

# IGCSE GEOGRAPHY 0460



Human Geo	Physical Geo	Economic (topics tend to overlap)
<ul style="list-style-type: none"> <li>• <b>Population</b></li> <li>• Settlements</li> </ul>	<ul style="list-style-type: none"> <li>• Plate tectonics</li> <li>• <b>Rivers</b></li> <li>• Coasts</li> <li>• Weather</li> </ul>	<ul style="list-style-type: none"> <li>• Agriculture (Food)</li> <li>• Industry (Globalization)</li> <li>• <b>Tourism</b></li> <li>• Energy</li> </ul>

## CASE STUDIES

1. Coast (1)
2. Volcano and Earthquake (2)
3. River (3)
4. Water (2)
5. Energy (1)
6. Population (6)
7. Tourism (1)
8. Weather (2)
9. Food (1)
10. Globalization (3)

**USE COMMON SENSE!!**

**GOOD LUCK PAL!!!**

**Case Study 1 . Coral Reef, Kisite Mpunguti Marine National Park, Kenya**

- Increased numbers of people wanting to see the corals
- Damage to reefs from tourist boats
- Snorkelers accidentally break off pieces of corals with their fins
- Land clearing to build resorts - increased sediments, roads, runoff
- Building of marinas, pontoon disrupt marine life
- Tourists break off pieces of coral for souvenirs
- Overfishing, Sewage pollution from hotels and agricultural runoff that washes into the ocean cuts off sunlight and promotes algae growth which respire and depletes oxygen for other living organism in the ocean (Eutrophication)
- Storms and El Niño events bleach and degrade coral
- boats pollute the water with engine by-products; ships sometimes dump oily ballast water
- oil spills damage the reproductive capability of coral reefs

**Case Study 2. Mt. Merapi Volcanic Eruption, Indonesia**

Causes:

- Composite volcano on Java Island, composed of sticky lava - very explosive
- Located on a destructive plate boundary and is part of the Pacific Ring of Fire
- Indo-Australian Plate, being the denser oceanic plate, was subducted and melted under the Sunda Plate which is continental.
- Convection currents also helped converge the plates together.
- Where the oceanic plate subducts under the continental plate a very deep Sumatran Subduction Ocean Trench is created. Ocean trenches are the deepest sections of the world's oceans.
- Huge amounts of heat from the mantle and also friction cause the oceanic plate to start melting, bits of the plate fell into the earth mantle.
- The continental plate can not be destroyed so is forced up to make fold mountains.
- As the oceanic plate melts, it expands, becoming less dense. This causes some of the magma to rise to the surface through the fold mountains creating volcanoes.
- friction was generated causing a build up of pressure that erupted through lines of weaknesses in the earth crust. hi

Impacts on people:

Short-term impacts	Long-term impacts
<ul style="list-style-type: none"> <li>• 273 people were killed by hot ash, gas and pyroclastic flows and 577 people were injured</li> <li>• Pyroclastic flows spread 3km down the mountain</li> <li>• Sulphur dioxide was blown across the island</li> <li>• Villages 15km away were under 30cm of ash</li> <li>• 360,000 people were displaced from their homes</li> <li>• Several villages destroyed and damage to crops from ash fall was widespread</li> <li>• 2000 farm animals were killed</li> </ul>	<ul style="list-style-type: none"> <li>• Danger zone extended to 20km from the mountain and 278,000 people living in this area had to flee their homes</li> <li>• evacuation centers were over crowded leading to poor sanitation, no privacy and serious disease risks</li> <li>• Ash, rock and lava deposited on the sides of the volcano being washed down into towns by rainfall creating lahars</li> <li>• Ash from the volcano will eventually lead to more fertile soils in the area</li> <li>• vegetable prices increased because of the damage to crops</li> <li>• 1300 hectares of farmland were abandoned</li> <li>• Economic losses of \$600 million due to severely reduced farming and tourism</li> </ul>

Why people live near Merapi even though it is dangerous:

- 75,000 people living on the slopes of Merapi
- volcanic ash from regular eruptions weathers down to form nutrient-rich soil. Combined with hot, wet climate... this means 3 crops of year
- Indonesia has a huge population density and land in short supply
- Confidence that they will be given adequate warning to evacuate
- High poverty - cannot afford
- Tourism for Borobudur near Yogyakarta (3 million people living there) - huge tourist attraction - lots of job opportunities nearby
- hot springs to enjoy
- Geothermal potential
- Ppl have lived here for many generations and do not wish to leave their ancestral lands
- Also - worship / spiritual beliefs linked to their faith - and the mountain.

**Case Study 3. Earthquake Indian Ocean 2004**

Causes	Effects
The Indo-Australian Plate was subducted under the Eurasian Plate. The epicenter is 160 km off the coast of Sumatra island at the depth of 30km. The magnitude is 9.0. The earthquake caused the seafloor to uplift, displacing the sea floor above. When rocks underground suddenly break through the cracks as pressure builds up, this sudden release of energy caused the seismic waves to make the ground shake.	<ul style="list-style-type: none"> <li>• over 200,000 died</li> <li>• 600,000 were made homeless</li> <li>• 30% of agriculture was lost</li> <li>• Over 80,000 houses were destroyed as well as serious damage to ports, boats and roads</li> <li>• 8 people were killed in South Africa which is over 8000 km away from epicenter</li> <li>• diseases such as cholera spread due to lack of clean water and sanitation in refugee camps killing 15,000 people</li> <li>• income sources were lost → destruction of fishing boats and damage to the ocean bed</li> </ul>

**Case Study 4. Flooding of the Indus Rivers, Pakistan (LEDC)**Causes:Environmental factors:

- Heavy rainfall and monsoon patterns causing the river to fill up quickly
- rossby wave (blocked jet stream, therefore made the monsoon stay)
- la niña event
  - temperature in Indian Ocean increases which speeds up evaporation, creating lots of moisture in air. These moisture get blown across to the Indus River, then it turns into clouds and rain.
- climate change

Human factors:

- Deforestation
  - Pakistan is known to have one of the highest rate of deforestation in the world. Only 5% of Pakistan is now occupied by forest due to timber harvesting. Due to the lack of vegetation to intercept the precipitation, flooding occurs.
- embankments were built to protect from small floods initially, but at that time it actually kept water from flowing back into the bank, causing more of a disaster to the communities.

- poorly maintained irrigation canals by the local Pakistani farmers made floods worse.

#### Effects:

##### Social:

- 20 million people affected (more than 1/10th of the population), mostly by destruction of property, livelihood and infrastructure, especially the Punjab and Baluchistan regions of Pakistan
- 10 million people were forced to drink unsafe water since wells and water pipes got contaminated
- floodwater destroyed much of the health care infrastructure in the worst-affected areas, leaving inhabitants especially vulnerable to water-borne disease
- Black death (e.g. gastroenteritis, diarrhea, skin diseases) due to lack of clean drinking water and sanitation pose a new risk to flood victim
- First documented case of cholera emerged in the town of Mingora
- Pakistan also faced a malaria outbreak
- 11 million homeless people
- 700,000 homes were damaged or destroyed
- 2000 approximate death toll
- 800,000 people were cut off by floods and were only reachable by air
- 70% of Pakistan's population, mostly in rural areas, did not have adequate access to proper nutrition
- Looters took advantage of the chaotic scene and lack of law and order in Sindh, they ransacked abandoned homes using boats
- flooding diverted Pakistani military forces from fighting Taliban, giving them an opportunity to regroup

##### Economic:

- 1/5th of land submerged
- 200,000 livestock were killed → loss of food production and potential long term food shortages
- 2.9 billion for agricultural damage → Pakistan depends on agriculture for its GDP growth
- 6.5 million acres of crops were washed away in Punjab and Sindh provinces
- Roads, bridges, airports and 1/3 of the railway destroyed
- Electricity supply cut off for several weeks
- total economic impact US\$43 billion to repair damages including structures and crops

##### Human response:

- UN asked for US\$460 million relief funds and 20% was received
- 21 helicopters and 150 boats to assist affected people
- The government has already set aside money to build flood defense systems and ways to warn people if another flood is to happen.
- 155,200 trees have been planted to prevent erosion
- 19,667 people have been given shelter

## **Case Study 5. Kallang and Singapore Rivers (Flood prevention)**

#### Facts:

- Singapore receives 2357.8mm of rain annually
- Kallang River is 10km long, the source is Lower Peirce Reservoir and the mouth is Marina reservoir

#### Methods of river management used in Singapore:

- Building storm drains and canals to avoid flooding by getting rid of rainwater faster
- straightening rivers (canalization) to get the river to the sea or a reservoir faster

- creating **reservoirs or underground storage tanks** to increase the capacity of storage and to control water flow with gates
- Building **flood barriers** around buildings to protect the buildings from flooding
- **Porous pavements** allow water to infiltrate
- **Planting trees** and making laws to stop people cutting down trees around reservoirs so more water is absorbed into the soil as the vegetation can intercept the flow. Also, the roots of the plants that are outside can prevent landslide and stop soil erosion.
- Building **flood protection dams** to control water level surges and holding back flood water
- Installing green **roofs and rain gardens** in public and private buildings allow plants to absorb more water to reduce the amount of surface runoff
- Making rules for buildings that ground floors should be used for car parks to stop car parks being flooded
- **flood alert systems** and giving people information to make people aware and be prepared

## **Case Study 6. The Three Gorges Dam, China (for flood protection AND HEP)**

### **Facts:**

- Yangtze River 3rd longest river in the world, the source is the Himalayas and flows into the East China Sea in Shanghai
- In 1998, it caused **3000 deaths** and **30 million people homeless** from **Yangtze flood** (reasons it should be built/introduction)
  - an area the size of New Zealand was flooded
  - Floods regularly, unpredictable

### **Aim**

- Generates HEP
- improve river transport upstream, easier for trading
- the dam helps prevents floods

### **Advantages** (Economic, social and environmental)

- **100 million people** on the **lower course/downstream of river protected** as **water discharged through dam** when necessary - **SOCIAL**
- HEP needed for China's growing industry and for domestic use too, **provides 10% of China's electricity through HEP** (China uses 40% world power)
  - This will decrease China's dependency on fossil fuels and therefore reduce greenhouse gases and other harmful substances released into the atmosphere - **environmental**
  - Electricity generated will help the economic development of cities nearby such as Chongqing with a population of 3 million people e.g provide better water, sewage system etc - **social**
- thousands of construction **jobs** were created - **SOCIAL/ECONOMIC**
- Becomes a **tourist attraction** overtime to witness its significance - **ECONOMIC**
- Improved **shipping** as larger boats (up to 10,000 tonnes) can travel upstream to Chongqing - **ECONOMIC**

### **Disadvantages** (Economic, social and environmental)

- **1.3 million people relocated** often **without** adequate **compensation** - **SOCIAL**
  - Most of the land used for **resettlement** is over 800m above sea level, where the climate is colder and the soil can **barely support farming**
- 4 cities, 8 towns and 356 villages submerged, such as Fuling (population of 80,000) and Wanxian (population of 140,000) will be flooded - **SOCIAL**
- Temples and sacred places will be flooded, **cultural sites are destroyed** - **SOCIAL**
- Silt builds up behind dam so does not fertilize fields downstream - **SOCIAL**

- Risk of earthquakes due to the pressure created by the huge weight of water in the reservoir behind the dam - **SOCIAL**
- **untreated human and industrial waste** will not be washed away downstream into the sea, but will stay and **pollute the river** instead - **ENVIRONMENTAL**
- Loss of species like the Yangtze river dolphin - **ENVIRONMENTAL**
- 27 billion pounds to build it which would divert money from other development - **ECONOMIC**

## **Case Study 7. Effect of Economic Development on Environment** **The Aral Sea, Southern Kazakhstan and Northern Uzbekistan**

### Facts:

- used to be the fourth largest lake in the world
- source of rivers: Amu Darya and Syr Darya
- 2007, it had declined to 10% of its original size

### Environmental effects

- irrigation of cotton diverts water from rivers, causing the level of Aral sea to go down
- method of irrigation with unlined canals and poor drainage led to water wastage
- overuse of pesticides and fertilizers on the fields polluted groundwater
- less water flows into the sea, level of sea dropped, volume decreased
- 65 million tonnes of salt and dust in the air, salinity increased 400%
- killed most fish and wildlife, 178 fish species reduced down to 38, and then down to 4
- climate became drier and hotter, water level went down
- water pipes have to be built above ground because groundwater is contaminated, this creates visual pollution
- dry environment and soil high in salinity led to death of plants

### Social and economic effects

- destroyed fishing industry with loss of 60,000 fishing jobs and annual fish harvest of 25,000 tonnes
- led to economic hardship and out-migration, 15,000 people have left
- Aral sea heavily polluted led to health problems, increased cases of esophageal cancer
- infant mortality rate was high (100/1000 births)
  - babies were physically deformed —> high salinity in mothers' milk
- cotton is the only cash crop, food shortages increased leading to increased malnutrition and typhoid which went up 29 times greater

## **Case Study 8. Niger Delta Oil Spills (Water Wars)**

### General Facts

- 70,000 km<sup>2</sup> - 7.5% Nigeria's land area
- contains over 75% of Africa's remaining mangrove
- one of the five most polluted spots on earth
- Oil main source of energy
- Nigeria 6th largest oil exporter
- low sulphur oil
- multinational companies drilling for oil Shell, Total, Chevron

### Negative Effects

- Gas Flares- 70 million m<sup>3</sup> each day = 40% Africa's natural gas consumption;

- World's single largest source of greenhouse gas emissions;
- Damages crops & fishing grounds; farmers and fisherman lose jobs
- Oil spills- 1.5 mill tonnes; 6,817 spills
  - Kills aquatic life
  - Contaminates Water
  - Fisherman lose jobs
  - Reduced Fish stocks
- Deforestation- over 20,000 hectares mangroves
  - Soil erosion
- Local Wave patterns- caused by construction and increased ship traffic
  - shore erosion
  - migration of fish into deeper water
  - reduced fish stocks; fisherman lose jobs
- Gov problems- 70% oil revenue lost through corruption; oil refineries poorly run
  - Poverty and neglect
  - agriculture forfeited for oil
  - country imports most of fuel
  - Most Nigerians live on less \$1 day
  - Standard of life not increased

#### Solutions

- Shell & other main oil companies financing community development projects
- \$ 30 mill invested in community-related schemes
  - health
  - portable drinking water
  - education
  - employment
  - skills development

### **Case study 9: more than 1 Renewable energy, Iceland**

Iceland may not have many fossil fuels but it has many renewable energy resources. It is located on a plate boundary and hotspot so has a high capacity for Geothermal and it also has high rainfall and mountainous central areas and large glaciers like Vatnajokull which lead to powerful rivers for hydropower. Renewable energy sources are very important in Iceland. Over 85% of its primary energy (this is energy that is used directly) comes from local renewable sources, especially Geothermal (65%) and Hydro electric power (25%). In terms of electricity generation, Iceland uses almost 100% renewable sources.

Iceland has 200 volcanoes and 600 hot springs. Hot water can be pumped directly into homes from underground, and in other places cold water is pumped down into the ground to be heated up and then piped to homes and community swimming pools. This warm water is also used to heat buildings during the cold winters, and to heat greenhouses in places like Hveragerdi so that vegetables can be grown despite the harsh climate.

Increasingly the hot water is also used to generate steam to turn turbines and generate electricity too, though most of Iceland's electricity comes from Hydropower generated from rivers like the Sog. The biggest power station is Karahnjukar where 5 dams have been

built. The water turns turbines to generate electricity, which is used by Aluminum smelting factories.

Iceland is now developing wind power too. As the population is small (320,000), there is plenty of space. Iceland still relies on imported oil for vehicles and for the fishing industry. Environmentalists in Iceland have said that although energy comes from renewable sources it still causes problems for the environment, especially when big, wild rivers are dammed.

### **Case study 10. Kenya (High birth rate in LEDC)**

Facts:

- population quadrupled in size, from 10.9 million in 1969 to 40 million in 2012
- fertility rate: 4.3
- majority of the population is below 20 and will soon reach child bearing age
- birth rate: 35.5 per 1000 in 2012

Causes:

- education is limited and few girls do not attend school
- couples need children to look after them when they are old as there is limited social security provided by the government
- certain religions encourage large families as more children bring rewards
- efforts to introduce family planning were neglected as the HIV epidemic diverted the fund
- 1/4 of women aged 20-24 have mated and given birth by age 18 - early marriage is part of the culture
- children can work on farms or help family look after siblings
- society places great value on large families so many women are afraid to use contraception for fear of reducing status

### **Case study 11. China's One Child Policy (High birth rate solution)**

Facts:

- One child policy was introduced by Chinese leader Deng Xiaoping in 1979 to limit communist China's population growth. The policy limits couples to one child.
- China had been prone to floods and famine and wanted to feed all its people.
- Past view had been "the more people, the stronger we are"
- Families with one child were given free education, priority housing and family benefits.

Problems with enforcing the policy:

- Those who had more than one child were fined
- The policy was keenly resisted in rural areas, where it was traditional to have large families.
- strict enforcement of policy in urban areas, remote rural areas harder to control
- Forced abortion and sterilization in rural area by government (women with more than 1 child)

Impact of the policy

- The birth rate in China has fallen since 1979, and the rate of population growth is now **0.7%** compared to **1.9%** in 1950



- due to a traditional preference for boys, large numbers of female babies have ended up homeless or in orphanages, and in some cases killed. In 2000, it was reported that **90%** of fetuses aborted in China were female.
- As a result, the **gender balance** of the Chinese population has become distorted. Today it is thought that men outnumber women by more than **60 million**.
- 1.6 fertility rate compared to 2.81 in 1979 before policy was implemented

#### Long-term implications

- Two child policy from now on since Jan 1, 2016
- While China's population is now rising more slowly, it still has a very large total population (1.36 billion) and China faces new problems, including:
- the falling birth rate - leading to a rise in the relative number of elderly people
- fewer people of working age to support the growing number of elderly dependents - in the future China could have an aging population

### **Case study 12. Bangladesh (Overpopulation in LEDC)**

Facts: population density of over 1000 people per km<sup>2</sup>

Causes:

- lack of availability and knowledge regarding contraceptives
- Condoms are also unpopular in Bangladesh
- children to help subsistence farmers work on the farms.
- no state pension system in Bangladesh, so children will take care of parents when they are old
- has high IMR (Infant Mortality Rate), so people have more children to replace the fatal ones
- Females are not fully emancipated

Problems:

- areas near the fertile floodplains of Ganges river become densely populated, the land is heavily farmed, leading to over-cultivation
- 90% of people live on these low-lying land prone to flooding from Ganges-Brahmaputra rivers and cyclones from Bay of Bengal
- The farmers are poor and therefore cannot afford to replace the nutrients in the soil, so the soil becomes infertile, which leads to a lowering of crop yields. This can cause an insufficient supply of food and result in some people becoming malnourished.
- Bangladesh suffers from annual floods during the Monsoon season. As a result of being poor, and having insufficient resources to protect themselves from these Climatic Hazards, this often results in a high death rate.
- puts pressure on resources such as housing, health care, water and sanitation, education etc.
- Overpopulation forces people to live in shanty towns, which contribute towards the spread of diseases and an increase in the death rate
- Too many people in the cities cause a stress on health care and medical facilities such as hospitals and medication
- Increased traffic and congestion problems leads to release of greenhouse gases
- Increasing youthful population lead to high unemployment rates, or seasonal, low-paid jobs since people have poor access to education

### **Case study 13. Japan low birth rate/aging population**

Facts:

- Stage 5 of demographic transition model (BR>DR)

- Migration
- total population decreases
- 126 million people
  - population declined a lot due to the tsunami 2011 especially coastal areas are affected
- 1.41 fertility rate
- spinning top/contracting pyramid → aging population

Causes:

- the number of women of reproductive age is on the decline
- people focus more on working than relationships
  - 1/3 of people under 30 had never dated at all according to a survey in 2011
  - 70% of women give up work when they get married (It's either one or the other since the corporate world makes it impossible to have both)
  - women are more independent and ambitious
- women follow strict cultural norms
  - only 2% of babies are born outside of marriage (compared to 30%-50% in most developed countries)
- high standard of living
  - children are unaffordable to raise unless both parents work
- limited space so there is a constrain from housing situation
- the perception of marriage by women is increasingly poor
  - 90% of young women believe staying single is preferable to what they imagine marriage to be

Effects:

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• population is either stable or decreasing which put less pressure on the land</li> <li>• low cost for things like education</li> <li>• 40% of social aids will go to elderly</li> <li>• 1/4 budget spent on social security since there are more elderly</li> <li>• older people can share traditions, wisdom and experiences</li> <li>• older people do a lot of volunteer works therefore more paid jobs are available for economically active workers</li> </ul>	<ul style="list-style-type: none"> <li>• too many older people to support</li> <li>• older people needs social security and old homes</li> <li>• the number of taxpayers is decreasing as working age population is shrinking</li> <li>• old people are having poor health which puts a lot of pressures on hospitals</li> <li>• old people in old homes are lonely but have nowhere else to go since they don't want to be a burden for their children</li> <li>• some elderly become daughters/sons only priority. His/Her life revolves around the elderly</li> </ul>

**Case study 14. Canada underpopulated**

Facts:

- Canada has a pop density of only 4 people per km<sup>2</sup> and a total population of 35 million, over 5 million square miles. (pop density, pop, area)
- The most underpopulated part is north west territory which occupies the size of India with a population of less than 55,000.
- 90% people live more than 100km away from the nearest road and half the population depends on air transport.

- Although Canada has rich abundance of zinc, tin, gold, silver, lead, oil and gas, these resources are frontier which means that they are hard to obtain & develop and are heavily influenced by market prices.

#### Causes:

- Large areas of Canada are extremely cold e.g. in Nunavut and have temperatures regularly below 0°C making these places inhospitable in winter
- The ground is permanently frozen in places (permafrost) which makes farming difficult
- Many mountains areas e.g. Canadian Rockies - with steep slopes making it difficult to build settlements
- Places in the far north bordering the Arctic ocean are blocked with sea ice for most of the year making communications difficult and expensive

#### Effects of under population in Canada:

- High rate of immigration
- Foreign economic involvement
- Regional disparities
- Service provision
- Urban population
- High standard of living (but not as high as it could be)

### **Case study 15. International Migration, Bangladesh to Singapore**

#### Facts:

- ranked 142 on Human development index (HDI)
- 5 million workers currently working outside of Bangladesh
- brings back new innovations, ideas
- however, all the most-skilled and educated individuals in Bangladesh left

#### Push Factors:

- poverty and low income due to its slow economic development, \$3200 per capita annually, half of their salaries in Singapore)
- family pressure
- lots of natural disaster and poor management e.g. flooding (most settlements build on low-lying floodplains near Ganges-Brahmaputra river so population very vulnerable)
- less job opportunities, many graduates in Bangladesh cannot find work
- too densely-populated, no space to live, land shortages mean small farmland and low yield
- droughts mean incomes and crop yields can be very low so life in rural Bangladesh is tough
- limited access to safe drinking water, sanitation or sufficient amount of food
- low quality of services e.g. health: only 0.4 doctors per 1000 people compared to 2 per 1000 in Singapore)

#### Effects of migration on Singapore:

- Migrants take jobs that are not filled up by Singaporeans, which require low level of skills and labor based, so Singaporeans can take still dominate the workforce
- cultural clash between workers and local Singaporeans/residents, lead to racial discrimination and conflicts
- increase Singapore's population, more people in the workforce boosting its economy
- some high-skilled workers compete with local residents for jobs
- lead to rise in property and food prices
- add strains in Singapore's infrastructure e.g. MRT, causing more congestion and traffic

- widens income gap between rich and poor

## **Case study 16. Tourism Kenya**

Facts:

- 52 different tribal groups
- Mount Kenya, second highest mountain in Africa
- Hot air balloon rides at Masai Mara National Park
- Galloping at Tsavo National Park
- Wildebeest migration across the Mara River
- dhow boat rides in Mombasa
- Fort Jesus Museum

Advantages:

- brings in US\$ 500 million per year
- accounts for 20% of Kenya's income
- employs over 500,000 Kenyans in the tourist industry
- huge range of jobs e.g. waiters, hotel receptionists, tour guide
- indirectly supports economy as local businesses support tourist industry
- traditional cultures and crafts are valued e.g. Masai Bracelets
- enhances image of Kenya as a safe place for investment
- Tourist prices for National parks subsidize locals
- preserves natural resources as they provide money and an incentive for conservation e.g. reduces activities of elephant poaching
- raises profile of National treasure e.g. Fort Jesus Museum is on UNESCO world's heritage list

Disadvantages:

- work is often low paid, low skilled and seasonal
- economy is vulnerable to fluctuations, tourists stopped coming in 2008 due to election crisis
- many profits leave the country since mostly TNC companies are behind the management
- traditional cultures are seen as a commodity and are exploited
- lack of respect for Swahili Islamic culture on the coast, with tourists in skimpy clothing
- sex tourism increases, shift in values occur among locals to cater tourists' demands
- Maasai tribes forced off their land to make Maasai Mara National Park
- Tourism damages the environment e.g. snorkeling damage coral reefs at Kisite Mpunguti Marine National Park, locals selling shells and reefs as souvenirs to tourists
- animal behavior affected e.g. rhinos especially sensitive to noise from hot air balloons
- Vehicles ignore 25m rule away from animals, causing soil erosion and disturb animals' routines
- Tourists demand imported food, increasing carbon footprint

## **Case study 17. Deserts of South-west USA**

Plants Adaptations

- path vegetation cover, plants must compete for water
- xerophytes
  - store water in their leaves and stems
  - waxy leaves or thorns reduce water loss through transpiration
  - deep roots used for storing water
- creosote bush
  - a mass of tiny rootlets just below the surface which can gather the dew that forms at night through condensation

- some plants only grow after storms due to limited water supply
  - produce flowers and seeds within 2-3 weeks
  - seeds lie dormant for many years until it rains again

### Animal Adaptations

- **nocturnal animals:** avoid the extreme heat by spending days under stones or in burrows and only come out at night
- having few sweat glands to save water loss
- get water from food
- produce dry feces and very concentrated urine
- **Gerbils, kangaroo rats and many insects:** feed on dry vegetation and seeds
- Some animals digest thorns
- Due to wide spaces of deserts, **fennec fox** has acute hearing
- **Camels**
  - wide padded feet stop it sinking into loose sand
  - long legs keep the body well above hot sand
  - nostrils can close during sandstorms
  - eyes are protected with long eyelashes and a double eyelid
  - shaggy coat which keeps it warm at night and helps with air circulation during the day
  - mouth is able to chew very tough plants and can store over 60 liters of water

## **Case study 18. Typhoon Haiyan, Philippines 2013**

### Intro

- Formed in Vietnam
- Category 5 typhoon (250 kph)
- 5m high
- lasted 9 days

### Effects

short-term effects	long-term effects
<ul style="list-style-type: none"> <li>• 8000 death toll</li> <li>• 13.2 million people affected</li> <li>• 4.4 million people displaced</li> <li>• 90% of schools in Aklan, Capiz and Iloilo provinces are partially or completely damaged</li> <li>• access to safe water supplies still a challenge</li> <li>• Over 1 million farmers and fishermen lost their livelihood</li> <li>• 2.5 million in need of food</li> <li>• 1 million houses damaged</li> <li>• 500,000 houses destroyed</li> </ul>	<ul style="list-style-type: none"> <li>• Between 50,000~120,000 tonnes of sugar may have been lost</li> <li>• coconut plantations flattened, 50% of the income lost</li> <li>• inflicted an estimated \$15 billion damage to Philippines</li> <li>• Agricultural industries such as rice and sugar plantations cost \$80 million to restore</li> <li>• 90% of buildings from Tacloban destroyed</li> </ul>

## **Case study 19. Famine in Kenya**

### Causes

- Indian Ocean warmed → global warming, hot air condenses but does not fall over the land → low moisture in air in East Africa
- drought - worst one encountered in 60 years, less than average rainfall over a long term
- drought killed off the pastoralists' prime livestock assets (up to 90% animal mortality in some areas), slashing further their purchasing power

- poverty → cannot afford the food → food insecurity (low resilience)
  - 50% of the Kenyan population live on less than \$2 a day
- inability of government and donors to tackle the country’s chronic poverty
  - lack of investment in social services and basic infrastructure
  - corruption
  - donors reacted too late and too cautious
  - overall international response to this humanitarian crisis have been slow (1 billion is needed according to UN, so far donors only committed less than \$200 million)
- land previously available for nomadic grazing being taken over for commercial farming for profit
  - Chinese, American and European companies buy up large amounts of land in Africa because their own countries have been facing food shortages e.g. China’s growing population and US depleting their acquires and running out of water
- Overpopulation caused by high birth rate
  - dependence on agriculture - need children
  - lack of education, healthcare and welfare

Effects

- child malnutrition rates are 30% which doubled the emergency threshold of 15%
- widespread devastation of farmland, failed harvests and livestock deaths
- families lost income and food supplies
- ground cracked and brown land replaced green
- 10 million people affected across East Africa
- dead carcasses not being cleared fast enough
- school attendance dropped → lower the amount of education received
- out-migration increased
- affects 3.75 million in Kenya
- 0.5 million children and pregnant women especially suffer acute malnutrition
- food and fuel price increases

**Case study 20. Tropical Rainforest/Deforestation/farming system, Oil Palm Plantation, Indonesia**

Input	Process	Output	Feedback
<ul style="list-style-type: none"> <li>• railway connections to the coast</li> <li>• Pollination</li> <li>• Workers in large number</li> <li>• plant nursery</li> <li>• huts for workers</li> <li>• oil pumps</li> <li>• cages to hold 2.5 tonnes of fruit</li> <li>• Trucks to collect</li> <li>• nets to pick up loose fruit</li> <li>• fertile soil</li> </ul>	<ul style="list-style-type: none"> <li>• processing factories, remove waste</li> <li>• Sterilization</li> <li>• Threshing</li> <li>• Pressing to get the oil</li> <li>• Removing dirt and moisture to purify product/Refining</li> <li>• Separation of palm kernels and fibre</li> </ul>	<ul style="list-style-type: none"> <li>• raw material                             <ul style="list-style-type: none"> <li>• rubbers for tires</li> </ul> </li> <li>• oil kernels - non consumption palm oil (cosmetics/soap)</li> <li>• sludge waste</li> <li>• crude palm oil → cooking oil</li> </ul>	<ul style="list-style-type: none"> <li>• profit</li> <li>• shells fibre</li> </ul>

Facts:

- 85% of the world’s palm oil comes from Indonesia and Malaysia
- a booming global commodity, used in cosmetic products, soap, cooking oil, food etc.

Negative effects:

- slash-and-burn method of farming meaning cutting down trees of old plantation to make space for oil palm, rainforests the size of 5 football fields disappear every minute
- Soil erosion, desertification
- in 15 years, 98% of the rainforests will disappear because of deforestation
- orangutan extinction, over 50,000 died and 90% of their habitat destroyed in the last 20 years
- orangutan is important in the ecosystem in rainforest, as it aids germination
- haze in neighboring countries cause breathing problems
- Farmers nearby experience red eyes, skin irritation, bronchitis, and possible reasons leading up to other respiratory problems
- children and pregnant women are especially vulnerable to such illnesses
- carbon pollution, making Indonesia the 5th largest emitter of carbon dioxide in the world
- discourage tourism in the area
- Monoculture - makes people in the industry dependent to this industry and vulnerable to price fluctuations
- social conflict - as rights of farmers are ignored
- human rights violation e.g. child labor to carry large loads of heavy fruit, weed fields and spending hours every day bent over collecting fruit from the plantation floor, they often receive little or no pay for their efforts

Climate:

Because tropical rainforests are close to the equator, they have very similar climates all year around. Their temperature is constant at **between 25 and 30 degrees Celsius**. They also receive **rainfall** all year around, although the monthly amounts may vary slightly. Tropical rainforests normally experience **convective rainfall**. This is because they are close to the equator where temperatures are hot. **The hot temperatures warm up the land, causing evaporation and transpiration and then convection**. Not only is the weather similar between months, it is also very similar between days. Days will start of warm and then the temperature and humidity will build up. By the afternoon the air is saturated and tropical rainforest normally experience intense rainstorms. Because tropical rainforests are near to the equator the hot air rises causing **low pressure**.

## **Case study 21. TNC Toyota and global links**

Facts:

- Toyota factory located in Burnaston, near Derby, opened in 1992
- World's 3rd largest producer of cars
- 2,500 employees and over 200 suppliers
- 26 countries have workers for Toyota, there are factories in every continent
- 8.5 million cars produced worldwide in 2010
- produced first hybrid car, 37 million tonnes of CO2 saved by Toyota's hybrids

Factors that affected the location of Toyota Burnaston Manufacturing Plant

- Transport - located on the junction of the A50 and A38 roads, main roads connecting to the rest of the country, also near International Airport. Transport links are important to receive supplies and transport cars.
- Labor - Derby is a traditional manufacturing location, has a large supply of skilled workers
- Universities - near Leicester and Nottingham university, provide skilled graduates and research facilities
- Market - UK population of 65 million and EU population of 500 million, huge potential market

- UK is in EU, Toyota in UK can easily export cars to the rest of EU
- Reliable Electricity - reliable source across the nation, recently installed solar panels in factories
- Communications - good broadband internet coverage, quick and efficient post as well
- Schools and Hospitals - Derby is home to Royal Derby Hospital and Derby Grammar schools for workers to send their children
- Political incentives - local government help with recruitment of workers
- Recreation - Derby has a football club, recreational centres, golf courses etc.
- Flat land - site near Burnaston very flat and easy to build on
- Room for Expansion
- Environment - very green, mostly farmland, so no clean up costs

Industrial system:

Input	Process	Output
<ul style="list-style-type: none"> <li>• 2.35 million m2 of land</li> <li>• £1.15 billion investment</li> <li>• 2,500 workers</li> <li>• 200 suppliers (tyres, paint, steel rolls, etc.)</li> <li>• 50% of suppliers are in UK</li> <li>• 50% of suppliers are in EU</li> <li>• Limited number of supplies from Japan</li> </ul>	<ul style="list-style-type: none"> <li>• Research and development</li> <li>• Production of raw materials                             <ul style="list-style-type: none"> <li>• sheet steel for body</li> <li>• metal casting for engine</li> <li>• electrical wires</li> <li>• plastics for interior</li> <li>• metals used in electrical components</li> </ul> </li> <li>• Manufacture of components                             <ul style="list-style-type: none"> <li>• engine, body, transmission system, battery, paint, electronic components, interior trim</li> </ul> </li> <li>• Car manufacture and assembly                             <ul style="list-style-type: none"> <li>• highly automated</li> <li>• large assembly lines</li> </ul> </li> <li>• Marketing and distribution</li> <li>• Sale, service, parts</li> </ul>	<ul style="list-style-type: none"> <li>• Toyota Avensis (68,367 cars) and Toyota Auris (68,687 cars)</li> <li>• 15% sold in UK</li> <li>• 70% sold in Europe</li> <li>• 15% sold worldwide</li> <li>• profit for Toyota and waste (scrap metal and etc.)</li> </ul> <p><b>Economies of Scale: Producing products in large numbers on a large scale actually reduces the price of the products or services on offer</b></p>

**Case study 22. An industrial zone - Pudong Development zone, China**

Factors influencing its location

- government stimulate the development of neighboring areas by setting up several development zone in all parts of the country
- wages of the workers are kept low by the host country
- no corporate income tax has to be paid for maybe 5 to 10 years
- ever since 1990, areas of slum, reed ponds and farms were converted into new industrial zone with a revitalized system of roads and services
  - over 3 million m3 of old buildings have been torn down
  - metro line was constructed linking the new Hongqiao airport to the west of Shanghai
  - Hongqiao airport is capable of handling 80 million passengers a year
- labor force in the coastal areas are better educated, more skilled and more productive
- no trade unions who might go on strikes for better work conditions
- suppliers are nearby
- road, air transport, telecommunications infrastructure are highly developed
- near to seaports so fewer delivered delays and lower transportation costs



## **Plate tectonics**

**What may be done before an earthquake occurs to reduce these short-term effects e.g. life, injuries, damage to buildings and communications**

- buildings can be built on **flat land** with solid rock
- buildings can use **cross braces** to make them stronger
- **dampers** can be added to high buildings to counteract swing in earthquakes
- Windows can be **reinforced**
- **emergency exits** should be created
- Emergency exit **drills** should be exercised on a regular basis

**Why is LEDCs more vulnerable to natural hazards**

- tend to have **more informal settlements** e.g. favelas/shanty towns that don't follow building codes
- suffer from **rapid urbanization**, uncontrolled growth of settlements on dangerous marginal land
- **poor medical care**
- **less money** spent on rescue teams
- **poor transport and communication** e.g. population with limited access to phones, tv, internet → not **warned about forthcoming** natural disasters
- not enough **supplies** of tents, blankets, food and clean water
- **electricity and water will take longer to repair** → secondary hazards of diseases
- **lack of education**, never learnt about ways to respond to natural disasters
- **High population densities**, take longer to restore homes

**Why are long-term effects difficult to deal with**

- injuries take longer to recover
- damaged transport links
- loss of workers, most are involved in accident
- psychological impacts
- shortage of food and water
- electricity shortages
- damaged infrastructure

## **Population and Migration**

**Effects of migration on MEDCs**

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• more workers → increased productivity → more goods produced</li> <li>• provides skilled labor supply; e.g. doctors/dentists/technicians/brings in new ideas</li> <li>• provides cheap labor, take up unwanted jobs</li> <li>• multi-cultural society</li> <li>• bring new business to the country → create employment/generates income</li> <li>• increase size of local market</li> <li>• more people to defend country/join armed forces</li> <li>• more taxpayers, tax can be used to improve services/infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• rise in housing price</li> <li>• rise in price of food/oil</li> <li>• overcrowded schools/overburden on education/cramped classroom</li> <li>• put pressure on public services</li> <li>• unemployment may rise as migrants take some of the jobs</li> <li>• conflict with locals (cultural clashes)</li> <li>• increase in crime rate</li> </ul>

**Effects of aging population (Stage 5 DTM)**

- There may be a shortage of workers (not enough economically active)
- less tax payers and the government receives less money to spend on services, infrastructure
- Old people tend to get more sick, so there will be an increase in pressure on hospitals
- In many countries retired people can claim pensions off the government. If there are a lot of old people this can be very expensive

- The government has to provide places in care homes or provide services so people can care for themselves at home e.g. meals on wheels

## River

Explain how a delta is formed	Why do people live on floodplains
<ul style="list-style-type: none"> <li>• Deltas are found at the mouth of large rivers - for example, the Mississippi. A delta is formed when the river deposits its material faster than the sea can remove it. (high volume and large discharge)</li> <li>• river capacity reduces when entering sea/ lake (lower course of river)</li> <li>• deep and wide river channel</li> <li>• low energy level as deposition takes place; river cannot carry load if it is heavily laden with silt</li> <li>• distributaries form to enable water to flow through to sea</li> <li>• Absence of major tidal flows/currents</li> <li>• flat landscape, very fertile floodplain good for agriculture</li> </ul>	<ul style="list-style-type: none"> <li>• fertile soil/high crop yields</li> <li>• good grazing land</li> <li>• water from river for drinking/washing/ domestic uses</li> <li>• irrigation for crops</li> <li>• flat building land</li> <li>• transport along river —&gt; trade</li> <li>• easy communications/roads/railways can be built along valley</li> <li>• power available from river/water mills/HEP e.g. Three Gorges Dam</li> <li>• scenic beauty/make money from tourists</li> <li>• source of food/fishing</li> <li>• clay for building/making pots</li> </ul>

## Weather and Climate

### impacts of large scale deforestation on environment

- threatens species with extinction, destroys animals/plants—>loss of biodiversity
- reduced photosynthesis, releasing more carbon dioxide into the atmosphere—>GH effect
- reduces interception and root uptake and transpiration, increase surface runoff and flooding
- soil less stable, landslides are more likely to occur
- with increased flooding and surface runoff, soils and silt is washed into rivers, changing local ecosystem and reducing the depth of rivers
- silt reduces transparency of sea —> reduces the light that coral reefs receive and the temperature of water
- rainforest soil loses its fertility after deforestation —> desertification
- destroying homes of indigenous groups
- < water transpired from plants into the atmosphere, reduce the formation of clouds and rainfall

### Effects of climate change:

- ice melted —> increase in temperature, loss of habitats in polar areas, drought due to warmer water evaporate faster, rise in sea level (melting glaciers) —>hurricanes, longer seasons, extreme temperatures

## Agriculture

### Desertification

Causes	Effects	Solutions
--------	---------	-----------

<ul style="list-style-type: none"> <li>• <b>Overgrazing</b> (allowing too much livestock to graze on a land, making ground susceptible to wind and water erosion)</li> <li>• <b>Over cultivation</b> (farm intensively, all the nutrients in soil get used)</li> <li>• <b>Deforestation</b> (less nutrients, more vulnerable to erosion, less stability)</li> <li>• <b>Overpopulation</b> (demand for agricultural products increase)</li> <li>• <b>Fertilizer and Pesticide use</b> (pollute local water, use up natural nutrients, land vulnerable to erosion)</li> <li>• <b>HYV and GM crops</b> (encouraged over cultivation, diminish natural nutrients)</li> <li>• <b>Unsustainable water use</b> e.g. Aral Sea</li> <li>• Rising temperatures</li> <li>• Reduced rainfall</li> <li>• flash floods (erosion of topsoil → land degradation)</li> <li>• wind (wind erosion)</li> </ul>	<ul style="list-style-type: none"> <li>• Dust storms</li> <li>• Reduced crop yields (soil less fertile, less crops, famine)</li> <li>• Conflict (with increasing soil degradation and reduction in agricultural output and available agricultural land, conflict can arise over diminishing resources)</li> <li>• Famine: if soil becomes degraded and crops begin to fail or the yields reduce in quantity then famine can happen.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Crop rotation:</b> different nutrients are used, fallow periods for soil to regain fertility</li> <li>• Shelter belts: areas of forest that are left untouched to protect farmland from effects of water and wind erosion</li> <li>• Reforestation/<b>Afforestation</b></li> <li>• Irrigation: if not used sustainably, can cause water shortages and land degradation elsewhere</li> <li>• <b>Grazing quotas:</b> placing limits on the number and types of animals that can graze on land</li> <li>• Population control: to limit the land we need and farming intensity</li> <li>• GM crops: to withstand poor soil and water shortages (might encourage people to farm on unsuitable land causing further land degradation)</li> <li>• Harvest branches rather than whole trees to prevent deforestation, soil erosion etc.</li> <li>• <b>Stone lines</b> along soil contours to keep soil in place</li> </ul>
--	--	--

### How farmers can increase yields

- Use HYV or GM crops
- buy more land
- land reform: avoid dividing land into smaller profits, to ensure that plots of land remain big enough to farm sustainably
- Use fertilizer and pesticides
- Crop rotation
- Modern machinery: more efficient and better ploughing and faster harvesting
- Irrigation: more frequently to grow crops over a longer season
- Cooperatives: by joining together with nearby farmers, share technology and even land to increase production
- Terracing on hillsides: increase the size of their land, reduce the use of water

**Slash and burn farming:** The process of cutting down areas of forest and then burning the stubble/roots in order to farm. Because land will become infertile very quickly, slash and burn farmers will move land every few years.

### Shifting Cultivation:

Farming that involves clearing an area of land (deforestation) in order to farm. Shifting cultivation is usually small-scale subsistence farming. Once the land is cleared farming will take place. However, without its normal source of nutrients (rotting plant and animal matter) the soil soon becomes infertile and the farmers are forced to move onto a new location. Shifting cultivation is very common amongst indigenous groups in rainforests.

#### Problems:

- The killing or disturbance of flora and fauna.
- The breaking of the nitrogen cycle, causing soil to lose its fertility very quickly
- Breaking the stability of the soil and causing top soil erosion. Tree roots are very good at holding soil in place. If you remove these roots then water and wind erosion is more likely to happen.

- More flash floods caused by the reduced interception, increased surface run-off
- Silting of rivers caused by top soil being washed into rivers. The silt can then be washed into the seas blocking shipping channels or damaging reefs.

	Organic Farming	GM Farming
Advantages	<ul style="list-style-type: none"> <li>• Crops take longer to ripen, have better flavor</li> <li>• Limited fertilizer or pesticides are used so there is minimal runoff into rivers or infiltration into groundwater stores</li> <li>• much less chemicals consumed by customers</li> <li>• often get a higher price when sold to consumers</li> </ul>	<ul style="list-style-type: none"> <li>• all uniform in shape, make storage and transport easier</li> <li>• growing season is shorter, possible to have two or more crop seasons per year</li> <li>• crops may be drought resistant so less water is used in production</li> <li>• may be possible to farm in areas previously deemed unsuitable for farming</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• crops are not uniform</li> <li>• may be susceptible to diseases</li> <li>• may take longer to grow, increasing the growing season</li> <li>• may need more water to grow</li> </ul>	<ul style="list-style-type: none"> <li>• Native/natural species may die because they cannot compete with stronger GM crops</li> <li>• taste is not as good because they have been grown for appearance rather than taste</li> <li>• can lead to the development of super weeds to compete with stronger GM crops</li> <li>• unknown long-term health effects on humans</li> </ul>

**Famine**

Human/political/economic causes	Physical causes
<ul style="list-style-type: none"> <li>• Overpopulation: demand for food is increasing</li> <li>• Overgrazing: all the vegetation can be eaten. reduces the integrity of the soil and can cause topsoil erosion and soil degradation.</li> <li>• Over cultivation: using all the nutrients and not giving them time to recover. If the land becomes degraded then the yields decline.</li> <li>• Deforestation: integrity of the soil can be damaged as well as its source of nutrients. This can cause soil degradation and erosion, both leading to reduced yields.</li> <li>• Pollution: Farming and industrial pollution can both degrade the land and reduce yields of crops.</li> <li>• Conflict: less farmers—&gt;reduced yield, land destroyed</li> <li>• Corruption: Sometimes government officials or armies can use crops for their own needs/ mismanagement of rural areas</li> <li>• Poverty: cannot afford food/food insecurity</li> <li>• Natural disaster</li> </ul>	<ul style="list-style-type: none"> <li>• Temperature: Temperatures that are too hot or too cold can both kill crops and animals. Most crops need steady and reliable temperatures.</li> <li>• Rainfall: If there is a shortage of rainfall then most crops will die or need extra irrigation. If water to irrigate is not available then crops will begin to die and yields reduce.</li> <li>• Flooding: Although all crops need rainfall, especially things like rice, too much rainfall can flood and kill crops or wash away topsoil reducing the soils fertility.</li> <li>• Natural Disasters: Natural disasters like hurricanes, tsunamis and volcanoes can destroy large areas of agricultural land. They can also kill or injure farmers. Both factors reduce yields.</li> <li>• Soil fertility: If soil is infertile because the bedrock contains few minerals or there is no flora and fauna to provide a humus layer then it can be hard to cultivate the land and lead to low yields.</li> </ul>

**Industry**

**Why are high tech industries important in NICs**

- Creates jobs for local people
- TNCs will pay local government taxes, therefore increasing the government’s budget

- Jobs at a TNC will be in the formal economy, so better regulated in terms of safety, pay etc.
- Improves workers' skill and education levels
- Introduce new technology into the country
- Infrastructure like roads and ports are upgraded and benefit the whole economy and people
- Diversifies the economy, move away from the reliance on one industry like farming or tourism
- Country receives prestige for attracting TNCs and investment into the country (g reputation)

### **Factors that affect location of factories**

- Skilled labor available
- Cheap labor available e.g. clothes factories in LEDCs
- Available Capital (access to money) - does not really affect the location
- Potential market
- Suppliers - to ensure the smooth production of products it helps to be close to suppliers
- Good housing - to attract workers, may be high density cheap housing
- Good schools and hospitals - attract workers and especially their family
- Universities - especially for quaternary industries that carry out research and development, near universities to have skilled workers and available laboratories
- Transport links - so industries can receive supplies and distribute products
- Good communications - contact suppliers and customers
- Reliable electricity and water supply
- Flat land - easy to build than hilly land
- Available land - land that have the potential to expand factories/offices
- Unpolluted land - no clean up costs before construction
- Natural transport links - e.g. rivers and coast to sell products worldwide
- Available raw materials
- Renewable energy sources - for companies to demonstrate their sustainability
- Nice environment - to attract skilled worker
- Climate - especially for solar panel research and development (need a source of UV)

### **Causes of Globalization - the increasing interconnectedness of countries due to economic investment, trade, cultural and political reasons**

- improvements in transportation
  - large cargo ships → cost of transportation decreases
  - Economies of Scale → cost per item reduces when operating on a larger scale
  - transport improvements → less delivery delay
- Freedom of trade
  - remove barriers between countries e.g. WTO promotes free trades (removing trade barriers)
- Improvements of communications
  - internet and mobile technology
- labor availability and skills
  - lower labor costs e.g. clothing in LEDCS take adv. of cheap labor and less legal constraints
  - high skill levels
- development, increased affluence → increased demand for products

### **Effects of Globalization**

Positive:

- inward investment by TNCs help provide new jobs and skills for locals
- TNCs bring wealth and foreign currency to local economies when they buy local goods
  - money can be spent on education, health and infrastructure
- sharing of ideas, experiences and lifestyles of people and cultures
- increases awareness of events in far away parts of the world e.g. emergency aid is delivered
- increases awareness of issues e.g. deforestation and global warming
  - alerts us the need for sustainable development

Negative:

- does not help to close income gap between rich and poor countries

- mostly operates in the interests of the richest countries, continue to dominate world trade, LEDC only provide cheap labor and raw materials
- no guarantee that inward investment will benefit locals
  - profits send back to TNC base
  - drive local companies out of business
- absence of strictly enforced international laws → pollution, poor working conditions, low wages
- threat to cultural diversity
  - cultures exploited/lost, world is dominated by 'western' or 'American culture'
- industries thrive in LEDCs at the expense of jobs in manufacturing in MEDCs

## **Tourism**

### **Advantages of tourism in a country**

- Tourists pay visits to museums, preserving local culture
- Historical ruins may be protected or rebuilt to attract tourists
- May improve countries' reputation and create cross-cultural links
- encourages education in order to work in tourist sector and should improve linguistic skills
- Jobs are created for local workers in hotels, restaurants etc.
- People learn new skills that can be transferred to other parts of the economy
- New equipment or technology may be introduced
- Local infrastructure like roads and electricity may be improved
- National Parks may be created protecting areas of natural beauty
- Animal obtain an economic value if people are willing to pay to see them → wildlife protected

## **Energy/Water**

### **How the increased demand for energy can have serious environmental effects. (4)**

- The increased demand for energy means that it is drilled in very remote areas, which are unspoiled. In Alaska there was the building of the pipeline, which went through unspoiled mountain ranges and protected areas.
- The building of the pipeline could upset the wildlife
- danger of spillage → the ecosystem will suffer
- greenhouse gas emission e.g. burning fossil fuels

## **Coast**

### **Cliffs & Wave Cut Platforms**

- Cliffs are formed when destructive waves erode the bottom of the rock by hydraulic action and corrasion
- Points of weakness and faults are attacked most, a wave-cut notch is formed
- The rock above overhangs the notch, and as it is cut deeper into the rock, gravity causes the overhanging rock to collapse
- The loose rocks are removed by the waves and transported along the coast (LSD)
- The whole process of undercutting the cliff begins again
- As the cliff is eroded, it retreats, leaving behind a wave-cut platform at the bottom of cliff

### **Headlands and Bays and caves, arches and stacks**

- coastlines have alternate bands of resistant hard rock and less resistant soft rock
- less resistant soft rocks will be eroded faster
- bays are formed
- remaining resistant hard rocks extend into the sea as headlands
- waves attack lines of weaknesses at the base of the headland and undercut it
- through hydraulic action and corrasion, a cave is formed
- caves may develop on each side of the headland, erosion eventually join caves together, leaving a bridge of rock known as an arch above the opening

- Overtime, the roof of the arch collapse to form a stack

### **Spits and Tombolos**

- longshore drift moves the materials along the coastline
- spit forms when the materials accumulate in one area
- overtime, the spit grows and develops a hook at one end of the spit, if wind direction changes further out
- waves cannot get past a spit which creates a sheltered area where silt is deposited and mud flats or salt marshes form
- a spit has one end connected to a mainland while the other end projects out into the sea
- it may continue to expand until it joins the island to the mainland, a tombolo is formed

### **Process of Coastal erosion:**

**Abrasion (Corrasion)** - wearing away of materials carried by waves

**Hydraulic action** - force of waves causing air in the cracks to be compressed by water entering the cracks, resulting in the widening of cracks

**Corrosion** - waves react chemically with soluble minerals contained in the rocks and dissolve them

**Attrition** - when rocks carried by waves rub or hit against each other, breaking down into smaller, rounder, smoother pieces

### **Pressure on coral reef ecosystems:**

- Overfishing, predators have less to feed on
- Dynamite blasting and spearfishing, coral reef habitat destroyed, selective depletion of fish population disrupts ecosystem
- recreational use/tourism, waste may be discharged into water and stress corals; boat anchor damage corals
- Land reclamation, coral reefs are suffocated by sediments and are destroyed (sunlight blocked, algae cannot photosynthesize)
- Climate change, reefs might not be able to adjust to the temperature, loss of algae
- mangroves cleared for fuel and charcoal, coasts become more vulnerable to storms, waves
- mangroves converted into paddy fields

### **Coastal protection measures**

- limit damaging activities
- protect coastal resources
- restrict development in areas prone to natural hazards

Hard and soft engineering:

- Seawalls, absorb energy of waves before they can erode away loose materials
- headlands, reduce the force of high energy incoming waves
  - offshore, create a zone of calm water behind them, materials are then deposited and build up in this zone forming beaches
- groynes, constructed at right angle to the shores, retain sediments that might otherwise be removed due to longshore drift, absorb wave energy
- beach nourishment, slows down erosion of beaches, may come from another beach, expensive
- Planting vegetation/mangroves, trap sediments and reduce coastal erosion