

## Project Summary

Explanations of Russian farming's failures have typically invoked features derivative of the socio-economic order such as incentives, ownership, and communal forms. However, since low efficiency and poor production outcomes have survived at least three changes in the dominant socio-economic order, certain background causes of agriculture's poor performance apparently have not been addressed. This project explores the idea of objective development constraints whose neglect could be a root cause of the problem. The ultimate goal of the project is to uncover these constraints with strong spatial dimensions, to understand their implications, and to evaluate prospects for Russia's agricultural development through the prism of these constraints.

**Step 1:** Three constraints are considered as an initial step in the project: physical environment, burden of space, and demographics. Specific variables informing each of these constraints will be selected and explained. Their juxtaposition by virtue of described Geographic Information Systems (GIS) procedures helps delimit marginal lands whose abandonment may favorably influence the overall performance of Russian agriculture.

**Step 2:** This step will include the exploration of major factors of agricultural variance within non-marginal spaces. These factors are fertility of the soil, accessibility to major urban cores, and market conversion. The first two factors will be analyzed from the perspective of their contribution to economic rent, a composite measure of surplus productivity. The comparison of these contributions will be conducted at several points in time, and several hypotheses will be tested, including the hypothesis of the urbanization-driven spatial realignment of rural population. The measurement of the third factor, market conversion, is based on selected criteria, and a hypothesis about this conversion's relationships with major components of economic rent is tested.

**Step 3:** This step will focus on exploration of core-periphery gradients in land use intensity. These gradients underlie concentric rings of outwardly declining intensity around Russian cities – the repeatedly established fact. The hypotheses to be tested concern the relationships between these gradients and city size, dominant biomes, and the degree of market conversion.

**Step 4:** This final step will be devoted to the prospects of Russian agricultural revival, prospects that are in line with major factors of agricultural variance and with the concepts of agro-industrial integration (commodity chains, food complex, etc.). Whereas GIS is the analytical tool that will be applied in Step 1, regression analysis will be the primary method applied in Steps 2 and 3, including econometric production functions. The study area in Step 1 will be European Russia. Steps 2-4 will be conducted on three case-study regions.

The project will challenge aspatial explanations of Russian agricultural travails and contribute to knowledge about transitioning to market economy. The project will establish an example of a replicable framework for presenting both the data and results of our spatial statistical and cartographic analysis. The databases assembled in the process of this research will be fully documented and published in a software-independent format, queryable across the Internet and useable by other researchers in the field. This design will contribute to the ongoing development of research infrastructure to enable integration of results from diverse area and case studies.