In 1978, there was a major policy shift in China which embraced economic liberalisation. China entered the free market trading system which led to significant increases in trade and Foreign Direct Investment (FDI).

Processes of industrialisation and urbanisation increased China’s energy consumption because of industrial and domestic needs. A rising affluence within the population further heightened energy demand.

Facts:
- World exports increased from 1% in 1970 to 12% in 2014.
- China’s energy mix is made up of 65% coal and 20% oil (2012).
- Between 2000 and 2014, carbon emissions increased two and a half times.
- 1,845 million tonnes of coal were consumed in 2014.
- In 2006 China overtook the USA as the world’s largest emitter of carbon.

China’s CO₂ emissions from burning fossil fuels: 1899–2013 (1,000s tonnes of carbon)

<table>
<thead>
<tr>
<th>Year</th>
<th>Emissions (1,000s tonnes of carbon)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1899</td>
<td>26</td>
</tr>
<tr>
<td>1950</td>
<td>21,465</td>
</tr>
<tr>
<td>1970</td>
<td>210,422</td>
</tr>
<tr>
<td>1990</td>
<td>671,051</td>
</tr>
<tr>
<td>2000</td>
<td>928,601</td>
</tr>
<tr>
<td>2010</td>
<td>2,459,645</td>
</tr>
<tr>
<td>2013*</td>
<td>2,490,000</td>
</tr>
</tbody>
</table>

Source: CDIAC. *Estimates revised down by 14% because of low carbon content of Chinese coal.
January 2010: Haiti suffered an earthquake of magnitude 7

220,000 people were killed
300,000 were injured
1.3 million made homeless

Hundreds of thousands of people living in makeshift camps in Port-au-Prince

Given the extreme poverty of the country, already with 86% of inhabitants living in slums, the situation became worse — half of the population had no access to toilets

In October there was a major cholera outbreak
720,000 cases and 8,700 deaths

The British Red Cross was joined by other NGOs such as Oxfam but had its own response programme which involved:
- delivering clean drinking water to 300,000 people
- building 1,300 latrines serving 250,000 people
- providing medical supplies
- treating 18,700 cases of cholera in treatment units in La Piste camp, Port-au-Prince
Option B: Disease dilemmas

Case study: The rosy periwinkle

Growing conditions
- Common in tropical and sub-tropical conditions
- Requires warm, tropical climate with no frost
- Well-drained soils but with moisture
- Slightly acidic soils

International trade
- Commercial cultivation of rosy periwinkle in India and Madagascar
- Sales mainly to US pharmaceutical giants

Medicinal importance
- Contains two powerful alkaloids — vincristine and vinblastine
- Used in chemotherapy to treat childhood leukaemia and Hodgkin's lymphoma
My Revision Notes: OCR AS/A-level Geography
Chapter 4: Geographical debates options
Option C: Exploring oceans
Case study: The Pacific

Causes of accumulation
- A gyre is a system of ocean currents; the area at the centre is usually calm and once debris has been carried to the centre, it usually stays there
- The accumulation of debris in the North Pacific has led to the term ‘Great Pacific Garbage Patch’
- Debris is contained on the surface and just below the surface; it includes micro-plastics which are barely visible
- Plastics make up a substantial part of the debris
- There are two main patches of debris: a western and an eastern

Impacts on marine ecosystems
- Plastics become wrapped around animals, such as seals and turtles, and kill them
- Smaller pieces are ingested by fish and bird, not only disrupting digestion but also entering the food chain
- Impacts on animals, fish and birds damage food chains and webs
Case study: The Arctic

- Geo-political implications of changes in ice cover in the Arctic region
- Impacts on indigenous people
- The threats and opportunities posed by opening up of ocean route-ways and increasing access to ocean bed minerals
- The management through international organisations
Water shortages: unreliable monsoon rains, frequent drought, excessive use of groundwater, lowering water tables, 80% of groundwater sources exploited, expensive equipment required to drill to greater depths.

Increasing temperatures: frequent heatwaves, higher temperatures, more extreme weather events.

Soil erosion: little infiltration of baked earth, rain is intense and heavy when it does come leading to soil erosion, surface layer of soil is lost, up to 40% of rainfall is lost to run-off.

Lack of vegetation cover: deforestation and over-grazing expose soil surfaces to erosion.

The Green Revolution: advantages of increased yields, crops which are more resistant to rain and wind damage and employment opportunities in the production of agrochemicals. But: HYVs are dependent on irrigation and the intensive use of chemical fertilisers and pesticides which are costly and impact on the environment.

Larger, wealthier farmers are favoured and small farmers marginalised.

Small farmers end up in debt because of high costs of production.

Widening of the gap between rich and poor farmers.

Large population growth continues to put pressure on food security.

Previously self-sufficient in wheat, India must now import large quantities of grain because of population expansion and a decline in food production.

Issues with food security:
- Urbanisation is reducing the availability of land.
- Negative environmental and social impacts of the Green Revolution.
- Water management needs to be more effective and lacks government support.
- Infrastructure issues lead to problems of food distribution and storage resulting in waste.
- Small-scale farmers are marginalised and disadvantaged by globalisation and prohibitive costs of machinery for water abstraction and food production.
- Increased soil erosion due to deforestation and climatic change.
- Declining water tables due to high water demand and climatic factors.
Threats to the food security of indigenous people

- Climate change is leading to the reduction of sea ice and permafrost, which is making hunting difficult and threatening the already low biodiversity.
- Hunting terrain, migration patterns and the quality of traditional food sources are all being affected.
- Fish stocks dependent on ice cover are declining.
- Falling numbers of caribou as calves are born after the peak foliage time because of an earlier spring.
- The safety and quality of ‘wild resources’ is being compromised by increasing levels of pollution from fuel sources.
- People are turning to store-bought food which is expensive because of the transportation costs, is often of poor quality (high salt levels) and is causing socio-economic issues such as obesity and malnutrition.

Food production methods used by indigenous people

Indigenous people rely on techniques of hunting, herding, fishing and gathering. Examples include:

- **Wakeham Bay, Quebec**: fishing and harvesting of fresh food from the oceans.
- **Qaanaaq, northern Greenland**: the Inuit people have various techniques for hunting birds and marine and land mammals.
- **Barrow, Alaska**: whale hunting.

The physical conditions of the environment

- Coverage of ice sheets, e.g. Greenland ice sheet.
- Tundra biome, e.g. Alaska.
- Thick ice and snow cover, average winter temperatures of –20°C.
- Short summer thaw with temperatures just above freezing.
- Arctic tundra has an NPP of 140 g/m² per year, the second lowest of land biomes.
- Very low moisture availability because of frozen conditions.
- High winds because of lack of tall vegetation.
- Limited growing season.
- Very fragile ecosystem with short food chains.
Reasons why people live in tectonically active locations:

- Those with limited economic resources have few options.
- Earthquakes and their risk are embedded in the culture of Nepal.
- Areas of tectonic activity provide natural resources, e.g. minerals.
- Nepal as a country is in the middle of a collision zone and so even within the country ‘safe’ options are limited.

Impact of the earthquake on people

- Avalanches on Everest killed 20 climbers
- 8,800 fatalities
- 22,000 people injured
- 473,000 houses destroyed or damaged
- 2.8 million people displaced
- 1 million people required food aid
- Single women struggled to access food aid
- Increased trafficking of homeless women and girls to South Asian brothel

Impact on the country

- Culturally important locations damaged, e.g. Bhaktapur UNESCO World Heritage site
- India was accused of self-promotion through aid provision
- Estimated cost of US$10 billion to the economy
- Tourism (10% of the economy) badly hit
- Nepal’s government, businesses and individuals lacked the capital reserves to cope
- Food security affected in the short term as crops destroyed and in the long term as planting was disrupted
**My Revision Notes: OCR AS/A-level Geography**

**Chapter 4: Geographical debates options**

**Option E: Hazardous Earth**

**Case study: Italy**

<table>
<thead>
<tr>
<th>Tectonic setting</th>
<th>Attempts to mitigate against the event</th>
</tr>
</thead>
</table>
| Italy is located at fracture zones where the African and Eurasian plates meet. Mt Etna on Sicily is one of the most active volcanoes in the world. | - Slowing and diverting lava flows  
- Dropping of earth boundaries and concrete blocks into lava channels |

<table>
<thead>
<tr>
<th>Attempts to mitigate against vulnerability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring by the Volcano Risk Service (CFCRV), whose activities include:</td>
</tr>
</tbody>
</table>
| - long-term analysis  
- comparison with similar events elsewhere  
- analysis of gas emissions  
- satellite surveys  
- an alert-level sequence which is understood by government, communities and emergency services  
- research |

<table>
<thead>
<tr>
<th>Attempts to mitigate against losses</th>
</tr>
</thead>
</table>
| - Compensation to individuals and businesses  
- Effective evacuation based on accurate data  
- Well trained and resourced public services |