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Dmitry Sopov, PhD Student
e-mail: sopov_inau@rambler.ru
Uman National University of Horticulture, Ukraine

HISTORICAL ROOTS AND ENVIRONMENTAL IMPACTS OF LAND USE IN THE LUHANSK REGION

The influence of human activities (particularly agriculture and the coal industry) on the nature of land use in the Luhansk region (separately for right Bank and left Bank parts). The emphasis on the value sarutanont areas and sheet erosion in the degradation of soils and lands, especially on the Donetsk ridge (the right Bank of the Seversky Donets). The role of prologue relief Donetsk ridge as a natural factor in the spread of erosion processes. A brief historical overview of attempts to combat the development of ravines in the Luhansk region that carried out, starting from the second half of the XIX century, but mainly were not effective. As one of the negative factors that influenced the structure of land use, delineated drainage increasing the area under pasture, which increases the intensity of erosion processes.

Lighted the detrimental effect of mining activities on the land-use patterns in the study area. Noted regarding the environmental effects of physical exclusion of lands due to their occupation by dumps, waste heaps and other anthropogenic forms of relief, formed mining activities. Emphasized that not only mine, but also the concentrator, communication facilities and the like play a role in the reduction of the area occupied by farmland, and therefore cause negative changes of land use structure in the right-Bank part of the territory of the Luhansk region.

Noted that extensive and excessive land use in agriculture and the coal industry in Luhansk region has led to the degradation of large areas of land and the impoverishment of the land fund. Noted that the current structure of land use requires radical changes which should be based on new conceptual principles and a systematic approach to the problems of environmental management.

Key words: agriculture, land resources, issues of nature, land use structure, land degradation, extensive use of land.

Дмитро Сопов. ІСТОРИЧНІ КОРЕНІ ТА ЕКОЛОГІЧНІ НАСЛІДКИ ЗЕМЛЕКОРИСТУВАННЯ В ЛУГАНСЬКІЙ ОБЛАСТІ

У статті розглянуто вплив господарської діяльності людини (зокрема, сільського господарства та вугільної промисловості) на характер землекористування в Луганській області (окремо для правобережної і лівобережної частин). Відзначено, що екстенсивне, а також надмірно інтенсивне землекористування в сільському господарстві і вуглевидобувній промисловості Луганської області призвели до деградації великих площ земель і зuboжіння земельного фонду. Відзначено, що сформована структура землекористування вимагає радикальних змін, які повинні базуватися на нових концептуальних засадах і системному підході до проблем природокористування.

Ключові слова: сільське господарство, земельні ресурси, проблеми природокористування, структура землекористування, деградація земель, екстенсивне використання земель.

Дмитрий Сопов. ИСТОРИЧЕСКИЕ КОРНИ И ЭКОЛОГИЧЕСКИЕ ПОСЛЕДСТВИЯ ЗЕМЛЕПОЛЬЗОВАНИЯ В ЛУГАНСКОЙ ОБЛАСТИ

В статье рассмотрено влияние хозяйственной деятельности человека (в частности, сельского хозяйства и угольной промышленности) на характер землепользования в Луганской области (отдельно для правобережной и левобережной частей). Отмечено, что экстенсивное, а также чрезмерно интенсивное землепользование в сельском хозяйстве и угледобывающей промышленности Луганской области привели к деградации больших площадей земель и обнищанию земельного фонда. Отмечено, что сложившаяся структура землепользования требует радикальных изменений, которые должны базироваться на новых концептуальных принципах и системном подходе к проблемам природопользования.

Ключевые слова: сельское хозяйство, земельные ресурсы, проблемы природопользования, структура землепользования, деградация земель, экстенсивное использование земель.

Introduction. Natural resources, especially land, is the basis of development of any territory. However, the development of other natural resources leads to the increased volumes and rates of production and, consequently, to the increase of anthropogenic pressure on the natural environment.

In the Luhansk region, according to the available natural resources, the development of the economy proceeded in two directions: agriculture and coal industry. In both cases, the land was subjected to the greatest pressure through the physical reduction of the area of the land fund, the deterioration of the physico-chemical properties of soils, and the consequences of the crop losses, deterioration of sanitary-hygienic conditions of the population. That is, there were a number of environmental problems that for Luhansk region in modern conditions has gained special relevance.

The aim of the article is the insight into the history of land use in the Luhansk region and identify the causes and consequences of the impoverishment of the land fund – the basis of socio-economic development of the region.

Presentation of the basic material. Economic development of the territory of modern Lugansk region started with agriculture, mainly farming, due to favorable natural conditions and rich natural resources – the temperate climate, fertile land, large areas of forests are confined to river valleys and large beams.

As residents of the region, and the Donetsk steppes were mostly engaged in the tilling of the soil. Here were two systems of farming, which now we believe environmental – three-field and fallow. If you have large reserves of land farmers have used fallow system, which were gradually replaced arecoline for which the land was divided into three parts: two of them were cultivated and

inoculated, and the third was left to rest. In the future there was the alternation of sections is used. After two years' cultivation the land in the third year remained free, restoring its natural properties [7]. Such a system has determined that the land was plenty and to attend to the problem of preserving their fertility made no sense.

Through a small number of settlers in the first half of the XVIII century processed only a small part of the land. With the subsequent settlement and development of the territory, starting from the middle of the said century, the area began to expand. The peasants left the waste ground, moving to the new, virgin. Gradually the arable land moved to the slopes of river valleys and large beams, plowed lands; there was widespread steppe burns and fires. Unregulated grazing resulted in a violation of turf grass, "waste" land has become rocky and gravelly and completely withdrawn from economic use.

A few archival materials testify that already in the early economic development of the territory of modern Lugansk region of the earth began to crumble. Thus, the official data on the state of land, structure of land use date back only to the XVIII century, when, in 1789-1804., conducted General survey. According to him, the plowed areas did not exceed 1 – 2% [12]. The reform of 1861 was carried that invisible barrier that kept the settlement a rich but unexplored territory. And the first result of mass population was a sharp increase in arable land until the late nineteenth century. – to 31-45% [6], which naturally led to the strengthening of degradation processes, in particular the spread of erosion.

As unobtrusive, flush with planar sloping land, common in the region, initially almost not attracted the attention of researchers. The most obvious consequence of the erosive processes was the formation of gullies, a negative value which already in XIX century began to realize the scientists. So, describing the land Lisichansk parish Bahmut county, I. Levakivsky (1871) said: "a lot of ravines, they occupy an area of 40 acres in the square house in 648 acres, not counting the beams..."[4] (our translation – D. S.). Based on these numbers, we can calculate that the area that was occupied by ravines, was more than 6% of the area of the estate. There is no reason to believe that the author cites, as an example, most ravines territory, so we these figures relate to the entire Lisichansk parish, which is uniform in the natural attitude, and development.

Immoderate and unreasonable plow with all the consequences "has a historical antiquity and its historical reasons: first, the possibility of sale of cereals and exports that is continuously growing, and further growth of the population – were forced incessantly to increase arable area" [5] (translation ours. – D. S.). The increase of arable land led to the destruction of natural vegetation, reduction of virgin steppes, and this is even more intensified erosion processes (natural erosion has changed more intense anthropogenically accelerated).

Abandoned eroded land previously used for cultivation, has been destroyed. Adversely affect the condition of the turfgrass outstanding cattle grazing. Even in gully forest play an ameliorative role and contain rich feed resources, grazing has resulted in broken sod cover, were washed forest soils, and denude the root system of trees

and shrubs, young trees eaten by cattle, forest stable, gradually losing its water and lamalera value. The destruction of forests to increase arable, vegetable and grassland land show the names of some of the beams – Walnut, Linden and the like. On the slopes of these beams and formed the so-called "bargain" land.

It is known that planar erosion leads to reduced soil fertility due to the deterioration of the physico-chemical properties of the soil and air-water regime. Data on intensity of sheet erosion on the territory of modern Lugansk region over the past century are lacking, but current research demonstrates the gradual and steady nature of the process. Now only planar erosion in the Luhansk region suffers 63.6% of agricultural land.

In the Northern part of the Luhansk region, which since the mid of XVII century was settled mainly by immigrants from Zadnepryansk of Ukraine, settlements are concentrated along rivers and large beams. Because of the mineral deposits there had not yet been found, farmers grow wheat, vegetables, and bred cattle. Ancient erosion of the dismemberment of the territory and was to be strengthened through human activities, and steppe retreating to the watersheds, the richest natural pastures were subjected to intensive and unregulated grazing on the slopes of the plane wash was formed ravines. Gully formation along a more intensified due to the fact that the lands disturbed by erosion, the peasants were thrown and mastered new areas, the so-called "wasteland", but on abandoned land erosion was not stopped, because they have been given a boost because of a violation of turfgrass, mostly on sloping surfaces.

Runoff has increased because of erosion, worsened the hydrological conditions of the rivers edge. Fine soil, which in large quantities is submitted through the ravines and gullies, caused siltation and shallowing of rivers, swamping them in some areas. And surface runoff from sloping land under cultivation has reduced the humus horizon, has worsened the soil quality.

The compartmentalization of the areas that is growing, and increasing land unsuitable for agricultural land use caused a reduction in ploughing. The harm caused by the ravines, has become so significant that they were one of the causes of crop failures. In particular, the cause of the poor harvest of 1891, which covered twenty-one of the best agricultural provinces of the Russian Empire, "many believed... draining and the destructive activities of the ravines" [9] (translation ours. – D. S.), which are gradually formed from the previous management. The destruction of woody vegetation in the steppe areas and the plowing of steep slopes, valleys and gorges led to the decrease of moisture in the soil, which also impact on agronomic conditions of cultivation of grain.

Thus, a natural use of the land caused an increase in erosion, particularly sheet erosion and, consequently, has led to soil degradation, especially in the second half of the XIX century.

The right Bank of our region with some delay, but have experienced the same changes in landscape shape the environment, like the left Bank, which was associated not only with the agricultural development of the territory.

Semi mountainous terrain of the right Bank, especially the highest part of the Donetsk ridge, was not favorable to agricultural development, and so for a long time there were not many permanent residents. But after the 1861 reform in this region has been a rapid development of the industry, helped by the presence of vast natural wealth, which at that time was not only explored, but already developed. In 1792, in the modern area of Lisichansk were discovered deposits of coal. Somewhat later there was found the ore and built the first blast furnace, which was soon abandoned.

With the opening of coal fields, the region began to take shape as industrial, that left a definite imprint on the structure of the land. After all, the area of disturbed lands, unsuitable for agricultural use has increased by as underground workings and ground stripping.

It so happened that the structure of land use in the Luhansk region began qualitatively to change from the end of XVIII – beginning of XIX century, when after the discovery of coal here began and increased coal mining. So the farm on the left Bank of the Luhansk region and in its southern part developed in different ways. If in the North the greatest development have received agricultural production in the South, which is part of the Donbass, the development of mining led to the industrial specialization of the economy.

In conditions of Donbass, where virgin steppe were confined to watersheds with strand-ruffed-logowaniem relief, swung open and basins, and slopes, increased erosion. V. I. Taliev [9] noted that most uncover slopes with eroded soils occur near human settlements, which clearly shows anthropogenic origins of erosion. The same opinion is E. M. Lavrenko, which linked the presence of large areas of rocky wasteland with no human activities [3].

Cultivation of the new territories, mainly to the slopes, the formation of numerous boundaries caused accelerated erosion. And I. F. Levakivsky gives an example: "in 1890, in the autumn, was held furrow in the direction of the slope; by the autumn of 1890 out of this furrow was formed the moat of about 40 fathoms. in length, two quarters of the depth and the same in width" [4] (our translation – D. S.). It was about the village of Nagolno-Tarasivske, located in the central part of the Donetsk ridge.

Assessment of the territory of Donbass in the erosive aspect of the study confirm that E. E. Kern, who was allocated Ekaterinoslav province, and especially Bahmutsk county, which strongly gully. In many counties, he wrote, "the area under active gullies ranged from 5 to 30% of the total area of counties" [2] (our translation – D. S.).

Analyzing the situation with the land condition, M. A. Rozov [8] noted that in the Donetsk ridge formed the whole complex is extremely favorable for ravine erosion of conditions and causes. Most of the gully areas, in his opinion, was of the Luhansk region: "... a hill that diversifies the terrain, reinforced plowing, without the forest, obviously, and a pronounced continental climate have all contributed to the formation of ravines" (our translation – D. S.).

About what size entered in the Donbass gully erosion, in particular, appears "Report on the strengthening

of the ravines in the past, the present and the future" forester V. Raih, head of the Luhansk sandy-gully region of Donetsk subsample in 1918: "...everyone is well aware of the inconvenience to those who groin selly represent a growing ravines. In particular, in our county (in Slavyanoserbsk. – D. S.) they are downright toxic for anyone, because it is impossible to find any road in the County, which would not cut one or the other ravine. According to the survey I can say that in our County there are about 3 thousand ravines, which have taken the Plowman together with the beams almost a tenth of the whole earth, that is, about 34 thousand acres" [1] (translation ours. – D. S.).

Not to say that any attempt to improve the situation not been done, but they had local character. All attempts to suspend the erosion of forest-reclamation funds, without combining with agro-technical measures, did not give the desired effect [11]. The main objective is a comprehensive settlement of runoff and protection of soils in the catchment that are prone to erosion, remained unresolved.

Industrial coal mining, which began in the second half of the XIX century, gained momentum, and during the first decades, there were extracted 500 thousand pounds (about 8 tons) of coal per month. For a century and a half coal production increased by more than 200 thousand times.

Today, in Luhansk region, the number of mines together with closed and such that are in private ownership, is more than 300. They still want to add about 30 processing plants, since the latter play the same role in the reduction of the land fund.

Outline the impact of mining operations under the mining region of Luhansk region covers an area of over 1,300 km², mainly on the right Bank of the Seversky Donets river. The area of mine fields more than 8 thousand km², which is 31% of the area of the coal region [10].

The urgent problem of the coal region has long been is the physical loss of land, that is, the reduction of land resources as a result of their occupation of slagheaps and industrial land facilities and communications. Every year in the dumps of the mines and plants accumulated 12 million tons of "empty" breed. The total volume excavated on the earth's surface rocks within the Lugansk region is more than 10 billion m³ [10]. Within the Donbass for centuries a substantial area under agricultural and forest land were destroyed or significantly reduced, a significant area was used for various man-made structures and communications. Thus, only mining reduces land fund of the region is 4.1%.

Despite the vast development of the mining industry on the right Bank of the Luhansk region, agricultural production also continues to play a role in the degradation of the land Fund. Fertile soil, dedicated to the Main Donetsk watershed, intensively exploited and exploited, which, together with negative natural processes can't call them fast enough impoverishment. Earth experiencing a lot of violent agricultural load. Owing to the combined action of various anthropogenic factors on the right Bank became more the changing natural environment and therefore now and more environmental stress on land resources.

Conclusions. Researched literary, and archival materials indicate that the problem of catastrophic state of agricultural lands is not only not disappeared, but over time has deteriorated.

Intensive and extensive land and economic activity in the Luhansk region over the centuries has led to land degradation in agriculture through anthropogenically accelerated erosion, and the mining industry – through the physical removal of land due to enhanced mine construction and intoxication of soils the mine water and runoff from piles of rock.

The structure of land use scored a violent figure, land use in the region became unsustainable and inefficient and requires developments of new conceptual principles and the system approach to formation of optimal structure of environmental management in General and land in particular. This problem becomes even more acute and relevant in connection with the temporary Russian occupation of almost half of the region. The effects of the enemy's assault on the natural environment, not to mention socio-economic losses, it is difficult to assess, but the obvious will become the need of restructuring as the land fund, and land tenure system.

Список використаних джерел:

1. Державний архів Луганської області. – Ф. Р-733, оп. 1, спр. 1.
2. Керн Э.Э. Овраги, их закрепление, облесение и запруживание / Э.Э. Керн. – М. – Л.: Госиздат, 1928. – 198 с.
3. Лавренко Е.М. Леса Донецкого кряжа / Е.М. Лавренко // Почвоведение. – 1926. – № 3-4. – С. 20-25.
4. Леваковский И.Ф. О причинах различия в форме склонов речных долин (Днепра и Дона) / И.Ф. Леваковский // Труды общества испытателей природы при Харьковском университете. – Т. 3. – Х., 1871. – С. 32-35.
5. Лященко П.И. История народного хозяйства СССР. – Т. II. Капитализм. – 4-е изд. / П.И. Лященко. – М.: Политиздат, 1956. – 302 с.
6. Пірко В. Заселення Донеччини у XVI–XVIII ст. – Донецьк, 2003. – С. 25-26.
7. Подов В.И. История Донбасса: В 3-х т. – Т. 1. – Донбасс в XVII–XVIII веках / В.И. Подов. – Луганск: Альма матер, 2004. – 336 с.
8. Розов Н.А. Овраги Украины. Материалы по овражно-песчаному вопросу Украины / Н.А. Розов. – К., 1927. – 61 с.
9. Талиев В.И. Растительность крайнего юго-восточного пункта Екатеринославской губернии / В.И. Талиев // Труды общества испытателей природы при Харьковском университете. – Т. XXX. – Х., 1896. – С. 15-26.
10. Фондові матеріали Державного регіонального геологорозвідувального підприємства „Схід-ДРГП”.
11. Шикун Н.К. Развитие эрозионных процессов в Донбассе / Н.К. Шикун // Природные ресурсы Левобережной Украины и их использование. Материалы межвед. науч. конфер. – Т. II. – Х.: Изд-во Харьковск. ун-та, 1961. – С. 332 – 338.
12. Яната О. До проблем соціалістичної реконструкції сільського господарства Донбасу / Олександр Яната // Шляхи соціалістичної реконструкції сільського господарства. – 1932. – № 7. – С. 30-37.

References:

1. Derzhavnyi arkhiv Luhanskoï oblasti. – F. R-733, op. 1, spr. 1.
2. Kern, E.E. (1928). Ovrage, ikh zakreplenie, oblesenie i zapruzhivanie. M. – L.: Gosizdat, 198.
3. Lavrenko, E.M. (1926). Lesa Donetskogo kryazha. *Pochvovedenie*, 3-4, 20-25.
4. Levakovskiy, I.F. (1871). O prichinakh razlichiya v forme sklonov rechnykh dolin (Dnepra i Dona). *Trudy obshchestva ispytateley prirody pri Kharkovskom universitete*. T 3, 32-35.
5. Lyashchenko, P.I. (1956). Istoriya narodnogo hozyaistva SSSR. T. II. Kapitalizm. M.: Politizdat, 302.
6. Pirko, V. (2003). Zaselennya Donechchyny u XVI–XVIII st. Donetsk, 25-26.
7. Podov, V.I. (2004). Istoriya Donbassa: V 3-h t. T. 1. Donbass v XVII–XVIII vekakh. Lugansk: Alma mater, 336.
8. Rozov, N.A. (1927). Ovrage Ukrainy. Materialy po ovrazhno-peschanomu voprosu Ukrainy. K., 61.
9. Taliev, V.I. (1896). Rastitelnost kraynego yugo-vostochnogo punkta Ekaterinoslavskoy gubernii. *Trudy obshchestva ispytateley prirody pri Kharkovskom universitete*. T. XXX, 15-26.
10. Fondovi materialy Derzhavnogo regionalnogo geologorozvidualnogo pidpryemstva „Skhid-DRGP”.
11. Shikula, N.K. (1961). Razvitie erozionnykh protsessov v Donbasse. *Prirodnye resursy Levoberezhnoy Ukrainy i ikh ispolzovanie. Materialy mezved. nauch. konfer.* T. II. Kh.: Izd-vo Kharkovsk. un-ta, 332-338.
12. Janata, O. (1932). Do problem sotsialistychnoi rekonstruktsii silskoho hospodarstva Donbasu. *Shlyakhy sotsialistychnoi rekonstruktsii silskoho hospodarstva*, 7, 30-37.

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