

APPLICATION OF LAND-INFORMATION SYSTEMS OF THE REPUBLIC OF BELARUS IN THE MATTERS OF RURAL SETTLEMENT

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Abstract: In this work the application of the land-information systems of the Republic of Belarus in the matters of rural settlement on example of Glusck district of the Mogilev region is considered.

Key words: *Land Information Systems, rural settlement*

Introduction

At present in Belarus one of the major economic problems is the drastic change of the previous socio- demographic and economic situation in rural areas.

The rural areas occupy 99 % of the territory of the Mogilev region. More than 290 thousand persons live in the country. Region villages include more than 3 thousand rural settlements, 186 village Councils, 311 agricultural organizations with more than 50 thousand workers [1].

The countryside isn't notable for the variety of spheres of labour application. The prevailing part of the population work in one branch – agriculture, which for some years has been in critical financial conditions, wage level 49 % below than in industry.

The deterioration of social sphere and the low level of motivation of agrarian work have caused the considerable rural depopulation. It occurs because of increase in its natural loss, (death rate exceeds birth rate almost three times), and in connection with high migratory mobility and labour activity of the rural population, its involving in new non-agricultural kinds of activity.

Many dying and degrading remote villages were the result of long depopulation. But the central farmsteads of agricultural enterprises have kept alive, i.e. there was the polarization of settlements.

Thus, by structure of settlements the rural moving of the Mogilev region can be characterized as small- settled, and by population distribution - as sufficiently concentrated.

This research objective is the improvement of scientific-theoretical regulations concerning rural settlements with a glance to computer technologies.

Results

At present the problem of scientifically grounded prospects of the development of rural settlements is of great importance. The first step on the way of rural settlement improvement has been the beginning of experimental building in the country according to the problems put in the National Housing Programme (1996), in which the housing renewal by means of building of 4-5 houses in each sector annually was provided.

At present in «Village Revival and Development Programme» the basic socio-economic priorities and problems of village revival have been accurately defined, the solution of two blocks of basic questions - social and productive-economic is planned.

The social block – activities for the revival of social sphere in full force were developed, i.e. it is offered to realize social standards (central water supply, sewerage, standpipes, % of street illumination, % of asphalted covering streets, standards for children provision with preschool and school establishments were developed, etc.). Planned activities are realized in agrarian towns - - the administrative and territorial unit of base level, the territory of which is the historically settled administrative formation, having the sufficient demographic potential, and also the central farmstead of the agricultural organization [1].

In the productive-economic block the activities for the agricultural production intensification, the increase of its economic efficiency are planned.

For accounting, analysis, operational administration of rural territories it will be more reasonable to use instruments of GIS technologies.

The land-information system of the Republic of Belarus is created in the borders of areas and settlements, regions, republic territories, has the corresponding three-level structure and consists of local land-information systems, regional land-information systems, the central land-information system.

Information contents of LIS is made by databases of Central, Regional and Local land-information systems which contain the information about the modern, perspective and retrospective condition and the use of land resources and consists of spatial and attributive data of land use planning, land-cadastral and topographical content.

The spatially-attributive information of LIS database of the Republic in time aspect is organized in the form of coverings, which, in turn, depending on its information content are organized in the form of information layers :

- administrative-territorial units;
- turning points of the land borders;
- land borders;
- lands;

- land use restrictions;
 - lands (lands contours);
 - reclamation state
 - soils;
 - crossing of land contours, restrictions, lands and land reclamation;
 - communications;
 - fences;
 - conventional objects and symbols;
 - summaries;
- sheets of the land-cadastral map [2].

The present land-information system of the Republic is intended for the problem solving of land management. However, it is possible to expand a spectrum of LIS application. For this purpose on the basis of the local land-information system of Glusk district of the Mogilev region it is offered to create additional layers, which form GIS “agrarian towns” of mentioned district.

The first information layer contains general data about the settlement. In its layer there is information about population quantity, number of court yard, semi-age population structure, explication of village lands, planned form of the building of rural settlement, industrial village type and remoteness from the urban cores.

The second layer – the indicators of social standards:

- central water supply;
- standpipes ;
- % of street illumination;
- % of streets with the asphalted covering;
- preschool establishments;
- elementary schools;
- primary schools;
- secondary schools;
- shops;
- consumer services centre;
- bathhouse;
- recreation centre;
- outpatient clinic or feldsher-midwife station.

The third layer – rural settlement zoning (fig. 1):

- residential area;
- sanitary protection area;
- production area;

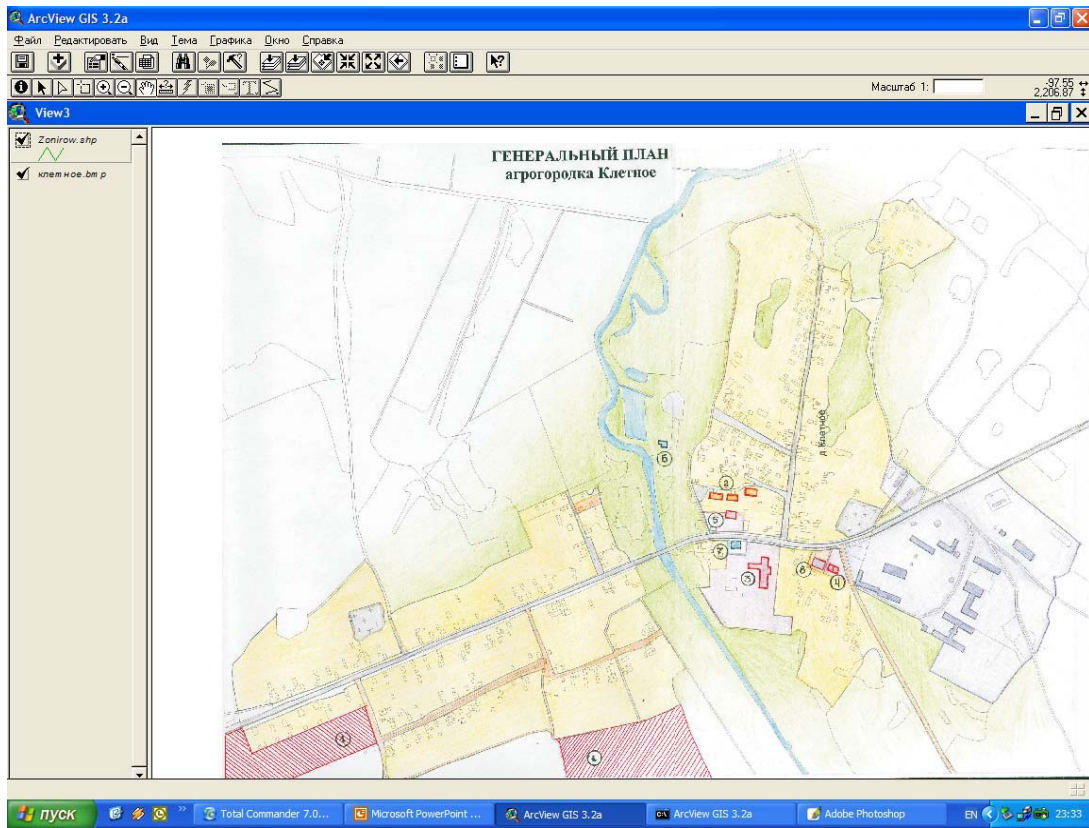


Figure 1. Rural settlement zoning

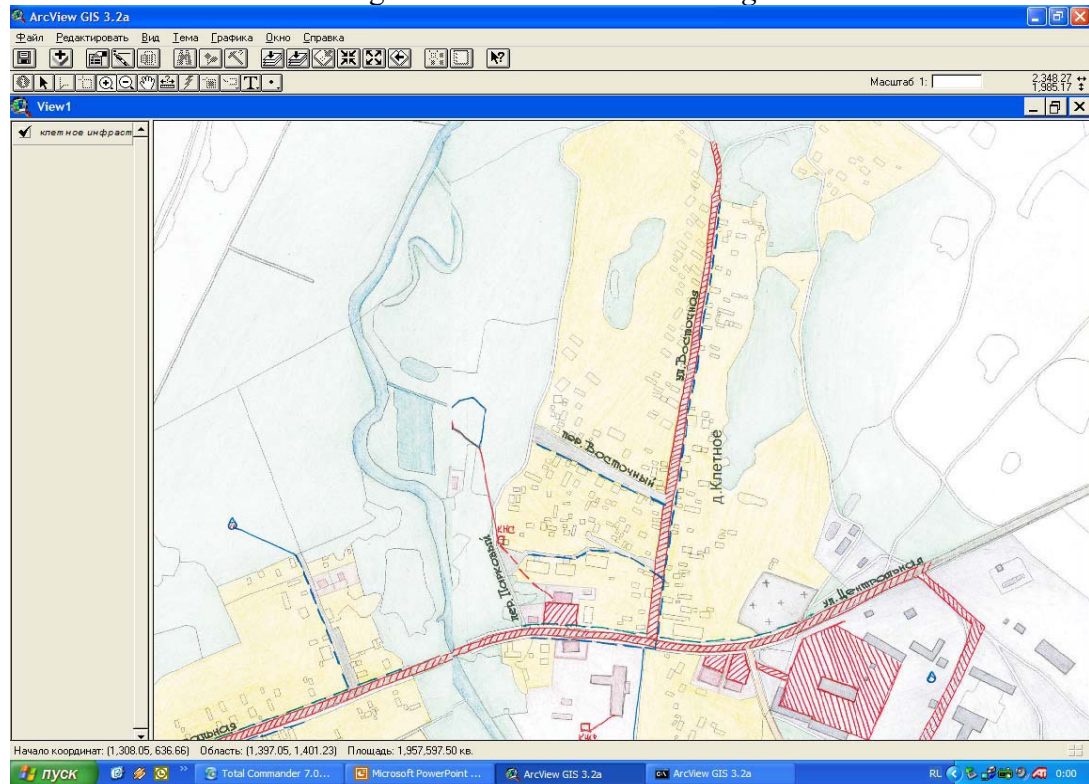


Figure 2. The fragment of the scheme of the engineering development of the territory

In the fourth layer the detailed information about lands, buildings and their owners contains:

- name of the citizen or public facility;
- land area;
- purpose of homestead land;
- property or forms of management on the lands and buildings;
- date of parcellation ;
- year of building;
- used building materials of existing constructions;

The fifth layer – the engineering development of the territory (fig. 2)

With the usage of hot links the binding of graphics documents to the vector map has been performed. In particular the binding of the general plan to the layer the common data has been performed.

In the third layer it is reasonable to perform the binding of each building to the vector map.

With the usage of stored information it is possible to solve various tasks. The vivid example is the execution of the Decree of the President of the Republic of Belarus «About measures for streamlining and decrease of ramshackle houses with utility structures in the rural area». Having the graphics and attributive database it is possible to make the reasoned decision on further land use, and also buildings and constructions allocated on it.

Great importance has the control over the land-laws execution, about out-of-time targeted land use.

For purposes of the scientific substantiation of the Village Revival and Development Programme of Glussk district, the classification procedure of settlements by the help of the cluster analysis was developed. The results were analyzed with the usage of ArcView facilities. As a result a group of villages earlier being stagnant area, but appeared to be in walking distance zone from agrarian towns was pointed out. These settlements will further develop and make a separate group of rural settlements - villages-sputniks (satellites). Affected zones of agrarian towns, as the centre of the primary link of the rural settlement, are formed as a rule in a radius of 20-30 minute walking distance of other settlements to it. It provides the population immediate access to the production means and the consumer products of daily demand. Walking distance zones were installed with the help of tools of buffer zone (fig. 3).

The circle of solved tasks is not limited to above-listed developments and will be further improved.

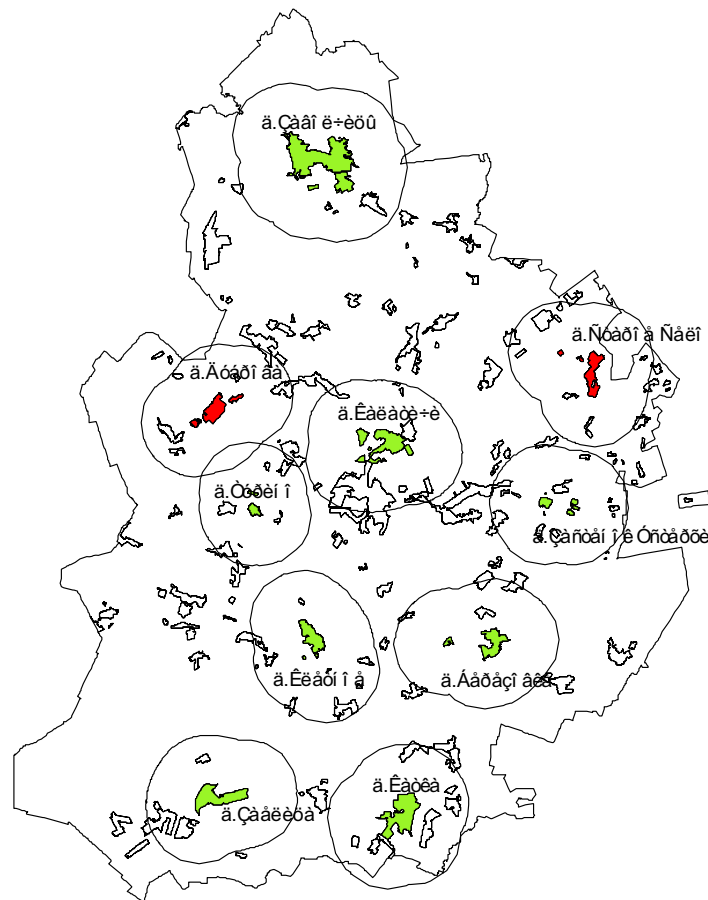


Figure 3. Supposed placement of agrarian towns and its walking distance zones

Conclusions

Thus, for accounting, analysis, operational administration of rural territories it is offered to use materials of the land-information system of Local level with additional layers: the common data about settlement, metrics of social standards, rural settlement zoning, detailed information about lands, buildings and owners, engineering development of the rural territory.

By means of buffer zone tools the affected zones of agrarian towns of Glusk district of the Mogilev region of the Republic of Belarus were pointed out. The separate group of rural settlements - villages- sputniks-was pointed out.

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