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TOP SCHOLAR



Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Scholarship 2025 Geography

Time allowed: Three hours
Total score: 24

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

Pull out Resource Booklet 93401R from the centre of this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–24 in the correct order and that none of these pages is blank.

Do not write in the margins (XXXX). This area will be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

INSTRUCTIONS

The materials in the resource booklet will enable you to become familiar with the theme and contexts of this examination: **extreme natural events in a global context**.

Information to answer any question can be taken from any resource.

Your answers to ALL three questions must include:

- specific information from the resource booklet
- knowledge and insight you have gained from your studies in geography
- relevant original and/or effective visuals, such as maps, graphs, and diagrams.

Space for planning has been provided on pages 4, 10, and 16 to help you prepare your responses. The questions on page 3 are repeated on their respective planning pages.

QUESTION ONE

Critically analyse the change over time in extreme natural events globally, and justify what is the most significant factor(s) causing the change.

Use page 4 to plan your ideas, and begin your answer on page 5.

QUESTION TWO

Perspectives are bodies of thought, theories, or world views that shape people's values.

On a global scale, critically evaluate through perspectives who is the most impacted by extreme natural events, and justify who is responsible for mitigating the impacts.

Use page 10 to plan your ideas, and begin your answer on page 11.

QUESTION THREE

Discuss to what extent technological advancements could resolve the impact of extreme natural events across the globe.

Use page 16 to plan your ideas, and begin your answer on page 17.

Begin your answer to **Question One** here:

Diagram 1)

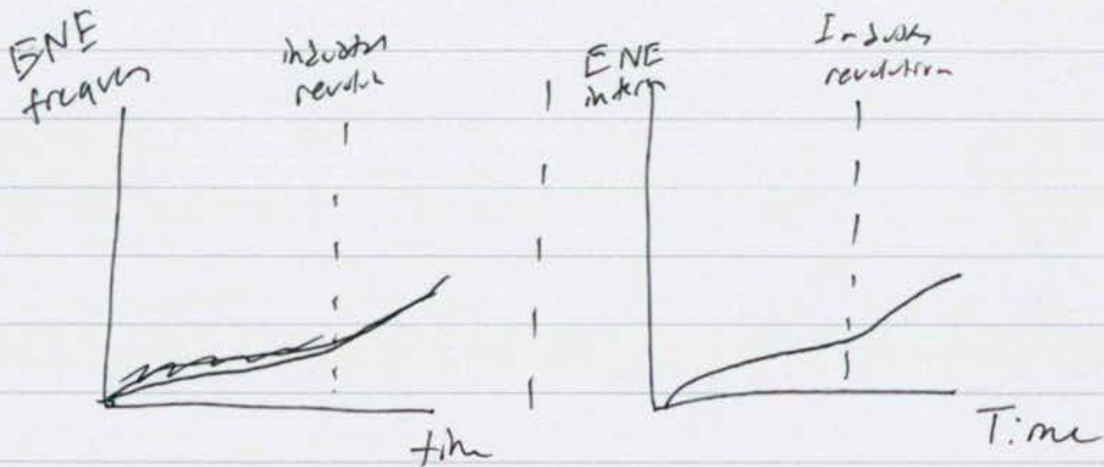


Diagram 2)

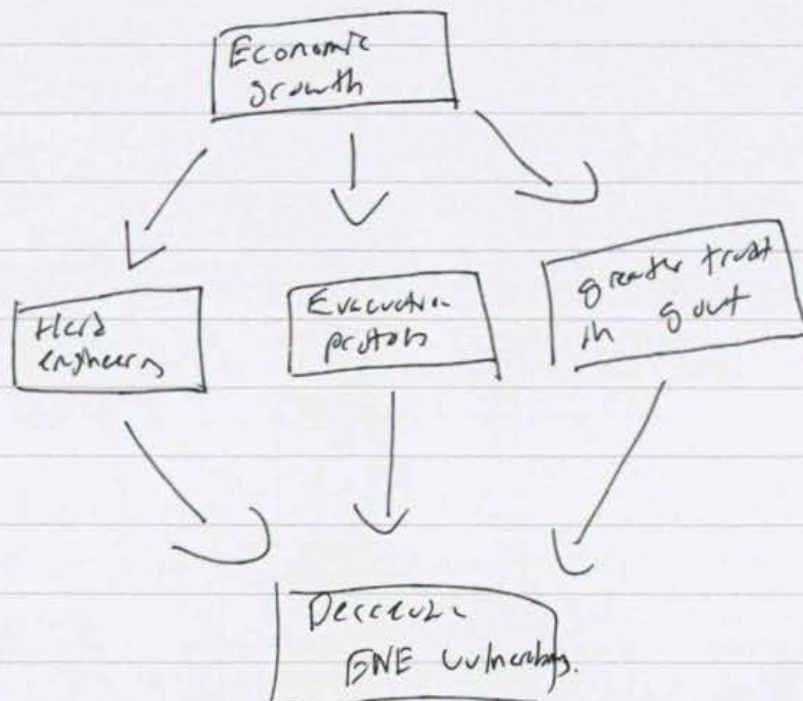
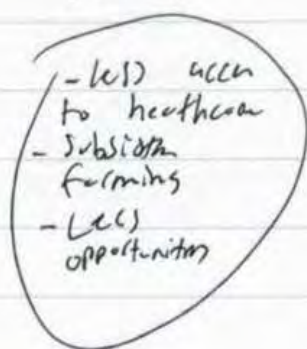


Diagram 3

rural



Migration



urbanized

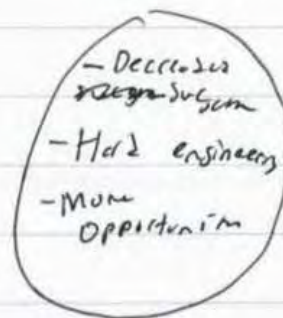
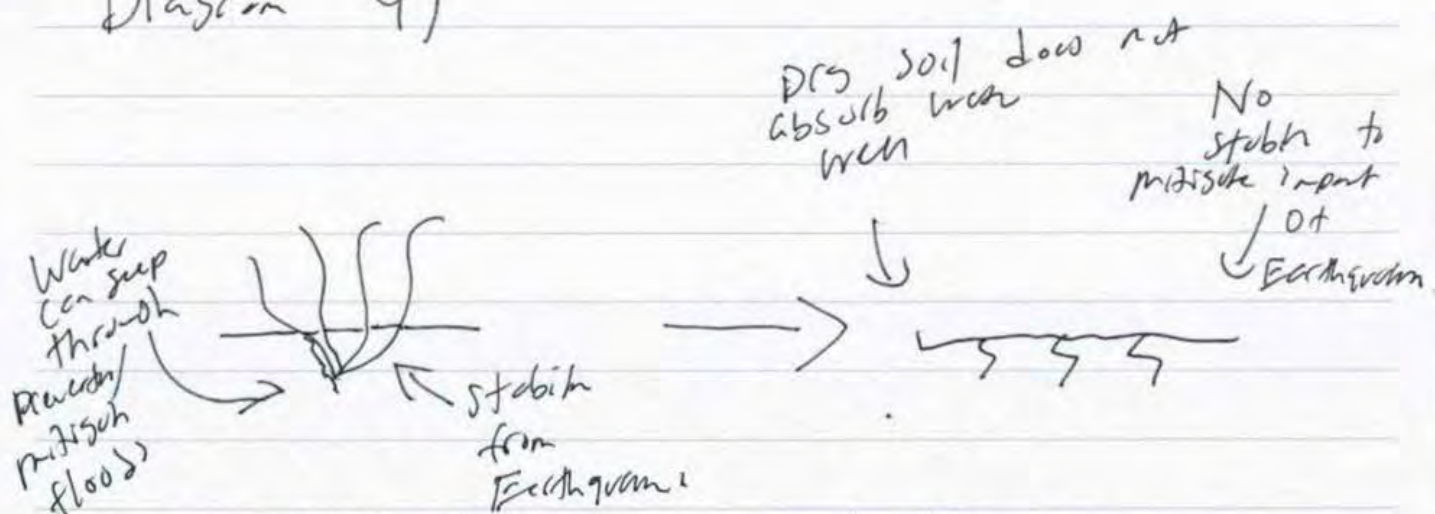


Diagram 4)



all refer to figures in & refer to diagrams

Figure 5)

	MEDC	LEDC
Climate Change	1st	1st
Technological Growth	3rd	2nd
Urbanisation	2nd	4th
Industrialization	4th	3rd 2nd 3rd

Question 1)

Extreme natural events (ENEs) have undeniably been changing overtime, yet it can be argued that the most significant factors causing this change can be categorised and ranked according to their significance.

It can be argued that the first categorisation of the significant factors causing the change in ENE's is climate change. Climate change in recent years has undeniably become a leading cause in increased frequency and intensity of ENEs overtime, with global warming causing rainstorms to be 30% more likely to occur and droughts becoming 70% more frequent as seen in recent years. As seen in diagram 1, since the industrial revolution, ENE intensity and ENE frequency has increased dramatically as a result of increased emissions into the atmosphere which has a flow on effect onto global warming and therefore increasing the frequency of atmospheric ENEs. In particular, in the 2010s, there were around 126 ENE's associated with weather disasters in North America, a staggering increase from the roughly 71 weather related ENE's in the 2000s. As a result, we see how there becomes a direct correlation between time and the frequency of ENE's especially atmospheric ones due to climate change. Furthermore, it can be further argued that in the long-term, climate change has become the most significant factor causing the shift in ENE's to becoming more intense and more frequent globally. In particular, there has also been an increase in unpredictable weather events such as typhoons and hurricanes, with the advent of hurricane Katrina in New Orleans and Typhoon Kalmaegi (Tino) which recently devastated the Phillipines, resulting in property damage upwards of \$500,000 USD. As such, we see how climate change has arguably been a major factor contributing the increased frequency and intensity of ENE's. However, it can be argued that climate change is not the only significant factor as the effects of climate change are mostly limited to atmospheric ENE's rather than mass movement and tectonic ENE's although it can be argued that climate change has been a cause of increased extreme rainstorms and thus increased frequency of mass movement ENE's such as landslides in areas susceptible to landslides due to instability of the soil and land.

It can be further argued that a second potential categorisation of the most significant factors affecting the change in global ENEs is technological growth and developing countries becoming more developed countries (i.e. Singapore). However, in this case, arguably the change in ENEs has become more positive, decreasing vulnerability to ENEs. In the case of technological growth, it has been a leading factor as to how the effect of ENEs have changed overtime, with increased technological growth with early warning systems, hard engineering, and evacuation protocols resulting in decreased susceptibility. In particular, diagram 2 illustrates a flow chart as

to how ENEs have changed due to increased technological prowess and less economically developed countries (LEDCs) becoming more economically developed countries (MEDCs). This has resulted in a trend of a decreased death toll overtime, wherein the 20th century had years where the death toll was in the millions often due to major droughts and floods not being able to be mitigated by hard engineering and foreign aid. Following such however, improved food security and increased global cooperation resulted in recent years only having 10,000 to 20,000 dead as a direct result of ENE's often due to major earthquakes and cyclones in LEDCs such as the Turkish Earthquakes of 2023 and major cyclones/typhoons across Southeast Asia. As a result of such, this second categorisation might not be as significant as perhaps climate change and increasing population sizes and rapid urbanisation in developed countries, it is still a factor to consider when looking at how ENEs have changed over time.

Arguably another potential categorisation could potentially be the rapid urbanisation of demographics, especially in MEDCs. This is a more negative change overtime in extreme natural events as increased urbanisation results in increased population density and therefore increased susceptibility to ENEs. In particular, diagram 3 illustrates the reasons as to why this rapid urbanisation and migration out of rural areas has occurred in developing countries shifting towards developed countries (MEDCs). As a result of such, while global population has been growing from 2.5 billion in 1950 following World War Two to a staggering 8 billion in 2023, population densities have also increased due to massive economic growth in countries such as China. In particular, urban earthquakes become much more dangerous as it has the potential to affect many more people than in rural areas due to the high population density. However, it can be argued that this would also depend on the level of infrastructure development within these cities or countries. For example, poor urban development will only increase susceptibility to ENEs whereas proper urban development (more so in MEDCs) can decrease susceptibility of ENEs such as Earthquakes. We see this in MEDCs such as Japan and Taiwan which due to historical Earthquake susceptibility, have developed hard engineering in homes which decrease susceptibility to tectonic ENEs such as earthquakes as they can withstand the tremors. Thus, we see how ENEs have changed in terms of MEDCs and LEDCs, where urbanisation becomes a major factor in both decreasing and increasing the impact of ENEs overtime. In particular poor urban development in LEDCs can often exacerbate the impacts of ENEs and this is a change which is largely negative in nature. It can be argued that an LEDC hit by a major earthquake such as Turkey in 2023, due to poor infrastructure develop not only results in high death tolls and mass displacement, but also results in increased susceptibility of people to secondary impacts of ENEs such as diseases, mass political instability, and societal disorder, all of which could be devastating for an LEDC. Thus, we can see

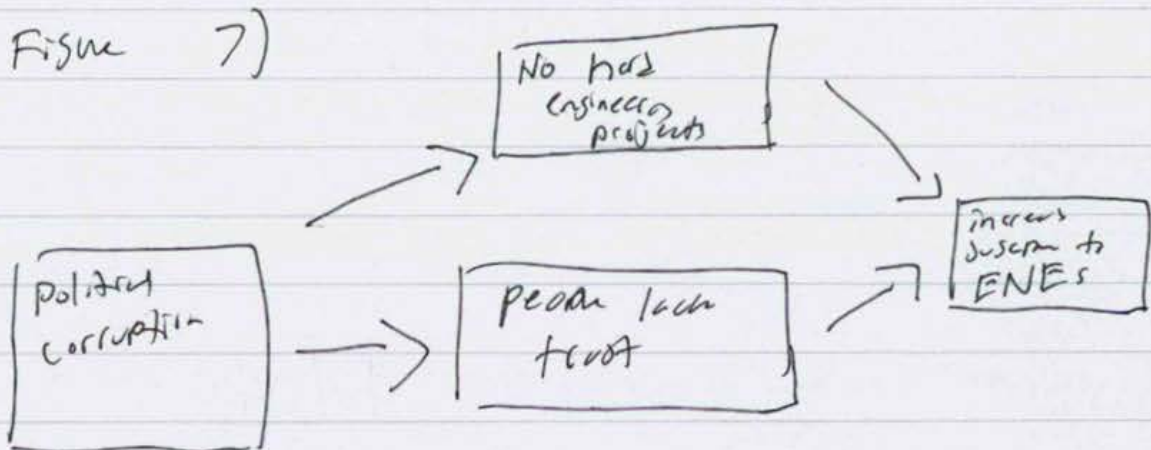
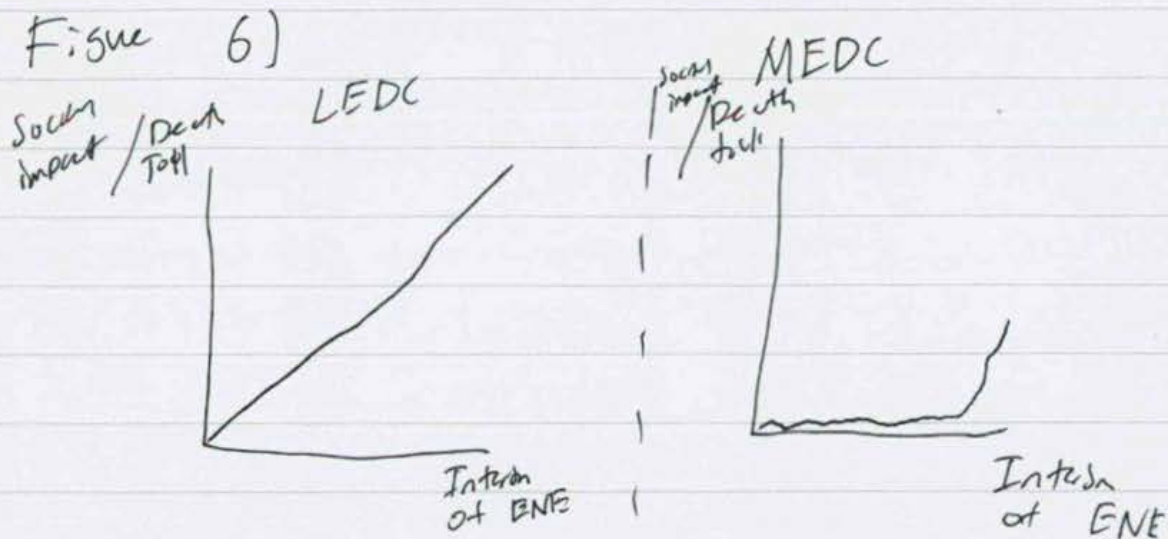
that arguably one of the most significant factors which has changed ENEs globally, especially the impacts is rapid urbanisation.

The final potential argument for categorising the factors which have changed ENEs is industrialisation. The industrial revolution and especially corporate dominance internationally has resulted in deforestation, loss of environment, and thus increased susceptibility to ENEs. In a case study of Afghanistan desertification, which has resulted in the loss of trees and thus biodiversity, 70% of the original forest cover has been lost since the 1950s due to industrialisation and deforestation due to war, building new houses, and keeping warm. As a result of this rapid industrialisation and loss of environment, Afghanistan has increased susceptibility to ENEs such as droughts which result in the secondary impact of famines, resulting in widespread dissent and decrease in overall health. This becomes especially prominent in LEDCs and further increases susceptibility to ENEs such as earthquakes due to the lack of structural stability provided from the roots of vegetation. Diagram 4 illustrates how a lack of vegetation results in increased susceptibility to ENEs such as floods and earthquakes. As a result of such, it can be argued that industrialisation and the loss of ecosystems/environments has become a major contributing factor to the change overtime in ENEs, especially in terms of their impacts on LEDCs. While it can also be argued that MEDCs are affected by this change and industrialisation, it is much less prominent as the effects of droughts can be mitigated through better food security and support from the government in MEDCs whereas better infrastructure in MEDCs results in decreased susceptibility to tectonic ENEs such as earthquakes whereas due to the poor structural stability of infrastructure in LEDCs (typically) the loss of vegetation to provide that structural support becomes devastating.

Thus, arguably these categorisations can be ranked based on their relative importance and their effect on how ENEs have changed overtime. Figure 5 illustrates table of this ranking according to MEDCs and LEDCs. Thus, it is undeniable that there has been a change overtime in the frequency, intensity, and the impacts of ENEs, with ENEs, especially atmospheric ones becoming more frequent and intense due to climate change. However, arguably due to technological growth and developing countries becoming more developed countries, there has also been a potential positive change in ENEs globally, with the impacts becoming less pronounced in MEDCs. However, there is the argument that LEDCs suffer even more from the impacts of ENEs due to industrialisation and urbanisation. However, it can be argued that for both MEDCs and LEDCs, climate change has been the single most significant factor causing the increased susceptibility, frequency, and intensity of ENEs in recent years.

Question 2)

Begin your answer to **Question Two** here:



★ However it is important to note that ENEs can have a firm on effect of leading out / disruption corrupt governments

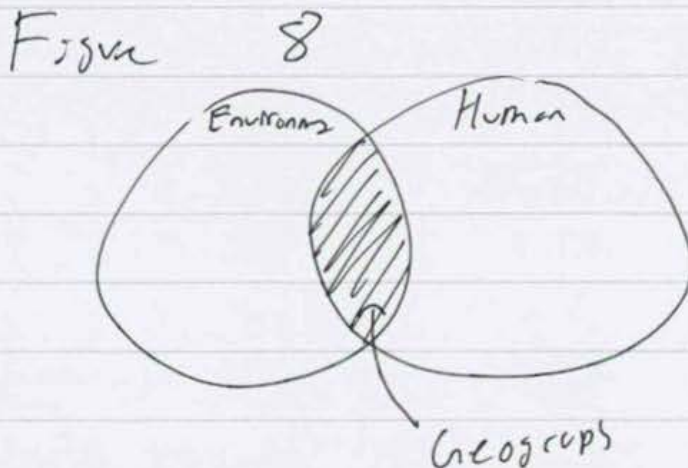


Figure 9)



LEDC



Figure 10)

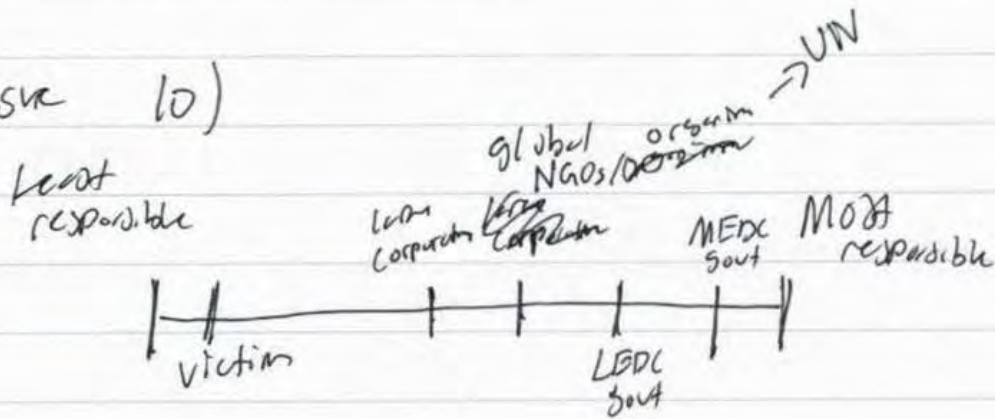
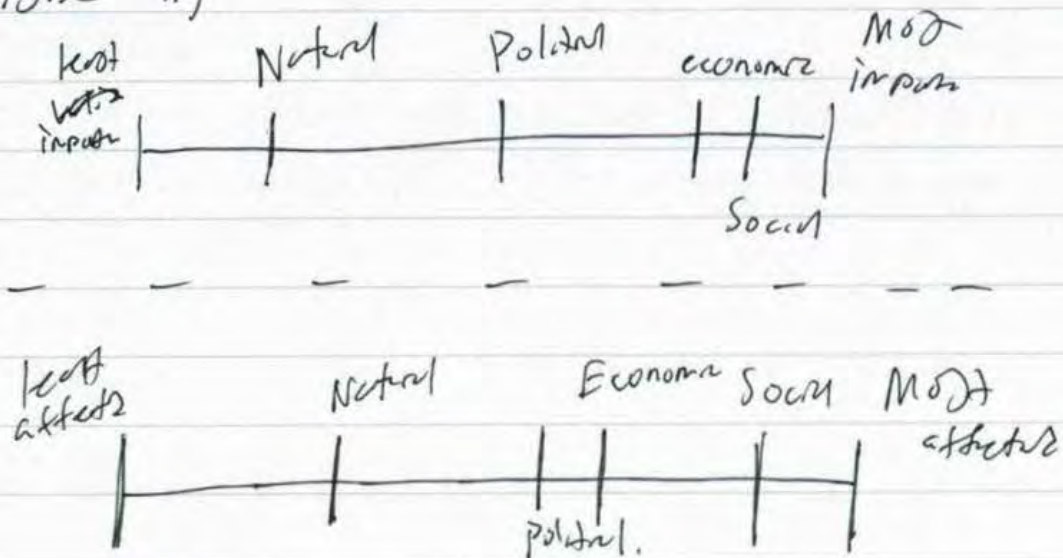


Figure 11)



Through perspectives, it can be argued that ENEs disproportionately affect some groups more than others, typically LEDCs more than MEDCs. However, there is also the issue of arguing who is responsible for mitigating the impacts of global ENEs. Is it the corporate giants and countries which have enabled climate change or is it perhaps the country afflicted who should be responsible for mitigating the impacts. These can be arguably placed on a relative hierarchy based on who is most impacted and who should be responsible for mitigating the impacts.

From a social perspective, it can be argued that those who are most impacted by ENEs are LEDCs. Typically, LEDCs pay for ENEs in the form of lives and loss of livelihoods whereas MEDCs typically pay for ENEs through the loss of infrastructure and economic downturn. From this social perspective, those who are most impacted by global ENEs become LEDCs. For example, Typhoon Yagi swept through Vietnam in 2024, affecting the livelihoods of 6 million children, restricting access to clean water, education, healthcare, food, and shelter. The secondary impact of said ENE was the lack of safe drinking water and increased chances of disease. Across East Asia where the typhoon afflicted people, Thailand saw 64,000 children being severely affected, Laos saw 60,000 children impacted. As such, we see how from a social perspective, those who are more impacted by ENEs are vulnerable communities and people, affecting their livelihoods. This becomes more evident in ENEs affecting LEDCs more so than MEDCs as LEDCs typically do not have the necessary resources to support so many displaced individuals, with infrastructure increasing such susceptibility to the ENE. Figure 6 illustrates the correlation between the social impact (i.e. death toll) of ENEs in LEDCs compared to MEDCs which can be attributed to better hard engineering and perhaps more comprehensive evacuation protocols. Thus, a social perspective would argue that those most impacted by ENEs are the people and the loss of livelihoods, especially in LEDCs. We can further see this with hurricane Katrina. While arguably the United States is an MEDC, New Orleans in 2005 could be considered an LEDC due to the mass inequality which plagued the city. The ENE massively affected the city, resulting in mass displacement and societal instability following the ENE, with mass looting and crime rampant in the city. Thus, arguably from a social perspective those most impacted by ENEs are the people, more so in LEDCs. By contrast, looking at the Fukushima tsunami, the death toll was only around 7k which while is a lot, is minuscule compared to the approximately 227,000 who died in the 2004 Boxing Day Tsunami and 227,000 deaths in the 2010 Haiti Earthquake, both ENEs which afflicted LEDCs. Thus, as a result, from a social perspective, it can be argued that the impact of ENEs more so impact LEDCs more than MEDCs. Thus, from this social perspective, perhaps those who should be responsible for mitigating the impacts would be the governments in building hard infrastructure to mitigate the initial impacts and then provide support for those afflicted. Although this might not be feasible considering the status of the LEDCs and their potential instability.

From a political perspective, it can be argued that those most affected by ENEs are those who have less trust in their government and those under a government with extreme corruption. This becomes evident in LEDCs but also MEDCs. In an MEDC such as the Philippines, there is inherent political corruption which has resulted in increased susceptibility to ENEs, affecting the country more so than others. In 2025, Typhoon Kalmaegi resulted in the deaths of around 75 people and around \$500,000 USD in structural damage. However, in the Philippines, over 26.6 billion Philippines Pesos in the national budget has been allocated towards “ghost projects” for flood mitigation. Thus, those who are most impacted by ENEs are those suffering from political corruption as in MEDCs, even though they have the necessary capital for hard engineering and deploying early warning systems, because of political corruption, these projects never come to light or become ghost projects. This can be seen in figure 7. Thus, through a political perspective, perhaps it would argue that those responsible for mitigating the impacts of ENEs is the government itself. Rampant corruption and political instability only exacerbate the impact of ENEs as a lack of government response to those afflicted and a lack of government response in terms of building hard infrastructure only further increases susceptibility of individuals living under these governments to ENEs. While it can be argued that through a political perspective, those most impacted by ENEs are those living under corrupt governments, in a relative hierarchy a social and economic perspective and who is affected through those are more important than a political one. However, the political perspective is perhaps more important than the natural perspective in a relative hierarchy.

From an economic perspective, it can be argued that those who are most affected by ENEs are MEDCs. MEDCs pay more for ENEs in the infrastructure damage and impact on the GDP rather than lives and livelihoods. For example, in Australia, the fires resulted in around 1.4k deaths from both the initial fires and the secondary impact of extreme pollution. However, it is estimated that around 17 million ha of land and 3094 houses were destroyed, erasing \$2.8 billion AUD from the Australian tourism sector. As such, we see how MEDCs pay more for ENEs through the destruction of infrastructure and loss of GDP rather than death toll compared to LEDCs. However, there is also the argument that for LEDCs and MEDCs, there is also a positive economic impact. ENE's which destroy infrastructure provide the opportunity to build better and more modern infrastructure. We see this more in MEDCs which can afford building new infrastructure such as in New Zealand. The Christchurch Earthquake devastated the city, however, due to rebuilding efforts, it has created jobs which has the flow on effect on the economy known as the multiplier effect, wherein an injection of capital (government spending on paying worker wages) results in a more than proportional increase in real GDP as the capital gained from the job is spent on other sectors of the economy. Moreover, Christchurch has the most modern infrastructure in all of New Zealand due to these rebuilding efforts. Therefore, there is a more positive long-term

economic impact in MEDCs following ENEs. Thus, those who are most impacted by ENEs from a economic perspective is likely still MEDCs despite some of that impact being offset through decreased unemployment during rebuilding efforts. While LEDCs are still massively affected, oftentimes the economic cost is much less significant than the loss of lives whereas for MEDCs, the loss of GDP (i.e. Australia lost AUD\$2.8 billion in tourism) and infrastructure is much more significant. From an economic perspective, it can be argued that those responsible for mitigating ENEs is either the government or engineers to build and fund hard engineering of infrastructure or fund projects to mitigate the impact of ENEs such as dams or tall sea walls.

From a natural perspective, it can be argued that those most impacted by ENEs are people who rely on the environment for safety and food, as well as wildlife. Perhaps it would be more appropriate to categorise them into long term and short-term impacts rather than the impacts on LEDCs and MEDCs. Through a natural perspective, the impacts of ENEs can be quite obscure. ENEs can have the effect of greater fertility of crops during floods but in the long-term have the impact of soil erosion. Moreover, while a wildfire might be devastating in the long term for biodiversity, the more carbon and nutrients become available for future growth of vegetation and thereby increased biodiversity. However, for there to be truly an impact, the environment must interact with humans, wherein the natural must interact with cultural elements for impacts as seen in figure 8. A case study such as the Kamchatka earthquake of 2025, despite being a magnitude 8.8 earthquake, there were no direct deaths (1 indirect). We can attribute this to the fact that in order for there to be feasible impacts, there needs to be an interaction between the environment and humans. Thus, from a natural perspective, it becomes quite obscure as to who is most affected by ENEs as while we could simply say the environment is the most affected which might be true, is simply not a nuanced enough argument. The environment has to interact with humans for there to be a feasible impact. Such as the impact of a flood in areas where people grow rice and therefore it is a benefit for there to be floods. It could be beneficial for the natural environment to receive that extra water whereas for other environments, ENEs such as a flood (i.e. Auckland floods) might be devastating to the natural environment. Thus, there becomes the argument that through a natural perspective, those who are most impacted highly depends on the area which the ENE affects and whether there is an interaction between the natural world and cultural world. Through this perspective, those who are most responsible for mitigating the impact of ENEs is perhaps humans themselves. Those who interact with the environment around them are perhaps those who are most responsible for mitigating ENEs.

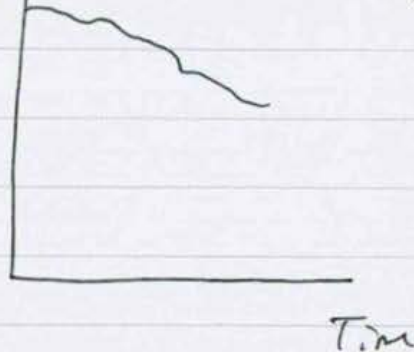
In figure 9, it illustrates the most important and to least important impacts of ENEs based on a relative hierarchy split into MEDCs and LEDCs. Whereas in figure 11, it illustrates a continuum of which perspectives are most valid/important compared to who is affected the most.

Those who are most responsible for mitigating the impacts can be explored through perspectives as the essay has done previously. However, it is perhaps more appropriate to simply say that as a collective society, we are the most responsible for mitigating the impacts. In a highly globalised society, everyone is responsible for aiding in the mitigation of impacts, but arguably it is more so governments in MEDCs in terms of aiding LEDCs in their responses, sending foreign aid, and aiding in hard engineering or prevention technology such as early warning systems. It also becomes the responsibility of governments in LEDCs to send help to areas affected within their borders and to cultivate a degree of trust with the people to ensure evacuation goes smoothly, therefore mitigating the social and political impacts of ENEs. We can see this in a continuum in figure 10 as to who is the most responsible for helping mitigate global ENEs. Thus, while arguably everyone is responsible for mitigating the impacts of global ENEs, it becomes more so the responsibility of the governments in both MEDCs and LEDCs, as well as global organisations such as the United Nations and countries collaborating in the Sendai Framework. In particular, the Sendai framework helps in disaster relief and helps reduce the impact of ENEs of people affected globally, reducing the potential death tolls and societal instability which comes with ENEs.

Begin your answer to **Question Three** here:

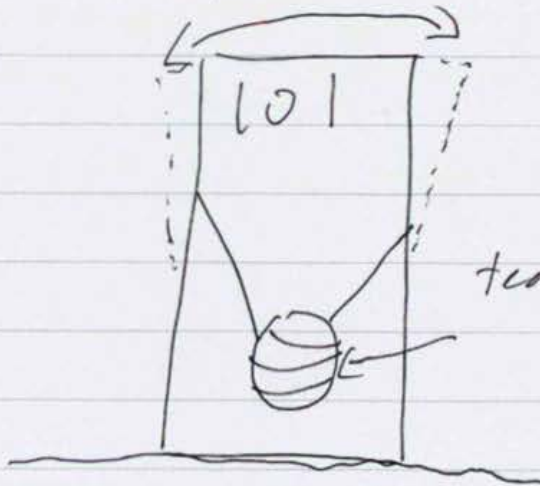
Figure 12)

~~Vulnerability~~
to ENE



Decrease
Vulnerability
due to
increase in
technology
and advancement

Figure 13)



technology from
stranded
stuck assets
Shales (can withstand
more than 0.55g of
maximum of earth)

Figure 14)

Code is
broken here
as hard engineering
mitigates impact of
ENE

impact
ENE

hard
engineering

residual
impact on
people

Figure 15



Figure 16



Question 3)

It is undeniable that technological advancements will be one of the key factors which reduce global vulnerability to ENE and the impacts of ENEs. However, there can be both an argument and a counter-argument for the extent of which technological advancements would resolve the impacts of ENEs across the globe.

First, an argument as to the extent of which technological advancements would resolve the impact of ENE. As the world become rapidly modernised in the digital era, there have been many initiatives and programmes, as well as early warning systems such as the Pacific Tsunami Warning Centre (PTWC) which have resulted in decreased vulnerability to ENEs across the globe, mitigating the impacts of such. As seen in figure 12, overtime there has been a massive decrease to ENE vulnerability to due early warning systems. Early warning systems have become almost a staple in resolving the impact of ENEs as typically, following an ENE in LEDCs, they simply do nothing because it is too expensive to implement hard engineering. However, because early warning systems include global cooperation and are relatively cheap to implement, it has massively decreased the impacts of ENEs across the globe. In the Food Early Warning Early Action system (FEWEAS) it illustrates a reduction of disaster risk through shared platform for community and the government to address issues regarding flood risks. Because of our highly globalised society, it can be argued that it has accelerated the process of developing early warning systems and increased the effectiveness of such, reducing the impacts of ENEs across the globe. In particular, in New Zealand following

the Kamchatka earthquake in Russia, the government sent out early warnings to phones across the country, alerting people of the potential dangers of being near the west coast owing to the potential ripple effects of the high energy released by the earthquake. This helped prevent any indirect deaths from the earthquake and in countries such as Japan and Taiwan, reduced the impact of the earthquake to only a few injuries rather than deaths. Moreover, as billions of dollars are being invested in Low Earth Orbit satellites which can give access to almost 2.4 billion people in dark areas, it will give internet to people which can aid in evacuation protocols or in ENE impact mitigation as access to internet means that previously isolated populations now have access to necessary aid following an ENE. As a result of such, it becomes evident that technological development and increased trust in governments have been a leading technological advancement which has reduced the social cost of ENEs (lives).

In particular, technological developments such as hard engineering, especially in MEDCs which experience frequent earthquakes or other ENEs have developed technology to reduce the potential impacts. Japan is a leading example of this, wherein because of its position in the Ring of Fire, it has developed structures with anti-seismic systems, damping systems, and seismically isolated structures, all of which are present in Japanese buildings. As a result of this hard engineering, Japan has a much-decreased susceptibility to earthquakes. This can also be seen in Taiwan, where following the Taichung Earthquake of 2010, Taiwan adopted many of Japan's hard engineering technology. An example of this is the Taipei 101, a skyscraper which can withstand magnitudes expected only every 3000 years. In 2023, Taipei was afflicted by a 7.4 magnitude earthquake and the Taipei 101 recorded no structural damage due to hard engineering. Diagram 13 illustrates a rough illustration of how the Taipei 101 is able to withstand such magnitudes without any structural damage. As a result, hard engineering especially in MEDCs has become a massive factor in the resolving of ENEs across the globe as the impacts become massively mitigated by hard engineering. In figure 14, it illustrates a circular flow diagram wherein hard engineering essentially breaks the cycle of the impact of ENEs as the impact is largely mitigated by better infrastructure which can withstand ENEs and have no structural damage.

Moreover, technological advancements in the last 25 years in Australia has resulted in indigenous fire management, wherein it removes fuel for larger fires in the dry seasons while maintaining and protecting the native wildlife. It becomes evident that technological advancements not only include the physical technology, but also diffusion of ideas through our ethnically diverse world. The lighting-controlled fires to mitigate the impact of wildfires is not a new idea, but it is in the way that it is applied which is a technological advancement in itself, advocating for methods to both mitigate the impacts of ENEs while preserving both culture and the natural environment. We further see this interaction between the environment and humans in the Teluknaga area in Jakarta wherein global action with the Indonesian Red Cross has resulted in efforts to

restore the ecosystem through mangrove planting to reduce the impact of marine erosion. It is estimated to benefit 74 million coastal people and reduce the risk and therefore the impact of tidal disasters while contributing to emissions reduction, a major contributor to climate change. Therefore, this initiative not only illustrates advancements within technology and global cooperation to mitigate the impacts of ENEs, but also to help potentially mitigate the causes and therefore resolve the impact of global ENEs.

However, it can be counter-argued that the extent to which technological advancements could resolve ENEs is actually quite limited in nature. In reality, hard engineering becomes the most effective way to mitigate ENEs, with disaster proof construction in the United States and Earthquake proofing in both Japan and Taiwan. However, this becomes severely limited to MEDCs, being nigh inaccessible to LEDCs which cannot afford this hard engineering (i.e. Turkey and Bangladesh). As a result, while early warning systems does aid in massively reducing the impact of ENEs, it is only to a certain extent. As seen in Diagram 15, an increase in the number of early warning systems does not result in a proportional increase in benefit, plateauing at a certain point and actually becoming less beneficial as the capital could be spent elsewhere. While hard engineering would result in a more proportional increase, this would only be to a certain extent until the benefit does not increase and could perhaps decrease if the capital could be spent elsewhere in the economy. For example, in an MEDC such as America, despite having sufficient early warning systems for hurricane Katrina, because of congestion and people simply not being able to leave their home behind, there were approximately 100k individuals who stayed behind. Moreover, with frequent hurricanes in Florida, many choose not to leave their home as they once again simply cannot afford to. As a result of such, it becomes evident that technological advancements is not the only way the impact of ENEs would be resolved. It can be argued that it becomes more so a matter of the trust with the government and the culture within the evacuating populations. In this counter-argument, religion also becomes a massive contributing factor as to how technological advancements will likely not be able to completely resolve the impact of ENEs. Historically, religion has been a justification for populations to do nothing following an ENE as they believe it is God's work or a force majeure. Thus, the impact of ENEs might not be fully mitigated due to these factors. However, there is a significant counter-argument to this wherein because the world is becoming much more secular, religion might not actually be that substantial of an obstacle to reducing the impact of ENEs.

Moreover, to add onto the counterargument that technological advancements could not resolve the potential impacts of ENEs, we also have to consider who is receiving the benefits of these early warning systems, organisations/foreign aid, and who has access to real time data provided from Remote sensing and sensors. In reality it is often the MEDCs which have this technology and the LEDCs who benefit from such are often

allies of said MEDCs and thus modern geopolitics come into play and become an obstacle in mitigating ENEs. For example in 2017, Bangladesh was hit by the eye of Cyclone Mora and more than 55,260 CPP volunteers and BDRCS youth volunteers were deployed to announce the danger and bring people to cyclone shelters, as well as many more individuals coming in for foreign aid. Whereas for ENEs in countries not affiliated with MEDCs and perhaps in conflict with them, the issue of foreign aid and being able to access the early warning systems become more obscure. For example, Afghanistan would not receive the same level of aid as Israel from America (MEDC) if they were hit by an ENE due to modern geopolitics. These early warning systems would also likely not be set up in these LEDC countries as they would likely have to rely on other nations helping them set up early warning systems and if they are not allied with one, might result in increased susceptibility and therefore it can be argued that technological advancement alone will not resolve the impact of ENEs. Rather, it becomes the issue of modern geopolitics and global cooperation wherein the impact of ENEs will have to be resolved along with technological advancements in early warning, evacuation, and hard engineering. In contemporary society, the issue of tensions surrounding modern geopolitics (i.e. Taiwan vs. China, Israel and Palestine) will inevitably be an obstacle in fully resolving the impacts of ENEs in the future. However, it can be argued that as global tensions are resolved, the impact of ENEs globally, from MEDCs to LEDCs will be much reduced.

Due to increasing vulnerability to ENE around the world, it can be argued that technological advancement alone will not be sufficient to resolve the impact of ENEs across the globe. Rather a degree of global cooperation, especially between MEDCs and LEDCs is needed in order to fully resolve the impacts of ENEs. While it is currently unfeasible for all countries to have effective early warning systems and effective hard engineering, overtime, perhaps with global cooperation and less tension in modern geopolitics we as a global society can massively resolve the impacts of ENEs, especially due to the advent of rapid technological development which aids in the effectiveness and distribution of early warning systems and hard engineering technology around the world.