

## 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.

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

## Topic 8

# Resource Reliance



### Environment and Food: Fishing and Farming

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

### Environment and Energy: Deforestation and Mining

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

## Environment and Water: Reservoirs and Water Transfer



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



### 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

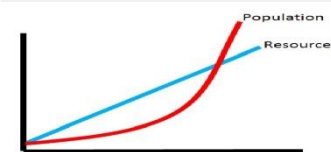
With the population growing very quickly, there are different ideas about whether or not this will lead to a food crisis.

#### 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

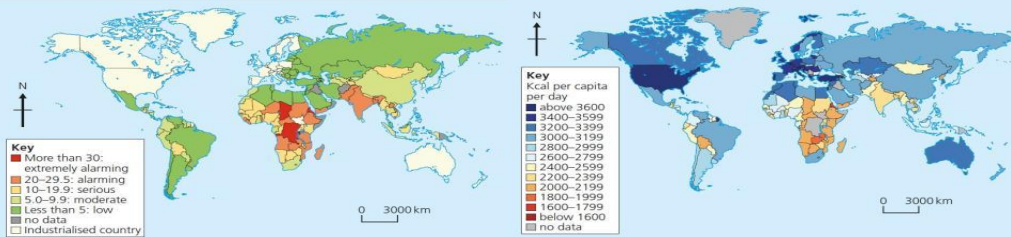
## Attempts to Achieve Food Security

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** (no hunger) to **100** (extreme hunger).

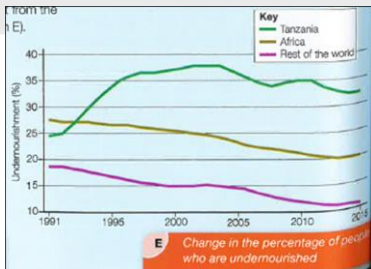
- This shows how many **calories per person** that are consumed on average for each country.
- This can indicate the global distribution of **available food and food inequality**,

## Case Study: Tanzania Food Security

### Food Availability in Tanzania

Population is **51 million**. Ranked **98<sup>th</sup>** / 109 countries in **Global Food Security Index**. Ranked **89<sup>th</sup>** / 116 countries in **Global Hunger Index**.

- 33% of people are undernourished.
- From 2005, sufficient food has been available for most of Tanzania.



### Food consumption in Tanzania

Average daily calorie intake in Tanzania is 2137 which has been gradually rising. Reasons for lower calories compared to countries like the UK are:-

- Poverty. In 2012 43.5% of population were living on less than \$1.25 a day.
- Most people live in rural areas as farmers and have land but may not have money for seeds or to buy food.

### Success in current local scale food security

**Goat Aid in Babati** – bottom-up aid from Farm Africa HGO. Toggenburg goats given to families as produce 3 litres milk daily. Given on credit to encourage locals look after them.  
**Positives** – better diets; crops yields increase due to use of manure; make money from selling milk; children able to go to school; farmers in scheme earn 3 x more than other farmers.  
**Negatives** – goats need water which is scarce; hooves damage land; overgrazing leads to desertification; vet bills are expensive.

### Past national attempt at food security

**Tanzania-Canada Wheat project 1967 – 1993.** President wanted to be more self-sufficient. Top-down development strategy.  
**Positives** – Experienced wheat producers in Canada gave advice & \$95 million financial support; seeds & equipment initially free; 60% wheat produced nationally; improvements made to road, rail & electricity; 400 people employed  
**Negatives** – Only in Hanang Province in north benefited; only one crop reduced biodiversity; soil fertility decreased; Barabaiga tribe forced violently off land; threatened livelihoods of 40000 people

### Effectiveness of present national attempts at food security

**SAGCOT (Southern Agricultural Growth Corridor of Tanzania)** East-west central strip of land is very fertile. Linked to Dar es Salaam port by road & rail for exporting crops. From 2010.  
**Positives** – China invested 439 million in Tazara railway; the Kilombero Plantation had millions of dollars invested in it, e.g. tractors, irrigation & rice mill; 7300 rice growers in 11 villages connected to better facilities; some farms produced 8 x more rice; 450000 jobs created so 2 million lifted out of poverty.  
**Negatives** – larger commercial farms mainly benefited; nomadic people lost land & access to water; small landowners taken over by plantations.

### 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.

### Allotments

- 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.