressures (e.g. for grazing areas) which, in some cases, led to their deterioration.

The Tajik national park was inscribed on the World Heritage List in 2013, becoming the first natural World Heritage site in the country. Five other natural areas are on the Tentative List.

The second edition of the Red Book was published in October 2015. It lists more species than the previous one; this is due to recent methodological corrections, e.g. the inclusion of lichens, and not to the growth in the number of endangered species.

The implementation of the 2005 Law on Biological Safety has been impeded by the absence of relevant by-laws establishing control and decision-making mechanisms, in addition to the lack of human and technical capacities, equipment and facilities. The country has no experience in conducting risk assessments nor in controlling intentional transboundary movements of GMOs.

In 2016, Tajikistan acceded to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Some time and effort would still be required to provide necessary training and increase the operational capacities of agencies responsible for CITES enforcement.

BOX 5: REFORESTATION EFFORTS

Since 2013, reforestation activities are annually applied to some 2,100 ha, and the seedling survival rate is estimated to be between 60 and 70 per cent. Such a low seedling survival rate results not only from the unfavourable soil and climatic conditions. The majority of seedlings planted are of non-native species, fast growing (e.g. sequoia) and/or yielding fruit, but not necessarily best adapted to the local conditions.

Taking into account the current state of forests in Tajikistan, the optimal area of reforestation activities would be some 4,500 ha per year – twice the average of recent years. This might not yet allow a significant increase in the forest coverage of the country, but could probably offset the current deforestation trend.

A precondition for the success of any reforestation programme is that planted forest tree seedlings and saplings are well protected, at least throughout the first years. In Tajikistan, neither mechanical nor chemical repellents, which could protect young seedlings, are used, as the local forestry institutions can hardly afford the cost of seedlings and planting works, much less their continuous nursing.

Recommended measures:

- Carry out comprehensive inventories of the different components of biodiversity and forest and non-forest ecosystems;
- Develop a biodiversity and forest monitoring system, utilizing efficient data acquisition, processing and visualization techniques;
- Accelerate the reforestation and afforestation activities to reach the level of some 4,500 ha annually;
- Establish industrial fuelwood plantations to limit illegal firewood collection;
- Ensure that decisions on quota for the hunting of animals inscribed in the Red Book are based on accurate and updated species population census;
- Designate small state nature reserves aiming at the protection of rare and endangered plant species;
- Revise legislation to grant permanent legal protective status to all protected areas.

Agriculture and environment

Agriculture remains a key sector of Tajikistan's economy. In 2014, 25 per cent of the total labour force worked in agriculture, and agriculture accounted for 23.5 per cent of GDP. An increasing population requires an increasing amount of agricultural production. In recent years, food crop yields and livestock numbers have increased; however, productivity and profitability remain low.

In 2014, agriculture consumed over 81.76 per cent of total water use, including for irrigation (77 per cent of the total water use). The agricultural sector is the largest source (accounting for around 80 per cent) of NH₃ emissions. But agricultural practices are not implemented in an environmentally friendly way; land and water management, especially, need to be improved.

According to official data, the overall consumption of fertilizers has decreased by 60 per cent, from 410,200 tons in 1999 to 245,300 tons in 2014. The amount of mineral fertilizers used annually in the period 2010–2014 was 141–182 kg/ha, but there is no strong trend of this decreasing. The manure of cattle that graze near villages is collected and dried, and used mainly (up to 90 per cent) as fuel; a very small share is used as fertilizer in agricultural production.

Pastures are a source of direct rural income as well as providing much of the country's meat and milk requirements. Pastures are not managed in a sustainable way that is economically viable, socially acceptable and environmentally responsible. Due to overgrazing, about 89 per cent of the summer pastures and 97 per cent of the winter pastures suffer from a medium to strong level of erosion.

In 2014, privately owned dehkan farms managed around 80 per cent of the arable land and produced 90 per cent of agricultural products. Half of dehkan farms are managed by unqualified people with no experience in agriculture. In general, farmers lack information on how to optimize the use of fertilizers, pesticides and water. Another issue has been the lack of freedom for dehkan farms to select agricultural crops to grow.

Some international projects provide for learning about the rational and sustainable use of agricultural practices. Extension services are not provided on a systematic basis by the Government.

The potential for organic farming is high. There have been pilot projects that have gained good results and have shown the availability of markets for organic production abroad. However, the accumulated best practices and knowledge are not communicated to farmers and there is no support provided to farmers to start organic farming.

The agricultural sector is vulnerable to the impacts of climate change, including increased and more severe floods, droughts, changing availability of water resources, increasing temperature and lowering and more erratic rainfall. The Pilot Programme for Climate Resilience has gained good experience in adaptation to climate change; however, this experience is not widely communicated and applied.

Figure 4: Use of fertilizers, 1999, 2009–2014, thousand tons

Source: Agriculture in the Republic of Tajikistan, Statistical book, Agency of Statistics, 2015.

BOX 6: PRESSURES FROM AGRICULTURE ON BIODIVERSITY

Many landraces and their wild relatives were lost due to changes in agricultural practices and loss of natural habitats; pistachio woodlands, for example, are almost absent nowadays. Up to 80 per cent of the area previously occupied by pistachio woodland communities is now overgrown with shrubs. During recent decades, there have been losses in agricultural biodiversity due to the introduction of major cultivated crops such as wheat, rice, cotton and vegetables. Uncontrolled grazing has caused changes in the diversity of plants and productivity of pastures and the extinction of wild plant species. A large proportion of forests has been given over for long-term use as pasture. However, grazing in the forests has had a negative impact on the diversity and quality of forests, and natural regeneration of forests has practically stopped because of the presence of livestock.

Recommended measures:

- **Promote crop diversification to increase food crops and agro-biodiversity and improve soil quality;**

- **Promote agricultural practices for sustainable management of water and land, and energy saving technologies;**

- **Ensure sustainable pasture management by securing the rotation in the use of pastures;**

- **Ensure the systematic provision of extension services;**

- **Develop measures to support organic production;**

- **Prepare an action plan on adaptation to climate change in the agricultural sector.**

Industry and environment

The number of industrial enterprises increased from 1,320 in 2007 to 2,150 in 2014. However, not all registered enterprises are in operation due to a lack of raw materials and seasonal work.

Since 2007, more than 210 industrial enterprises have transferred to coal. However, for the reasons cited above, only 160 of those enterprises are now in operation.

Industrial air emissions of most pollutants did not show any specific trend during the period 2004–2011 for companies reporting to the Ministry of Industry and New Technologies, therefore excluding the State Unitary Enterprise Tajik Aluminium Company (TALCO). The only clear exception is carbon monoxide, emission of which decreased dramatically from 2004 to 2010. The decreasing trend reversed in 2011.

Average GHG emissions from the "Industrial processes" sector in 2005–2010 amounted to 9.25 per cent of total national emissions. In 2005–2010, the highest volume of emissions was observed in 2007. Metal production contributed 80 per cent of CO_2 emissions in 2010. Aluminium production contributes considerably to industrial GHG emissions.

As the mining industry has been developing over the last five years, waste generation by this industry has increased elevenfold, from 111,400 tons in 2010 to 1,267,646 tons in 2014. The amount of waste generated by light industry reportedly skyrocketed from 10,301 tons in 2010 to 1,107,549 tons in 2014. Such an increase can be partly explained by better data collection.

Tajikistan does not have policies for greening industry and promoting sustainable production, although some strategies were adopted by the Government. This important policy gap hampers the development and implementation of measures towards more efficient and green industry.

Little information is available on the pressures that industry places on the environment. Neither data nor estimates are available of industrial wastewater discharges and associated surface and groundwater pollution. There is no information on land uptake by industrial facilities and land degradation and soil contamination caused by industrial activities. Noise and vibration from industrial installations are not measured.

Table 5: Industrial air emissions, 2004–2011, thousand tons

Pollutant	2004	2005	2006	2007	2008	2009	2010	2011
CH_4	3.56	0.07	0.07	..	2.22	0.07	0.55	0.42
CO	1876.67	687.84	654.46	684.37	598.77	263.57	66.27	127.18
CO_2	290.06	605.14	728.36	893.69	665.53	540.65	839.93	765.25
NH_3	178.1	121	101.2	76.46	108.7	..	..	..
NO	88.11	78.9	73.78	44.72	43.62	..	..	..
NO_2	140.61	148.35	162.38	247.56	183.33	143.52	170.15	142.13
NO_x	0.27	0.35	0.22	1.16	0.47	1.16	0.2	0.4
N_2O	1.06	1.03	19.91	19.2	15.54	21.64	0.85	0.85
SO_2	354.25	380.57	435.78	560.3	583.95	762.04	271.43	288.25

Source: Ministry of Industry and New Technologies, 2015.

Table 6: Industrial waste generation, 2010–2014

	2010	2011	2012	2013	2014
Industry, tons	..	..	..	..	..
Mining, tons	111 400	532 955	978 066	1 195 797	1 267 646
Colour metallurgy, tons	119 612	63 010	65 430	84 035	69 583
Chemicals, tons	..	..	..	..	..
Light industry, tons	10 301	400 475	78 428	1 003 081	1 107 549
Machine building and metal processing, tons	57	56	58	60	61
Construction materials, tons	270	390	312	257	510
Food, tons	..	..	..	..	..
Coal, m³	566 308	502 609	860 356	707 902	869 462

Source: Ministry of Industry and New Technologies, 2015.

Table 7: Electricity consumption, 2003, 2009–2014

	2003	2009	2010	2011	2012	2013	2014
Total electricity use, million kWh	16 518	16 160	16 581	13 113	16 313	16 171	15 160
of which:							
by industry	6 675	7 007	7 344	6 335	6 150	5 251	3 935
by industry as percentage of total electricity consumption	40.41	43.36	44.29	48.31	37.70	32.47	25.96

Source: Environmental Protection in the Republic of Tajikistan, Agency of Statistics, 2015.

Recommended measures:

- **Support activities related to eco-design and clean production;**
- **Support eco-labelling in the textile industry;**
- **Create the conditions for the transfer of know-how related to industry;**
- **Ensure regular environment-related data collection from the industrial enterprises.**

Energy and environment

The dissolution of the Central Asia Power System, limited gas supplies and an underdeveloped coal sector have left Tajikistan almost solely reliant on hydropower generation, which remains insufficient in the winter. An estimated one million people spend much of the winter without access to reliable electricity supplies.

The country's thermal power plants (TPPs) mainly use coal. Due to the fact that more coal-fired TPPs are currently in the pipeline, an increase in effects upon the environment might be expected to take place in the future.

Since 2005, investments in energy efficiency have increased more than threefold, reaching almost 3.5 per cent of GDP, with budget funding from all sources amounting to at least 30 per cent of investment costs. The GDP energy intensity has decreased by about 30 per cent compared with 1995.

The power sector is highly subsidized, and consequently tariffs for electricity are still low and do not reflect the costs of energy production. Energy subsidies and socially determined pricing mechanisms have failed to promote sound energy efficiency policies. Selling electricity at low prices stimulated excessive consumption.

The 2013 Law on Energy Saving and Energy Efficiency provides for the introduction of energy efficiency materials, appliances and technologies. However, energy efficiency has very low priority in practice, determined by the fact that a large proportion of the population does not have secure and reliable access to energy. There is no governmental department to govern, regulate, enforce and monitor energy efficiency reforms. Energy efficiency measures are still heavily focused on the supply side, with little improvement in demand-side management.

A Technical Committee "Energy saving, energy efficiency and energy management" was established in 2012 as part of the Agency on Standardization, Metrology, Certification and Trade Inspection under the Government. This Committee develops standards in the area of buildings, energy-consuming products and renewable energy. However, efforts to introduce standards are partly undermined by the 2010 Law on Standardization, which stipulates that standards are applied on a voluntary basis.

The Government introduced measures to restrict the manufacture, import and sale of incandescent lamps. All government, industrial and commercial organizations were requested to switch to the use of energy saving lamps from 1 May 2009. About 241,000 poor households were provided with energy saving lamps, financed from the state budget. In the period 2009–2011, two new plants for production of energy-saving lamps have been built and put into operation.

With regard to renewable energy sources (RES), Tajikistan uses less than 1 per cent of the potential of RES other than hydropower. About 10 per cent of the country's population lives in remote, mountainous, off-grid areas where off-grid renewable energy solutions make more economic sense. To date, photovoltaic and wind energy systems are used only on a pilot basis. Overall, solar power is not yet considered as a priority supply option. The potential for using geothermal resources, the availability of thermal water and its characteristics are not well researched.

As approximately 98 per cent of the country's electricity is produced from hydropower sources in river basins fed by glacial meltwater and snowmelt, the energy sector is greatly exposed to climate change. The majority of the existing power plants, including the large Vakhsh cascade with a total capacity of over 4.5 GW, were designed in the 1950s, with no regard for climate change implications.

Figure 5: Total final energy consumption by sector, 2013, per cent

Source: www.iea.org/statistics/statisticssearch/report/?country=TAJIKISTAN&product=balances&year. Accessed 28 November 2015.
Note: Non-specified includes all fuel use not elsewhere specified as well as consumption for which separate figures have not been provided, e.g. military fuel use for all mobile and stationary consumption.

BOX 7: CONSTRUCTION OF THE ROGUN HPP

Completion of the construction of the Rogun HPP, with a capacity of 3,600 MW and annual electric power output of 13.1 billion kWh, is a priority for Tajik energy engineering. Together with the other water reservoirs, this HPP's water reservoir, with a capacity of 13.3 km³, would be able to ensure multi-year regulation of the runoff into the Amu Darya basin to increase the sustainability of water supply for about five million ha of land in the riparian countries in low-water and drought periods.

From 2011 to 2014, the World Bank supported two studies, the Techno-Economic Assessment Study (TEAS) and the Environmental and Social Impact Assessment (ESIA). The main purpose of these studies was to evaluate the viability of the Rogun HPP. The studies also served as a basis for decision-making and dialogue for the riparian countries. As part of the assessment process, two independent panels of experts, composed of recognized professionals selected by the World Bank, were formed – an Engineering and Dam Safety Panel and an Environmental and Social Impact Assessment Panel. The role of the panels was to ensure objectivity and credibility through independent advice and guidance.

The ESIA, completed in 2014, concluded that, overall, subject to modifications in the original design and the implementation of identified mitigation measures and monitoring, a large dam could be built at the Rogun site in line with international safety norms. The assessment concluded that impacts could be managed with known mitigation measures. It is noteworthy, however, that the question remains potent as to whether or not the Government has sufficient institutional capacity and appropriate implementation mechanisms and procedures in place to enforce mitigation measures and requirements for monitoring.

Recommended measures:

- **Pursue the policy of restructuring electricity tariffs to eliminate cross-subsidies;**
- **Establish an independent national centre for energy efficiency and renewable energy;**
- **Support renewable sources of energy;**
- **Conduct studies to identify prospective geothermal sites;**
- **Develop a long-term climate-resilient national energy strategy;**
- **Take into account the impacts of climate change on hydrology when planning for new hydropower facilities.**

Transport and environment

Although vehicle ownership in Tajikistan is still rather low at 43–44 vehicles per 1,000 people, over the last decade, dramatic growth in the vehicle fleet has occurred. The rapid increase in the number of vehicles has already resulted in traffic congestion and increased air pollution.

The vehicle fleet is ageing, due to large-scale importation of outdated second-hand cars. The average age of the vehicle fleet is around 15–18 years, for both light duty vehicles (LDVs) and freight vehicles. As a result, motor transport is identified as the number one cause of environmental impacts on the quality of air in Dushanbe and other cities.

Over recent years, the impact of the transport sector on air pollution has stabilized in absolute terms. Compared with 2009, emissions of air pollutants from transport in 2014 have increased by only 14 per cent (from 249,000 to 284,000 tons), while the vehicle fleet has increased by 26 per cent (from 337,425 to 423,303) in the same period. This phenomenon is explained by the fact that more and more vehicles with petrol engines have been converted to use liquefied petroleum gas as fuel, because of its lower price and consumption rate.

In relative terms, however, road transport remains by far the main source of air pollution. In 2014, its contribution was more than 13 times higher than the total emissions from the industry and energy sectors.

The existing system of customs import duties and taxes provides almost no incentives for the importation of recent vehicles. New vehicles (produced within the last five years) are subject to a 5 per cent import duty, compared with 7 per cent for vehicles that are older than five years. This 2 per cent difference is not significant, taking into account that all imported vehicles are also subject to a 10 per cent excise tax and 18 per cent VAT. Customs duties and taxes provide no distinctions based on a vehicle's engine power, volume, powertrain or fuel (petrol, diesel, hybrid, etc.). When calculating the annual vehicle ownership tax, no distinction is made based on the powertrain or fuel consumption of a vehicle.

The Government has introduced mandatory periodic vehicle inspections and emission testing to determine the roadworthiness of LDVs and freight vehicles. However, the current system of vehicle emission tests and roadworthiness inspections is not stringent enough and mainly gears up for revenue collection, rather than for improving air quality and road safety.

The 2015 Law on Ensuring the Environmental Safety of Road Transport envisages a wide range of measures to mitigate the environmental impacts of the road transport. However, a coordination mechanism among various public authorities is not yet available. The available international standards for road vehicles, which are indispensable for the proper implementation of this Law, have not yet been adopted.

Several projects have been completed to improve the public transport system. Still, the current public transport system cannot cope with the increasing needs of the population. This is due to the outdated fleet, deteriorating infrastructure and inefficient structure of routes for various types of public transport. The growing demand for public transport services, in particular in the capital, is partially met by unlicensed private companies (4,000 illegal carriers in Dushanbe alone) that operate without proper control by the authorities, cause traffic problems and impede road safety.

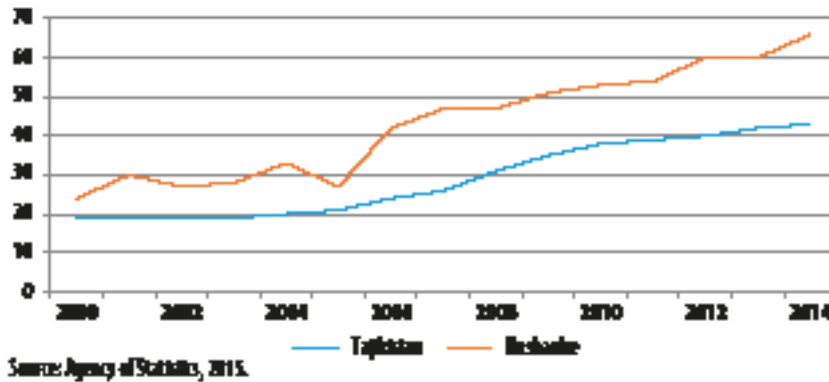Figure 6: Light duty vehicles, 2000–2014, number per 1,000 population

Source: Agency of Statistics, 2015.

Table 8: Air polluting emissions from road transport by vehicle category and from stationary sources, 2014

	Light duty vehicles	Freight vehicles	Buses	Special vehicles	Total for road transport	Stationary sources
Vehicles, number	362 180	45 779	16 720	3 960	428 639	-
Total, thousand tons	**284.8**	**27.3**	**15.6**	**2.6**	**330.3**	**21.1**
Carbon monoxide	204.2	19.6	11.2	1.8	236.9	16.5
Hydrocarbons	42.2	4.1	2.3	0.4	49.0	..
Nitrogen oxides	38.3	3.7	2.1	0.3	44.4	1.0
Sulphur dioxide	..	..	..	..	..	2.6

Source: Committee on Environmental Protection, 2016.

Recommended measures:

- Adopt a road map for the implementation of the Law on Ensuring the Environmental Safety of Road Transport;

- Adopt emission standards for vehicles and their technical specifications;

- Allow importation only of vehicles that meet the Euro 3 standard and above;

- Reduce customs payments for importation of new vehicles and/or vehicles meeting the Euro 4 standard and above;

- Differentiate vehicle ownership tax based on vehicle emissions, fuel and powertrain;

- Strengthen inspections of roadworthiness and vehicle emission tests;

- Continue the rehabilitation and enlargement of trolleybus networks and develop other low-emission urban transport modes;

- Improve urban transport planning and optimize public transport routes;

- Combat unlicensed passenger operators and introduce bidding procedures for private transport companies that would take into account road safety and environmental protection.

Housing and utilities sector and the environment

The Government adopted the Concept for Reform of the Housing and Utilities Sector for the period 2010–2025 and the Programme of Development of the Housing and Utilities Sector for the period 2014–2018. However, issues relating to modernization of the existing housing stock in apartment buildings, enhancement of its reliability and improvement of its energy efficiency and environmental safety are not addressed sufficiently. A governmental body responsible for development and implementation of state policy in the housing and utilities sector – envisaged by the Programme – has not yet been established.

Over the past decade, the total floor space of the housing stock has increased by 52.5 per cent. Rural housing stock grew by 75.58 per cent and urban housing stock by 21.4 per cent. This is a result of citizens' initiatives, mostly in rural areas, in the absence of any substantial governmental support. The increase falls short of satisfying people's housing needs: the average per capita floor space (10.9 m²) remains below the established social standard of per capita floor space (12 m²).

The revision of construction standards and norms is in process, with an aim to establish clear requirements for design and construction, which would facilitate the use of new and traditional safe construction materials and modern technologies designed to resist seismic and other unfavourable natural factors and to provide environmental safety. At the same time, the level of public awareness in respect of seismic protection regulations, energy efficiency and resilience to climate change is still low. New construction standards and norms are hardly ever applied in construction of self-build houses in rural areas.

The legal framework for establishing home owners associations has been put in place. However, only a few associations were established. In the majority of cases, they play a minor role in improving the management and maintenance of apartment buildings. For many years, apartment buildings have not had adequate technical maintenance and repairs. There is a huge need for capital repairs and enhancement of energy efficiency in such buildings.

There are no statistical data available on air pollution by the housing and utilities sector. About 88 per cent of rural households and 37 per cent of urban households with limited access to electricity use stoves for heating and cooking. These stoves run on solid fuels (coal, wood, agricultural waste) and contribute to air pollution. Most boiler houses of the remaining central heating systems are characterized by high emission of pollutants, partly due to their conversion from gas to coal without modern flue-gas cleaning systems.

Large green areas in parks, mini-parks, alleys and gardens in land pots adjacent to housing are typical of urban settlements in Tajikistan. Green areas account for about 30 per cent of the total area of cities. However green areas of common use are poorly developed in peripheral areas of towns and cities. Non-native tree species, which are vulnerable to the climate of Tajikistan, are used in place of native broad-leaved species in new green areas in urban communities, especially in Dushanbe.

The available data on the state of the housing sector are limited to the information received through the 2010 population census and published in 2013. There are no up-to-date reliable and comprehensive statistical data that would allow the Government to identify and comprehend the problems in respect of housing provision and the availability of communal services.

Figure 7: Buildings constructed in various periods of time, percentage of total number of buildings in use at the end of 2010
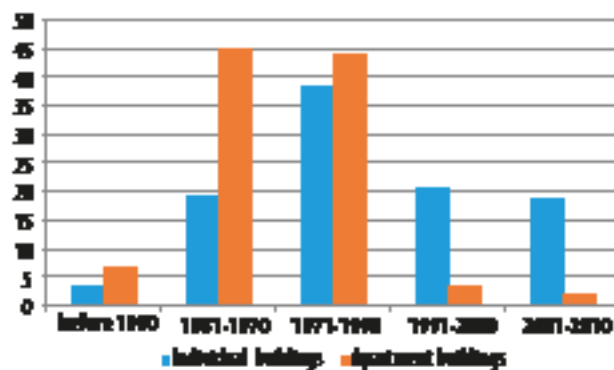
Source: The Republic of Tajikistan Population and Housing Census 2010, Housing Stock and Housing Conditions of the Population of the Republic of Tajikistan, Volume VIII, Agency of Statistics, 2013.

Recommended measures:

• **Define a governmental body in charge of state policy in the housing and utilities sector;**

• **Develop a national housing strategy;**

• **Raise public awareness in respect of the norms on seismic protection and energy efficiency;**

• **Ensure control over compliance with the construction standards and norms;**

• **Preserve and expand green areas using native types of trees and shrubs;**

• **Ensure the collection of reliable and comprehensive data on the state of the housing sector.**

Health and environment

The notifiable gastrointestinal infections, which continue at high levels in the period 2005–2014, indicate a significant burden of ill health associated with unsafe water. The incidence of viral hepatitis, especially the most common Hepatitis A, tends to be on the rise. Though declining after 2009, the life-threatening disease typhoid fever is still present. The actual burden of water-related diseases is likely to be higher because of the limitations of the country's surveillance system.

The increasing incidence rates for selected parasitic diseases in the period 2005–2014, with infections sourced from contaminated food and/or water, is an alerting signal for environmental public health status. These infections are: giardiasis caused by contaminated food or water, ascariasis and enterobiasis, caused by contaminated hands due to poor personal hygiene and poor sanitation, as well as by contaminated food and, less commonly, water.

Morbidity from major notifiable zoonoses such as bovine tuberculosis, brucellosis and anthrax persisted in the period 2007–2011. Improper treatment of animal products (e.g. non-pasteurisation of milk), the illegal selling of farm products on the streets and overall weak control determine the burden of the population's ill health of epizootic origin. Monitoring and control of food contamination is not efficient and neither is there capacity for timely detection and prevention of human zoonoses.

Three centres for prevention and control of undernutrition have been set up across the country. However, undernutrition remains a priority issue severely affecting children and other vulnerable populations. Overall, only 20 per cent of children aged 6–23 months are fed appropriately according to the recommended infant and young child feeding practices.

There are no data on chemical incidents and number of cases of poisoning induced by chemicals. The poisoning of schoolchildren in May 2016 following a school disincection in the Shamsiddin Shokhin district of the Khatlon Oblast showed the lack of capacity of the health sector in chemical incident preparedness and response.
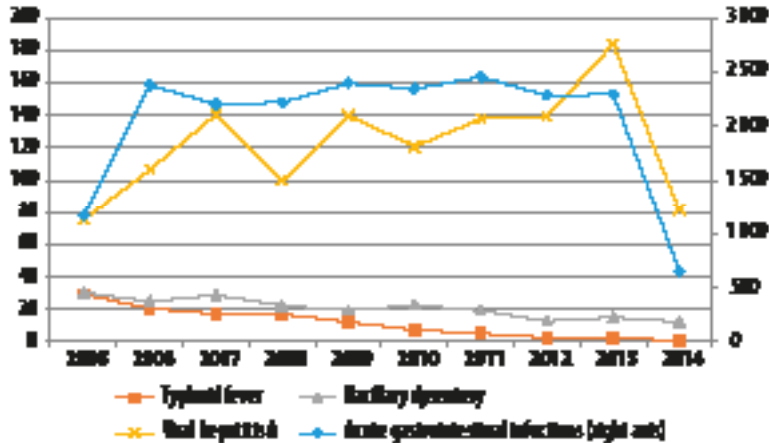
Asbestos-related diseases have not been registered in the occupational diseases register of Tajikistan. Workers at the asbestos facilities undergo regular occupational medical check-ups. Asbestos-containing products are legally available, and the Dushanbe cement factory resumed production of corrugated asbestos-cement sheets in September 2013.

Although national legislation prohibits the employment of children below 15 years of age, child labour still remains a widespread problem. According to Child Labour Survey 2012–2013, 26.9 per cent of boys and 19.7 per cent of girls aged 5–17 years are working. In the 5–11 years age group, these figures are 13.3 per cent for boys and 8.1 per cent for girls. Among 12–14 years group, 34.7 per cent of boys and 25.1 per cent of girls are working and in the 15–17 years age group, these figures are 45.5 per cent and 38.4 per cent, respectively. Children are mostly engaged in elementary occupations and are unpaid family workers.

Tajikistan has ratified most of the health-relevant international conventions. However, it has not acceded to the ECE/WHO Protocol on Water and Health. The country has only partially benefited from the Strategic Approach to International Chemicals Management initial capacity-building activities. The participation of Tajikistan in the European Environment and Health process has been rather ad hoc.

Figure 8: Incidence of water-related microbial and viral infectious diseases, 2005–2014, per 100,000 population

Legend: Typhoid fever; Bacillary dysentery; Viral hepatitis A; Acute gastrointestinal infections (right axis)

Source: Ministry of Health and Social Protection of the Population, 2015.

Figure 9: Incidence of water- and food-related parasitic infectious diseases, 2005–2014, per 100,000 population

Legend: Giardiasis; Enterobiasis; Ascariasis; Parasitic infections (right axis)
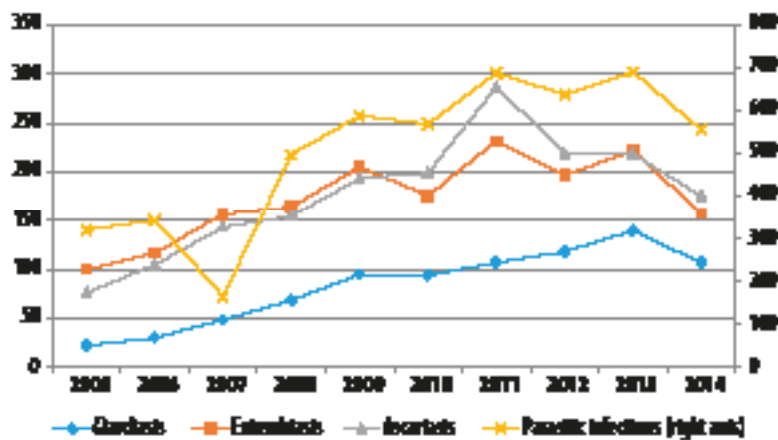
Source: Ministry of Health and Social Protection of the Population, 2015.

Recommended measures:

- Enhance infectious disease surveillance;
- Establish mechanisms for maintaining exchange of data and information on the incidence of human and animal zoonoses;
- Take actions to decrease foodborne health risks along the entire food chain;
- Ensure inter-agency coordination to improve food safety control management;
- Reinforce hygiene education, in particular in remote rural communities;
- Ensure progressive implementation of the WHO water safety plans in small water supply systems;
- Accede to the ECE/WHO Protocol on Water and Health;
- Strengthen participation in SAICM and the European Environment and Health process.

Management of disaster risk associated with natural and man-made hazards

Over the past 10 years, a lot of effort has been put into strengthening the disaster risk management (DRM) system. Through the 2010 National DRM Strategy for the period 2010–2015 and the National Platform for Disaster Risk Reduction, disaster risk reduction has become a known concept in the country. However, the practical work of key institutions still centres on response.

The 2010 National DRM Strategy for the period 2010–2015 was based on the Hyogo Framework for Action 2005–2015 and complemented DRM measures that have been provided in previous programmes and action plans. The inclusion of DRM in local programmes of socioeconomic development was one of a number of achievements. However, the links between the National DRM Strategy and ongoing climate change adaptation work appear to be weak.

Existing disaster risk coordination platforms are limited in their scope. The National Platform for Disaster Risk Reduction does not include all relevant government authorities or partners.

The recently introduced Uniform State System for Emergency Prevention and Response is a good attempt to harmonize sectoral disaster management initiatives. According to the Uniform System, commissions on emergency situations are set up at the national, regional, district and facility levels and are responsible for decision-making and coordination in the event of emergency. However, the Uniform System has yet to be put into concrete action through the clarification of duties and responsibilities and development of concrete mechanisms for collaboration.

Risk information is not systematically managed, with vertical silos hindering information sharing between authorities and across sectors. A lot of risk information is classified and not shared among government bodies, and much less with partners and the general public. Gender-disaggregated disaster data are not publicly available.

Many good efforts by donors and international and national NGOs have been implemented at the local level, where community awareness of risk has increased. Search and rescue teams, and volunteers, are responding to disasters and saving lives. At the national level, the lack of ownership, and technical and financial capacity is hindering the sustainability of the work of these partners.

In 2011, Tajikistan acceded to both the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. Tajikistan is not yet a Party to the ECE Convention on the Transboundary Effects of Industrial Accidents.

Table 9: Natural disasters, 2005–2014

	Disasters, number	Fatalities, number	Economic damage, US$ thousand
Earthquakes	314	7	33 831
Floods	72	0	30 053
Mudflows	457	114	194 959
Avalanches	550	111	8 256
Landslide, rockfalls	84	55	3 248
Droughts	1	0	47
Wind	55	4	1 480
Snowfall	76	5	24 041
Heavy rains, thunderstorms	54	8	5 159
Severe cold weather	2	2	8 509
Epidemics	10	5	145
Epizootics	1	0	0
Other	12	6	76

Source: Committee on Emergency Situations and Civil Defence, 2015.

Note: Only reported natural disasters are reflected. US$ values adjusted for annual exchange rate.

BOX 8: HAZARD IDENTIFICATION

Numerous data collection and monitoring systems on hazard identification exist within respective governmental bodies for the various types of natural and man-made disasters. The Information Management and Analytical Centre of the Committee on Emergency Situations and Civil Defence hosts national maps on, among other matters, seismic risk, landslide risk, erosion risk and land use, which are available online. Seismic maps are available at the Institute of Geology, Seismic Construction and Seismology under the Academy of Sciences. The Ministry of Industry and New Technologies keeps the List of facilities storing and handling hazardous chemicals. The Committee on Environmental Protection maintains a database on environmental permits, with information on type of industry and emissions. There is also the inventory of legacy sites, including radiological hazard sites.

Hazard maps exist at the district and lower levels, but there is no comprehensive and unified database on natural and man-made hazards. Data collection – and limited analysis – is conducted by individual government departments and committees. Coordination among various agencies involved in hazard identification appears to be limited.

Recommended measures:

- **Ensure participation of all relevant actors in the National Platform for Disaster Risk Reduction;**
- **Improve multisectoral collaboration for early warning and disaster response preparedness;**
- **Increase the effectiveness of national DRM and climate change adaptation efforts;**
- **Enhance participation in the Assistance Programme of the ECE Convention on the Transboundary Effects of Industrial Accidents and accede to the Convention.**

Tajikistan
Environmental Performance Reviews
Third Review - Highlights

The United Nations Economic Commission for Europe (ECE) Environmental Performance Review Programme assesses progress made by individual countries in reconciling their economic and social development with environmental protection, as well as in meeting international commitments on environment and sustainable development.

The third Environmental Performance Review of Tajikistan was carried out in 2015, and recommendations to the country on how it can improve its environmental governance were adopted by the ECE Committee on Environmental Policy in January 2017. The third review examines the progress made by Tajikistan in the management of its environment since the second review in 2010. It covers policymaking, implementation and the financing of environmental policies, as well as efforts in the area of greening the economy. It addresses air protection, water management, waste management, biodiversity and protected areas and discusses integrating environmental concerns into selected sectors, in particular, agriculture, industry, energy, transport, housing and health. The review also assesses the progress made by Tajikistan in the management of disaster risk associated with natural and man-made hazards. It makes suggestions for strengthening efforts towards a comprehensive and systemic response to sustainable development challenges and implementation of the 2030 Agenda for Sustainable Development.

The Highlights of the third Environmental Performance Review of Tajikistan draw attention to the key findings of the review to inform and guide policymakers and representatives of civil society, as well as the international community, in their efforts to improve environmental management and to further promote sustainable development in Tajikistan.

Printed Environmental Performance Reviews may be obtained from the United Nations Department of Public Information at:
https://shop.un.org/

Environmental Performance Reviews are available online at:
http://www.unece.org/env/epr/