

## 8.1: What is Resource Reliance?

Natural materials become **resources** when humans need & value them. Some resources are finite, some not, some renewable, some not. Humans are becoming increasingly dependent on exploiting resources.

### 8.1: Resources Required ?

Resources such as food, energy and water are needed for basic human development. These resources are inter-related.

FOOD 	WATER 	ENERGY 
Without enough nutritious food, people can become <b>malnourished</b> . This can make them ill. This can prevent people working or receiving education.	People need a supply of <b>clean and safe water</b> for drinking, cooking and washing. Water is also needed for food, clothes and other products.	A good supply of energy is needed for a basic standard of living. People need <b>light and heat</b> for cooking or to stay warm. It is also needed for industry.

### 8.1ai: Why is 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 varies dramatically by location and over time.

#### 1. Population Growth

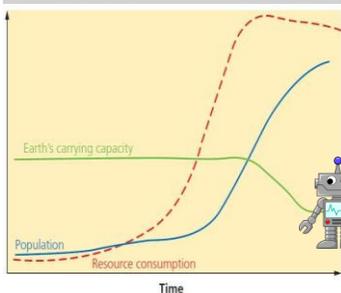
- Currently the global population is **7.3 billion**.
- Global population has risen **exponentially** this century.
- Global population is expected to reach **9 billion by 2050**.
- With more people, the **demand** for food, water, energy, jobs and space **will increase**.

#### 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.

#### 3. Finite & threatened supplies

- When it's gone it's gone – some resources are finite eg Fossil Fuels
- Some resources might 'die out' as a result of climate change. Human greed & waste doesn't help much either!



#### 4. 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.

## 8.1aii: Reasons for NOT Meeting Modern Resource Demands.

<b>Climate</b>	<ul style="list-style-type: none"> <li><b>Global warming</b> affects 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 infrastructure eg roads and water pipes and farm land.</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>

# Resource Reliance



## 8.1bi: Human use & modification of the environment for 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> finds 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	<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> </ul>

## 8.1bii: 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>

## 8.1biii: 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>

## 8.2ai: Feeding 9 billion by 2050: Food Security

'**Food Security**' is when all people at all times have [physical & economic] access to sufficient, safe & nutritious food to meet their dietary needs for an active & healthy life.

### Human factors affecting FS

- Poverty** prevents people affording food and farmers buying modern equipment.
- Poor infrastructure** makes it difficult to transport fresh food quickly
- 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 factors affecting FS

- 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).

## 8.2aiii: 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 (pessimist?)

\*Believed that **population would increase faster than food supply could keep up**.  
\*This would lead to a lack of food being available.  
\*Malthus believed this would cause **large scale famine, illness and war**  
\*PC's would occur until population returned to level that can be supported. What are PC's?

### Boserup Theory (optimist?)

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



## 8.2ai: Measuring Food Security and Global Patterns of access to food

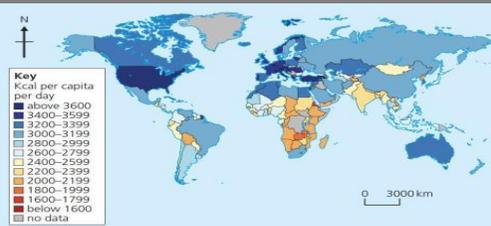
Food security (FS) varies around the world. Some people and places are more food secure than others. This can often depend on how much a country can grow and is able to afford. We can measure FS with indicators and indices

### The Global Hunger Index



- 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).

### Daily Calorie Intake



- \*This shows average consumption of **calories per person** for each country.
- \*This can indicate the global distribution of **available food** and **food inequality**,

## 8.2: Case Study: Food Security in Tanzania

### 8.2b: Food availability in Tanzania



Tanzania's population is around **51 million**; food security is **low but improving**.

\*On the GHI Tanzania ranks 89/116 with a score of 28.7

\*Most farmers are subsistence – growing to feed families > make profit

\*Food **imports** are expensive and are best avoided

### 8.2bii: PAST attempts at NATIONAL Food Security in Tanzania – some success achieved.

1973-1974 droughts in Tanzania affected its home grown food supplies. 90% of its maize and 80% of its wheat were being imported at this time.

\*Tanzania approached Canada for help. Canada provided \$95 million between 1968 & 1993.

\*Large scale wheat growing occurred (26,400 hectares).

\*Canada sent seeds, expertise, training, ferms & machinery

☺ T was able to grow 60% of all of its wheat needs & didn't need food aid in the 1992 drought

☺ Transport infrastructure improved so less food waste; people gained skills (mechanics)

BUT ☹ Soc: Barabaiga people forced off their land (40,000); most T's eat maize so growing wheat didn't help; Env: one crop = reduced biodiversity; Ec: ltd jobs were created; spare parts for tractors expensive so couldn't afford to repair them.

### 8.2b: Food consumption in Tanzania



Average daily calorie intake has **increased** from 1696 in 1964 to 2137 by 2009.

Reasons for this include:

- Better health care so more babies survive (IMR ↓) so Birth Rate drops so fewer mouths to feed.
- Changes to farming practices

### 8.2bi: Success in securing local food security

#### FARM AFRICA Babati Goat Aid project (bottom up)

\*\*Toggenburg goats introduced to villagers of Babati district (cope better with drought than local goats)

\*\*Aid project cost £200,000 to supply 500 goats

\*\*Socially – improved diet – meat and milk (3 litres/day); people trained to look after goats

\*\*Economically – people paid for the goats; valued them more. Surplus milk and meat sold for £. 16 baby goats per year – sold for £ - can send kids to school.

\*\*Environmentally – manure = natural fertiliser for crops – crop yields increase = more spare for sale.

### 8.2biii: Effectiveness of present attempts at food security – the jury is out .....

SAGCOT – growth corridor – development of a fertile strip of land across central Tanzania for farming. Multi-lateral aid (\$1250 million) provided plus TNC investment. Aims to be successful by 2030. Hub farms help smaller farms. Some successes (8x yield ↑; spin off industries) BUT worries that the small farms don't gain after all. Not all \$ aid has materialised. Nomadic tribes have lost water access.

## 8.2c: Attempts to Achieve Food Security

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.

Social

Economic

Environmental



### 8.2ci: Ethical Consumerism

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

#### Fair Trade

- 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 **protect rather than destroy the environment**.

#### 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**.

### 8.2cii: 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

- No chemicals are used; **animals are raised naturally**.
- This can lead to 20% **lower yields** and products being **more expensive**.



### 8.2ciii: 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**. Eg Golden Rice powered with Vitamin A to reduce sight loss.

#### 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.



### 8.2civ: Small Scale 'Bottom Up' Approaches

This involves **small scale production of food, run by individuals and communities**

#### Urban Gardens (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.
- \*Often on rooftops or on small parcels of land

#### Permaculture

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