3. CONCLUSION ON THE ECOLOGICAL SITUATIONIN THE BAIKAL NATURAL TERRITORY AND MEASURESTAKEN TO PROTECTLAKE BAIKAL IN 2022 ГОДУ

Analysis of the data describing **the state of the natural environment** in the waterarea andnear режья Lake Baikal, as well as the Baikal Natural Territory, allows us to draw сле- the following conclusions for each of the observed indicators.

The pstatus of Lake Baikal in 2022 changed depending on the useful inflow to the lake and regulation of the operation modes of Angarsk Hydroelectric power Plants, which was carried out ществлялосьon the basis of instructions from the Federal Agency for Water Resources in соответ- accordancествии with the"Basic Rules for the use of water resources in reservoirs of the Angarsk Cascade of Hydroelectric Power Plants" regulations of the Government of the Russian Federation No. 379 of 16.03.2022 "On the maximum and minimum water level values in Lakей- Baikal in 2022-2023" (hereinafter-Resolution No. 379), recommendations of the "Interdepartmental- ной Working Group on regulating the operation modes of reservoirs of the Angara- Yenisei Cascade and Northern Hydroelectric Power Plants, the water level of Lake Baikal". The courseозof the water level in- Lake Baikal in 2022 corresponded to the conditions of high water content. The level limits set by Resolution No. 379 have not been reached.

P o v e r x n o s t n ы y s l o y I и v o d n a I t o l щ s a . In 2022 2022 , observations of the ка-quality вод of Lake Baikal waters were carried out at background deep -water stations of a longitudinal section running along Lake Baikal in its central part, on Southern- ном Baikal in the area of influence сточных of wastewater КОС г. from the Baikal city spit, in the areas of ports of Southern Baikal, in the area истока of the Angara source, in the area of the Selenginsky shoal, in районе the area of the Kultuk - Slyudyankasection, in the area of the influence of the BAM highway on the Northern Bay- Kale, in the area of the Barguzin Bay and in the area пролива of the Small Sea Strait. Критерием оценки The water quality assessment criterion воды was рыбохозяйственные нормы based on the MPC fisheries standards approved При- казом Министерства сельского by Decree No. 552 of the Ministry of Agriculture Российской of the Russian Federation dated 13.12.2016 № 552

"On approval нормативов of water quality standards воды for water bodies of fisheries significance, в том including standards for maximum permissible concentrations of harmful ве- substances in the waters of water bodies of fisheries significance". Table 3.1 presents theд- ставленahydrochemical characteristics of Lake Baikal water based on the results of observations in 2022.

The projection of the water column contamination zone with non-sulphate sulfur compounds on athe- territory of the landfill located in the area of influence of waste waters of the Baikal SPIT in the reporting year had the lowest indicators – 3.86 km^2, which is 2.1 times less than- last year's value (2021- 8.04 km^2) and 7.9 times less than the maximum (2016 – 30.35 km^2) for the ten-year period 2013-2022. As in previous years, the pollution zone remaineda- ласьopen.

In the control 100-meter section, the average concentration of volatile phenols remaineda- ласьat the level of the previous year and corresponded to the MPC level. The maximum content of phenols exceeded the norm by 2.0 times. The maximum content of non-sulphate sulfur в in-the control water was 0.20 mg /^{dm3}, which exceeded the background value by 2.0 times. Compared to last year, the average annual concentration of non-sulphate sulphur decreased by 1.7 times in 2022.

The average annual concentrations of sulfates and chlorides in the water of Lake Baikal in the 100 - meter range during the ten - year period 2013-2022 were withinthe permissible limits. The maximum concentrations of sulfates in the water of Lake Baikal in the control area, starting from 2013 to the present, are within the limits допof the permissible- стимыхnorms. The average annual and maximum values of sulfates in the water of Lake Baikal in 2022 were recorded at the level of 6.2 mg/^{dm3} and 7.4 mg/^{dm3} , respectively. For the period 2013-2022, the maximum concentrations of phenols exceeded the permissible мую norm by 2-6 times (maximum in 2016). The average annual values содержания of phenol contentin the period 2015-2022 were at the level of 1 MPC.

In the observation points along the longitudinal section of Lake Baikal, where сте- пень the level of contamination of Lake Baikal was assessed according to the UKIZV (Maritui stationМаритуй, Larch m., Krasny Yar m., HMS Uzur, HMS Solnechnaya, HMS Bol. Ushkaniy and the village of Baikalskoye),

каче- ствothe water quality was characterized as "conditionally clean". Compared to last yearкаче- ство , the lake's water quality озера has not changed significantly.

D o n n s e o t l o g e n I I . In the reporting year, geochemical and hydrochemical studies-of bottom sediments and ground water were carried out in the area of influence of wastewater KOC г. from the Baikalsk spit, in the area of the Selenga shallow (авандельтаw a t e r (Selenga River avandelt),in the area of influence of the BAM highway, in the area of the Small Sea.

In 2022 2022 в донных отложениях в районе выпуска городских коммунальных сточных вод г. Байкальска отмечено уменьшение , the content of easily hydrolyzable carbohydrates (LGU) decreased 2.2 times, the content of hard – to – hydrolyzable carbohydrates (TSU) decreased 1.6 times, and the value calculated from the ratio of TSU+LHA to total organic matter decreased 1.3 times in the bottom sediments in the area of municipal wastewater discharge in Baikalsk к общей органике – в 1,3 . The average content of organic nitrogen, organic carbon and lignin-humus complex(LHC) remained at the level of 2021. Also, in comparison with the previous year, the уменьшение average concentrations of cobalt decreased by 2.6 times, nickel – by 2.2 times, iron – by 1.7 times, copper and mercury - by 1.4 times. The average содержание lead, manganese, cadmium , and zinc content did not change significantly.

In the reporting year, the state of bottom sediments deteriorated in terms of the most representative indicator – the content of sulfide sulfur in the area of influence сточ- of wastewater from the spits of Baikalsk. Зафиксировано Its increase was recorded by 2.2 times по compared to 2021. The area загрязнения of sulfur sulfide contamination in 2022 2022 составляла здесь was 3.9 km2 here^{2}; the area of contamination calculated from the ratio of TSU+LGA to total organic matter$^{was\ 15.1\ km2}$. Compared to the previous year, the area of sulfide sulfur contamination increased в 3.3 times; the area of contamination calculated in terms of the ratio of TSU+LGA to total organic matter remained at the level of the previous year.

In general, over the past 10 years, there has been a significant fluctuation in the average зна- чений values of sulfide sulfur сульфидной in bottom sediments in the area of influence сточных of wastewater KOC from the Baikalsk SPIT (at least in 2013, 2014, 2015 – 0.001 mg/kg; maximum in 2020 – 73.07 mg/kg), the BAM highway (at least in мг/кг; максимум в 2017 г. – 232,82 2014, 2015-0.001 mg / kg). 2014, 2015 – 0.005 mg / kg; maximum in 2017-232.82 mg/kg), as well as in the Selenga shallow water area (minimum in мг/кг; максимум в 2017 г. – 64,98 2016-0 mg / kg; maximum in 2017-64.98 mg/kg) (Table 3.2)..

На At p. the Selenga в River avandelt in 2022, the сравнении с прошлогодней съемкой, average content of LGA in bottom sediments increased by 4.6 times, organic nitrogen – by 2.3 times, TSU – by 2.1 times, organic carbon – by 1.6 times, and the valuescalculated from the ratio of TSU+LGA to total organic matter – by 1.3 times, compared to last year's survey the content of easily hydrolyzable carbohydrates (LGU) decreased by 1.6 times. The average content of sulfide sulfur in bottom sediments, по compared to last year, decreasedby 4.5 times.

In the north, the zone of influence of the BAM highway, the average content of TSU in bottom sediments increased by 2.7 times and the value calculated from the ratio of TSU+LGA to total organic matter-by 1.3 times; the content of LGA decreased by 1.4 times. The average content of organic nitrogen, organic carbon , and lignin-humus complex did not change significantly. The average content of sulfide sulfur in bottom sediments decreased by 2.1 times.

In the area of the Small Sea, the average content of TSU in bottom sediments increased by 4.1 times; the content of LGA decreased by 3.2 times, organic nitrogen – by 2.1. The average content of organic carbon, easily hydrolyzed carbohydrates, and the value рассчи- calculated in relation to the ratio of TSU+LGA to total organic matter did not change significantly. The averagecontent серы of sulfide sulfur in bottom sediments decreased by 1.7 times.

Compared 2013 to 2013 , there was an increase in the average values серы of sulfide sulfur, as well as the content of easily hydrolyzable carbohydrates(LGU), трудногидролизуемых hard - to-hydrolyzable- carbons (TSU), and lignin-humus complex (LGA).

G и I d r o b и I o l o g и i h e s k и i e s o o b щ s e s t v a . In 2022 2022 , hydrobiologicalobservations on Lake Baikal were carried out in the area of influence of the Baikalsk CBS, in the area of influence of the BAM highway, as well as in the area of the Maloe Sea Strait and on the Selenginsky Melkovo- diye. Hydrobiological observations included the study of bacterioplankton, phytoplanktoни- топланктона, zooplankton, bottom sediment microflora, and macrozoobenthos by a number of parameters (abundance, biomass, and species diversity).

In March and June 2022, the average quantitative indicatorsгидробион-of hydrobiot groupstовat all observation sites of Lake Baikal KOS were comparable with the values of previous years. In August – September, there was a decrease in the average quantitativea- indicators of hydrobionts in different parts of the lake to the minimum values по comparedto the data for the same period of a number of previous years. The decrease is especially noticeable in the Se- Lengin shallow water and in the area of the BAM highway. чис- ленностьThe number of heterotrophic microorganisms in bacterioplankton decreased most significantly в бактериопланктоне.

In the area КОС of the Baikal spit , cellulose-destroying bacteria в течение сезонаwere found in 40-61% of samples of the surface water layer and 52-68% of samples taken fromthe bottom surface during the season. In the bottom sediments, the maximum number of heterotrophic, phenolico- , and hydrocarbon-oxidizing bacteria was determined in March at stations нахо- дящихсяlocated in the immediate vicinity of the conditionally clean water discharge point. At the same time, the highest number of hydrocarbon-oxidizing bacteria during the season was observed among thesamples of- bottom sediment microflora донных отложений, taken по throughout Lake Baikal.

In the surface layer of lake water, the occurrence of phenol-oxidizing bacteriawas 0-67 %, and in bottom sediments-0-47 %. Most often, bacteria were detected in water samples taken in June in the Male Sea Strait and in September on the Selenga Melkovo- diye, as well as in samples taken from поверхности the bottom surface in September в near трассы the BAM highway.

The occurrence of hydrocarbon-oxidizing bacteria in water varied in диапthe a- zone range of 0-100 %, and in bottom sediments-0-82 %. A small amount ofhydrocarbon- oxidizing bacteria (10-102 cells/ml) was detected in all пробах water samples in проливе the Male Sea Strait in June, with no indicators of oil contamination at the bottom. In the bottom sediments , bacteria were more common in June in the area of the BAM highway.

The highest average values of zooplankton abundance (29 thousand specimens/^{m3}) and zoological-benthos (6 thousand specimens/^{m2}), as well as phytoplankton abundance (4074 thousand cells/l) and biomass (1031 mg/^{m3}) were determined in September in the Maloe Sea Strait. The highest average numbere- of heterotrophic microorganisms (825 cells/ ml) and the highest averagезоозooplankton biomass (215 mg/^{m3}) were detected in June near the BAM highway, and the highest average био- масса zoobenthos biomass (25.5 g/^{m2}) was detected in September in the Selenga shallow water.

Throughout the entire surveyed water area of the lake, with the exception пролива of the Maloe Moroe Strait, a haric filamentous alga of the genus *Spirogyra Link, which is not typical of Lake Baikal*, was found.The amount of spirogyra increased by the end of the growing season.

Filamentous algae was found in 24 % of macrozoobenthos samples in the area of the Baikal SPIT during the ice surveyy- жена в 24 % проб макрозообентоса. Algae filaments were found in bottomsedimentstakenfrom depths of 25 to 120 m at the landfill, mainly on the eastern side of the point of release of relatively clean water. In the background area, spirogyra is marked at a depth of 35 m. In the water column, during the selection of zooplankton by the Jedi network, spirogyra was found in Augustin 47 % of samples taken at the landfill, at the eastern and western sections. The largest concentrations of algae were observed at coastal stations. Individual cells are marked at a distance of up to 7 km from the shore. На репере No spirogyra was detected on the reference point.

In the area of the BAM highway, spirogyra was found in zooplankton samples throughout the seasonн- ных. In summer, filamentous material was found in most of the samples (62%) collected both along the perimeter of the lake and at two northern reference stations. In September, spirogyra was foundе-чаласьat all stations of the western coast and northern tip, including the northernmost reference station in the middle of the Nizhneangarsk-Dagar Bay section (67 % of samples). In June and September, the greatest accumulation of algae was observed at the station locatedo- 0.5 km from the mouthof the Tyi River. In autumn, the alga was also found in 35 % of macrozobenthos samples макрозо- обентосataken from depths of 40-200 m, at stations located along the western бережья coast-from m. Tolstoy to the port of Severobaikalsk.

In the area of the Selenga shallow water, spirogyra was found in half of the samplesof macrozoobenthos and in 83% of zooplankton samples taken in the water column, with the greatest accumulation in the в north-eastern part of the water area- on the removal from the pr. Kolpinnoy.

I x t и I o f a u n a и i p o p u l I c и i I n e r p s . Полученные The data obtained in the course of the research дан- ныеallow us to draw conclusions about a fairly stable state of the reserves of commercial species of aquatic bioresources of Lake Baikal, with the exception of the Baikal omul. In 2022, the- ду total number of Baikal omul that entered the spawning rivers was 1.5 million , which is 28.6% lower

than in 2021 (2.1 million) and significantly lower (64.3%) than the long-term average (4.2 million) (Figure 3.1). In the Upper Angara River the numbern- of spawning herds (0.91 million specimens) was 2.4 times lower than the long-term average. The decreasein the- number of omul producers is due to the entry of small-generations into spawning herdsлочисленных поколений in 2016-2018. The низком уровне остаются total biomass of omul remains at a low level омуля.

The status of other commercial fish stocks remains fairly stable, as in previous yearso-статочно .

Общая The total population of the Baikal seal in 2022 amounted to 160.3 thousand specimens, which на is 4.3 thousand more. экз. (or 2.6 %) less than in 2021 2021.

O s o b o o x r a n I e m s e p r и i r o d н n e t e r r и i t o r и и i i . Within the boundaries of the Baikal Natural Territory , the network of specially protected Natural Areas (SPNAs) consists- of five nature reserves, four national parks, 21 nature reserves, one natural park, 72 natural monuments, and one botanical garden. In 2022, in thep- кутскойIrkutsk region, within the BPT, one new protected area of regional significance was created - the мятник Chekanovsky Cave Nature Reserve of geological and geomorphological profile «Пещера Чекановского.

In the reporting year в , due to the lifting of quarantine restrictions during the spread of COVID-19, the number of officially registered visitors to state reserves and national parks of the BPT increased by 59.5% compared to the data of 2021, amounting to 360,620 people. For the period 2013-2022, this is the second highest value after the figures of 2019, when the number of registered touristso- was 402,044 (Figure 3.4).

Along with the increase in the number of visitors возросло , the number of violations of the environmental regime in protected areas included in the BPT has increased. In comparison with the data 2021 of 2021 (812 offenses), the total number of violations increased by 51% in the reporting year(1226 offenses). This is the highest figure for the ten-year period 2013-2022. максимальный показатель за десятилетний период 2013–(Figure 3.5). For certain types of violations, the number of cases of illegal logging, illegal fishing, illegal construction, illegal location, passage and passage has almost doubled compared to 2021, as well as other violations, which include, for example, violationof sanitary safety rules, abandonment of un – exported wood, extraction of raw materials, etc. sand and gravel, being with weapons, draining fecal waste, draining concrete water, being with a metal detector, violating a special fire protection regime, etc. The number of cases of illegal hunting, gathering of wild species and, thanks to the active educational activities of protected areas, violations of fire safety rules in forests has decreased.

In the reporting year, the number of foreign visitors to protectedи- natural areas sharply decreased due to the general political situation. The number of employeesof- nature reserves and national parks remains stable.

R e k и i . River runoff supplies в Lake Baikal with an average of more than 80 % of the total прихода water intake in the lake's water balance. The volume of long-term and annual привноса в поставке взве- шенныхintroduction of suspended and dissolved substances, in which rivers play a significant role, depends on the natural conditions of the entire catchment area of Lake Baikal, which covers an area of риторию площадью 541 thousand km2[2] (excluding площади the area of the lake's water area-31.5 thousand km2[2]). 240.5 thousand[km2] of the Lake Baikal basin is located on the territory of Russia, the rest (300.5 thousand[km2]) is located в within Mongolia.

More than 300 rivers and streams flow into Lake Baikal, of which half of the volume of water entering the lake is brought by the trans-border Selenga River, originating in МонгоMongolia лии. The main volume of river runoff to Lake Baikal is formed in the BEZ BPT, where the main catchment areas of the Selenga and Verkhn Riversare located. Angary, Barguzin, Turki. Водосборные The catchment areas of the remaining tributaries of Lake Baikal are located in the Central Economic Zone of the BPT.

Observations of surface water quality in the Lake Baikal basin in the Republic of Buryatia were carried out on 25 rivers and one lake (42 channels in total); in the территории Trans – Baikal Territory -on seven rivers (10 channels).

Of the 13-17 indicators taken into account in the integrated water quality assessment, the numberof pollutants varied from two (Kholodnaya River) to 11 (Selenga River, Ulan- Ude, 3.7 km below Mostovaya siding, Modonkul River), for which регистрировались cases of exceeding the MPC were recorded during 2022.

In comparison with 2021 , the average annual concentrations of copper, zinc, and nickel compounds

increased in the water of rivers located on the territory of the Republic of Buryatia ; organic substances (according to COD), iron and manganese compounds decreased. Качество The water quality of rivers in 2022 2022 в generally remained at the level 2021 of 2021 and was estimated as

"polluted" – in 30 % of sashes and as "very polluted" – in 70 % of sashes.

In 2022 , an increase in the average annual concentrations of volatile phenols and petroleum products and a decrease in the average annual concentrations of iron compounds were observed in the water of rivers located in the Trans-Baikal Territory compared to 2021 нефтепродуктов и уменьшение среднегодовых концентраций соединений . In 2022 2022 качество воды , water quality 14 % was assessed as "weakly polluted" in 14%of the sites, "polluted" in 23 % – как «загрязненная» и в , and "very polluted"in 54 % «очень . Качество Water quality as

"dirty" was observed in 9% of the gates, "dirty" - in the Selenga river (пгтNaushki village), "very dirty" - in the Modnokul River Моднокуль (above and below Zakamensk).

At present , the quality of surface water in the Republic of Buryatiaand the Trans-Baikal Territory is caused by both spatial and temporal changes in theч- ного river flow and climatic conditions, as well as by anthropogenic load on catchments.

P o d z e m n y e v o d y . In the reporting year в пределах БПТ , there were no significant changes in the state of the underground hydrosphere within не the BPT.

In the Republic of Buryatia, in the reporting year, themм-average annualgroundwater levels inalmost all hydrogeological divisions of the IAB were higher than- in the previous year, which led to an increase in the long-term average values. Groundwater contamination was detected at 14 sites. An increased content of manganese, окисляемости permanganate oxidizability, petroleum products, COD, iron, and nitrogen - containing compounds was noted.

On the territory of the Irkutsk Region within the BPT Central Economic Zone in 2022, the average annual values уровней подземных of groundwater levels were higher than last year's and remained в within the long-term average. In the course of monitoring of underground waters, intensive contamination of underground waters, as in previous years, was detected in the zone of influence of the BPPC and on the territory of the Kultuk oil depot, where the maximum permissible concentration of lignin sulfate, iron, manganese, lead, aluminum, etc. was exceeded. The salinity of underground waters exceeded the background value several times. The processes of self-purification of underground water proceeded poorly.

On the territory of the Trans-Baikal Territory, within the BPT, in the reporting year, observations of theуровнем groundwater level вод were not carried out.

E n d o g e n n y e g e o l o g и I h e s k и i e p r o c e s s s . The Baikal natural territory-рияin 2022 was characterized by moderate seismic activity. During the year , five earthquakes were registered, two of them were the strongest. These Гоare goloustnenskoe-II, 14.10.2022 with energy class K>14.2 (magnitude M>5.2) and Goloustnenskoe-устненскоеIII, 8.06.2022 with energy class K>14.0 (magnitude M>5.4).и- The maximum intensity of earthquake shocks was five to six points. In the reporting year , the value of the annual total seismic energy releasedwithin the BPT was ΣeE=281.7 $*^{10\text{-}12}$ J, which is significantly higher than inthe- ющий previous year 2021 ($\Sigma E=7.8\cdot^{10\text{-}12}$J).

E k z o g e n n y e g e o l o g и I h e s k и i e p r o c e s s s . As part государственного of the statemonitoринга of the state of subsurface resources within the Central Economic Zone of the Irkutsk region, observations экзоген- of exogenous geological processes were carried out at four points государственной опор of the state reference observation network, and in the Republic of Buryatia – at six. In the Trans - Baikal Territoryю- , observations for EGP within the BPT in 2022 were not carried out. According to the results of surveys in 2022 2022 , no catastrophic manifestations of the processes were detected.

In general, in the reporting year, the level of activity of ravine formation processes was below thelong- term average values. The activity of landslide processes was also low. The degree of activity of the Aeolian accumulation process was average. During the reporting period, flooding was characterized by a low degree of activity; the process manifesteditself during the seasonal rise уровня of the ground water level.

Z e m e l l n y f o n d . In the reporting year муниципальных образованиях, располо-женных на , there was a slight redistribution of land area between categories in the municipalities located on the BPT площади земель между ка-тегориями. In the Irkutsk Region перераспределение , land redistribution affected three categories —м-ли agricultural land decreased by 0.03 %, земли residential land пунктов increased by 0.165 %, земли and industrial and other special -purpose land increasedby на 0.12 %. Площади Land areas of other categories за отчетный период did not change during the reporting period .

In the Republic of Buryatia in 2022 2022 , changes affected all categories of land, andthe- exception was made by the land of the water fund. A decrease in the area was noted in the categoriesземель сельскохозяйственного of agricultural land (0.12 %), industrial and other специаль-ного special purposes (0.045 %), specially protected areas (0.015 %), and state за-reserves (0.68 %). An increase in the area was found among the lands населенных of localities(0.83 %) and the forest fund (0.03%).

On the territory of the Trans-Baikal Territory, there is a redistribution of land in four categories. Industrial and other special-purpose land, specially protected areas, and State reserves increased by 0.77 %, 0.01 %, and 0.25%соответ- , respectively. The area of agricultural land decreased by 0.26 %. Пло- The area of land in localities, forest and water resources has not changed as compared to last year не .

In general, in the municipalities located on the BPT, during 2022 there was a slight redistribution of land area between categories: земли agricultural land decreased by 0.124 %; land населенных of settlements increased by 0.437 %; industrial and other specialназнач-purpose land- ния increased by 0.235 %; land of specially protected areas decreased by 0.10 земли forest fund lands increased by 0.017 %; земли state reserve landsdecreased by 0.381 %. Площадь The land area of the water fund has not changed.

Changes площадей in land areas of various categories from 2013 2013 to 2022 2022 are presented in Table 3.3. Over the ten-year period , agricultural land decreased by 0.45% in municipalities located on the BPT; landin settlements increased by 15 %; industrial and other special-purpose land increased by 2 %; land in specially protected areas decreased by 0.003 %; forest fund lands increased by 8 %; water fund lands decreased by 0.01 %; state reserve lands decreased by 1.5 %.

R a s t и I t e l ь n o s t t и i g и i v o t n ы y m и i r . The species diversity *of the flora* Байкаль-of the Baikal natural area is about 2500 species. Protected species includет- 201 species, of which 35 are listed in the Red Book of the Russian Federation (2008), 180 in the Red Book of the Irkutsk Region (2020), 158 in the Red Book of the Republic of Buryatia (2013), and 65 видов in the Red Book of the Trans – Baikal Territory (2017).

The floristic diversity of vascular plants in the Irkutsk region is about 2,300 species. 161 species of higher vascular plants are included in the Red Book of thep-Irkutskregion (2020) from the flora species inhabiting the territory of the BPT. The bionavigationи- reserve of the Irkutsk Region (a list of species that for various reasons are not included in the Red Book, but require increased attention and constant monitoring of their condition) includes 71 species.

The variety of vascular plants in Buryatia is represented by about 2200 species. The Red Book of the Republic of Buryatia (2013) includes 126 species of vascular plants growing on the territory of the BPT. The bionazor list of the Red Book of the Republic of Buryatia (2013) includes*Alisma Eastern chastukha (Alisma orientale*), Artemisia ledebouriana (*Artemisia ledebouriana*, cSaussurea davurica (*Saussurea davurica*) и , etc.

The floristic diversity of vascular plants of the Trans-Baikal Territory isaboutло 1700 species. There are 164 protected species in the territory – of the region, of which на БПТ 59 are registered in the BPT .

Animal world. About 480 species of vertebrate animals have been recorded on the territoryof the BPTных, which is almost 83 % of the total species diversity позвоночных of vertebrates in the Baikal region.

The fauna of the Irkutsk region includes about 60 species of fish, six species of amphibians,six species of reptiles, 414 species of birds and 86 species of mammals. Of these к числу вклю-ченных в Красную книгу Российской Федерации (2021) на территории БПТ относятся че-, four species of crustaceans, three species of insects, three species of fish, 38 species of birds and two speciesof mammals - the Baikal black - capped marmot and the Altai – Sayan population of reindeer-are included in the Red Book of the Russian Federation (2021) on the territory of the BPT сурок, алтае-саянская популяция север-ного . Из встречающихся на территории БПТ видов The Red Book of the Irkutsk Regiona-сти (2020) includes one species of mollusks, three species of sponges, three species of leeches, 15 species рако-of crustaceans, nine species of insects, seven species of fish, one species of amphibians (Mongolian toad),and one species of reptiles (patterned creeper)., 56 species of birds, nine species of mammals. The animal world of the Republic of Buryatia is represented by 66 species of fish, six species of amphibians, seven species of reptiles, 417 species of birds, and 86 species ofa-mammals. На территории БПТ встречается Five species of insects, four species of fish, one speciesof reptiles (Mongolian Barbour's foot - and-mouth disease), 33 species of birds and four species ofa-mammals,

included in the Red Book of the Russian Federation (2021) are found on the territory of the BPT. The list of the RedBook of the Republic of Buryatia (2013) includes 185 animal taxa: three species of ciliate worms, one species of leeches (Pelyazhya acanthobdela), one species брюхоногих of gastropods (прудо- Thermobaikalsky Island pond), 15 species of higher crustaceans, 34 species of insects, five speciesof fish, two species of amphibians (Far Eastern croaker frog, ostromordaya frog), five видов reptile species тилий, 88 bird species, and 17 mammal species inhabiting the territory of the BPT. For the firsttime in the Red Book of the Republic of Buryatia (2013)бионадзорный, a bio-monitoring list has appeared. This is a listof species that for various reasons are not included in the Red Book, but require increasedattention and constant monitoring of their condition. In particular, в this list includes mon- Golsky marmot and Zabaikalsky hamster.

The территории Забайкальского Trans-Baikal Territory is home to more than 500 species позвоночных of vertebrates, из них including 67 species of fish, five species of amphibians and five species of reptiles, more than 330 species of birds, and more than 80 species of mammals. Среди встречающихся на территории БПТЗабайкальского края представителей животного мира в Красную книгу Российской Федера-ции (2021) занесены Three species of insects, three species of fish, 11 species of birds and one species of mammals (manul) are listed in the Red Book of the Russian Federation (2021) among the representatives of the animal world found in the BPT of the Trans - Baikal Territory три вида рыб, 11 видов птиц и один вид млекопи-тающих . The перечень Red Book Забайкальского of the Trans-Baikal Territory (2012) lists 205 taxa, из including на территории БПТ встречаются: 15 species of insects, seven species of fish, one species of amphibians (Far Eastern frog), 22 species of birds , and four species of mammals.

L e s a . In 2022, the area covered by forest vegetation in the BPT as a whole increased by 5.18 thousand hectares (or 0.02 %) compared to the indicators of 2021 соста- and amounted to 24,869. 31 thousand hectares. In the Trans-Baikal Territory, the area increased by 10.2 thousand hectares (or 0.2 %). In the Irkutsk region , the area covered by forest vegetation decreasedby 5.0 thousand hectares (or 0.02 %). In the Republic of Buryatia – has not changed.

The estimated cutting area of mature, over-mature forest stands в within the BPT in 2022 amounted to 16,255. 3 thousand $m3^3$, which is 2.6% higher than last year's values (in 2021 2021 – 15,837. 3 thousand $m3^3$).

A t m o s f e r n ы y v o z d u h . In the Central Economic Zone of the BPT , monitoring of загрязнением atmosphericair pollution is carried out in four localities of the Irkutsk Region-the city of Baikalsk, the city of Slyudyanka, р.п. Култук, the Kultuk river, and the Listvyanka river. The levelo- of atmospheric air pollution in2022 on the territory of the BPT Central Economic Zone has not changed significantly compared to 2021 and is estimated as "low". In the reporting yearпрошлогод- , the average annual concentrations of formaldehyde in the atmospheric air of the city of Baikalsk мальдегидадecreased by 1.4 times and ozone increased by 2.5 times compared to the previous year. и- The maximum single concentrations of carbon monoxide decreased by 1.9 times, ozone - by 1.9 times, the maximum daily average concentration of PM10 suspended particles – by 25.9 times; the чиласьmaximum single concentrations of nitrogen dioxide – by 1.1 times, and the maximum monthly average concentrations of benz(a)pyrene - by 1.7 р.пtimes. In the Kultuk river in 2021 and 2022, the average annual and one-time concentrations of detected pollutants did not exceed the established standards, with the exception бенofbenzo (a)pyrene, the maximum monthly average concentration of which в 2022 году increased by 2.4 times in 2022. In the Listvyanka riverin the reporting year, the average annual concentration decreased compared to 2021 suspended solids increased by 1.1 times. The maximum of the monthly концен- average concentrations of benzo(a)pyrene increased 1.3 times. In Slyudyanka, the average annual concentrations загрязняющих of pollutants, в том including бензbenzo(a)pyrene, did not exceed установленные the established hygienic standards. The maximum monthly average concentration бенofbenzo (a)pyrene уве-increasedличилась by 1.6 times.

In the BEZ BPT, observations of atmospheric air pollution are carried out in three населенных localities of the Republic of Buryatia – Ulan-Ude, пгт Selenginsk, Gusinoozersk, and Petrovsk-Zabaikalsky of the Trans-Baikal Territory. In 2022, the state of atmospheric air pollution in the BEZ BPT was defined as very higho- кое in Ulan - Ude, пгт Selenginsk, and high – in Gusinoozersk and Petrovsk-Zabaikalsky. Substances that determine a very high level загрязнения of air pollution, in Ulan-Ude - бензbenz (a)pyrene, formaldehyde, copper, manganese, suspended substances, in пгт Selenginsk -

benz(a)pyrene, formaldehyde, suspended substances, ozone, hydrogen sulfide. The high level of air pollution in Gusinoozersk was determined by the concentrations of suspended solids, PM10, ozone, PM2. 5, and hydrogen sulfide; in Petrovsk-Zabaikalsky, it was mainly determined by the concentrations бенофbenzo (a)pyrene. The city of Ulan-Ude and the village of Selenginsk в течение have been included in the Priority List of Russian cities with the highest levelof air pollution for many years .

Air pollution monitoring is carried out in six cities of the Irkutsk region – Angarsk, Irkutsk, Svirsk, Usolye-Sibirsky, Cheremkhovo, Shelekhov, as well as in the village of Meget. In 2022, no cases of extremely high загрязнения атмосферного air pollution were registered in the EZAV BPT было . The results of observations indicate that the level of atmospheric air pollution (estimated by индексу загрязнения the atmospheric pollution index) in Svirsk, Usolye-Sibirsky, Cheremkhovo, г. Shelekhov was determined as very high, in the cities of Angarsk and Irkutsk - as высоhigh , in the village of Meget – as low. The main contributors toат- atmospheric air pollutionin these localities were benz(a)pyrene, suspended solids,- щества, nitrogen dioxide, formaldehyde, and PM-10 suspended particles.

O s a d k и i , s n e w n ы y p o k r o v . The amount of precipitation выпавших that fell in 2022 на ча- in part of the Irkutsk Region, which is part of the BPT, was about and less than usual, in the northern part – 1.5 times more than the long-term average values. On the territory ofthe- Republic of Buryatia, which is part of the BPT, precipitation fell about or more than the climatic norm. The exception is May 2022 and the autumn months (October-November), during which precipitation fell less than the climatic norm. About and more than the climatic normof precipitation fell in 2022 on the territory of the Trans-Baikal Territory. The exception is October 2022, during which time there was a shortage of precipitation; the entire territory выпа- лowas less меньшеandnear the climatic norm.

Высота The snow cover height in most of the BPT was higher средних than the long-term averagevalues. The destruction of the stable snow cover occurred in late March – mid-April, and the formation of snow cover was observed from early October – mid -November.

The highest average concentrations of suspended solids, petroleum products, and chlorides in the snow cover of the BPT Central Economic Zone were observed in the area of the Kabansk – Baikalsk section; minerals and sulfates – in the р.п. Kultuk – Slyudyanka River areaСлюдянка; and phenols – участке с. Кабанскin the Kabansk – Baikalsk section and in р.п.the Kultuk-Slyudyanka river area.Слюдянка The highest сум- марныеtotal precipitation densities of zinc, copper, manganese, cadmium, and iron compounds were observed in участке с. the Kabansk – г. Baikalsk area; lead, nickel , and cobalt – в районер.п. deposits were observed in the Kultuk – Slyudyanka area. – г. Слюдянка.

K l и I m a t и i h e s k и i e u s l o v и I I . In 2022 2022 , the average annual температура air temperature in the part of the Irkutsk Region included in the BPT was close to the multi - year average values. Overall, the year was characterized by moderately cold winters, warmc- winters, and cool summers. In the part of the Trans-Baikal Territory that belongs to the BPT, the average annual air temperature in 2022 exceeded the climatic norm. In the territory of the Republic of Buryatia, which is part of the BPT, вduring 2022, warm, abnormally warm weather prevailed.

Dangerous hydrometeorological phenomena noted in the summer of 2022, which occurred on the periphery of deep high-altitude hollows located over Western Siberiaand the Krasnoyarsk Territory, as well as blocking ridges over Transbaikalia, were formed as a result of the strengthening of the zone of contrasts in the middle troposphere at an altitude of 1.5 km. The increase was due to the arrival of cold air masses from the west and the removal of heatfrom south-western and southern flows from the regions of Kazakhstan and Mongolia, as a result of в приземном слое атмосферы which cold fronts intensified in the surface layer of the atmosphere .

A Itг а р о - Е н и с е й с к и й к а с к а д Г Э С includes: Irkutsk, Bratsk, Ust-Ilim andъ-Илимскую и Boguchanskaya hydroelectric power stations on the Angara River; Krasnoyarsk (Divnogorsk), Maina (Maina settlement) and Sayano-Shushenskaya (Sayano-Shushenskaya city). Sayanogorsk) Hydroelectric power station on реке the Yenisei River.

The Angarsk and Yenisei hydroelectric power stations operate in the unified energy system of Siberia in a compensatory, interdependent mode. The total installed мосapacity- of the Angara Cascade hydroelectric power plants is 9002 MW, with annual electricity generation of about 49 billion kWh..

Осуществленная в 2022 году предполоводная The pre-water operation of the Angara Cascade reservoirs carried out in 2022 водохранилищ Ангарскогокаскада made it possible to ensure the safe passage of spring floods and rain паводfloodsков through гидроузлы the cascade waterworks. В During the

autumn rain flood , it was possible to мини-minimize damage to the territories of horticultural plots located in зоне the flood zone. The limit values of the water level in Lake Baikal in 2022 were within the range of regulation established by the Decree of the Government of the RussianFederation от 16.03.2022 No. 379 of 16.03.2022 "On maximum and minimum значениях уровня water level values in Lake Baikal in 2022–2023 2022-2023".

Teploenergetиika. The main contribution to загрязнение atmospheric air pollution inthe ESAV BPT is made предприятия by heat power enterprises owned by Baikal Energy Company LLC (until 01.09.2020 by Irkutskenergo PJSC): CHPP-9 and site No. 1 of CHPP-9 (CHPP-1), CHPP-10 (Angarsk), Novo-Irkutskaya CHPP (Irkutsk), CHPP-11 (Moscow Usolye-Sibirskoe), CHPP-12 (Cheremkhovo), Shelekhovsky section of Novo-Irkutskaya CHPP (Shelekhov).

Within the administrative borders of the Republic of Buryatia, the main share водопоf- water consumption and disposal in the BPT in 2022 2022 was accounted for by heat and power engineering – 99 % (in 2021 – 98 %). Thermal power companies have taken 544.11 million м^{m3} (in 2021 – 419.19 million^{m3}) of surface water; сброс wastewater discharge вод to surface water bodies amounted to 539.77 million m3^{3} (в 2021 г. – 414,39 млн м$^{(in\ 2021\text{-}414.39\ million\ m3}$). Water abstraction from underground sources in 2022о-дуamounted to 0.07 million^{m3}, in 2021-0.11 million m3^{3}. In the structure of discharge to surfaceд- ные water bodies, normatively clean waters account for 99.85 %.

Within the administrative boundaries of the Irkutsk region, water consumption in the BPTa-amounted to 415.13 million^{m3}, which is 77.91 million^{m3} (23.1 %) more than in 2021. Ato- верхностныхthe same time, 342.16 million m3 of water was withdrawn from surface sources^{3}, which is 87.89 million^{m3} more than in 2021 2021 (34.6 %), and 72.97 million m3 of water was withdrawn from underground sources, в том including associated водыwater –72,97 млн м^{3}, which is 9.99 million m3^{3} less than in the previous year. in 2021 (12.0 %). Water discharge to surface water bodies in 2022 amounted to млн327.17 million^{m3}, which is 74.98 million^{m3} (29.7 %) more than in 2021.

Gиlиisno-kommunalьnoe hozIsctvo. In 2022 2022 на объектах питьевого водоснабжения, расположенных на БПТ, отобрано питьевой воды , 5,846 samples of drinking water were collected for sanitary and chemical indicators at drinking water supply facilities located at the BPT, санитарно- of which 281 (4.8 %) did not meet hygienic standards тивам, and 7,029 samples for microbiological indicators, of which 123 (1.7 %) оказались did not meet hygienic standards.

In 2022, the volume of water intake and сброса wastewater discharge , as well as the discharge загрязняющих of pollutants into surface water bodies, increased at housing and utilities enterprises located on the BPT . During the reporting year, housing and utilities enterprises of the Republic of Buryatia within the boundaries of the BPT reduced the volume забора of water intake по compared to 2013-2021 . The volume сброса сточных of wastewater discharged to surface water bodies increased compared to 2020-2021. 3.12), but its value in the reporting year is lower than for the period 2013-2019. гг.

The main reasons for the growth of the mass sbrcca of pollutants in the wastewater of centralized wastewater disposal systems of settlements, urban districts of housing and communal services enterprises include outdated treatment technology, operation of treatment facilities with a high degree of wear and tear, which are subject to major repairs or reconstruction, and do not provide wastewater treatment to standard quality. Frequent reorganizations of enterprises and transfer of wastewater treatment facilities from one organization to another, as well as short договоры -term lease agreements for spillway facilities are also относятся к negative reasons for the deterioration of the situation at water supply facilities.

Selskoe xozIystvo. In предприятиях сельского 2022, agricultural enterprises locatedon the BPT increased the volume of water intake, which is associated with увеличени- an increase in field irrigation due to the low amount of precipitation in the summer period of the reporting year. Forthe five -year period 2013-2022, the volume of water abstraction at agricultural enterprises in the Republic of Buryatia shows a steady downward trend in water use indicators (Figure 3.13). The total volume of wastewater discharge in the reporting year is lower than in the period 2017-2021. These are mostly normatively clean waters discharged by fish farms.

OxotnичIhe xozIsctvo. На In БПТ в 2022 2022 численность , the animal population in the BPTгоincreased by 1.5% compared to the data of 2021. On average, the number of fur - bearing animals increased by 4.1 %, and the number of carnivorous animals – by 4.6 %. At the same time , the number of ungulates decreased by an average of 2.9% compared tolast year's шлогоднимиdata. The level of animal

production within the BPT in the reporting year- decreased by 7.3 % compared to last year's indicators.

R y b n o e x o z I y s t v o . In 2022 2022 при разрешенном вылове рыбы в объеме, only 548.4 tons (37% of the permitted catch) were caught by users with a permitted catch of 1,485 tons, which is 55 tons less than in 2021 and more than в three times lower than in 2013-2016. гг. (Figure 3.15).

The decrease in the total catch volume was due to a decrease in catches of the main commercial species-omul and roach. The official catch of omul, due to the introduction of a ban on its commercial fishing, amounted to 133.7 tons, including 75.9 tons for artificial reproduction 75,9 т, традиционного рыболовства , 52.2 tons for traditional fishing of indigenous 52,2 т, в научно-peoples, and 5.6 tons for research and control purposes. Commercial removals of other fish speciesgenerally remained at the level of 2021, with a downward trend in the catch of small particles over the past 5-10 years.

B a y k a l l s k и i y f l o t . In 2022 2022 , the number судов of inland water transportvessels registered on Lake Baikal and registered with the East Siberian branch of the Russian Classification Society amounted to 337 units, which на is 15% more than the number of vessels last year (in 2021 – 293 units).

The amount сданной на очистку of contaminated water delivered for treatment in 2022 по сравнению increased by 8.8% compared to 2021 and amounted to 1,035.74 tons (including 323.51 tons нефтecofoil - containing water). In the reporting yearСамотлор, the largest amount of contaminated water was delivered for treatment at Samotloro- личествоas compared to 2013-2021. (Figure 3.18). This is mainly due toy- JSC HSR. In the reporting year, the third-party fleet reduced the delivery of household and sente- вой water for treatment по compared to 2017-2021.

W e l e z n o d o r o w n ы y t r a n s p o r t . In 2022 2022 в , compared to 2021 2021 , theBPT achieved a reduction in air emissions by 0.1% and a reduction in waste generation by 2% from railway transport units. In the reportingyear- , the trend towards a decrease in the anthropogenic impact of railway ноготransport enterprisesin the Central Economic Zone and BEZ BPT continued (Fig. 3.20, Fig. 3.21).

T u r i z m и i o t d y x . In 2022, compared to 2021, the situation in the tourism скойindustry improved. For example, in the Republic of Buryatia in 2022, the number of officially registered tourists increased by 41.1% and amountedto 581.86 thousand people, в including 7.13 thousand foreign tourists (an increase of 37.1 %).

E k o l o g и I h e s k и i e p r a v o n a r u w e n и I I . In 2022 2022 , the number администра-of administrative offenses in the field of environmental protection and природополь-зования, nature use detected by the territorial bodies of Rosprirodnadzor in the Baikal Natural Territory по сравнению с 2021 decreased by 31.9% compared to 2021 (740 offenses) уменьшилосьand amounted to 504 offenses. The main administrative violationsy- registeredwithin the BPT in 2022 were non-compliance with environmental requirements when carrying out urban development activities and operating- цииenterprises, structures or other facilities; non-compliance with environmental and sanitary-epidemiological requirements when handling industrial and consumer waste требления, substances that destroy the ozone layer or other hazardous substances; ми; concealment or distortion of environmental information.

In 2022, six judicial acts on environmentaldamage caused tothe Lake Baikal ecosystem as a result of the activities of economic entities entered into legalforceектов. Общая сумма The total amount составила 92 of the penalty was 92,694,661 rubles. 09 kopecks.

S o c и i a l l n o e p o l o g e n и I e n a s e l e n и I I . In general , in the Baikal region, the population in 2022 decreased by 0.7% compared to 2021 and amounted to 4,311. 4 thousand people (in 2021-4,341. 9 thousand people), within the BPT , the population decreased by 13.4 thousand people and amounted to 2,561. 0 thousand people. During the reporting yearчис- ленность, the number of people on BWT decreased compared to 2018-2021–, but exceeds the values- of 2013-2017.– (Figure 3.24). Over the ten - year periodнасел, the population concentration- ния in BNT increased from 54.6% in 2013 to 59.4% in 2022.

The level **of anthropogenic impact** on the natural environment of the Baikal Natural Territory in 2022 2022 was characterized by the following indicators.

In 2022 2022 на Байкальской природной территории выброшено в атмосферу , 448.0 thousand tons of pollutants were released into the atmosphere in the Baikal Natural Territory, which is 14.5% more than in 2021 (391.4 thousand tons , respectively). For rail transport, in 2022, compared to 2021, BPT achieved a reduction in air emissions by 0.1% and a reduction in waste generation by 2 %. After the shutdown of the main production facility in 2013, more than 99% of the total emissions from the facilities of JSC Baikal Pulp and Paper Mill were generated by combined heat and power plants. In general, over the ten-year period 2013-2022, the indicators of emissions in the Baikal naturalp- Territory did not show clear dynamics. Until 2017, there was an increase in emissions, and then in 2018-a significant decline. Since 2018, there has been a незначи-slightтельному росту increase in emissions (Figure 3.25).

In the Republic of Buryatia на БПТ , the volume сбросов of wastewater discharges at the BPT вод increased by 124.55 million м^{m3} and amounted to 612.66 million^{m3} (2021 – 488.11 million^{m3}). Wastewater непо-is not discharged directly into Lake Baikal. In the Central Economic Zone of the BPT of the Republic of Buryatia, the volume of wastewater discharge decreased by 17.07% compared to 2021 – from 2.46 million м^{m3} in 2021 to 2.04 million^{m3} in 2022. At the Irkutsk Region BPT, water discharge too-surface water bodies amounted to$^{522.97\ million\ m3}$, which is 81.39 million^{m3} (18.4 %) morethan in 2021. The total mass of pollutants entering Lake Baikal in 2022 was 168.4 tons (in 2021-168.73 tons), which is 0.34 tons (0.2%) less than in 2021. In general, over the ten период -year period 2013-2022 показатели , the discharge rates at BWF remain при approximately at the same level, with slight fluctuations in the direction of decreasing or уве- личенияincreasing, while since 2020, there has been an increase in discharges to surface water объек- bodies, which exceeds the maximum values of 2017-2018.

The volume of water abstraction from Lake Baikal in 2022 amounted to 0.85 million м^{m3} (in 2021 – 0.97 million^{m3}), which is 0.12 million^{m3} (12.4 %) less than in 2021. In general, the volume ofe- water use in the Baikal Pulp and paper Mill area decreased compared to last yearумень- .

In 2022 , 59,829. 5 thousand tons of solid household waste were generated in the Baikal Natural Territory, which is 2.6% less than in 2021 (61,446.5 thousandtons- , respectively). In general, over the ten-year period 2013-2022, the indicator of solid waste generation in the Baikal natural Territory shows a tendency тои- reduce the volume of waste. At the same time, in 2018-2020, there was a peak in this indicator , followed by a sharp decline.

Normatиivno-pravovoe regulиirovanиieи ikoordиinacиii oxranyoz era baykal. The ecological well-being of Lake Baikal is настоящее currently стоит at the forefront of any activity carried out on the territory of the Baikal Territory. This is stipulated at the legislative level by a series of laws related to the protection of Lake Baikal, specially protected natural areas and the use of various resources. The basis of the legal regulation of Lake Baikal is Federal Law от No. 94-FZ of 01.05.1999 "On the Protection of Lake Baikal", whichis followed up byspecial альные resolutions of the Government of the Russian Federation and acts of federal орга- нов executive authorities.

In 2022, the following additional legislative acts were adopted. Federal Law от 01.05.2022 No. 124-FZ **of 01.05.2022 "**On внесении Amendments to the City Planning System".

land Code of the Russian Federation and certain legislative acts of the Russian Federation " a law has been adopted that provides for the extension of the simplified procedure for the construction of a number of facilities, while the new norms will not affect specially protectedи- natural territories.

On 04.07.2022, the Order of the Ministry of Natural Resources and Environment of the Russian Federation от No. 451 "On Amendments to изменения the Order of the Ministry of Natural Resources and Ecology of the Russian Federation от 21.02.2020 No. 83 dated 21.02.2020 " On approval of standards for maximum permissible impactson the unique ecological system of Lake Baikal and the list of harmful substances, including substances belonging to the categoriesdangerous особо опасных, высокоопасных, опасных for the unique ecological system of Lake Baikal" (Registeredwith the- Ministry of Justice of the Russian Federation on 17.10.2022 No. 70549).

By Decree of the Government of the Russian Federation No. 1140-r of11.05.2022, the- Republic of Buryatia was granted a subsidy of over 2.5 billion rubles in 2022for themodernizationнизацию and construction of treatment facilities for the treatment of polluted wastewater entering Lake Baikal and other water bodies of the Baikal natural террито-Territoryрии, strengthening the shores of Lake Baikal, and improving the quality of and development of infrastructure facilities necessary to preserve the unique ecosystem of Lake Baikal.

Decree of the Government of the Russian Federation No. 1402-r of 02.06.2022 " On changes to the distribution of subsidies for the modernization and construction of sewage treatmente plants for

thetreatment of polluted wastewater entering Lake Baikal and Other Water Bodies of the Baikal Natural Territory, strengthening the shores of Lake Baikal, совер-improvingшенствование and developing infrastructure facilities necessary for conservation уни- of the unique ecosystem of Lake Baikal, for 2022 and for the planned period of 2023 and 2024" the Republic of Buryatia is увеличение expected to increase subsidies in 2023 and 2024. гг.

Decree of the Government of the Russian Federation No. 2241 of 07.12.2022 approved the possibility of allocating subsidies to regions located on the BPT not only for the construction,e- reconstruction and modernization of wastewater treatment plants, but also for conducting engineering surveys and preparing project documentation. Also, the субсиди- рованияregions will be able to payfor the elimination of illegal landfills to regional municipal solid waste management operators through federal subsidies отходами работы по ликвидации незаконных .

In addition, a special Government Commission for the Protection of Lake Baikal has been established and is functioning under the leadershipof Victoria Abramchenko, Deputy Chairman of the Government Виктории Абрамченко. In 2022 2022 состоялись , two meetings of the commission were held, in which

приняли attended полномочный представитель Anatoly Seryshev,Presidential

head of the Republic of Buryatia Alexey Tsydenov, Governor of the Irkutsk Region Igor Коб- Kobolev, representatives of the Ministry of Natural Resources, the Ministry of Emergency Situations, the Ministry of Foreign Affairs, the Ministry of Construction, the Ministry of Economic Development, the Ministry Минздра- ofHealth, Rosprirodnadzor, Rospotrebnadzor, Rosreestr, RAS and others. Based on the results ofa- the commission's work, the main directions of environmental protection activities in the territory of Lake Baikal were identified, instructions of the commission were drawn up and protocol decisions on preserving the unique ecosystem of Lake Baikal were approved.

In accordance with them, the main tasks of the protection of Lake Baikal are the elimination of previously accumulated environmental damage caused, inter alia,o- мышленнымby industrial production previously carried out on the coast of Lake Baikal, модерни-mdriza- зация, construction and reconstruction of treatment facilities населенных in settlements of the Central Economic Zone of the BPT, development of alternative options for sewerage and wastewater treatment South Baikal with очисткой образующихся the treatment of wastewater generated in населённых settlements and на tourist скихfacilities up to all - Russian standards and their direction through коллекто- collection outside the BPT, development of an action plan for the systematic development of environmental- скоготourism in the BPT with an appropriate list of documents, taking into account the minimization and redistribution of anthropogenic load on this territory.

M e r o p r и I I t и i I p o o x r a n e o z e r a B a y k a l . The federal project "Conservation-of Lake Baikal " (hereinafter – referred to as the federal project, the project) is implemented within the framework националь-of the national project "Ecology" of the Ministry of Natural Resources of the Russian Federation together with interested federal-ными органами executive authorities . The project is aimed at preserving and restoringthe bioresource potential and biological diversity of water bodies of the Baikal Natural Territory and на reducing the anthropogenic load on the ecosystem of Lake Baikal.As part of measures to reduce the level of above - sludge water in картах-the storage mapsof JSC "BCBK" очищены надшламовые , above-sludge water in landfill storage maps was cleaned up полигонов "Solzansky" and "Babkhinsky" in the volume of at least 70 thousand м^{m3}.

As part of the work to eliminate accumulated вреда environmental damage, BPPK OJSC received positive conclusionsfrom the State Environmental Inspection Commission No. 38-1-1-3-095401-2022 in the part of the Babkhinsky landfillБабхинский, No. 38-1-1-3-097404-2022in the part цеха of the treatment plant shop.

Ino- 2022, nine landfills with a total area of 28.9 hectares were eliminated in specially protected natural areas located in the Central Ecological Zone of the Baikal Natural Territory, which exceeds the planned value set in the project passport- by 12.7 hectares. Work has also begun to eliminate unauthorizedл- ки piles within the boundaries of национальногоthe Tunkinsky National парка «ТункинскийPark with a total area of 15.9 hectares. By the end 2022 of 2022 , more than 5 hectares of contaminated areas have been cleared.

Reconstruction of sewage treatment plants on the righta-вогobank of Irkutsk continued. The work is carried out in 10 stages. The fourth, fifth ande- final stages were implemented. Work is being carried out in stages 7-9. Work on phase 10ois scheduled to start in 2023. Upon completion of the stages, the capacity of sewage treatmentт- ныхplants will increase to 220 thousand^{m3}/day.

In the Trans - Baikal Territory, reconstruction ofa- нализационных sewage сооружений treatment

plants in Khilka and строительство construction очист- of sewage treatment plants inZhipkhegen and Tarbagatai continued in the reporting yearЖипхеген. In the reporting year, the construction readiness of the first facility was 92.6 %, the second – 93 %, and the third-67.9 %. Commissioning of the facilitiesc-плуатацию is scheduled for the first half of 2023.

Значительное влияние на сокращение объемов загрязненных сточных вод в водные объекты БПТ окажет Reconstruction правобережных of the right-bank sewage treatment plants in Ulan-Ude with a capacity of 130 thousand m3 will have a significant impact on reducing the volume of contaminated wastewater into the BPT water г. Улан-Удэ мощностью 130 тыс. $м^3$bodies.The facility is under the control of the Presidentй- of the Russian Federation within the framework of directive No. Pr - 454 dated 24.03.2021. The facility is scheduled to be commissioned in 2024. In the reporting year, preparatory work was partially completedo-, and the axles ofbuildings were removed. Due to a significant increase in the cost of construction resources, an adjustment was made to the estimated costof construction of the object under construction. A positive conclusion повторной of the repeatedp- state examination No. 03-1-1-2-081141-2022 dated 21.11.2022 issued РБ «by the State Expert Examination Agency of the Republic of Belaruswas received.

In order to preserve and reproduce the unique aquatic biological resourcesof Lake Baikal, four fish hatcheries and one fish farm in the region го- дуreleased 339.66 million juveniles (larvae) of aquatic biological resources into the lake in 2022. честве According to the state task ществлены, 338.886 million juveniles (larvae) were released into Lake Baikal in 2022 , including 0.87 million sturgeon species.млн and whitefish – 338.016 million units. In order to compensate for the damage caused to aquatic biological и resources and их their habitat, в озеро Байкал, выпущено 0.718 million juveniles (larvae) of aquatic biological resources were released into Lake Baikal, рыб including 0.196 million sturgeon млн шт., лососевых – 0,505 , 0.505 million salmon, карповых и 0.0165 million carp and perch. 0,0165 млн шт.

Objects of artificial reproduction (in much smaller volumes по compared to omul) in the Lake Baikal basin are whitefish, grayling and carp. Осуществле- ниеThe implementation of artificial reproduction of these species, which is necessary to preserve биоразно- the biodiversity of water bodies in the Baikal region, was hindered in 2022 by the lack of targeted funding. In the reporting year, a positive opinion was received on the project documentation and a contract was signed as part of the reconstruction ofthe- Bolsherechenskiy Fish Hatchery in order to ensure the possibility of preserving and reproducing- the unique aquatic bioresources of Lake Baikal within the framework of a federal project.

Within the framework of measures aimed at state environmental monitoring of the Baikal Natural Territory, Order No. 261 of the Ministry of Natural Resources and Ecology of the Russian Federation dated 08.04.2022 approved a new method for calculating the indicator " Coverage of the area of the Baikal Natural Territory by State Environmental Monitoring (G7)" of the federal project "Conservation of Lake Baikal", входяще- which is part of the national project "Ecology". State environmental monitoring is carried Минприроды out by the Ministry of Natural Resources of the Russian Federation together with Roshydromet, Rosleskhoz, Ros - nedra and Rosrybolovstvo.

In 2022, the Federal Agency for Fisheries will establish an observation post for monitoring aquatic biological resources in the southern part of Lake Baikal in the village of Utulik in the Slyudyansky District oftheIrkutsk Region. A contract was signed for the construction of a research vessel for hydroacoustic and trawl surveys in areas whereд- water biological resources are found.

As part of Rosnedra's activities, 11 пунstate - of - the-art automated monitoring pools have been created тов for monitoring the ecological state of underground waters and dangerous exogenous and endogenousгенных geological processes in the Baikal Natural Territory.

Roshydromet purchased and installed two stations for persistent organic за-pollutants, upgraded nine observation points for atmospheric air pollution, purchased four mobile laboratories, проведено and re - equipped instrumentsми and equipment for nine chemical and analytical laboratories.

Rosleskhoz conducted state forest pathology monitoring вы- performing expedition surveys, remote observations of the sanitary and forest pathology state of forests based on high-resolution imagesния, within which the data reliability increased by 6.62% by 2022, as well as monitoring the state of forest genetic resources of the BPT using мо-molecularлекулярногenetic diagnostics methods . conducting DNA tests.

In order to ensure high reliability, efficiency, accessibility and completenessof information from the state environmental monitoring (state монито- environmental monitoring) of the Baikal Natural Territory, work continued on the development of a unified information platform on the state of the environment on Lake Baikal-the geoportal " Environmental Monitoring of Lake Baikal "(www. baikalake.ru), which is It is

рыйavailable in four languages and is an official source of information about экологии the lake's ecology.

In order to reduce the anthropogenic load on the ecosystem of Lake Baikal and increase the tourist attractiveness of the Baikal Natural Area , construction of a guest complex with a parking lot in the Monakhovo area continued in the reporting yearМонахово. Местность The Monakhovo area is one of the most popular places for recreation and transit travel, свя-and therefore с чем this guest complex will be an important reference point for ecological and educational work, the development of educational tourism and recreation directlyon the territory of the Trans - Baikal National Park.

Construction of the Zapovedny Sever Baikal administrative and information centere- and two fire and chemical stations have been started in the territory of the Baikal National Park.

E k o l o g и I h e s k a I e k s p e r t и i z a . In the Irkutsk Region по объектам, расположен-ным на Байкальской природной территории, в 2022 году подготовлено , 74 conclusions of the federal state environmental expertise were prepared and approved for objects located in the Baikal natural Area in 2022 утверждено 74 заключения государственной экологической экспертизы федерального уровня, из них , including 11 negative conclusions for objects planned for implementation on the BPT. For theъ-projectsplanned for implementation in the BPT CEZ, 11 state экологиче-environmentalских examinations were conducted, and a negative conclusion was issued for two objects. A regionalp- level state environmental assessment of materials justifying the limits and quotas for the extraction of hunting resources in the hunting season for 2022-2023 рую was carried out, and a positive conclusion was approved .

In the Republic of Buryatiaподго- товлено, 54 conclusions of the expert commissions of the state environmental expertise of the federal level were prepared and approved for the objects located on the BPT in the reporting yearэкологиче- ской, of which five receiveda negativeconclusionчение. For the objects planned for implementation in the BPT CEZ, in 2022e- , ten state environmental examinations were conducted. Positive conclusions were issued for all objects. The state ecological expertise of the regional level of materials justifying the limits and quotas for the extraction of hunting resources inthe зоне northern hunting zone for 2022–2023 2022-2023 was carried out, for which утверждено a positive conclusion was approved.

In the Trans-Baikal Territory, the state environmental assessment was carried out for шesix federal - стilevel objects located on the BPT, three of which have отри- a negative conclusion. In 2022, no regional-level environmental assessment объ- of the objects, located on the BPT was carried out.

E k o l o g и i h e s k и i y n a d z o r . In 2022 2022 на Байкальской природной территории , as a result of federal state environmental control (supervision) , 98 inspections of compliance with environmental legislation were conducted in the Baikal Natural Territory. The total numberof inspections decreased by 57.2% compared to 2021 (229 inspections in 2021). и-The numberofdetected violations decreased by 60.6% compared to 2021 and amountedсоста- вилото191 offenses (in 2021 г. 2021-485 offenses).

According to the results of regional supervision на БПТ в 2022 , there were1,415 inspections at the BPT in 2022 415 . The number of detected violations amounted to 828 offenses.

Based on the results of monitoring nuclear safety, the state радиацioof- radiation safety in organizations operating with the use of- radioactive substances is assessed as satisfactory, the radiation situation is stable, and no radiation accidents have been registered.

N a u h n o e o b e s p e h e n и i e s o x r a n e n и I i o z e r a b a y k a l . Since 2002 2002 , theSiberian Branch of the Russian Academy of Sciences has been operating the Scientific Council on Lake Baikal (NAS SB RAS), whose tasks are to form a consolidatedн- position of the scientific community in the field of lake protection; coordinate the expert work of scientific organizations on Baikal topics; prepare conclusions and proposals

on key environmental issues, submission of these documents ис- to the executive and legislative authorities.

In general, according to the National Council of the Siberian Branch of the Russian Academy of Sciences on Lake Baikal Problems, the Russian Academy of Sciences целе- and the Siberian Branch of the Russian Academy of Sciences should prepare a report to the Government and the President of the Russian Federation on the critical state of the Lake Baikal ecosystem and proposed measures to reduce threats, as well as предложить сформировать программу срочных мер на федеральном уровне.

The measures aimed at preserving Lake Baikal that are being developed and implemented in

practice Байкал, are based on данных scientific research data. В In году исследования the reporting year, the Limnological Institute of the Siberian Branch of the Russian Academy of Sciences (Irkutsk), the Institute of Geography of the Siberian Branch of the Russian Academy of Sciences (Irkutsk), the Baikal Institute of Nature Management СО РАН of the Siberian Branch of the Russian Academy of Sciences (Ulan-Ude),the Siberian Institute of Plant Physiology),andИнститутомBiochemistryобщей и экспериментальной биологии of РАН (г. Улан-Удэ), the Siberian Branch of the Russian The Institute-of Natural Resources, Ecology and Cryology of the Siberian Branch of the Russian Academy of Sciences (Ulan-Ude), the Baikal Museum of the Siberian Branch of the Russian Academy of Sciences (Listvyanka River. , Irkutsk Region), as well as employees of scientific departments of protected areas.

F o r m и i r o v a n и i e e k o l o g и i h e s k o y k u л l t u r s . В Байкальском регионе функ-The two UNESCO departments in the region ционируют: the UNESCO Department of Environmental Ethics at the East Siberian State University of Technology and Management in Ulan-Ude Улан-Удэ and the Department of Water Resources at Irkutsk State University. In 2022, the above-mentioned departments will carry out research conducted by SOCRo- ECTU " Ecological problems of the Baikal natural territory. Natural monuments of the Republic of Buryatia". Scientific research is related to the study of natural, антропоanthropogenic , ecological-economic, engineering-ecological systems and structures at регио- the regional and local levels. The applied value of the work lies in the expertise of the ecological components of economic activity in the territory with specialo- ecological requirements, which is the Baikal Natural Territory.

Отдельную работу по формированию экологической культуры проводят Regional Ministries of Natural Resources carry out separate work on the formation of ecological cultureь- ные. The Ministry of Natural Resources of the Irkutsk Region , within the framework of the state program " Environmental Protection" , together with public environmental organizations , annually conducts work within the framework of the Days of Protection from Environmental Hazards, дня Lake Baikal Day and other events aimed at supporting "green" projects, environmental education, promotingи- таниeresponsible consumption, active citizenship, etc. save- the окружающую environment.

The key institution carrying out this work is госу- the State budgetary institution of additional education "Resource Ecological and Biological Center of the Republic of Buryatia". In 2022, the Ministry of Education of the Trans-Baikal Territory, together with the Ministry of Natural Resources of the Trans-Baikal Territory, also held a number of events on environmental education and enlightenment (Ecodictant, the action "Water of Russia" to clean the banks of reservoirs from garbage, the development of the movement of school forestry districts, and others).

O b щ s e s t v e n n o e e k o l o g и i h e s k o e d v и i g e n и i e . On the territory Иркутской об-of the Irkutsk region, there are more than 30 public organizations engaged in environmental- protection activities. In 2022, they implemented measures aimed at formingиandрование и improving the ecological culture of citizens, supporting научно- research projects on Lake Baikal, programs for the conservation of biodiversity and natural monuments in the Baikal region, and carried out measures aimed at поддержа-maintainingние cleanliness in the coastal zone of Lake Baikal. рабо- The following public organizations operate in the Republic of Buryatia: the Non – profit Partnership for the Development of Ecotourism in the Republic of Buryatia "Big Baikal Trail - Buryatia", the public organization "Buryat Regional Association for Baikal",е-the regional publicственную organization "Baikal Information Center "Gran", the autonomous non - commercial organization for the promotion of emergency tourism in the Republic of Buryatia.- rescue and восста-restorationновительных works of the " корпус Baikal Volunteer Corps" and the public organization

"The future of the Earth depends on you", regional branch of the All-Russian public Organization "Union of Volunteers of Russia", ANO" Assistance", ANO "Clean Buryatia".

In the Trans-Baikal Territory, more than 200 volunteerр- organizations of about five thousand people operate. A Public Council has been established under the Ministry of Natural Resources of the Trans-Baikal Territory, which considers initiatives of citizens of the Trans-Baikal Territory,publicственных associations, organizations, органов государственной and state authorities on issues relatedto the Ministry's areas of activity (geology and subsurface use; ecology; forest resources; water resources and water use). A platform has been created for Public Environmental Inspectors who take part in activities aimed at protecting and рационалrationalizing- ному the use of natural resources.

M e w d u n a r o d n o e s o t r u d n и i h e s t v o . In the reporting year запланированная на19–30 , the 45th session of the UNESCO World Heritage Committee, scheduled for June 19-30 in Kazan (Russia), was not held. The mission of representatives of UNESCO and the International Union for Conservation of

Nature to Lake Baikal in 2022 to assess its ecological state hasы- been canceled.

The XVI Meeting of the Plenipotentiaries of the Government of the Russian Federationandи- the Government of Mongolia on the Implementation of the Agreement between the Government Российской of the RussianFederation and the Government of Mongolia on the Protection and Use трансграничных вод of Transboundary Waters-ялосьwas held on August 31 - September 1, 2022 in Ulaanbaatar (Mongolia). At international cooperation events , the Russian side once again expressed озабоченность concern связиabout the intention of the Mongolian side to resume construction of hydraulic structuresy- жений and dams in the basin трансграничных of the trans-border Selenga and Uldzarivers. Russia is waiting от Монгfor materials fromМонголии материалы, confirming the safety of implementing these projects for the eco-мы system of regions, o as recorded in the minutes of the XVI Meeting of Authorized Partiesand the 24th meeting of the Intergovernmental Russian-Mongolian Commission on Trade , Economic , Scientific and Technical Cooperation (November 15 2022 , 2022, г. Moscow).

The Mongolian side is studying the possibility of creating reservoirs with regulatedи- flow to stabilize the water content of the river. УльдзыА detailed environmental impact assessment is being carried out for this purpose. In 2022Ульдзе в Монголии не про- , no dam construction activities were carried out on the Uldze River in Mongolia какие-либо работы по строительству .

Issues related to the planned construction of hydraulic structures in the Selenga River catchment area are comprehensively considered by a Joint Working- чей Group established at the site of the Ministry of Natural Resources of the Russian Federation.

The Russian side's obligations to implement the Agreement in 2022 выпол- неныhave been fully fulfilled. The current water management situation in 2022 тре- did not require the use of an emergency notification system between the Parties to the Agreement. In order to ensure the safe passage of high water and flood waters, the Parties рукоare guided by водствуются national plans for the implementation of a set of organizational and technical measures. During the flood passagea-, operational hydrological information was exchanged between the Partiesми .

In May 2022 2022 на территории Республики Бурятия , an International Forum was held on the territory of the Republic of Buryatia Международный форум

"Russia – Mongolia. Partnership in a New Reality", where experts, предприentrepreneurs andheads of regions discussed the prospects for cooperation betweenthe twostatesствами, as well as proposed ready - made solutions for optimizing trade and economic cooperation, export and investment potential and logistics flows.