



# Mark Scheme (Results)

## January 2026

Pearson Edexcel International Advanced Level in Geography  
Researching Geography  
WGE04/01

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Question 1 – ‘The most successful strategy to manage the impacts of tectonic disasters is to modify the vulnerability of communities at risk.’ Discuss.

- Research the different modification strategies used to reduce vulnerability to tectonic hazards.
- Research a range of locations to examine why some tectonic disasters are more successfully managed than others.

Indicative content

**The focus** of this title is to discuss the effectiveness of strategies in reducing the vulnerability of at-risk communities.

**The framework** chosen may be by the following

- Type of tectonic hazard – sections comparing vulnerability to earthquakes of varying magnitudes, volcanic eruptions (types and tsunamis)
- Scale of hazard and disaster – case-study led using various measurements of intensity/scale mapped against measurements of scale of disaster and the impact on people and property.
- A temporal approach- discussions about disasters before, during and after the event.
- Different measures of vulnerability – poverty, gender inequality, degree of preparation and / or response and the physical/built environment.
- Comparing modification of vulnerability against mitigation (event modification) and loss modification – or other management approaches

**Key analytical Points**

- Vulnerability, in the context of hazards, is a community's susceptibility to harm (death, injury, economic loss) resulting from economic, social, physical and institutional factors; vulnerability is reduced by the ability of an individual or group of people to anticipate, cope with, resist and recover from the impact of a natural hazard / disaster.
- Strategies to modify vulnerability include monitoring, prediction, warning, evacuation, education, community preparedness and adaptation. All are not applicable to all hazards e.g. most volcanic eruptions can be predicted (but not phreatic ones) but earthquakes cannot be – so evacuation is not possible; however warnings (EEWS, tsunami warning) are possible but not everywhere.
- Strategies to modify vulnerability (and the ability to do so), are closely linked with the level of poverty and development of communities at risk from tectonic disasters, because some are high cost and rely on technology (installation and maintenance costs).
- Modifying the event is possible e.g. tsunami walls and barriers, earthquake resistant / aseismic buildings but the costs are high and few countries have

'engineered' mitigation in a widespread way than Japan and Taiwan – other than for major infrastructure and commercial property.

- Modifying the event (emergency and relief aid, insurance, community action) could be seen as inevitable in many cases e.g. developing world earthquakes but might be seen as a 'failure' to prepare a community for a tectonic hazard.
- However, there are differences in impacts between the developing and developed countries and their impacts from seismic hazards e.g. Nepal 2015 some communities were less educated /aware of risk and therefore not prepared, many buildings were not hazard resistant and no warning (EEWS) was given, resulting in 8800 deaths and 22,000 injuries. But given the magnitude, the impacts could have been much worse (largely rural area hit)
- Community Preparedness and Education it could be argued play a key role in reducing the vulnerability. The Nepalese do have some measures in place such as Nepal Earthquake Safety Day 15th January and the retrofitting of schools which trains local masonry workers.
- The Japanese EEWS & DART systems can trigger warnings to their populations via mobile and media communications, this early warning system reduces death tolls (if people act, and not everywhere). Japanese citizens are also educated, prepared & many buildings are hazard resistant.
- However, the resulting tsunami in 2011 created a very high death toll and major environmental and economic impacts largely due to overtopping existing 8m tsunami walls and some people ignoring the warnings that were given.
- In Turkey 2023, more than 150,000 buildings collapsed or were damaged beyond repair. Turkey's building codes do address seismic concerns in the region, but building specifications are mostly not followed/ enforced and don't build earthquake resilience.
- Mt. Merapi, Indonesia, 2010 eruption used land use planning which forbids any permanent settlement on higher slopes. In addition, early warning and evacuation plans helped reduce death rate. Examples such as Mt. Merapi, Indonesia use search and rescue by emergency services, temporary shelters and river channel clearance.
- Candidates may argue that 'modifying the hazard event' might be more effective in volcanic areas. Actions can be taken to modify volcanic effusive eruption events for e.g. Mt Etna, Italy, slowing and diverting lava flows, or by building tsunami defences (stops the wave causing damage).
- There are other factors that could be discussed such as population density, the quality of infrastructure and lack of design which can increase vulnerability. However, these all depend upon the ability of a community to afford and govern modification strategies for tectonic disasters.
- Some might argue that a holistic approach where the hazard management cycle is followed over a time period of decades is needed to reduce risk, by

reducing vulnerability, modifying the event where possible and ensuring response is planned for so loss modification starts quickly – in other words that modifying vulnerability alone is not enough.

### **In summary**

- Vulnerability is a key factor in managing the level of impacts from tectonic disasters. Vulnerability modification strategies can play a significant role in reducing the losses of at-risk communities, however, other factors such as the level of development and governance are important for such strategies to be implemented and effective, and modifying loss and the event are also relevant.
- Stronger answers should directly address the idea of ‘most successful’ i.e. is vulnerability modification the ‘best’ of most successful approach compared to others (event, loss), does it vary by hazard type and / or location, or is another approach needed i.e. a more holistic one?

### **Case studies used are likely to include:**

- Iceland – Eyjafjallajökull eruption 2010
- Türkiye- Syria earthquake 2023
- Haiti earthquakes in 2010 and 2021.
- Nepal earthquake 2015
- Japan: Tohoku earthquake and tsunami 2011

Many others are relevant and may be included.

### **Question 2 – ‘Evaluate the view that physical factors are the main cause of both global and local food insecurity.’**

- Research the physical and human causes of food insecurity.
- Research the global distribution of food insecurity and how food insecurity varies at local and global scales.

### **Examine local and global threats to coastal ecosystems.**

#### **Indicative content**

**The focus** of this title is to discuss the significance of physical factors in food security at different scales.

**The framework** chosen may be by the following.

- Local versus global; locally physical factors might be viewed as more important (in some cases) whereas globally the focus may be more on income / inequality and development level.
- Different causes of food insecurity across a range of countries at different stages of

development.

- A 'case-study' approach by area/region with different examples illustrating causes of food insecurity/security and targets.

- By causes: physical (marginal land, desertification, water supply, climate change) human including socio-economic (poverty, inequality) and political causes (war, conflict, government policy).

### **Key analytical points**

- Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (UN FAO definition). Food insecurity affects around 2.4 billion people worldwide i.e. the global pattern.
- The causes of food insecurity are often long-term, multifaceted and are often a combination of human and physical factors. They range from political instability, war, trade dislocations to environmental degradation, poverty, and population growth and climate change.
- There is a link between food insecurity and physical factors such as marginal farming land (altitudes, extreme temperature, seasonal / unreliable rainfall) which makes providing and adequate food supply challenging – although many would argue that physical conditions / factors alone rarely explain food insecurity.
- Candidates may discuss desertification as one of the causes of food insecurity; they should recognise that it is a complex, multi-factorial process that involves physical factors (drought, erosion, climate change) but also human factors such as over-cultivation, overgrazing, deforestation and poor farming practices
- Climatic factors play a significant role in the Sahel (drought, high temperatures, lack of rainfall / increased variability and high levels of evapotranspiration) but with increasing socioeconomic pressures (over population, inappropriate irrigation practices and overcultivation) crop production is poor, impacting food security in these regions.
- There have been some successful attempts at increasing crop production such as using stone bunds / magic stones / contour bunding in Burkina Faso and elsewhere which trap soil resulting in a 50% increase in crop yields; these and other adaptive methods shows that in some cases physical factors can be overcome (suggesting other factors may be equally important).
- Government policies on food subsidies (India), import tariffs, and biofuel production can significantly impact food availability and prices and therefore affect food security – many of these are political decisions.
- The government can be key players in achieving food security. In the Chinese region of the Gobi Desert the government control the food markets and have introduced the settled farming of specific crops. There is limited food

insecurity here because of the assistance with crop growth and conservation.

- Climate change is also placing pressure on those regions that already have a significant food security issue. Desertification in and sub-Saharan regions continues to place pressure on agricultural production which is already quite marginal in many cases.
- Physical factors might be considered as 'triggers' whereas human factors could be viewed as the underlying causes of vulnerability – in some cases, perhaps especially locally; it may be that in some places e.g. USA food deserts that there are no physical causes. Some countries in the Middle East lack the ability to grow much food, but don't experience food insecurity (at least it is not reported).
- War and conflict place a significant pressure on countries in achieving food security. Since March 2011 conflict in Syria has resulted in dramatic food price increases, with flour costing 197% more than in previous years; other examples include Yemen, Sudan and Gaza.
- Some answers might argue that at a local scale physical factors can be important, but at a global scale the pattern of food security is more linked to global systems i.e. development level, trade, inequality.
- In some countries / locally there may be more specific factors related to poor governance, existing conflict or trade (export-oriented production, that decreases local food security, for instance).

### **In summary**

- The range of physical factors in areas and regions sets spatial limits for crops to grow and despite technical advances, limits the ability to produce sufficient food remains heavily influenced by the physical environment.
- Many will argue that physical factors are just part of a much more complex picture; physical factors may be important at a local level but are perhaps less helpful in explaining the global pattern of food insecurity – the main causes globally are likely to be seen as socio-economic.
- In some cases local food insecurity might be better explained by political or economic factors.

### **Case studies are likely to include:**

- Sub-Saharan Africa; the Sahel – and other dryland regions where farming is often marginal and climate change evident.
- The Godi Desert
- Australia: how its farm systems adapt, but are also vulnerable.
- Regional differences between East and West provinces of China
- Places affected by conflict: Yemen, Gaza, Sudan, Syria.

Question 3 - 'Without effective management the impacts of globalisation are always negative for indigenous cultures and landscapes' How far do you agree?

- Research the social, economic and environmental impacts of globalisation on indigenous cultures and landscapes.
- Research a range of locations to explore the effectiveness of management strategies at protecting indigenous cultures and landscapes

Indicative content

**The focus** of this title is to examine the impacts of globalisation on indigenous peoples and traditional cultures – and their cultural landscapes - and whether management strategies (wanted or not) are effective in the protection of culture, traditions and landscapes.

**The framework** chosen may be by the following.

- Case studies of different societies/places with Indigenous populations – a place-by-place approach.
- Some might take the management approach and discuss the impacts and effectiveness of protection on a range of scales.
- An 'impacts' vs. strategy approach
- Contrasts between the impacts of globalisation on people versus their landscape.

**Key analytical points**

- Globalisation is the increasing interconnectedness and integration of the world's economies, societies, cultures, and politics, driven by cross-border flows of goods, services, capital, people, and information, facilitated by advances in technology (like the internet) and transport; it can be seen as a process likely to impact on all people, culture and places – unless very strong management decisions were made to prevent this.
- Globalisation may be viewed as 'negative' because of impacts such as tourism / overtourism (physical landscape impacts, and cultural dilution), trade and cultural exchange leading to changes in dress, speech, diet, social relationships, local media; the adoption of western consumer culture displacing local culture, trade and production; may introduce Hyperglobalists, Sceptics, and Transformationalists as a way of considering change and impacts.

- Some might argue the impacts are not necessarily negative as hybrid cultures emerge rather than traditional / indigenous cultures being totally 'lost'; there is also an argument about 'who' perceives the impacts of globalisation as negative i.e. is it traditional / indigenous people or hand-wringing westerners?
- Migration / immigration can be linked to globalisation with some places and groups arguing that it leads to ethnic / cultural changes which dilute or erode national / local culture – on the other hand cultural diversity is seen as positive by many; attempts to manage immigration are common but often divisive and may not prevent other globalisation forces causing cultural change.
- There is a very long history of colonial and neo-colonial exploitation of indigenous peoples and a rejection of their cultures although these are sometime exploited for commercial reasons through the flows associated with globalisation– Machu Pichu; some may take a very long-view of the degradation of local cultures and their landscapes i.e. it is not something that has only recently emerged as a result of contemporary globalisation.
- Some Indigenous and traditional groups seek to retain their cultural identity within countries and retain their control of culture and physical resources, whereas other groups embrace the economic advantages that globalisation brings – in other words there is a debate over what 'negative' actually means.
- As a management example: in Canada, the 1.8 million Indigenous people represent 5.0% of the total population, up from 4.9% in 2016; The First Nations major project of Canada, an NGO, attempts to retain indigenous cultural identity and prevent it from being eroded by cultural globalisation. An Assembly of First Nations promotes the rights and needs at a national level within Canada and First Nation schools teach native languages and traditions. This preserves the potential cultural diffusion or erosion of the group from globalisation. The Canadian government fund 100 First Nations and Inuit Cultural Education Centres to help preserve and develop cultures and traditions.
- The Fort McKay First Nation in Alberta negotiated a 20 km exclusion zone between its Moose Lake Reserve lands and any oil sand extraction preserving the potential environmental impacts of globalisation that TNC's and Global cooperations may bring to the area.
- Protecting local cultures may preserve important aspects of the cultural heritage of modern nation states as well as protecting the environment from development.
- The 'Keep Jumbo Wild' campaign represents Ktunaxa indigenous Nation who strongly oppose the Jumbo Glacier tourist resort. The wilderness areas are a sacred territory for the Ktunaxa people
- Candidates may address the role of Government and how they play a key role in managing the impacts of globalisation. The election of Evo Morales as Bolivian President in 2006 brought rapid changes for indigenous people in the

country. His policies targeted reducing discrimination against indigenous people and a focus on preserving cultures and traditions of the Aymara people; this might be seen as at least partially successful in Bolivia.

- Counterarguments might suppose that with globalisation comes the inevitable positive and negative and Indigenous and traditional groups would need to adapt to said changes; it may be very difficult to resist all change – and possibly not desirable because some perceive some changes as positive.

### **In summary**

- The overall suggestion that Indigenous and traditional peoples always want protection from the impacts of globalisation is probably a naïve one, because some globalisation change is positive.
- Rather, Indigenous peoples should be afforded the right to protection in whatever social economic and/or environmental capacity they wish if they so choose, but this can be hard to actually implement within specific countries / regions (where those being protected are one group among many).
- Some might argue that – over long timescales – it is inevitable that cultures and landscapes will be degraded / diluted by globalisation unless some management is attempted to limit the worst negative impacts.
- Some might differentiate landscapes (physical damage, Disneyfication of landscapes, westernisation) from cultures – and argue one or the other is more vulnerable and / or easier / harder to protect / manage.

### **Case studies used are likely to include:**

- Canadas First Nations
- Aymara People, Bolivia (and Bolivian policy under Morales generally)
- Torres Strait Islanders, Australia – and other indigenous groups and issues in Australia.
- Māori, New Zealand.

Question 4 – ‘Evaluate the view that both local and global programmes are always needed to successfully reduce disease risk.’

- Research local and global programmes used to manage disease risk.
- Research a range of locations to examine the success of management strategies in reducing disease risk

Indicative content

**The focus** of this title is to evaluate the degree to which global programmes are more effective than local management in reducing health risk.

**The framework** chosen may be by the following.

- Different management strategies on different scales, from local to national to global; contrasts between global programme (vaccinations) and more local actions.
- Models of health risk (ETM, Kuznets).
- By health risk, e.g. malaria, Lyme disease, cholera, Chagas.
- By level of development

**Key analytical points**

- Management of health risks can happen at local, national and global scales, with programmes / strategies often operating at a combination of scales or all three.
- There are some long-standing global programmes – such as global vaccination efforts (Polio, TB, Smallpox and others) – which may be considered highly successful; they rely on a global programme working with national governments and local infrastructure to eradicate (or attempt to) infectious diseases.
- There are other global efforts, some of which are coherent strategies often led by WHO (AIDS/ HIV, malaria) and others looser coalitions – such as the response to Covid-19 – which have had some success in reducing health / disease risks and burden; it might be argued that funding variations and commitment (political will, in the case of HIV / AIDS in South Africa) have led to variations in the success of these efforts.
- As an example: Malaria has 500 million cases each year with over a million

people dying from the disease. Over 90% of these deaths are in sub-Saharan African regions where tropical climates enable mosquitos to thrive and multiply. The U.S. President's Malaria Initiative (PMI) has 'invested' half a billion dollars into antimalarial programs, such as providing insecticide-treated nets to residents and residual spraying has also been used extensively. In total, the number of malaria-induced deaths has declined by 50% in just 15 years from the peak in 2004. The University of Oxford have been working on the vaccine that is cheap and there is a deal in place to manufacture 100 million doses a year in 2023. This global programme will offer up to 80% protection against malaria.

- Mauritius successfully eliminated malaria in 1969, and after a reemergence in 1975 after a series of tropical cyclones, the government investment in techniques such as spraying breeding sites and buildings with pesticide. Mauritius is now classed as a Malaria free country because of successful management at both local, national and global scales along with strong leadership and substantial funding.
- Some candidates will include health risks associated with the quality of built environment. Air pollution is a major health risk in India. 21 of the 30 most polluted cities globally are in India. 99% of Indians breathe air above the WHO's "safe" levels of PM 2.5 concentrations of less than ten micrograms/m<sup>3</sup>.
- Gujarat, a state in the west of India, has set a legal limit on pollutant emissions for industrial plants to reduce the health risk from air pollution. Petrol and diesel subsidies have also been scrapped in some areas and 14 Indian cities are expanding the use of high-speed metro systems - encouraging clean, fast public transport which reduces traffic congestion.
- However, the introduction of legislation like this has been slow and there are greater priorities for the moment such as increasing living standards across the country.
- Some candidates might argue that TNCs and 'Big Pharma' has a key role to play, because it develops many drugs and vaccines - although due to cost issues these are not always available in all countries (even the UK's NHS restricts access based on cost).
- Some might draw a significant distinction between communicable (diffusion model), and non-communicable diseases (diabetes) arguing that the former may need regional global management (Covid, SARS, Ebola) whereas others present a smaller risk so can be managed locally i.e. low / no risk of 'spread' to not requiring containment; on the other hand global programme may reduced the risk of diseases such as diabetes becoming more prevalent by improving health messaging / understanding of risk factors.
- Many health risks are managed at national and local level, so organisations like the NHS are crucial; in some places charities / NGOs may fill gaps where national government cannot provide all necessary healthcare: this may

provide critical disease interventions especially for children.

**In summary**

Global management is significant especially for infectious diseases and for disease monitoring – but this almost always goes hand in hand with national strategies and local delivery.

Environmental health risks are perhaps more often, and successfully, managed locally. It's possible to argue that a global programme is not *always* needed, but equally a global framework is likely to be helpful.

**Case studies used are likely to include:**

- The global and local management of Malaria, with reference to Ethiopia or Ghana
- The national and local strategies adopted by the Indian government and regional states.
- Global management of polio and smallpox
- The role of pharmaceutical TNCs such as AstraZeneca and Pfizer in managing health risks
- NGOs operating in South Asia, Sub-Saharan Africa and Haiti.