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THE EXTENT OF DESTRUCTION OF LANDSCAPES IN THE TASHKENT REGION

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Abstract

The article points to those parts of landscape of the Tashkent region that have become unfit for use in the economy - destroyed lands and their extension as a result of natural and anthropogenic factors.

Keywords: landscape, damaged lands, natural factors, anthropogenic factors and the damaged degree.

Introduction

The origin of damaged lands, restoration, reclamation of landscapes, issues of environmental improvement, mining, agriculture, construction are studied in landscape science as well. The study of “damaged lands” in analyses aimed at the efficient use of landscapes and the improvement of geo-ecological conditions is of great importance. The purpose of this paper is to study the size of areas of the landscapes occupied by the damaged lands, i.e., the examination of the extent of destruction of landscapes.

1 Basic part

The concepts of “Damaged lands”, “Destruction of landscapes” are based on opinions on the destruction of landscapes to be used in the husbandry of lands under the influence of the human activity. For the first time in science, the concept of “Damaged lands” was applied by the British scientist V. Beaver in 1945. Thereafter this concept was improved by V.S. Eskin [4], K. Wallwork [3], P.I Tomakov [2], Kh. Vakhobov [1], and others.

In these definitions specified in the literature for the concept of disturbed lands, the attention is devoted solely to the human activities (mainly industrial one), while such natural processes as landslide, erosion, subsidence, mudflows, salinization, flooding, swamping and other processes are not taken into account. We are of the opinion that in determining this concept, the following three circumstances must be taken into account:

First, the concept of *damaged land* is associated solely with the human being, its economic activities, and in no way with nature. Hence, the destruction of lands to be used in the husbandry, not only under the influence of industry or other economic activities, but also subsequently natural processes - is a truth that does not require proofs. For instance, deterioration of quality, the coming into unusable or inadequate state of agricultural lands might be occurred as a result of the irrigation erosion or

salinization, the landslide or the formation of a ravine in the summer pastures at the slopes of mountains;

Second, it is necessary to pay attention to the expression *the loss of economic value; unfit for use*. As discussed above, the lands to be used in agriculture may lose their economic value, and become unfit for use not only under the influence of human activity, but also as a result of natural processes. It should be noted that the concept of lands became unusable is used solely in relation to economic activities of the human being. Actually, even on these unsuitable lands there is flora and fauna being a component of nature, among which there is a continuous exchange of substances and energy, while the geographical systems continue to perform their special function. Thus, unsuitable lands do not exist for nature;

Third, the territories, facilities being the source of the adverse environmental impact may arise not only under the influence of industrial or other economic activities, but also as a result of natural processes. For example, exposing of layer of rocks with strong radioactive exposure as a result of a landslide or the formation of ravines, or the spreading of salts over the surroundings located in the bottom of a dry lake under the influence of wind, the flooding of flood plains and the formation of marshy areas during high-water periods and etc.

On the basis of the foregoing, the following definition will be proper for the concept of damaged lands:

2 Damaged lands

Damaged lands - areas with an unfavorable view that have lost their economic importance and become unusable or inadequate for use after human activities and natural processes, as well as being the source of adverse environmental impact due to changes in soil and vegetable cover and stream conditions, the creation of anthropogenic relief. They are sources of contamination of the soil, the water, the air, and complicate the living and functional environment of people.

According to the damaged degree under the influence of natural and anthropogenic factors, the terrains of the Tashkent region are divided as follows and the map has been made according to the present data (Fig. 2):

1. 0 - 1,0 % - undamaged
2. 1,1 - 5,0 % - slightly damaged
3. 5,1 - 10,0 % - moderately damaged
4. 10,1 - 20,0 % - highly damaged
5. 20,1 - 30,0 % - extremely damaged

Terrains considered as **undamaged** are mainly 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th and 28th terrain types (classification and names of landscapes given on 1-table) on the II, III, IV terraces above the flood plains, relating to the

desert-steppe type of the terrain on the piedmont plains (Figure 1), fully developed to be used in irrigated farming.

The sustained reclamation activities are carried out in order to harvest a high yield from crops. Most of the regional settlements are located on these terrains. Therefore, the damaged parts of such terrains are spread out in very small areas, where mainly the processes of ravine, subsoil erosion formations and sometimes landslides are found. Among the anthropogenic factors, there are mainly places of industrial, construction, and household waste accumulations.

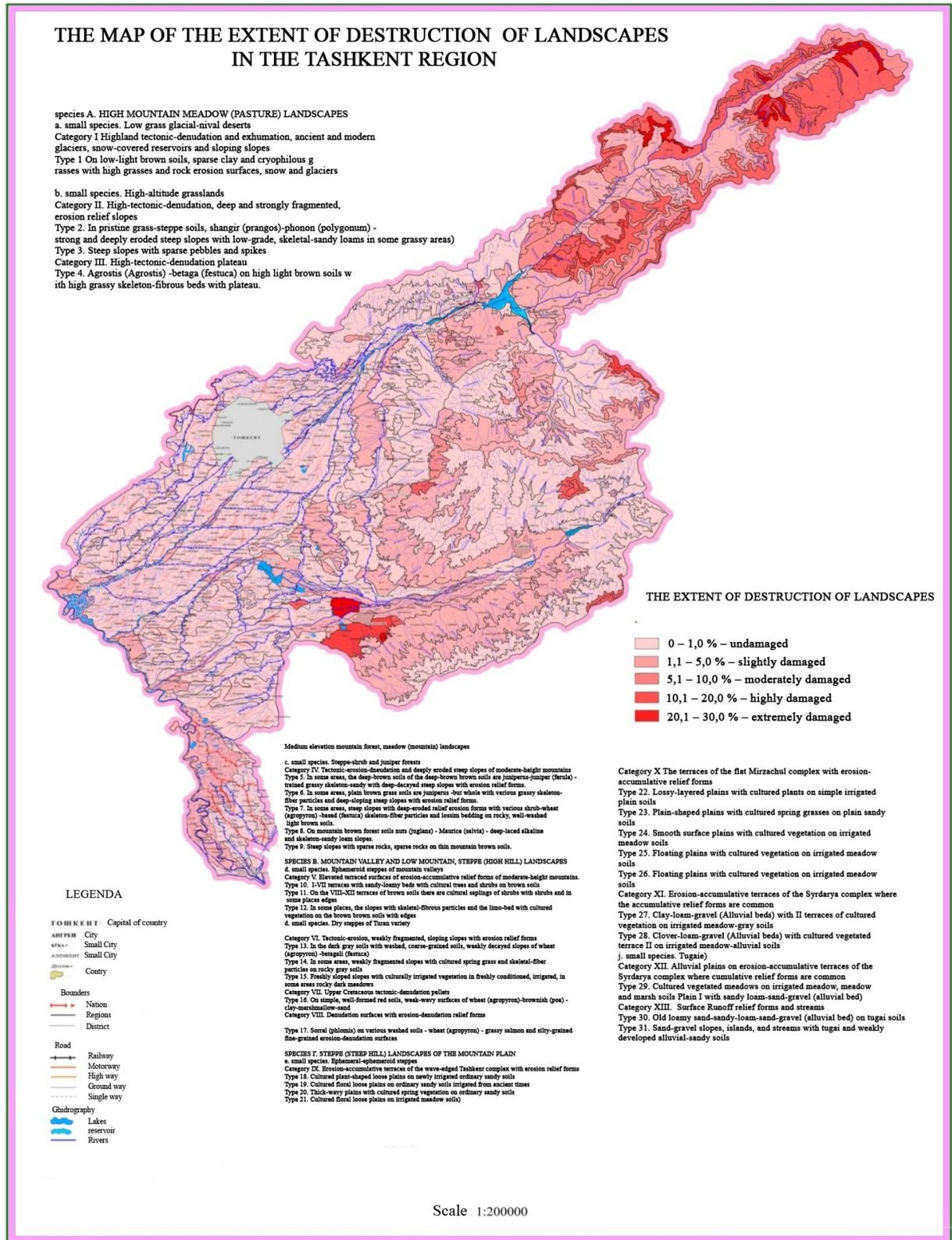


Fig.1: Map of the damaged terrains of the Tashkent region

Terrain classification of the Tashkent region (according to the classification of V.A. Nikolayev, 1999)

Classification unit	Characteristics of the classification	Landscapes	
Chapter	Interconnection of geospheres within the boundaries of the geographic crust and the type of their impact	Land - 1-31	
Section	The energy base of the landscapes - regional-zonal differences of the humid-heat balance (at the level of climatic regions)	Subtropics - 1-31	
Subsection	Sector characteristics of the climate, continentality	Subtropics extra arid (steppe) continental	
Family	Regional characteristics at the level of natural and geographical region	Subtropics the Central Asian extreme continental - 1-31	
Class	High-category geomorphological structures (at a mega-form level of the relief), a kind of natural zoning (horizontal or elevated)	Highland - 1-17	Plain - 18-31
Subclass	Layers of the relief height (at a macro-form level of the relief)	High - 1-4, medium-high - 5-12 and low - 13-17 hills	Piedmont lowland - 18-31
Group	Water and geochemical order, moisture ratio	Automorphic - 3-17 Semi-hydromorphic - 1-2	Automorphic - 18-25 Semi-hydromorphic - 26-28 Hydromorphic - 29-31
Type	Zonal characteristics of the landscapes (soil and geoclimatic features at the level of soil types and classes of plant formations)	Grassy steppe (pasture) - 1-4 Forest-flood plain-steppe (mountain land) - 5-9 Dry steppe (hilly land) - 10-17	Desert-steppe (hilly) - 18-31

Subtype	Soil and bioclimatic characteristics (at the level of the soil subtypes and the plant formation subclasses)	Short-grass glacial and nival deserts - 1 High-grass plains - 2-4 High plain-vegetable-low bush-spruce forests - 5- 9 Ephemeral steppes - 10-12 The Turan forb steppes 13-17	Ephemericephemeral desert steppes -18-28 Thicket - 29-31
Category	Genesis and morphology of the relief (genetic types of the relief)	The tectonic denudation and the exaration bridge distributors and slopes - 1 The tectonic erosion-denudation slopes, pediments, - 2-3, 5-9,13-15,17 The tectonic denudation plateaus - 4 The tectonic denudation peneplains - 16 Erosion-accumulative terraces - 10-12	Erosion-accumulative terraces - 18-29 (I-29; II-27,28; III-26,25,24,23, 22; IV-21,20,19,18) Erosion-accumulative floodplains - 30 Erosion beds and islands - 31
Subcategory	Genesis and lithology of deposits on the ground surface	Magmatic, metamorphic deposits; eluvial - 1,4,16, dealluvial - 2, 5-8,12-15,17 colluvial - 3,9, proluvial and alluvial rocks -10-11; Abyssal rock, faceted cobblestone, small-stone, skeletal-loamy, skeleton-crushed-sandy, loess-like and loess deposits	Deposits; proluvial and alluvial rocks - 18-31; Loess, loess-like sand-loam crushed-stone deposits
Variety	Similarity of the dominant natural boundaries (similarity of soils, plants, terrains and deposits)	<i>For example:</i> 22. Loess-like deposited plains having the even surface with crops on typical irrigated fallow lands	

Not highly disturbed terrains are 29th terrain type on I terraces above the floodplain, 30th and 31st terrain types located on flood plains and river beds, and are used as pastures. There is a partly irrigated arable farming, i.e., rice is grown. The disturbed lands mainly consist of marshy areas and quarries, where sand and crushed stone are quarried for construction. The disturbance degree of the 4th terrain type on high-altitude tectonic peneplains, 5th, 6th, 7th and 8th terrain types in the mountains of medium height, 10th, 11th, 12th, 13th, 14th and 15th terrain types related to the mountain and valley and low-mountain piedmont flat terrain type is also considered as not highly disturbed. The disturbed parts of these terrains are mainly related to natural phenomena, and consist of landslides and ravines, rocks and soot in some places within small areas. In addition to the above mentioned natural processes in the terrains of the Chatkal and the Kurama ranges, there are also anthropogenic factors, i.e., the mining industry. Quarries, dumps and waste banks in such terrains occupy considerably larger area, and become the causes of moderate to severe degrees of disturbance of terrains. The 5th terrain type on the northwestern slopes of the Pskem Range (the Machitosgonsay, the Ispaiysay, and the Kaptarkumush valleys) is highly disturbed by landslides and soot, the 5th terrain type on the northwestern slope of the Maydantal range (Tekeshsay Valley) and on the northwestern slope of the Pskem range (Koksu valley) is highly disturbed by soot. The remaining of the 5th terrain types are considered as slightly disturbed.

On the 6th terrain type located on the north-western slope of the Ugam range (Novalisay, Teparsay, Akhalasay valleys) and on the northwestern slope of the Pskem Range (Koksu Valley), the soot is widespread being the cause of the average disturbance degree of terrains. On the 6th terrain type located on the northwestern slope of the Pskem Range (Mulala, Aksarsay valleys), soot and landslides are widespread that occupy 14-15% of terrains and considered as highly changed. The remaining 6th terrain types are considered as slightly disturbed.

Landslides and precipices are relatively widespread on the 7th terrain type of the northern slope of the Kyzylnur mountain (Boshkyzylsay valley), occupy 10.8% of its area and considered as moderately disturbed. The rest of this terrain type is considered as slightly disturbed.

10th, 11th, 12th terrain types on terraces with widespread erosion-accumulative relief forms of medium-altitude mountains are also included into a slightly disturbed group. These terrains are developed where villages, gardens and vineyards are sprung up. The sustained reclamation activities against various natural processes are carried out in areas under crop and villages. Therefore, the disturbed parts of these terrains are distributed in very small areas, and mainly ravines, landslides, and sometimes landslides are found. Among the anthropogenic factors, there are mainly places with accumulated construction and household waste.

Moderate and severe disturbances had been occurred in some 10th terrain types. Multiple soot on the Urungachsay terrain and widely spread landslides on the terrains where the Chimgan and Khumsan villages are located have led to the fact that the disturbed lands in these terrains occupy a larger area and the disturbance degree of the terrains is considered as severe. The disturbance degree of the remaining part of

this terrain type is defined as not strong.

The moderately disturbed terrains occur mainly in certain parts of 2nd, 5th, 6th, 7th and 9th terrain types on medium and high altitude mountains. Causes of their moderate and severe disturbances were mainly soot and landslides, and on the 7th terrain type were ravines and landslides.

Highly disturbed terrains occur mainly in the 1st and 3rd terrain types and in the certain 2nd, 9th and 17th terrain types.

1st terrain type is located in the glacial-nival zone, high watershed parts over 3400-3600 m of the Ugom, the Pskem, the Chatkal and the Kurama mountains, therefore their formation and development are under strong influence of perpetual snows and glaciers, as well as from waters, temperature fluctuations generated by them. Therefore, a significant part of these terrains are not suitable or suitable to a very little degree for economic use due to large areas covered with soot, hard rocks. In view of this, these terrains are highly disturbed.

Even the 3rd terrain type does not occupy large areas it covers the places adjacent to the watershed of the valleys with small rivers, originating from the high-altitude mountains. Their significant part (from 12.8% to 59.9%) consists of soot matters, hard rocks, that are unusable for economic use, and are considered as highly disturbed.

The 2nd terrain type on the southwestern slopes of the Ugam range, on the southwestern slopes of Maydantal mountain, on the northwestern slopes of the Pskem range, on the north-western slopes of the Koxsu range, and on the terrains adjacent to the watershed of the Babaytag and Babaiyob mountains are highly disturbed by soot and landslides due to a relatively large slope of the relief.

Landscapes of the 9th terrain type on the north-western slopes of the Pskem range are highly disturbed by soot.

17th (17-7) terrain type located near the Pskent town is highly disturbed mainly due to precipices or more specifically due to irrigation erosion. The Urtaaryk having the length from the Akhangaran river to the Pskent town and the circular fields and its streams, transformed 14.8% of the area of this terrain into the precipices.

Extremely disturbed terrains occur in the certain 1st, 2nd, 3rd, 9th, 16th and 17th terrain types.

Landscapes of the 1st terrain type, occupying the watershed areas of the Pskem range, the watershed places of the Chatkal range are considered as extremely disturbed. 31.7%, 21.3% and 20.9% of these terrains cover soot, hard rocks, perpetual snows and glaciers, respectively.

Most of the landscapes of the 2nd terrain type on the southwestern slopes of the Ugam range, on the northwestern slopes of the Pskem range (21.9%, 30.4%, 31.5%, 21.8%, and 23.1%, respectively) are covered with soot, landslides. Therefore, it is considered as an extremely disturbed terrain.

The huge part of the landscapes of the 3rd terrain type on the southwestern slopes of the Maydantal range, on the northwestern slopes of the Pskem range (59.9% and 34.4% respectively) is covered with soot, hard rocks, landslides, and is considered as a highly disturbed terrain.

The landscape of the 9th terrain type on the northwestern slopes of the Pskem range is considered as highly disturbed as a result of formation of the canyon due to the strong erosion of the Machitosgansay valley, that is, 28.5% of the territory is covered with soot and hard rocks.

16th and 17th terrain types are mainly distributed in the Akhangaran valley and related to moderately, highly and extremely disturbed terrains. The 16th terrain type in the Almalyksay basin is considered as extremely disturbed due to the fact that 89.5% of the area is occupied by the Kalmokkyr quarry. 26.6% of the area of the 17th terrain type is occupied by the Kalmokkyr and the Dalneye quarries and their dumps.

The 30th terrain type in the Akhangaran valley is considered as highly disturbed due to the fact that 37.3% of the area is occupied by the waste banks from the Almalyk Mining and Metallurgical Complex and the settling basin for waste water of this complex.

3 Conclusion

Both natural and anthropogenic factors being the reasons for the transformation of the terrains of the Tashkent region into unfit condition for economic use, are changed as they approach the mountain watersheds from the piedmont plains, obeying the regularity of altitudinal zoning. If the anthropogenic factors play an important role on the terrains of the piedmont flat parts, then in rising up the share of natural factors increases, and the terrains of the mountain watersheds and the adjacent territories are mainly under the influence of the natural factors.

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