

What is Resource Reliance?

Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.

Resource Required

Resources such as food, energy and water are what is needed for basic human development.

FOOD



Without enough nutritious food, people can become **malnourished**. This can make them ill. This can prevent people working or receiving education.

WATER



People need a supply of **clean and safe water** for drinking, cooking and washing. Water is also needed for food, clothes and other products.

ENERGY



A good supply of energy is needed for a basic standard of living. People need **light and heat** for cooking or to stay warm. It is also needed for industry.

Demand outstripping supply

The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations

1. Population Growth



- Currently the global population is **7.3 billion**.
- Global population has risen **exponentially** this century.
- Global population is expected to reach **9 billion by 2050**.
- With more people, the **demand** for food, water, energy, jobs and space **will increase**.

2. Economic Development



- As **LIDCs** and **EDCs** develop further, they require **more energy** for industry.
- LIDCs** and **EDCs** want similar lifestyles to **ACs**, therefore they will need to **consume more resources**.
- Development means **more water is required** for food production as diets improve.

Resource Reliance Graph

Consumption – The act of using up resources or purchasing goods and produce.

Carry Capacity – A maximum number of species that can be supported.

Resource consumption exceeds Earth's ability to provide!



3. Changing Technology and Employment

- The demand for resources has driven **the need for new technology** to reach or gain more resources.
- More people in the **secondary and tertiary industry** has increased the **demand for resources** required for electronics and robotics.

Reasons for NOT Meeting Modern Resource Demands.

Climate	<ul style="list-style-type: none"> Global warming effects cycles and seasons and therefore farming. Rainfall patterns are changing and are becoming unpredictable. This is a problem for farming.
Geology	<ul style="list-style-type: none"> Not all countries have access to fossil fuels or suitable landscape for renewables. Many minerals are finite and therefore once used will reduce the resources available. Rock types might limit the availability to store water.
Conflict	<ul style="list-style-type: none"> War can disrupt transport of resources by damaging roads and water pipes.
Poverty	<ul style="list-style-type: none"> LIDCs are unable to afford technology to effectively exploit the natural resources available.
Natural Hazards	<ul style="list-style-type: none"> Increase in hazard events due to climate change. Prime agricultural regions in Asia and Africa and are also in hazard zones. Has the ability to destroy infrastructure needed to transport resources.

Topic 8

Resource Reliance



Environment and Food: Fishing and Farming

	Methods	Environmental and Ecosystems
Fishing	Bigger nets and fishing boats have allowed for greater catches. GPS and sonar has also find the fish easily.	<ul style="list-style-type: none"> Overfishing of certain fish has caused their decline. Dredging can damage seafloor habitats. Decline of one species has a knock on effect on other marine species.
Farming	Tractors, computer programming and GPS technology is producing food more effectively and at a larger scale.	<ul style="list-style-type: none"> Field sizes have caused hedgerows to decline in biodiversity. Fertilisers and pesticides enter water courses and harm or kill organisms. Heavy machinery can cause soil erosion.

Environment and Energy: Deforestation and Mining

	Methods	Environmental and Ecosystems
Deforestation	Logging using modern machinery and transportation has made deforestation more productive & convenient.	<ul style="list-style-type: none"> 2 billion people depend on wood for fuel, which therefore creates high CO2 emissions Forests provide for important habitats. Clearing of forests leads to soil erosion. Tree intercepts rain and prevents flooding.
Mining	Large machines and drill technology can remove and reach through material effectively.	<ul style="list-style-type: none"> Mining waste can pollute soil and contaminate water supplies. Habitats are destroyed in mining zones. Fossil fuels burnt release greenhouse gases

Environment and Water: Reservoirs and Water Transfer

	Methods	Environmental and Ecosystems
Reservoirs	Increasing storage to hold more water and constructing more dams to control river flow can provide a reliable source of water.	<ul style="list-style-type: none"> Can flood a large area of land and damage habitats and natural landscapes. Dams can be a barrier for certain species to migrate upstream. Natural flow of sediment is disrupted, which then reduces fertility of land further down.
Water Transfer	Constructing pipes and canals to divert water surplus to areas in need of a water supply.	<ul style="list-style-type: none"> Large-scale engineering works can damage ecosystems along the route. Lots of energy is required to pump water over long distances.

Food Security

'**Food Security**' is when people at all times need to have physical & economic access to food to meet their dietary needs for an active & healthy life. This is the opposite to '**Food Insecurity**' which is when someone is unsure when they might next eat.

Human



- Poverty** prevents people affording food and farmers buying modern equipment.
- Poor infrastructure** makes food difficult to transport fresh food.
- Conflict** disrupts farming and prevents supplies.
- Food waste** due to poor transport and storage.
- Climate Change** is affecting rainfall patterns making food production difficult.

Physical



- Temperature** needs to be ideal for certain crops to grow.
- The **quality of soil** is important to ensure crops have the necessary nutrients.
- Water supply** needs to be reliable to allow food to grow.
- Pest, diseases and parasites** can destroy vast amounts of crops that are necessary to feed large populations.
- Extreme weather** events can damage crops (i.e. floods).

Malthus and Boserup's Theories about Food Supply

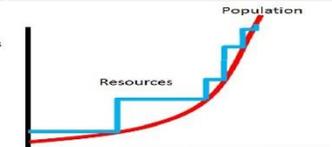
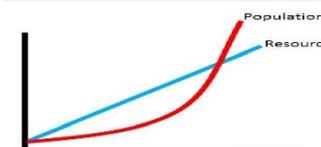
With the population growing very quickly, there are different ideas about whether or not this will lead to a food crisis.

Malthus Theory

- Believed that **population would increase faster than food supply**.
- This would lead to a lack of food being available.
- Malthus believed this would cause **large scale famine, illness and war**
- This would occur until population returned to level that can be supported.

Boserup Theory

- Believed that however big the population grew, **people would find ways to manage**.
- If food supplies became limited, **people would find new ways** to increase production.
- These solutions would often involve **creating new technologies**.



Measuring Food Security

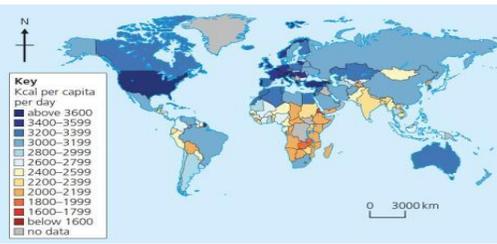
Attempts to Achieve Food Security

Food security varies around the world. Some people and places are more food secure than others. This can often depend on how much a country can grow and is able to afford.

There are various measures to maintain or even improve our food security. These measures are often taken to be **socially, economically, environmentally** viable for the longer term.

The Global Hunger Index

Daily Calorie Intake



- This shows how many people are suffering from **hunger or illness** caused by lack of food.
- The index gives a value for each country from 0

- This shows how many **calories per person** that are consumed on average for each country.
- This can indicate the global distribution of

Case Study: Tanzania Food Security

Food Availability in Tanzania

- Ranked 98th out of 109 countries in the Global Food Security Index with a score of 33.7 out of 100 (the lower the score the less food security)
- In the Global Hunger Index it ranks 89th out of 116 countries with a score of 28.7 (the higher the score the more hunger) and a rating of 'serious'
- In 2012 43.5% live on less than \$1.25 a day so struggle to afford food

Food consumption in Tanzania

Tanzania has an average calorie supply per day of 2137. this has risen from 1696 calories a day in 1964 to 2283 calories in 1989. It fell to a low of 2056 calories in 1999 before rising again

Reasons for this included recession and therefore economic issues with access to food, seeds etc

Success in securing local food security

- Goat Aid by Farm Africa imported Toggenburg goats at a cost of £400 a goat. £200,000 was invested in the Babati region
- These produced 3 litres of milk a day and villagers were taught how to keep and care for them. Were given on credit and cost repaid slowly
- Benefits included income from breeding, meat, more nutritious diet and better quality of life
- Success is seen by an increase in profits earned by farmers involved in the scheme

Effectiveness of past attempt at food security

- Tanzania's president asked Canada for help growing wheat using modern technology. Between 1968 - 1993 \$95 million of aid given
- Covered 25, 400 hectares in Northern Tanzania and Canada helped develop seeds and provided expertise, training and machinery

Effectiveness of present attempts at food security

Southern Agricultural Growth Corridor (SAGCOT) 2010 – aims to improve farming as a growth corridor. Millions invested in infrastructure to create 6 key cluster areas with better connections to world and national markets. By 2030 will create thousands of jobs & millions out of poverty by encouraging big commercial farms to cluster areas (hubs) which will help improve surrounding areas (outgrower areas)

Kilombero Plantation is an early success. Invested in tractors, irrigation, rice mill and storage. Doubled its yields. Connected with 7300 rice growers in 11 villages increasing production there. Getting better price too. Other examples include tobacco processing factories / sunflowers

Successes	Failures?
60% of Tanzania's wheat, 121 people trained in wheat farming, 400 jobs, infrastructure in place	Low yields, soil fertility fell, most ate maize, couldn't afford seeds and parts. Barabaigs worse off

Social

Economic

Environmental

Ethical Consumerism



This involves buying products that have a positive social, economic and environmental impact today, without compromising future generations.

Fairtrade

- This is a global movement to give farmers a **fairer price for their products**.
- The profits benefit the community **with schools and medical facilities**.
- Involves using farming methods that **protects rather than destroys environments**.

Food Waste

- One-third of all food gets lost or wasted.
- Aim to **eat locally sourced food** to reduce waste through transport.
- Eating 'ugly' food despite it not being 'ideal' can prevent waste and **save money**.
- Prevents wasted energy for producing food and therefore **reduces CO2 emissions**.

Food Production



This involves producing as much food as possible in as small a space as possible. They often involve using machines and chemicals to gain as much produce as they can.

Intensive Farming

- Makes the most of the land and allows for higher yields. This can make growing food more **productive and therefore cheaper** to produce.
- Chemical fertilisers, pesticides and herbicides can **pollute the environment** and **harm people**, animals and insects.

Organic Methods

- This involves the banned use of chemicals and **ensuring animals are raised naturally**.
- This can lead to **lower yields of 20%** and products being **more expensive**.



Technological Developments

Through better understanding of science and improved technology, it is now possible to change the food we grow and protect and harvest the crops more effectively.

Genetically modified (GM)

- Involves changing the DNA of foods to enhance their productivity and properties.
- Crops can be **better protected from disease and drought**, but also made larger or include more **health benefits**.

Hydroponics

- This is a method of growing plants without soil. Instead they use nutrient solution.
- Less water is needed and a **reduced need for pesticides** to be used.
- However, this method is **very expensive** so only used for high value crops.



Small Scale 'Bottom Up' Approaches

This involves a small scale production of food and relies on individuals and communities, rather than government or large organisations.

Urban Gardens

- This is an area of land that is divided into plots and rented to **individuals to grow their own fruit and vegetables**.
- Allows people in urban areas to produce their **own cheap & healthy food** close to home.

Permaculture

- This involves **people growing their own food** and **changing their eating habits**.
- This can create **more natural ecosystems** and fewer resources are required.