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Agriculture

Agriculture is the production of food, feed, fibre and other goods by the systematic growing and harvesting of plants, animals and other life forms.

The development of agriculture is a central element of human history, as agricultural progress has been a crucial factor in worldwide socio-economic change.

Wealth-building and military specialisations rarely seen in hunter-gatherer cultures became commonplace in agricultural and agro-industrial societies, when farmers became capable of producing food beyond the needs of their own families. Other people in the tribe/village/city-state/nation/empire were freed to devote themselves to projects other than food acquisition.

The relative importance of farming on employment has dropped steadily since the beginning of industrialisation. In 2006, an estimated 36 per cent of the world’s workers were employed in agriculture, down from 42% in 1996. Despite the fact that agriculture employs more than one-third of the world’s population, agricultural production accounts for less than five per cent of the gross world product (an aggregate of all gross domestic products).

Genetically modified organisms (GMOs) are a product of modern agriculture. The assessment of GMOs in terms of their impact on food security, poverty, bio-safety and sustainability of agriculture is also a task for geographers to study and understand. Besides the implementation of new technologies in agriculture, climate change and shrinking resources are likely to threaten food security in the world.
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Land resources

Land resources are the resources of climate, water, soils, forests, pastures and wildlife, on which agriculture, forestry and other forms of rural land use depend. They are destroyed by land degradation and conserved by sustainable land management.

Geographers study land resources by analysing remotely sensed satellite images and maps which show the impact of humans on the landscape. In many parts of the world anthropogenic influences have led to land degradation as well as events, like the Dust Bowl in the USA and the clearance of the rainforest in South America, which have negative impacts on life on Earth. Geographers have mapped these developments as well as researched the causes and effects of the phenomena affecting land resources around the world.

Loss of productivity, declining quality of life and the degradation of rural areas are some of the impacts which geographers study in the field of land resources. There is a strong relationship between development, population growth, conservation and the study of land resources.

Land resource management is also linked to land use planning, a theme which is closely linked to the study of geography. Land use planning and its tools help the effective management and deployment of land resources. Geographers and planners study the impacts and conflicts arising from land development. They also look at the holistic impact of land development in relation to economic development, population growth and sustainability.
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Housing

Housing is the provision of suitable accommodation for human populations.

Housing and land use planning are significant issues in modern societies and are therefore relevant in studies related to Geography.

Many countries have institutionalised housing through the provision of social housing. The adoption of planning tools impacts on housing through the management of land resources.

Geographers study the development of urban areas. They study housing by looking at the problems arising from improper housing, affordability and the distribution of poor and wealthy, slums in developing countries, location, re-development and regeneration.

Work related to the Geography of housing is predominantly found in studies of urban environments, where the issue of housing remains central to the development of healthy and sustainable cities. The expansion and redevelopment of slum areas in cities is one area of concern, for example in Rio de Janiero, or the regeneration of the docklands area in London.
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Nature

Nature is the natural physical world including plants, animals and landscapes.

Life on our planet is the outcome of billions of years of evolution. It has been shaped by physical forces such as changes in the Earth’s crust, ice ages and fire. However, the natural environment is increasingly being altered by humans.

We are consuming more of nature’s resources through over-harvesting, deforestation and urbanisation.

Biodiversity is the variety of plants and animals on the planet; these are nature’s products. Nature provides us with products for agriculture, horticulture, construction, cosmetics, pharmaceutics and many other things. Therefore, protecting biodiversity is to our own benefit; its loss threatens our food supplies, sources of medicines and the way we live. Geographers are constantly studying the distribution of different forms of plants and animals and research the conditions which favour their development.

The possible loss of individual species often reaches the news nowadays, yet it is the loss of forests, wetlands, coral reefs and other ecosystems that presents the greatest threat to biological diversity. Changes in the Earth’s atmosphere, for example, depletion of the Ozone layer and climate change add to the stresses. Global warming is already blamed for changing habitats and species distribution.

Loss of habitat has been dramatically increased by urbanisation and developments consuming land, destroying the habitat of wildlife and degrading water quality. Clearing of land, burning of forests, over-harvesting, draining of wetlands, over-fishing, air pollution and use of pesticides all endanger biodiversity. These are all human alterations to nature.

Geographers understand how to apply scientific methods to protect the environment, its inhabitants, and their interrelation. They map species and habitats using Geographical Information Systems and satellite technologies. In land use planning, geographers are employed to give advice on the quality of land use, in order to create balanced and sustainable communities which allow expansion for humans whilst protecting and/or enhancing nature.
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Water resources

Geographers use their knowledge to help manage resources and solve environmental problems related to the source, distribution and management of waste.

Freshwater is a finite resource increasingly threatened by many factors. Without water humankind cannot survive.

Freshwater as a resource is threatened by increased population demands and pollution. In order to avoid a crisis many countries are aiming to conserve their water, manage their supply better and pollute less. Geographers engage in programmes which develop tools to manage water resources in many countries. By applying Geographic Information Systems, geographers are able to identify water sources, ensure their sustainability and manage demand.

Global water consumption is rising twice as fast as the world population. Currently the supply of water is not keeping up with the demands placed upon it. In the developing world, the average person uses 10 litres of water every day for drinking, washing and cooking, in comparison the average European uses 200 litres. This has significant implications in that lack of water makes food supplies more expensive. Poorer countries increasingly have to choose whether to use their water for agriculture or for domestic use. A lack of water is creating water refugees, as people are forced to leave their homes in search of water. Water shortages are being exacerbated by global warming with prediction of increases in drought and desertification. Rising temperatures in some countries means their groundwater reserves are being used at a rate that is unsustainable.

Geographers can predict and provide solutions to water shortages through water resources management. They endeavour to understand why pressure is put on our water supplies whilst developing effective management of such crises.
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Waste and Pollution

Waste products are the things we no longer think are needed and throw away. This often leads to pollution of the environment.

Waste not only comes from our homes but from businesses, industries, construction, demolition, sewerage sludge, farm waste, spoils from mines and dredging of rivers. Many of the activities that take place in our cities produce waste solids, liquids or gases and if we are not careful these can pollute and damage our air, water and land environments.

Effectively protecting the environment requires activity on a wide range of different fronts, for example, from working to limit global environmental threats such as global warming to safeguarding individuals from the effects of poor air quality or toxic chemicals.

Due to pressure from environmental groups and political intervention, many developed countries have seen dramatic improvements to their city environments over the past few decades as the amount of uncontrolled waste being released into the air, rivers and onto the land has decreased enormously. Despite improvements our oceans have been severely undermined by human impacts. Fishing, pollution and climate change are considered by scientists to have left their mark on our oceans, with almost no areas of ocean undamaged and over 40 per cent of oceans being heavily affected.
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Minerals

A mineral is a naturally occurring substance formed through geological processes that has a characteristic chemical composition, a highly ordered atomic structure and specific physical properties.

A rock, by comparison, is an aggregate of minerals and may not have a specific chemical composition. Geographers study the location of minerals as well as their use and management.

Minerals range in composition from pure elements and simple salts to very complex structures with thousands of known forms. The study of minerals is called mineralogy. There are currently more than 4,000 known minerals, according to the International Mineralogical Association, which is responsible for the approval of and naming of new mineral species found in nature. Of these, perhaps 150 can be called common, 50 are occasional, and the rest are rare to extremely rare.

Society today depends on minerals in countless ways, from the construction of skyscrapers to the manufacture of televisions. A few minerals such as talc, asbestos, and sulphur are used essentially as they come from the ground, but most minerals are first processed to manufacture a usable product such as bricks, glass, cement, plaster and many metals ranging from iron to gold. Both forests and farms are dependent upon soils, which are composed chiefly of minerals. This important aspect of minerals makes their study important for the economic development of many countries. Geographers are particularly interested in the distribution of minerals as they correlate with societies and economic growth.
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Food resources and distribution

Food is a resource essential for human survival and yet in many parts of the world there are serious shortages.

Food distribution across the world is extremely unequal and is more inclined towards the wealthier countries.

This is reflected by a large portion of the World’s cereal production being used as animal feed accommodating the meat-eating diets of middle and high income countries. Despite the fact that in the last 25 years significant progress has been made in reducing the number of food-poor people in the world, Africa has remained an exception. Despite figures falling with regard to undernourished members of the population the actual numbers for those people experiencing food poverty remain high.

The United Nations estimate that 20 per cent of the world’s population does not have enough to eat. Rising food prices are causing people in more countries to go hungry. The price of food is directly related to the high cost of oil and increasing demand from developing countries. High cost of food is also caused by the use of crops in bio-fuel production and severe weather conditions attributed to global warming which lead to crop and livestock losses. As the price of basic foods increases across the world the most vulnerable populations are affected.

Increased population, war, famine, and disease influence why many people live where they do. A geographer can look at growth, distribution, and movement of the world’s population and understand the implications of the human, social, cultural, political, and economic challenges but also physical events like flooding, resource depletion, and environmental issues which have an impact on food.
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Energy resources

Energy resources are renewable and non-renewable power which humans can draw upon to meet the needs of society.

Worldwide, there are a range of energy resources either renewable or non-renewable.

They are used to generate power for use in the home and industry. Non-renewable sources of energy can be divided into two types: fossil fuels and nuclear fuel.

Fossil fuels such as natural gas, oil and coal, are found within the rocks of the Earth's surface formed many millions of years ago by geological processes acting on dead animals and plants. As they took millions of years to form, they cannot be replaced once used up. Nuclear fuel is generated from radioactive materials, such as Uranium, that occur naturally. The materials are extracted, concentrated and formed into 'fuel rods'. Placing fuel rods together sets off nuclear reactions, thus generating heat.

Geographers are mostly interested in the use and distribution of non-renewable resources, as such energy resources drive economic development. They also examine the impacts of energy on our environment. Despite having improved technologies, renewable energy resources have still not replaced the use of non-renewable resources. Wind, sun, wave and hydro-electric power sources are increasing. However due to their slow growth, most industrialised countries still rely mainly on non-renewable energy resources.