

Subtopics

- ~~5.1 Soil~~
- 5.2 Agriculture and Food
 - ~~5.2.1 Food security~~
 - **5.2.2 Agricultural systems**
 - 5.2.3 Making agriculture sustainable

Learning Objectives

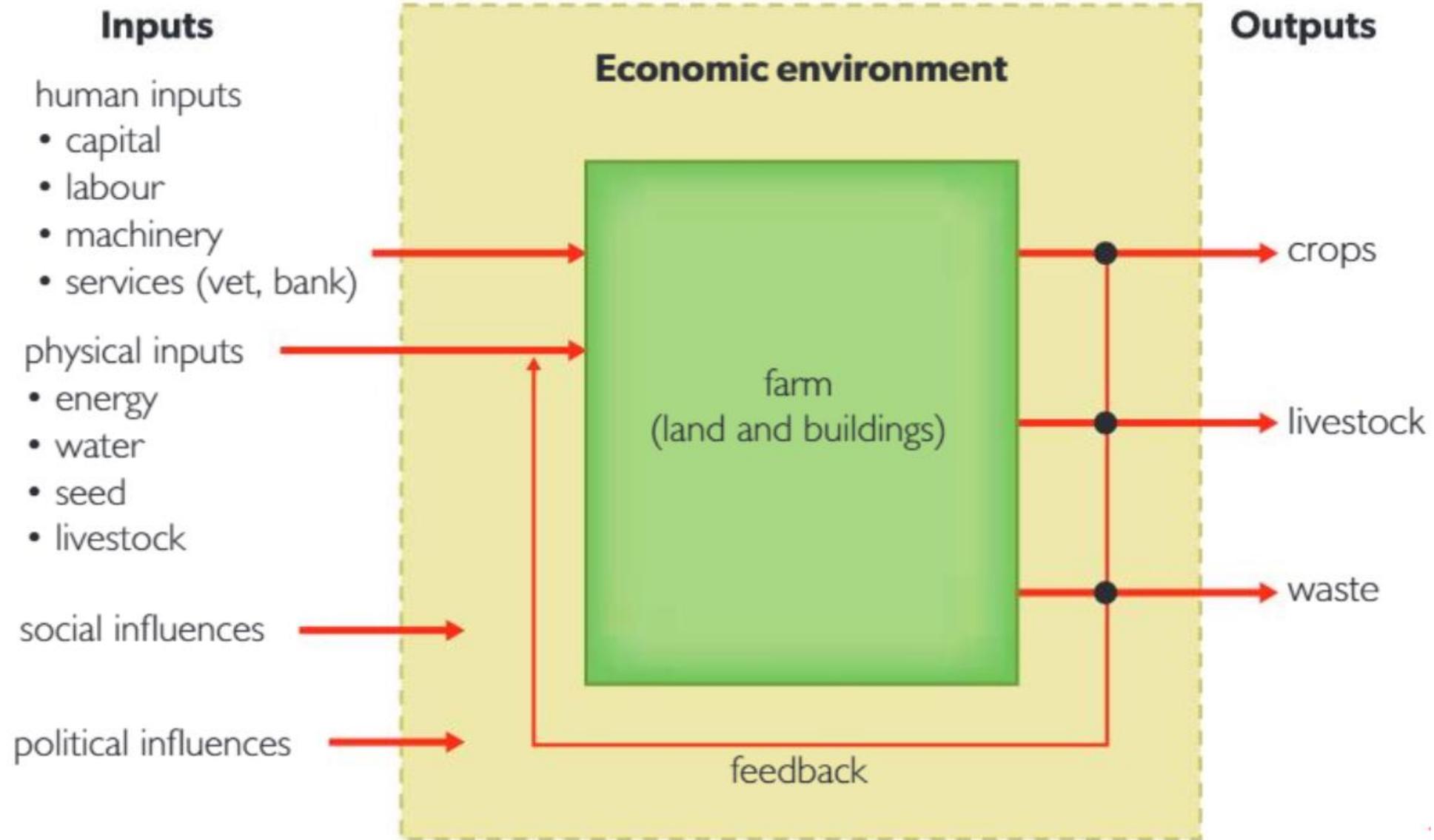
1. Compare agricultural systems worldwide in relation to variations in soils and climates.
 - how different factors shape farmers' choices and the implications for economic, social, and environmental sustainability.
 - traditional agricultural techniques such as nomadic pastoralism and slash-and-burn farming, and assess their role in sustaining low-density populations.
2. Explain the innovations of the Green Revolution and critically evaluate its sociocultural, economic, and environmental impacts.
3. Distinguish between the role of synthetic fertilisers in intensive farming and alternative soil fertility methods used in sustainable agriculture.

Activity 1

Activity 1: Agricultural system

Instruction: Complete this following agricultural system diagrams.





Agricultural systems can be categorized in several ways:

- **Outputs of the farming system**
 - Arable, pastoral, or livestock farming,
 - monoculture or mixed farming.
- **Purpose of farming**
 - commercial or subsistence-based, sedentary or nomadic.
- **Types of inputs required**
 - intensive or extensive methods,
 - irrigated or rain-fed systems,
 - soil-based or hydroponic approaches,
 - organic or inorganic farming.

Activity 2

Activity 2: Agricultural system classification

Instruction: Outline the meaning of these classifications and provide an example each

Classification 1: Output from the farm	
1	Arable
2	Pastoral or livestock
3	Monoculture
4	Mixed
Classification 2: Reasons	
1	Commercial
2	Subsistence
3	Sedentary
4	Nomadic
Classification 3: Input	
1	Intensive
2	Extensive
3	Irrigated

Subsistence farming

- Production of food by farmers primarily for household consumption or for local communities, with little or no surplus.
- Typically, mixed cropping is practiced, requiring significant human labour and minimal use of fossil fuels or chemical inputs.
- Due to limited access to technology and capital, productivity remains low, rendering farmers vulnerable to food insecurity.

Cash cropping

- Involves the cultivation of crops specifically for market sale rather than household consumption.

Commercial farming

- Characterized by large-scale, profit-oriented agricultural enterprises aimed at maximizing yields per hectare.
- This form of farming frequently relies on **monoculture**, where a single crop or livestock type is cultivated.
- High levels of technological, chemical, and energy inputs enable increased productivity.

Arable farming

- Focuses on crop cultivation, either for direct human consumption, animal feed, or biofuel production.

Pastoral farming

- Involves the rearing of animals, usually on grassland or marginal land unsuitable for crop cultivation.

Mixed farming

- Integrates crop cultivation and livestock rearing.
- Animal manure is used to enhance soil fertility, while crops may serve as fodder for livestock, thereby creating a symbiotic relationship between the two components.

Nomadic pastoralism

- A mobile form of pastoralism in which herders migrate cyclically with their animals in search of water and pasture.
- Livestock may include cattle, sheep, goats, camels, horses, or reindeer.
- Approximately 40 million people worldwide, such as Mongolian nomads, Aboriginal Australians, and the San people of Africa, continue to practice this system.

Shifting cultivation

- Commonly practiced in tropical regions of sub-Saharan Africa, Southeast Asia, and South America, follows a traditional “slash-and-burn” method.
- Farmers clear and burn vegetation before cultivating crops on the nutrient-rich, ash-fertilized soil for two or three seasons. Fields are then left fallow to regenerate.
- This method, a form of both subsistence and extensive farming, represents one of the oldest systems of agriculture, still practiced by an estimated 200–300 million people across 64 countries.

Extensive farming

- Relies on low levels of fertilizers, pesticides, machinery, and labour per unit area. Productivity is generally low, but it allows for cultivation or grazing over larger areas with minimal inputs.

Intensive farming

- Seeks to maximize output from a limited land area through high input use, including fertilizers, chemicals, and mechanization. Examples include feedlots and high-yield crop systems, which depend on inorganic fertilizers to sustain soil fertility.

Irrigated agriculture

- Depends heavily on water resources, accounting for 70% of global freshwater use and over 40% in Organisation for Economic Co-operation and Development (OECD) countries.
- Irrigation enables consistent crop growth but imposes significant pressure on water availability.
- Alternatives include rain-fed farming and water capture in tanks or reservoirs.

Hydroponics

- A soil-free cultivation system in which plants grow in nutrient-rich water solutions, often supported by inert materials such as gravel. It enables high planting density and reduced land use, but is currently limited to high-value crops like salads and soft fruits, rather than staple crops.

Organic farming

- Avoids synthetic fertilizers and pesticides, instead using natural methods such as crop rotation, compost, and biological pest control to maintain soil fertility and reduce disease.

Inorganic farming

- Depends on synthetic fertilizers and chemicals, often derived as by-products of the petroleum industry, to boost soil fertility and crop yields

Activity 3

Activity 3: Agricultural system around the world

Instruction: On the map above, label the following using the letters annotate an example for each

A	Extensive, commercial, rain-fed,
B	Intensive, Organic fertiliser, subsistence
C	Hydroponic, commercial
D	Pastoral (pasture), commercial, mixed



Exercise: Farming in the United Kingdom

1. Describe the major types of agricultural system practices in the UK
2. Explain the choice of agricultural system in the UK

