Russia Activity 3 - Command Economy
(adapted from ARGWorld activity J – Association of American Geographers)

Overview

Students act as planners in the Soviet command economy. They use a CD simulation in two ways: to run some "experiments," and to choose locations on a map for different land uses. In doing so, they learn about comparative advantage, the progressive nature of environmental limits, the interplay of product weight and cost of transportation, and the displacement of lower-value uses to less favorable locations. By doing this simulation, students also learn that much of the Soviet Union was too cold or dry for efficient production of food crops, which in turn made food self-sufficiency a difficult task for Soviet planners.

Learner outcomes and standards

After doing this Activity, a student should be able to:

> 1) design a procedure for an "experiment" to test relationships between an effect (yield of a crop) and a cause, such as low precipitation, short growing season, or distance from market (Standard 15: how physical systems influence human systems);

> 2) identify and locate the major population centers of Russia and its neighbors (Standard 12: identify factors involved in the development of cities and rural settlements);

> 3) explain why historic differences in food production between Russia and the United States were not entirely due to differences between Communist and capitalist economic systems (Standard 17: how geographic contexts have influenced events and conditions in the past).

> 4) understand how a growing population can lead to changes in the area used for particular crops (Standard 5: how regions change over space and time)

This Activity fits a unit on physical geography, economic geography, or world geopolitics.   It can also fit units on world history or the history of Europe, Asia, or the United States.   The attempt to discover rules of land value can make this Activity a lesson in observation and applied mathematics.

Requirements and resources

Time: two or three class periods, depending on whether students make additional graphs for presentation

The multimedia unit on the Command Economy is essential for this activity; it can be supplemented by CD units Climagraphs (climate around the world), Land Use Decisions (what people should consider in deciding how to use land), Tea (inputs and outputs from commercial agriculture, Coffee Co-op (another way to plan the production of food), Moscow Rings and Land Value in Moscow (additional background information about Russia).

Classroom procedures

1) Discuss land-use decisions or the economics of food production; Part 1 of the CD can help here.

2) Explain that students should imagine that they are planners trying to decide which crops to grow in specific parts of a large country (in some classes, a teacher might choose not to identify the country until after the simulation, or to make country identification part of the activity).

3) Have students run the simulation in Part 3 of the CD unit (or run it yourself with a projector to focus class discussion). To look at "present" conditions, students could skip question 12 on the Response Sheet. To simulate the impact of population growth on regional land use, they could compare the patterns and answers for questions 12 and 13

4) Get students to make generalizations about the influence of precipitation, growing season, slope, and distance. By doing both questions 12 and 13, students gain a greater understanding of the need for and the limited success of the centrally mandated "Virgin Lands Programs" in the Soviet Union during the 1950s and 1960s. Many analysts view that episode as an early symptom of the basic problems that led to the eventual downfall of the Soviet system.

5) Debrief by getting students to make a logical distinction between the mechanical facts of the simulation (growing season requirements of cotton, profitability of wheat, etc.) and the affective notions (central planning is hard work, even in a simplified environment; decisions often have to be made with incomplete knowledge; etc.)

Setting up the activity

Ask students to describe the main differences between the Communist and capitalist economic systems. Note that a number of American politicians, including several Presidents, cited the Russian Grain Deals of the 1970s as proof of the superiority of the American economic system ("look, the Soviet Union cannot even feed itself!") Then ask whether that conclusion is valid, given other differences between the two countries.   Explain that this Activity is about using geography to help interpret the differences in food production between Russia and the United States.

Alternative introductions

This Activity can also be started by having students discuss things that a farmer must consider in deciding what to plant in a particular field. The list can be quite long (as illustrated by an interactive animation in Part 1 of the CD unit). Try to get students to classify those factors into categories, such as:

environmental conditions – rainfall, growing season, soil, slope, etc.

cultural considerations – food preferences, taboos, prices, etc.

economic forces – suppliers, purchasers, trade arrangements, etc.

characteristics of the field itself – size, shape, fences, distance from road, etc.

personal traits of the farm operator – skill, money, equipment, family, etc.

Progress check

Response Sheet maps will have a fairly large number of land uses clustered around Moscow if students understand the interplay of rainfall, growing season, and distance. Transparencies 5 and 6 are samples of high-scoring maps. Top score on question 12 is a bit above 370; for question 13, about 485.

Answers to questions on Response Sheets
Land Use in Russia and Its Neighbors

T **F** 1) Wheat requires a longer growing season than cotton.

> *False – wheat can grow around Moscow and eastward into Siberia, but cotton can grow only in the a few places in the southern part of the country.*

T F 2) The western part of Russia has more favorable land for food production than the east.

> *True – many crops can grow in the area between Moscow and the Black Sea, but only a few crops can grow in only a few areas in the eastern part of the country.*

T F 3) Corn-hog farms require more rain than wheat farms.

> *True – wheat can grow farther inland, away from the sources of moisture.*

T **F** 4) Fruit orchards are very tolerant of adverse environmental conditions, and therefore they can be profitable almost anywhere in the country.

> *False – these crops are very sensitive to both dryness and cold, and therefore can grow only in the warm and rainy area near the Black Sea.*

T **F** 5) Wheat farms produce a heavier product than dairy farms and therefore should be located closer to the customers in order to reduce costs of transportation.

> *False – dairy farms lose profitability very rapidly as you go away from a market city such as Moscow; wheat can be profitably grown in remote parts of southern Siberia.*

T **F** 6) Nomadic herding is a profitable use of land. For that reason, herders usually get to choose the best land, and other users must settle for colder or drier places.

> *False – nomadic herding is not very profitable even in the best environments, but it can tolerate colder and dryer conditions than other land uses.*

_____ 7) About how many "points" does it cost to transport wheat one square to the big city?

> *Roughly one point per square – test this by going east south of the Urals.*

_____ 8) About how much rain does corn seem to require in order to be profitable?

> *30 centimeters, but 40 or more is better*

_____ 9) About how long does the growing season have to be for cotton to be profitable?

> *About 7 months*

10) What environmental conditions does wheat seem to need in order to be profitable?

> *3 months growing season and 25-30 centimeters of rain*

11) Arrange these four land uses in order of the length of growing season that they seem to require; corn, dairy, cotton, herding.

> Longest   _cotton_   _corn_   _dairy_   _herding_   Shortest

Debriefing

As with any simulation, a strong debriefing session is needed to ensure maximum pedagogic benefit. This debriefing should focus on these major points:

1) The locations of major crop regions. Fruits and other specialty crops are grown near the Black Sea, corn in the Ukraine, dairy around Moscow, wheat eastward toward Novosibirsk in a fairly thin strip between the cold taiga and the dry grasslands, cotton around Tashkent, and economically impotent (impotent, not important!) nomads on the cold and dry margins.

2) The progressive nature of environmental limits. Yields tend to decrease gradually as you go farther into regions with less moisture or shorter growing season.

3) The importance of transport costs. Heavy products such as fluid milk have to be produced close to customers, whereas easy-to-transport products such as cotton can be grown farther away.

4) The tendency for high-profit land uses to get first choice of land, which leads to a "geographic displacement" of less-profitable land uses to less-favorable locations. Through time, as population grows, high-value land uses will push lower-value uses farther away from the economic center.

5) Centrally planned and market economies differ in several ways; this activity helps clarify the role of information as a guide to decision-making. See Concluding the Activity, below.

Extension and enrichment

One straightforward extension is to have students do research and prepare presentations or posters on specific land uses – the presentations should focus on examining the mix of factors that influence the locations where a particular crop or animal is produced.

A more complex but very rewarding extension is to have students try to design their own simulation for another world region. They have to use an atlas to identify the major crops and environmental conditions in the region, and then search an encyclopedia or Web site to learn about the environmental requirements of those crops. Good possibilities include Argentina, Germany, or West Africa – patterns are probably too complex in France, India, or East or South Africa. The CD has supplementary units on climagraphs, subsistence farming in Uganda, herding in Namibia, specialty tea grown for export in China, and fair-trade coffee cooperatives in Mexico.

Concluding the activity

The tone of the conclusion can be a difficult balance: students should conclude that the world is not neatly divided into favorable and unfavorable areas, but that some world regions (including the United States) do have a larger fraction of land that is good for food production. While no one would suggest that unfavorable environmental conditions are the main reason for the demise of the Soviet Union, it is equally naïve to conclude that differences in economic policies are the only cause!

Students should also realize that land-use planning is a difficult task, even with grossly simplified maps and relatively few land uses. Part of the problem in the Soviet Union was the sheer difficulty of gathering and comprehending enough information to make reasonable decisions for such a vast area. One huge advantage of a free-market economy is that millions of people have a vested interest in gathering relevant information and trying to make good decisions!

Frequently asked questions about planning: a sample dialog

Student (doing the first simulation for Question 12): What do I do when I have only one square of a crop left to locate and there are three or four possibilities with the same low profit?

Teacher: Well, you might first check to see whether you could exchange a square with any other crop and do better.

Student: I did that, and it didn't help.

Teacher: Then what you have is exactly what many countries have. They might have a little bit of very good land, where you can grow almost anything and make money, and then there is a lot of land that is "just good enough" for farming. The problem is, there's no easy way to tell people not to use it all. You've heard stories about farmers having trouble making ends meet. The land on these marginal farms isn't good enough to compete with central Illinois or the Ukraine, but it's not so bad that they should just let it go back to forest or grass. This is a big problem in many places around the world. Right now in the United States, for example, the government is paying farmers to stop growing crops on more than 35 million acres, about a tenth of all the cropland in the country. In Russia, you'd probably get a situation where nomadic herders or low-value grain farmers would use some of the best sites in many of the marginal squares, rather than all going into one (which is what the fairly coarse raster grid (square shapes) in this simulation makes you do).

Student (doing the second simulation for Question 13): Now I have the opposite problem – I seem to have run out of good places and still have six more squares to locate. What should I do?

Teacher: Well, you might try putting some over here (pointing to the eastern part of the country, near Vladivostok – a surprisingly large number of students don't think there's any activity on the other side of Siberia, when in fact that area has some of the best land in the country).

Student: OK, I got some dairy farms to go there.

Teacher: Wait a minute, though; maybe you can keep more of the dairying right around Moscow and St. Petersburg again. You might not lose so many points by moving something like grain to the eastern part of the country.

Wouldn't a central planner have access to more information?

Yes, but probably not as much as a farmer who actually lives on the land.

Is it realistic to divide the country up into such large squares?

Of course not. But as it is, this simulation is fairly good at reproducing the geographic pattern of crops production in northern Eurasia. If we made each square half as wide, students would have four times as many crops to locate. One big problem with central planning was the sheer mass of information to consider, and even so, they couldn't look at each parcel of land as carefully as someone living there. The bottom line: central planning is hard work, even with big squares.

Where do the numbers in this simulation come from?

A formula, where the points are related to the market price of a crop, minus some "penalties" for being in a place that might be a little bit too cold, or dry, or hilly, or far away, or all of the above.

Command Economy
Glossary of key terms

cells: individual squares on a grid; the basic unit of analysis in one kind of GIS

central planning: a term that refers to government planning of economic decisions in a command economy

Cold War: period following World War II and ending in the 1990s, in which the United States and the Soviet Union had very tense relations; this period was referred to as "the Cold War" because it never developed into physical fighting; the Cold War ended when the communist system collapsed in the Soviet Union and its allies.

command economy: a type of economy in which many decisions are made by the government (see the CD unit on Moscow Rings for some effects of this approach)

comparative advantage: the idea that two places may each have an advantage over the other in the production of specific crops, and therefore it pays for each to specialize in what it does best

free-market economy: a type of economy in which many decisions are made by individuals, who exchange their products at prices set by what buyers are willing to pay

friction of distance: the cost incurred to transport a product; milk is very heavy and perishable and therefore has a high friction of distance; wheat is much lighter (per acre of production) and less perishable, and therefore can be shipped at less cost

growing season: the months during a year when temperatures are high enough for crops to grow (see the CD units on Climagraphs and Solar Energy)

incentive: reason for doing something; reward you will get by doing it

inputs and outputs: inputs are things that are needed to produce something (such as factory goods or crops); outputs are the things that are produced

market: a place where prices are set for various goods; for food, the market is often considered to be the largest urban areas in a country

nomadic herding: a way of raising animals in which the herd does not stay in a single location, but travels around to find the best grazing pastures

rasterization (rasterized): a rasterized map is one that has been converted into a grid of squares; often maps and other things are rasterized in order to make them easier for computers to process

socialism: a type of government in which the economy is controlled by the people through the government; government makes most economic decisions, including what will be produced, where things are produced, and how much should be produced

Soviet Union (USSR): officially the Union of Soviet Socialist Republics (USSR), the union among Russia and other "republics" in East Europe and Central Asia was the largest and most powerful communist power in history; starting in the late 1980s, the system began to collapse and became 15 separate, independent countries