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## **The land reallocation accuracy substantiation in Ukraine**

Currently, there is an urgent need for the existing land tenure and land ownership improvement in Ukraine [1, 2]. Land reallocation is one of the most challenging aspects of the land tenure improvement due to the complexity of land reallocation substantiation. One of the key land reallocation aspects is the required accuracy of the reallocated land plots formation.

Up to now, the key land reallocation stages and reallocation algorithms have been considered [3], however, land reallocation accuracy has not been scrutinized carefully enough. A number of factors should be considered at the existing land reallocation methodology [4], it is still subject to criticism and significantly depends on the local conditions [3]. It is suggested to use system approaches, theory of surfaces numerical methods and land reallocation optimization models to consider the key land plot characteristics at reallocation.

The research is aimed at the search of mechanisms which can allow to gain the desirable land plot reallocation accurateness. Let us scrutinize the key impact factors to define the mechanisms of the increase of the topographic and geodesic and cartographic work accurateness at land reallocation (Fig.1).

The topographic and geodesic and cartographic work accurateness is influenced by the typical uncertainties. Their sources are:

1) Initial data – the accuracy of the determination of the geodetic control network stations placement.

2) Devices – the accuracy of the device, i.e. the accuracy of the electronic total station, transit, level, GPS.

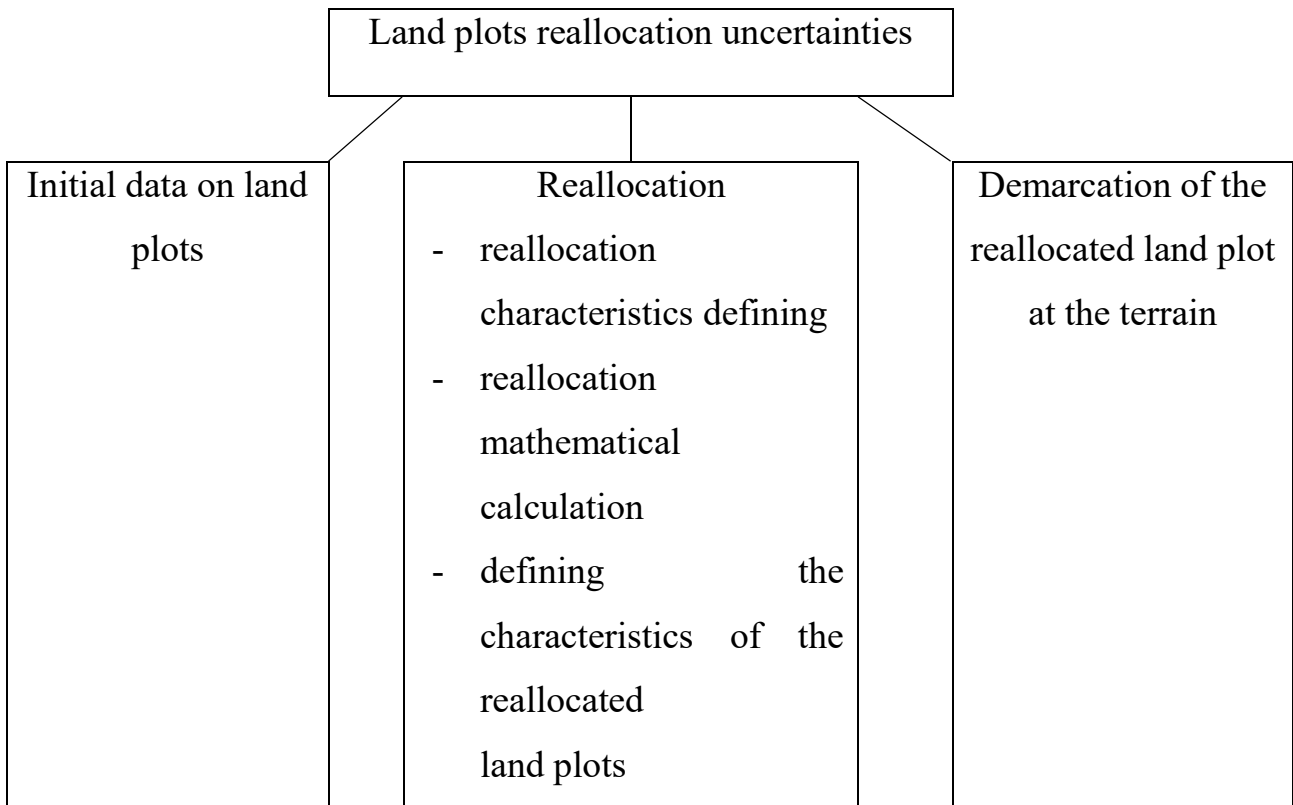


Fig. 1. Uncertainties at the key land plots reallocation stages

3) Operator – uncertainty of centering, targeting and sampling; depends on the personal qualities of the operator.

4) Environment – uncertainties of refraction, restricted visibility or the number of satellites (for GPS).

One of the most significant uncertainties influencing the topographic and geodesic and cartographic work accuracy is the uncertainty of the State Geodesic Network stations placement, i.e. initial data uncertainty.

Initial data accuracy is influenced by the following factors:

1) the incompleteness of the State Geodesic Network of Ukraine, created as a constituent of the State Geodesic Network of the USSR;

2) uncertainties on the edges of the projection zone, especially in cases the land plot is placed on the edge of the zone or in different zones;

3) transformation of coordinates from one coordinates system to another;

4) usage of the urban coordinates systems in some urban areas, that makes it impossible to manage land surveying in the unified state coordinates system.

The accuracy of the topographic and geodesic and cartographic work can not be better than the accuracy of the initial data. At land reallocation, the insufficient accuracy can threaten land ownership right, complicates the process of the voluntary participation of land owners and land users.

#### References:

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