

Revision booklet- Geography-MYP- Year 5

Answer Key

Theme 1. Demographics and human movements

1. What is meant by 'death rate'? [1- Criteria A]
Death rate – No. of deaths per 1000 people per year.
2. Identify:
A the area with the highest rate of natural population increase,
B an area of natural population decline. [2- Criteria A]
Central Africa, Eastern Europe and northern Asia
3. Suggest reasons why:
 - a. there are higher death rates in Western Europe and North America than in Latin America and the Caribbean [2- Criteria D]
Birth rates are comparatively lower therefore the death rates seems higher- MEDC have low BR and high life expectancy as compared to LEDC in Latin America and the Caribbean.
 - b. there are higher birth rates in Central and Southern Africa than in East Asia. [2- Criteria D]
primary economy- needs more children to work in primary sector- lack of family planning- lack of awareness- low availability of family planning measures.
4. Which age group in Ethiopia has the largest percentage of both males and females? [1- Criteria A]
Young dependents
5. What evidence in the population pyramids suggests that:
 - A. people in The Netherlands have a longer life expectancy than people in Ethiopia?
It shows 85+ age group and has more no. of people in this age group of old dependents
 - B. Ethiopia has a higher birth rate than The Netherlands? [2- Criteria A] **Young dependents base is broader**

It shows 85+ age group and has more no. of people in this age group of old dependents.
6. Describe the ways in which the dependent population is supported in LEDCs and MEDCs. [4- Criteria C]
Support in LEDC – By young working groups, they take care and look after, bear all expenses of medical as well as educating the young dependents, rely on charities.
Support in MEDC – Government looks after- provides education and healthcare.
Accommodation might need to be modified or special pensioner bungalows built that have been adapted for pensioner-use.
7. How does the dependent population of Ethiopia differ from that of The Netherlands?

Ethiopia has more young dependents, but Netherlands has more old dependents.

8. Suggest reasons why Japan has an ageing population. [3- Criteria D]

- **Healthier Diets**
- **210 doctors per 1000 people**
- **High quality of life**
- **Women having children older**
- **Very strict immigration policies**
- **Average age of first marriage increasing**
- **Marriage rates are falling**
- **Higher proportion of women in employment**

9. Suggest the likely effects of this population trend on the Japanese economy by 2050. [5- Criteria D]

- **Arcades drawing in older people meaning children are left out**
- **Elderly at risk of natural disasters - more deaths/illnesses - costs lot of money looking after the elderly**
- **Pensions timebomb - pensions very expensive - not enough working people to pay**
- **Elderly living and dying alone - if they have an accident no-one will know**
- **Not enough health care staff to look after the all**

10. Explain why the governments of some countries may be concerned by a rapid growth of population. You may refer to examples which you have studied. [7- Criteria C]

A large population has many effects.

Social

- **Services like healthcare and education can't cope with the rapid increase**
- **Children have to work to help support their large families**
- **There aren't enough houses for everyone, so people are forced to live in makeshift houses**
- **There are food shortages if the country can't grow or import enough food**

Economic

- **There aren't enough jobs for the number of people in the country so unemployment rises**
- **There's increased poverty because more people are born into families that are already poor and have no jobs**

- **More young people working means staff with short hours**
Political
- **Most of the population is made up of young people so the government focuses on policies important to the young.**
- **There are fewer older people so pensions become less important to the government**
- **The government has to make policies to bring population growth under control**
Give example – India/Bangladesh

11. What is meant by an *immigrant*? [1 - Criteria A]

Person coming into a country

12. Compare the number of immigrants in 1989-1990 with those in 1999-2000 and identify a place of origin:

A which shows an increase in migration,

B which shows the largest decrease in migration. [1 - Criteria D]

13. Write down the name of the area which you have chosen and suggest **three** reasons why people migrate from there to an MEDC such as Australia. [3 - Criteria C]

Why migrate to MEDC – Better Jobs [high paying], better education, better healthcare, improved living standards.

14. Many migrants from other countries move to cities in Australia, such as Sydney and Melbourne. Describe the effects of international migration on cities such as these. [3 - Criteria C]

Overcrowding, pollution, squatter settlements

More work force

15. A group of individuals conducted a survey to calculate population growth by interviewing people in a region. What type of data was collected? [1- Criteria – B]

Primary

Theme 2. Settlement and urban morphology

1. What is meant by *urban area*? [Criteria A - 1]

An urban area is the region surrounding a city. Most inhabitants of urban areas have nonagricultural jobs. Urban areas are very developed, meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. "Urban area" can refer to towns, cities, and suburbs.

2. Use Fig. given below to name an urban area where:

A. housing is overcrowded - **Kolkata**

B. air quality is poor. **Kolkata, Beijing** [Criteria A - 2]

3. Using **only information from Fig. 3**, identify three differences between the quality of life of people living in Shanghai and New York. [Criteria A - 3]

Shanghai is overcrowded [2 compared to 0.5]

Crime rate is higher in Shanghai

Traffic congestion more in Shanghai

4. Using evidence from Photograph, describe the problems which are likely to be faced by people who live in New York. [Criteria D - 4]
Overcrowding, traffic congestion, high rentals, pollution
5. How do the results of the 'rush hour challenge' reported in Fig. show that there is traffic congestion in Auckland? [Criteria D - 2]
By showing that a person bicycling can reach faster than cars, use data given to support
6. Write an essay to explain why traffic congestion is a problem in many large urban areas. [Criteria C - 5]

As more people move to the edge of towns and cities, traffic congestion may get worse. Many people will drive their cars into the city centre to get to work.

It is compounded by people being brought into city on large roads or motorways. These roads then link up with smaller, older, narrower roads in the city centre. This causes a bottleneck and congestion.

Add an example - Edinburgh is the UK's fourth most congested city. A recent study shows driving in Edinburgh takes 66 per cent longer in the evening rush hour and 53 per cent longer in the morning peak because of congestion. It also calculated drivers with a 30 minute commute wasted on average 86 hours a year in traffic jams.

Traffic queued at traffic lights in Edinburgh
160,000 vehicles enter the city every day and this is forecast to rise to 180,000 by 2016.

The western edge of the city, waterfront, and residential areas of the south-east are expected to suffer most from traffic congestion in the future. Office and business developments at Edinburgh Park generate a large amount of traffic in that part of the city as commuters make their way to and from work.

Edinburgh city centre is characterised by narrow, cobbled and winding streets in the Old Town. This exacerbates traffic congestion. Queen Street, Charlotte Square and the western end of Princes Street are areas of significant traffic delay.

7. In all large urban areas attempts have been made to solve the problems faced by the people who live there. These include problems such as:

traffic congestion,
squatter settlements,
housing shortages,
urban sprawl

Choose either one of these problems or any other problem faced by people who live in urban areas. For a named urban area, describe the attempts which have been made to solve the problem which you have chosen. [Criteria C - 7]

Using the same example of Edinburgh –

Solutions

Park and ride

A Park and ride facility has been built at Ingliston near Edinburgh Airport, on the western edge of Edinburgh. There is space for 535 cars and additional space at other stops such as at Hermiston on the Edinburgh City Bypass, Newcraighall in the east of the city and at Ferrytoll in Fife. More than 500 motorists use these schemes per day.

Pedestrian shopping streets

Pedestrianised areas, like Edinburgh's Rose Street, remove traffic from the central business district (CBD). They are safer for shoppers and reduce pollution. Deliveries can still be made in these areas but usually these are limited to early mornings or nights.

City of Edinburgh Council and business groups have further plans to improve the existing pedestrianised areas in the city.

Traffic calming

Roads are narrowed and speed bumps have been installed to make traffic move more slowly around narrower streets. Narrow roads may restrict the type of vehicle that can enter certain parts of the city.

A speed limit of 20 mph is to be rolled out across Edinburgh by April 2017 making it the first city in Scotland to do so. The limit will be implemented on all residential streets, main shopping areas, city centre streets, and roads with high levels of pedestrian and cyclist activity.

Car pooling

An increasing number of web-based car sharing schemes run across the UK. For example, Tripshare is funded by the Scottish Executive and supported by Edinburgh Council. It is part of the UK's National Liftshare network.

The Edinburgh City Car Club has specific parking spaces in the city so members of the scheme can pick up a car or van locally when they need one.

Permit holder parking

Permit prices across the city centre rose by ten per cent in 2013, just six months after a rise of five per cent. As of April 2014, an annual permit for large vehicles in the highest band costs £408.

Parking charges

Prices at pay and display meters in Edinburgh can cost as much as £3.20 per hour in the city centre. It is hoped that rising prices will deter motorists and encourage them to use public transport

Edinburgh Congestion Charge

Following on from the implementation of the London congestion charge in February 2003, City of Edinburgh Council announced plans to introduce a road toll scheme to be put in place on

main routes into the city. This was rejected in February 2005. A flat charge of £2 would have applied to vehicles entering the city boundary. This plan has been abandoned by the council due to a lack of support.

Improvements to public transport

Transport Edinburgh, the integrated transport delivery authority of City of Edinburgh Council, has worked hard to improve public transport in the city. This includes:

the Edinburgh tram network

new railway stations

improvements to Edinburgh Waverley and Haymarket railway stations, including new platforms to cope with new routes and increasing passengers

a real time bus tracker service

Edinburgh Trams

Edinburgh tram at a platform

Edinburgh's trams began running in May 2014 after six years of construction. The tram project has cost £776m, millions over the original budget and has taken years more than scheduled. Now trams are running it is hoped that they will go a long way towards reducing traffic congestion in the city.

Bus Tracker

City of Edinburgh Council started its Bustracker project in 2002. This service allows public transport users to find bus timetables and track services easily, either at bus stops or on their smart phones. This service is intended to encourage people to use public transport.

Criterion B – Total 18 marks.

8. **Formulate** a clear and focused research question to investigate the statement of inquiry:
"Urban areas can be better managed when local people are involved." **(4 marks)**
How can local population of Edinburgh help in easing traffic congestion during peak office hours?
9. **Justify** the relevance of your research question to the statement of inquiry. **(4 marks)**
Managing the traffic of city by using the local community.
They suggest solutions so they abide by it.
10. **List two** individuals or groups who might have an interest in your investigation. **(2 marks)**
Traffic police
Local population
Office goers
11. **Justify** why **one** of the individuals or groups you listed in part (iii) would have an interest in your investigation. **(2 marks)**
Office goers may decrease commute time
12. **State one** method of primary information/data collection you would use to help investigate your research question. **(1 mark)**

Survey

13. **Outline** how the method* of primary information/data collection stated in part (v) would help you investigate your research question. **(2 marks)**

A survey to find out the peak hours/ cause behind traffic/ suggest solutions will be helpful

14. **State one** source of secondary information/data you would use to help investigate your research question. **(1 mark)**

Google traffic data

15. **Outline** how the source of secondary information/data you stated in part (g) would help your investigation. **(2 marks)**

It will help figure out bottle necks.

Theme 3. Trade, aid and exchange

1. Name a continent where most countries have an average daily consumption of more than 3000 calories per person. **[Criteria A - 1]**

North America

2. Countries with a low average calorie intake may suffer food shortages. Describe the distribution of countries which have an average daily consumption of less than 2500 calories per person.

[Criteria A - 2]

India, Pakistan [Asia], Most countries in Africa, South East Asia

3. **Write an article to** explain how food shortages can be caused by:

A the natural environment,

B economic and political factors. **[Criteria C - 5]**

Food Shortage – Natural – Climate, shortage of water, flat and fertile land, support with example

Economic – Poor country, people, cannot afford food

Political – Corruption, hoarding, civil war, unrest, give example

4. State **three** outputs from the system. **[Criteria A - 3]**

Milk, manure, crops

5. Explain how the aid programme is likely to improve the quality of life of the people who live in Burundi. **[Criteria C - 5]**

Goat is being given as a part of aid programme, which is giving a regular source of income – explain the cycle.

Theme 4. Leisure activities and tourism

1. State the percentage of jobs in hotels created by the growth of tourism. **[Criteria A - 1]**

53%

2. What does Fig. suggest about the difference in jobs created by tourism for local people and people from abroad? **[Criteria D - 2]**

Local people get more [give data]

3. Write an essay on the benefits, as well as the creation of jobs for local people, which tourism brings to an LEDC. **[Criteria C - 5]**

Positive

Negative

Jobs created	Jobs are often seasonal (based on the time of year) and are poorly paid
More money for the country	Most money goes out of the area to big companies, not locals
Local traditions and customs are kept alive because tourists enjoy traditional shows, eg Flamenco dancing	Culture and traditions change as outsiders arrive
Money from tourists can be used to protect the natural landscape	Damage to the natural environment, eg footpath erosion (the wearing away of footpaths), litter, habitats destroyed to build hotels
New facilities for the tourists also benefit locals, eg new roads	Overcrowding and traffic jams
Greater demand for local food and crafts	Prices increase in local shops as tourists are often more wealthy than the local population

4. Using only evidence from Fig. describe three changes which have taken place in the area as a result of economic development. [Criteria A - 3]

Identify positive as well as negative changes

5. Suggest reasons why some people are worried about the continued growth of the tourist industry in areas such as the one shown in Fig. [Criteria D - 5]

Only talk about negative and its implications – example – Intense coastal traffic – increased commute time, pollution – sound, air.

6. Tourism is important in many countries. How can it be developed so that it is sustainable? [Criteria D - 5]

Honour your hosts and our common heritage: Make sure that you know local customs, traditions, social conditions and try to use the local language. Make sure you have permission before taking photos.

Protect our planet: Be a guardian of natural resources, respect wildlife by not using products that might endanger plants or animals. Only visit places open to visitors and avoid protected areas, leaving as small a carbon footprint as possible.

Support the local economy: Buy locally-made goods and pay a fair price, make sure that all products are acceptable within national and international law. Use local guides who have an in-depth knowledge of the area.

Be an informed traveller: Make sure that you take the right health and safety precautions on your trip, know how to access medical care and choose tour operators with a proven track record in sustainability and community projects.

Be a respectful traveller: Observe all national laws and regulations, ensuring that you respect human rights. Refrain from giving money to people who beg on the streets but support local community projects. Take photos instead of bringing cherished cultural objects home.

Ecotourism is a type of sustainable development. The aim of ecotourism is to reduce the impact that tourism has on naturally beautiful environments.

Any tourist destination can be harmed by increased levels of tourism. If areas are damaged or destroyed, they might not be available to future generations.

Ecotourism is environmentally sound so that natural environments and wildlife are protected; natural resources are protected in a sustainable way and that tourism is socially appropriate.

The ecotourism approach

Ensuring that tourism does not exploit the natural environment or local communities.

Consultation with local communities on planned developments.

Making sure that infrastructure improvements benefit local people and not just tourists.

Ecotourism now has the backing of the United Nations, which made 2002 the International Year of Ecotourism.

Guidelines for ecotourists

Ecotourism sets out guidelines for how tourists should behave when visiting fragile environments:

Protect the environment - keep to footpaths, don't leave litter or start fires.

Don't interfere with wildlife - don't scare or feed the animals.

Protect resources - don't take too many showers or use air conditioning.

Support local communities - stay in locally owned accommodation and buy produce from local people.

Eat local food and drink - avoid products that have been imported from MEDCs.

Respect local customs and traditions - some communities are offended when tourists wear inappropriate clothes in religious places, strip off on the beach or behave in a rowdy manner. Locals appreciate tourists who try to learn the language and show an interest in their culture

Ecotourism is increasingly popular and many people appreciate remote locations, small numbers of tourists and less sophisticated facilities.

If a resort becomes overdeveloped then they will choose alternative destinations.

7. For a named area which you have studied, write an article to explain why the tourist industry is important. You should refer to the area's physical and human attractions.
[Criteria C - 7]

Impact of mass tourism

Mass tourism means that there are hundreds of thousands, if not millions of tourists who will descend onto a variety of tourist resorts each year.

In the UK, tourism makes up nearly 10% of the total GDP which means that tourism has cultural, economic and environmental impacts.

Cultural impacts

Positive impacts	Negative impacts
Tourists learn about other cultures.	Some traditional roles (such as farming) will be lost in order to provide tourist services.
Rich and poor can learn from each other.	Tourist behaviour can lead to locals feeling that their culture and beliefs are minimised.
Tourists bring money which can breathe new life into neglected areas.	Local languages might be lost as people prefer to use international languages such as English.
Local crafts might be revived to be sold to the tourist market.	Crime and anti-social behaviour might rise as more and more tourists visit a place and bring their own social problems with them.

Economic impacts

Positive impacts	Negative impacts
Increased employment. Over 400 million people around the world are employed in the tourism industry.	Many tourism services are of little value to the locals.
Brings huge amounts of foreign currency into a country. This can help stabilise an economy and prices in a country.	The cost of investment in roads or infrastructure will have to be borne by the local people.
Tourism companies make a profit which can either be invested into new facilities in a country or back into the business.	The character of a place might change. Local shops might be displaced by shops that cater solely for tourists.

Positive impacts	Negative impacts
Improvement in general infrastructure can help locals.	Traditional jobs will be lost as an area switches focus in providing for tourists needs.
	Profits may 'leak' out of an area and back to the headquarters of a multi-national tourism organisation or hotel chain.

Environmental impacts

Positive impacts	Negative impacts
Many tourist organisations are trying to create a more sustainable ethos for tourism. This helps to protect the animals and local environment and will be funded by the tourists who visit.	Overcrowding can impact fragile environments and soil will be eroded away. Damage to the ecosystem might totally change the characteristics of a place.
Provides money that can help local people to protect their environment.	Overcrowding can cause congestion and pollution. It will increase the carbon emissions in an area.
Can also help raise awareness of different issues such as water shortages or endangered animals.	Tourists will increase the amount of waste and sewage in an area and this will need to be dealt with in a sustainable manner.
Improvements and investment in derelict areas and spaces that cannot be used for any other purpose.	More pressure on delicate water supplies. Many tourist facilities require increases in the use of water and this can lead to local people losing access to clean drinking water.

Theme 5. Energy and water resources

1. Briefly describe the changes in the importance of different types of power station in Japan between 1960 and 2000. [3]

Nuclear and thermal have increased. Support with data. Hydel unchanged.

2. For any **one** type of power station, describe and explain the factors which influence its siting. [Criteria A - 4]

Hydro –

Factors to be considered while selecting the site for the dam for hydroelectric power plants:

1) Good topographical location along the path of river: The best location along the path of the river is river canyon or at the location where there is narrowing of the river. If the aim is to store maximum amount of water, then the volume of basin above dam should be calculated so that sufficient quantity of water can be stored in it. The perfect site is one where there is wide and flat valley.

2) Right geological structure: The rock structure on which the dam will be constructed should be strong enough to sustain the weight of dam and water stored in the dam. The rock structure should be able to sustain all the visible and invisible forces. The rock structure should be stable and there should be least occurrence of the earthquakes in the region. The rock structure should not allow the seepage of water and it should be waterproof.

3) Sufficient water is available: The flow of water where dam is constructed should be sufficient enough to fill the dam. There is lots of loss of water from dam due to evaporation, the flow of river water should be able accommodate this loss of water without affecting the production of electricity from the hydroelectric power plant.

Thermal –

The Requirements for the Site

As the name implies the power plant is meant for generating power which obviously means that it will consume huge quantities of fuel. The exact quantity would depend on the size of the plant and its capacity but it is a general fact that ample quantities of fuel must be available either in the vicinity or it should be reasonably economical to transport the fuel till the power plant. Since most thermal power plants use coal (they can use other fuels as well) it must be ensured that sufficient coal is available round the clock. Just to give you a rough idea a power plant with 1000 MW capacity approximately would require more than ten thousand tons of coal per day hence the necessity for continuous supply and storage capability of coal in the power station.

Ash is the main byproduct of combustion and since the amount of coal used is huge, you can intuitively imagine the amount of ash generated and it is certainly in the region of thousand tons per day. Ash is much more difficult to handle as compared to coal since it comes out hot from the boiler and is very corrosive in nature. Disposing of such huge quantities of ash requires a large amount of empty space where it can be safely dumped. There must be ample space for the storage of coal, disposal of ash, building of the power plant, residential colony of workers, markets and so forth. An approximate analysis suggests that for every MW of power generated there must be at least 3 acres of land available for the purpose. Hence the power plant site needs to have good amount of land and this land should have good bearing capacity in order to survive the static and dynamic loads during the operation of the plant.

As we saw in the previous article of this series, large amount of water is required for cooling purposes in the power plant hence it is better if such a source is available nearby in the form of rivers etc.

Nuclear

There are some criteria that determine whether a certain location is suitable for a nuclear plant.

1. Geographical considerations

There are some geographical factors to consider. Firstly, seismic condition is very critical in site selection. Nuclear plant can be around for 50–80 years once it has been constructed. However, if massive earthquake occur in its lifetime, the integrity of the plant can be damaged. This can be mitigated by installing earthquake-resistant structure but this will increase the cost significantly. Depending on the contract price of electricity, using earthquake-resistant structure potentially render the nuclear plant infeasible.

Secondly, nuclear plant is basically steam-turbine power plant, just like coal-fired power plant. This kind of power plant use Rankine cycle technology which requires massive amount of water for cooling. That's why coal and nuclear plants are situated in riverside or seaside.

Finally, site must be easy to access because there are tons of material need to be brought to the site during construction which can be as long as 10 years.

2. Economical considerations

Nuclear plants are capital intensive. Almost the whole of their life-cycle cost is comprised of capital cost, which is the expenditure during construction. It's important to minimize logistic cost.

On the other hand, it's important to understand that it's significantly cheaper to build single 1000 MW power plant than to build two 500 MW power plants. If we need additional 1000 MW of power, we must build one 1000 MW unit as the cost of two 500 MW nuclear plant might not be justifiable. So we have to build one big unit instead of multiple plants of small units.

3. Identify a form of energy and describe how its use threatens the natural environment. You may refer to named areas which you have studied. **[Criteria C - 5]**

Hydel – Use Narmada Dam / any other dam/ discussion was done during HYE IDU.

Example –

The environmental consequences of large dams are numerous and varied, and includes direct impacts to the biological, chemical and physical properties of rivers and riparian (or "stream-side") environments.

The dam wall itself blocks fish migrations, which in some cases and with some species completely separate spawning habitats from rearing habitats. The dam also traps sediments, which are critical for maintaining physical processes and habitats downstream of the dam (include the maintenance of productive deltas, barrier islands, fertile floodplains and coastal wetlands).

Another significant and obvious impact is the transformation upstream of the dam from a free-flowing river ecosystem to an artificial slack-water reservoir habitat. Changes in temperature, chemical composition, dissolved oxygen levels and the physical properties of a reservoir are often not suitable to the aquatic plants and animals that evolved with a given river system. Indeed, reservoirs often host non-native and invasive species (e.g. snails, algae, predatory fish) that further undermine the river's natural communities of plants and animals.

The alteration of a river's flow and sediment transport downstream of a dam often causes the greatest sustained environmental impacts. Life in and around a river evolves and is conditioned on the timing and quantities of river flow. Disrupted and altered water flows can be as severe as completely de-watering river reaches and the life they contain. Yet even subtle changes in the quantity and timing of water flows impact aquatic and riparian life, which can unravel the ecological web of a river system.

A dam also holds back sediments that would naturally replenish downstream ecosystems. When a river is deprived of its sediment load, it seeks to recapture it by eroding the downstream river bed and banks (which can undermine bridges and other riverbank structures, as well as riverside woodlands). Riverbeds downstream of dams are typically eroded by several meters within the decade of first closing a dam; the damage can extend for tens or even hundreds of kilometers below a dam.

Riverbed deepening (or "incising") will also lower groundwater tables along a river, lowering the water table accessible to plant roots (and to human communities drawing water from wells) . Altering the riverbed also reduces habitat for fish that spawn in river bottoms, and for invertebrates.

In aggregate, dammed rivers have also impacted processes in the broader biosphere. Most reservoirs, especially those in the tropics, are significant contributors to greenhouse gas emissions (a recent study pegged global greenhouse gas emissions from reservoirs on par with that of the aviation industry, about 4% of human-caused GHG emissions). Recent studies on the Congo River have demonstrated that the sediment and nutrient flow from the Congo drives biological processes far into the Atlantic Ocean, including serving as a carbon sink for atmospheric greenhouse gases.

Large dams have led to the extinction of many fish and other aquatic species, the disappearance of birds in floodplains, huge losses of forest, wetland and farmland, erosion of coastal deltas, and many other unmitigable impacts.

4. Suggest reasons for the increasing demand for water in South Africa. [Criteria D - 5]
Climate change has affected water supplies within the region. Rains that usually come and supply the country's water has come infrequently. For example in Durban the Dams are 20 percent lower than at the start of 2010. Due to this fact cities are looking to impose water restrictions on communities.

Another problem that Durban in particular faces is **stolen water**. According to one report 35 percent of the cities water is stolen or given out through illegal connections.

Also, preventative measures that were put in place such as the construction of dams in the area have not even started or are still in the process of being built and those structures that are in place now are slowly **collapsing**. Those in rural areas still lack access to water.

Interestingly enough South Africa boast one of the most clean water systems in the world, however due to **the lack of sanitation and access** in the country's rural communities the threat of water borne disease is steadily increasing. The Vaal River, the largest river in South Africa and popular tourist destination is becoming increasingly **contaminated with fecal material due to the lack of sanitation supplies**. It is so bad that the local water agency Rand Water issued a statement that contact with the river may lead to serious infection. Wildlife is also being affected from the raw sewage run off. They blamed the reason for dumping sewage in the river on **old pipes**.

Overall, infrastructure is lacking, whether or not it is old pipes or ignorance the South Africa water crisis is here and affecting millions.

5. Suggest reasons why Lesotho has enough water to be able to sell to South Africa. [Criteria D - 5]

Lesotho – On mountains/ Highlands – abundant water supply, poor nation has an important resource – water, Neighboring rich country lacks water.

Jobs will be created in construction of dams and tunnels. Infrastructural development, Lesotho will get Hydro power – electricity.

6. Describe the advantages of using hydro-electric power (HEP), rather than other sources of energy. [Criteria C - 3]

Hydroelectricity - Advantages and Disadvantages

Advantages

Once the dam is built the energy is basically free.

No waste or pollution produced.

Quite reliable (more reliable than wind energy or solar energy for example)

Water can be stored above the dam ready to cope with times when more electricity and energy is needed (these are called 'peak times').

Constant generation of electricity.

Disadvantages

Dams are expensive to build.

Building a larger dam may flood an area upstream destroying many habitats.

Finding a suitable site is difficult as the impact on local residents and the environment has to be taken into account.

Water quality and quantity may be affected downstream.

7. Water and air may be polluted by human activities. Formulate a research question based on the above statement of inquiry. [Criteria B – 2]

How can construction of Hydroelectricity dam in Lesotho compromise the quality of water downstream?

Rapid urbanization has compromised the air quality of most urban areas.

Theme 6. Environmental risks and benefits: resource conservation and management

8. According to the prediction in Fig. , what will be the average global temperature in 2010?

[Criteria A - 2]

14.5

9. Use Fig.A to describe the changes in average global temperatures between 1960 and 2000.

[Criteria A - 2]

Use TEA [trend, explain, anomaly]

10. Use Fig. B to help explain how the greenhouse effect works. [Criteria A - 3]

Without greenhouse gases in its atmosphere, the Earth would be much colder on average than it is now. Greenhouse gases:

absorb energy transferred as infrared radiation from the Earth's surface

release infrared radiation in all directions, which keeps the Earth warm

electromagnetic radiation at most wavelengths passes through the Earth's atmosphere

the Earth absorbs most of the radiation and warms up

the Earth radiates energy as infrared radiation

some of the infrared radiation goes into space

some of the infrared radiation is absorbed by greenhouse gases in the atmosphere

the lower atmosphere warms up

11. Explain how human activities may increase the greenhouse effect to produce higher global temperatures. [Criteria C - 4]

More greenhouse means more heat trapped – Explain the entire cycle with more gases and how it leads to enhanced greenhouse effect.

12. Explain why Tuvalu is at risk from global warming. [Criteria A - 3]

Coastal area, sea level will rise because of global warming, may sink.

13. Explain why people in Tuvalu may have different attitudes towards global warming from people living in Australia and the United States. [Criteria C - 4]

They will be the victims, They are not as developed as other nations so they think that they have not added to the emissions but will pay for it, smaller nation than Australia and USA.

14. Human activities often pose a threat to the natural environment.

These include economic activities such as:

- tourism,
- agriculture,
- manufacturing industry,
- mining.

Name an area which you have studied where the environment is at risk from human activities. Describe the human activities causing the risk and explain how they have affected the natural environment of your chosen area. [Criteria C-7]

Maldives: Tourism as a development strategy

The Maldives are located south-west of India in the Indian ocean and consist of more than 1000 islands.

Tourism accounts for 28% of the Maldives' GDP and more than 60% of its foreign exchange receipts.

Natural attractions:

sea-sun-sand combination

climate

coral

Man-made attractions:

luxury resorts and suites eg. Taj Exotica Resort and Spa on South Male Atoll

Grand Friday Mosque in Male attracts religious tourists

How tourist demands are managed:

Water provided by desalination of sea water

Energy produced by generators

Waste dumped in landfill sites or sea (this problem is addressed by the compulsory installation of incinerators, bottle crushers and compactors in all resorts)

Problems/Threats:

Import leakage due to poor agricultural potential and no economic minerals

External shocks: sea-level rise, tsunamis, terrorism, etc.

Depletion of natural resources and climate change

How tourism is damaging the natural environment:

On the Maldives, tropical coconut palms are destroyed for building hotels. Consequently, the ecosystem is threatened as food chains are destroyed or disrupted. For example, lizards lose their natural habitat. Animals are also scared away by traffic. Besides, a ferry from Male every 10 minutes pollutes the seas, threatening the corals. The reefs are also destroyed as tourists take samples home and leave litter on the beaches that may kill reef fish. The atmosphere is polluted by the incineration of waste.

Aims:

Encourage linkage between tourism and other sectors as construction, manufacturing and transport (multiplier effect)

Encourage foreign investment in the development of new resorts

Increase employment

Encourage solar and wind power

Global warming management: Maldives

The Maldives are located in the Indian Ocean, only 1,5 m above sea level on average, with 80% percent of the land below 1m.

Global warming is a substantial threat to the Maldives, as an increase in temperatures leads to the melting of icebergs, causing sea level rise that may submerge the island group.

The Maldivian Government has built a 3m high sea wall that surrounds the island of Male, to protect it from flooding and preserve its beaches. The sea wall was funded by the Japanese government.

Also, the Maldives plan to be a carbon neutral country by 2019. In other words, they try to avoid adding Co2 to the atmosphere, as carbon dioxide is considered to be responsible for global warming. This should be accomplished by encouraging the development of solar and wind energy.

Theme 7. Dynamic Earth

1. How many earthquakes took place on the San Andreas Fault? [Criteria A - 2]-19
2. San Francisco was affected by an earthquake in 1989. What was the distance and direction of this earthquake from San Francisco? [Criteria A - 2]
3. Explain briefly why earthquakes take place on or close to major faults, such as the San Andreas Fault. [Criteria C- 3]
Fault lines are weak, transform boundary, moving/ sliding past each other, plates are not smooth, get stuck, pressure builds up, releases with jerk, causing earthquake.
4. San Francisco is still at risk from earthquakes. Study Photographs A, B and C, which were taken in San Francisco. Suggest three likely impacts of a major earthquake on the areas shown in the photos.
Loss of life
Loss of infrastructure
Damaged property
5. The Transamerica Pyramid is marked by an 'X' on Photograph C. In the 1989 earthquake it shook for more than a minute but the building was undamaged and no one was seriously injured. What measures can be taken to protect people from earthquakes? [Criteria D – 4]
Earthquake proof structures
Hazard zoning

Early warning system

Earthquake drills

Evacuation drills and safety plans

6. Explain why many people continue to live in areas at risk from natural hazards.
[Criteria D - 5]

Millions of people around the world live in areas of tectonic activity. This is because:

these places offer a somewhere to live;

provide economic opportunities; and

can be rich in natural resources.

Some people have little choice but to live in active zones that are prone to earthquakes and volcanoes due to their limited economic resources.

Countries such as Iceland, Japan and Indonesia only exist due to volcanic activity. In the case of Japan and Indonesia, plate subduction has produced molten material that has formed the archipelagos that make up each country. Almost 0.4 billion people live in these areas. Iceland was formed along the constructive margin formed by the North American and Eurasian plate separating.

The slopes of volcanoes attract people for a number of reasons. These include:

fertile soils for agriculture

tourism

geothermal energy

abundance of minerals

The fertile soils formed from weathered lava products and ash, especially in tropical regions, support intensive agriculture. In Japan, the fertile flanks of steep-sided volcanoes have been terraced to support farming.

Volcanoes provide opportunities for tourism. Volcanoes such as Kilauea and Etna have been erupting regularly for many years. Their lava flows are popular tourist attractions. Also, areas historically affected by volcanic activity, such as Pompeii, are popular tourist destinations. These provide jobs for local people in restaurants, hotels and as tour guides.

7. In many parts of the world the natural environment presents hazards to people. Choose an example of one of the following:
- a volcanic eruption
 - a tropical storm
 - a drought

For a named area, describe the short-term and long-term effects of the example which you have chosen on people living in the area. [Criteria C - 7]

Volcano

Effects of volcanoes

Volcanoes have a large effect on their locality. They produce ash, lava, volcanic bombs, pyroclastic flows and lahars. Ash from large volcanoes has been known to affect global climates.

The effects of volcanoes can be both positive and negative.

Positive effects

Geothermal energy is where heat from within the Earth is used to generate electricity. Geothermal energy can be generated in areas where magma lies close to the surface. This is good for increasing our renewable energy use.

Ash ejected by the volcano acts as a good fertiliser for soils.

Volcanoes attract many tourists, who enjoy the dramatic scenery that they produce.

Negative effects

Volcanoes are dangerous. They can kill people and damage property.

Economic activity can suffer as it is hard for businesses to operate after an eruption.

Habitats and landscapes are damaged by lava flows.

Montserrat is a small island in the Caribbean. There is a volcanic area located in the south of the island on Soufriere Hills called Chances Peak. Before 1995 it had been dormant for over 300 years. In 1995 the volcano began to give off warning signs of an eruption (small earthquakes and eruptions of dust and ash). Once Chances Peak had woken up it then remained active for five years. The most intense eruptions occurred in 1997.

During this time, Montserrat was devastated by pyroclastic flows. The small population of the island (11,000 people) was evacuated in 1995 to the north of Montserrat as well as to neighbouring islands and the UK.

Despite the evacuations, 19 people were killed by the eruptions as a small group of people chose to stay behind to watch over their crops.

Volcanic eruptions and lahars have destroyed large areas of Montserrat. The capital, Plymouth, has been covered in layers of ash and mud. Many homes and buildings have been destroyed, including the only hospital, the airport and many roads.

Short-term responses and results

Evacuation

Abandonment of the capital city

The British government gave money for compensation and redevelopment

Unemployment rose due to the collapse of the tourist industry

Long-term responses and results

An exclusion zone was set up in the volcanic region

A volcanic observatory was built to monitor the volcano

New roads and a new airport were built

Services in the north of the island were expanded

The presence of the volcano resulted in a growth in tourism

Volcanic activity has calmed down in recent years and people have begun to return to the island.