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## ECONOMY OF LAND DEGRADATION IN THE REPUBLIC OF TAJIKISTAN (Fayzabad district)

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## Fayzabad district

- located in the Rasht valley, in the southern slope of the Karatag ridge, 50 km east of Dushanbe. In the north and west it borders with the Vahdat district, in the east with the Rogun district, in the south - with the Nurek district of Khatlon province. The territory of the district is 874.11 km<sup>2</sup>
- The district of republican subordination in the Republic of Tajikistan. Founded on June 14, 1931. The district center is the urban-type settlement Fayzabad.
- The population of the district is 93325 thousand inhabitants (as of January 1, 2015).
- Altitude from 1100 m to 3300 m.
- Subtropical moderately warm, characterized by short warm winters, hot, dry and long summers.
- The frost-free period is 280-290 days
- The average annual air temperature in the valley is 14.2 ° C.

### Soils:

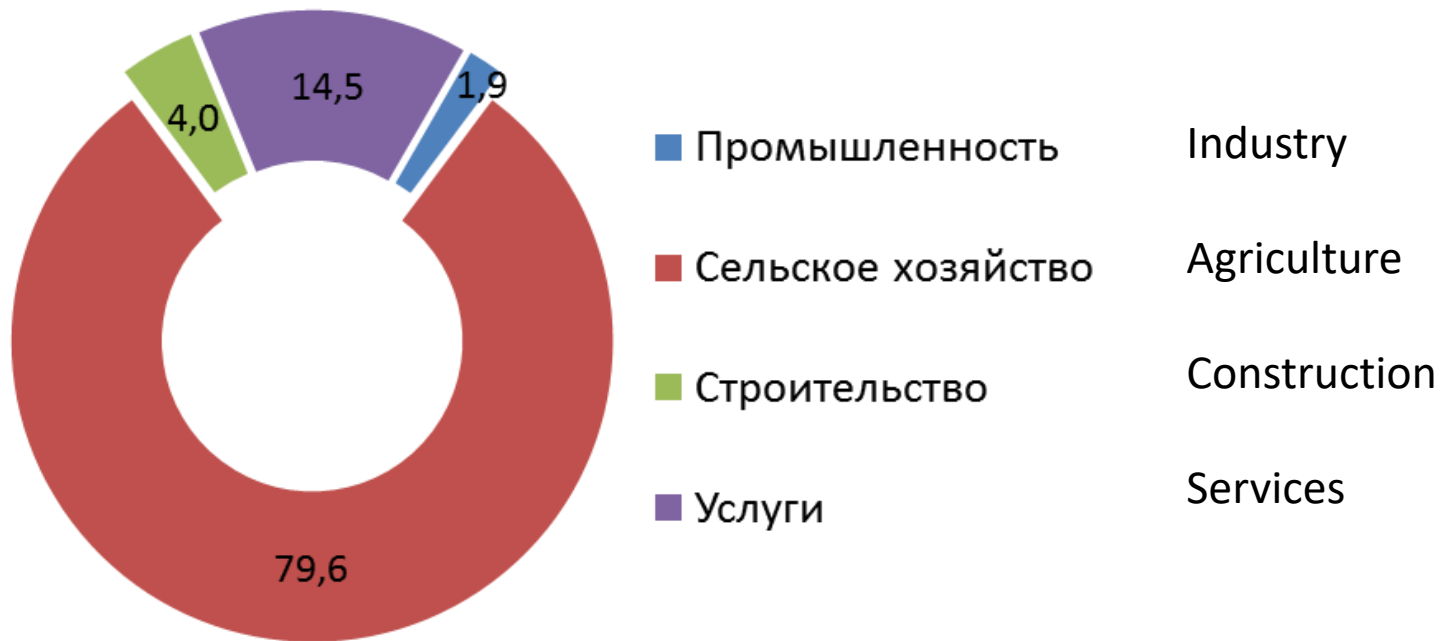
- Serozem (from a height of 500 to 1,600 m)
- Mountain brown carbonate soils (from 700 to 2000 m)
- Mountain brown typical soils (from 1600 to 2900 m)



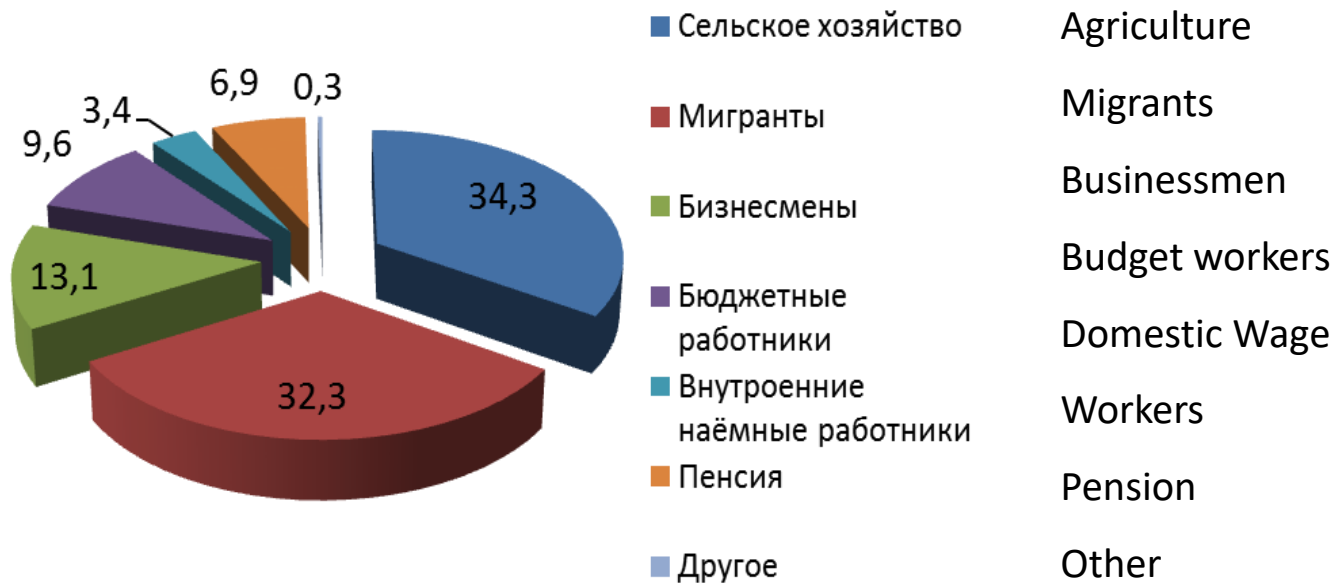
## Information on current land use practices and their impact on land

<i>Indicators</i>	<b>UoM</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
Cultivated area	ha	<b>7785</b>	<b>7836</b>	<b>7841</b>
<b>Production of agricultural products:</b>				
cereal	t	6236	7080	7293
vegetables	t	10465	9927	10553
potatoes	t	10857	13273	13823
fruits	t	2432	1205	1551
melons	t	55	57	57
stern	thousand units	11981	11905	13070
Meat production	t	1410	1224	1291
Milk production	t	12500	13349	13404
Honey production	t	53	55	60
Egg production	thousand pcs	89132	98229	98316
Wool production	t	43	45	48
Cocoon Production	t	4	4	4

## Key indicators of socio-economic activity, over the past 3 years, %



# The structure of income of the population of Fayzabad district, %



## Agricultural land is vulnerable to natural and man-made factors leading to degradation:

### *Natural factors:*

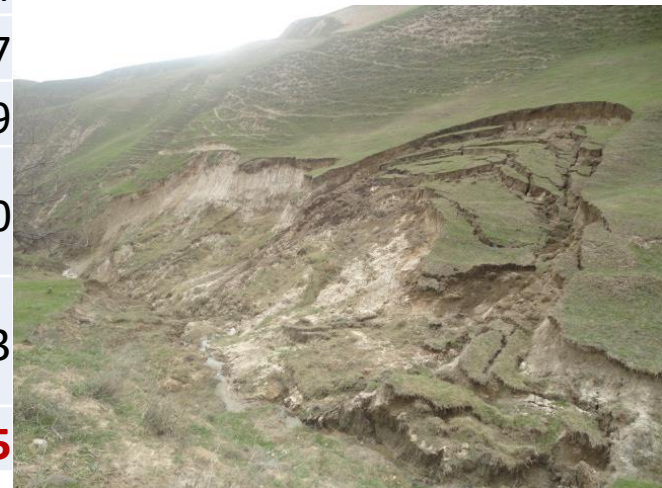
- Low land;
- Water shortage;
- Wind erosion;
- Stony soil;
- Low soil fertility;
- Soil compaction;
- Strong disaster susceptibility;
- Landslide and mudflow phenomena;

### *Anthropogenic factors:*

- Not perfect methods of applying irrigation equipment and technology;
- Flushing out the fertile soil layer;
- Soil exposure to irrigation erosion;
- Salinization and waterlogging of soils;
- Soil pollution by chemicals;
- Poor operation of irrigation and drainage networks;
- Inadequate use of crop rotation and pasture rotation;
- Reducing the content of organic matter (dehumification) of soils;
- Lack of reclamation of degraded lands;
- Felling of trees and shrubs
- Great load on pastures;
- Haphazard grazing;
- Increase in weed and decrease in useful vegetation on pastures;
- Poverty of the population;
- Shortage of energy resources and energy resources;
- Improper land use practices, etc.

## The value of ecosystem services in the study area

Services	Total economic value, thousand TJS
Food for livestock (pasture)	15 141,0
Food (cereals, vegetables, etc.)	184 477,7
Fuel (firewood)	18,3
Drinking water)	362,2
Fiber (wool, cocoon)	283,4
Pollination	1 808,7
Carbon conservation	346,9
Water regulation (flood control)	1 019,0
Biodiversity (hunting value)	17,3
<b>TOTAL:</b>	<b>203 474,5</b>





## Current land use practices and their impact on land



- In total, according to calculated ecosystem services, the economic value of the site is within 203.5 million TJS. At the same time, for each hectare of the area there are 2.33 thousand TJS of economic benefit, and for each resident of the region 2.13 thousand TJS
- In 2014, the lost profit from all degraded lands amounted to 3.3 - 3.6 million TJS for the site



# Alternative land management scenarios / improved land management practices

No	Description of alternative scenario		Ecosystem services that will be impacted
	Targets	Specific events	
1	Increase food production	1. The use of resource and energy-saving technology (No-Till);	1. Food;
		2. Creation of intensive orchards (costs of creating orchards)	2. Maintaining soil fertility;
			3. Water regulation
2	Preservation of agrobiodiversity and prevention of overgrazing of pastures, reclamation of pastures, preservation of soil erosion	1. Sowing perennial grasses and improving grass stand and pasture productivity (costs for the purchase and sowing of seeds).	1. Soil; 2. Food; 3. Water; 4. Erosion control



## Cost-Benefit Comparison

<b>Alternative 1</b>	Description of alternative scenario		Post-Exposure Economic Assessment
Increased agricultural productivity	Increased food production	1. The use of resource and energy-saving technology (No-Till), on 10% of the area	Net profit at NPV with a 10% discount rate = <b>8093</b> thousand TJS
		2. Creation of intensive orchards, on 10% of the area	Net profit at NPV with a 10% discount rate = <b>78959</b> thousand TJS
<b>Alternative 2</b>			
Pasture Improvement and Emergency Prevention	Preservation of agrobiodiversity and prevention of overgrazing of pastures, reclamation of pastures, preservation of soil erosion	1. Sowing perennial grasses and improving grass stand and pasture productivity, by 10% of the area	Net profit at NPV with 10% discount rate = <b>25645,7</b> thousand TJS

## Barriers to adoption of technologies for sustainable land management (SLM) and recommendations

- For a more rational use of ecosystem services, heads of relevant local structures are encouraged to use resources that are more efficient in order to maximize the benefits of using ecosystems and at the same time preserve them from degradation.
- Due to the ineffective management of pasture resources, the State enterprise “Pasture and Land Reclamation Trust” should develop a more effective approach to management planning, as well as to financing planning and develop its capabilities in the implementation of tasks based on recently approved national guidelines.
- The Ministry of Agriculture of the Republic of Tajikistan should introduce more widely the practice of creating intensive gardens using environmentally friendly technology to implement the Government Program for the development of horticulture and viticulture in the Republic of Tajikistan for 2016–2020 dated December 30, 2015 (No. 793).

**Thanks for your attention!**