

93401



S

SUPERVISOR'S USE ONLY

TOP SCHOLAR



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

Tick this box if
there is no writing
in this booklet

Scholarship 2020 Geography

2.00 p.m. Monday 30 November 2020

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.

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: **climate change**.

Your answers to ALL three questions must incorporate a wide range of case studies from around the world, as well as information and ideas BOTH from the materials provided in the resource booklet and from your studies in geography.

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

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 and justify the most significant cultural process that contributes to climate change.

Your answer must include:

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

P²⁻⁸

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.

With reference to different perspectives, have positive impacts on society from the use of fossil fuels outweighed the negative impacts? Discuss.

Your answer must include:

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

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

QUESTION THREE

"Twenty-five years ago people could be excused for not knowing much, or doing much, about climate change. Today we have no excuse." — Desmond Tutu

With reference to different perspectives, critically evaluate the predicted future impact of climate change on human societies across the globe. Who will be most affected?

Your answer must include:

- specific information from the resource booklet
- knowledge and insight you have gained from your studies in geography
- convincing communication.

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

QUESTION ONE

Critically analyse and justify the most significant cultural process that contributes to climate change.

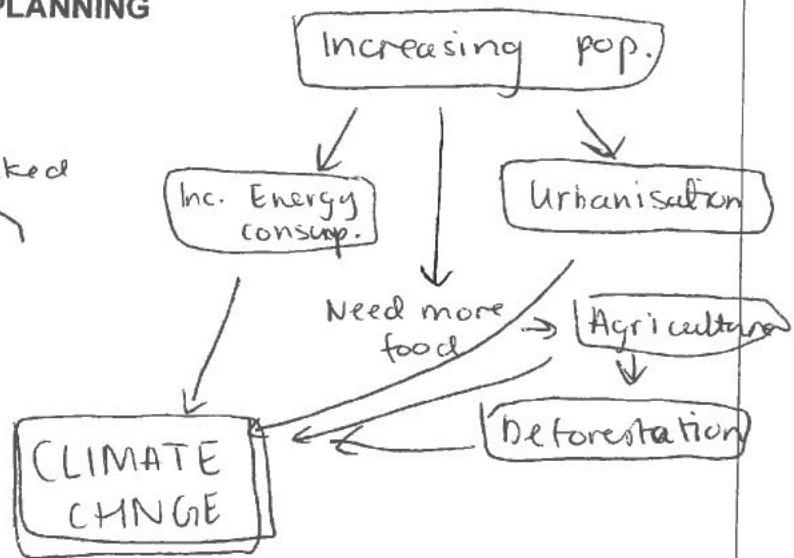
Your answer must include:

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

PLANNING

Cultural Processes:

- 1- Human pop increase
 - 2- Urbanisation
 - 3- inc. energy consumption
 - 4- agriculture
 - 5- deforestation
2. linked
4. linked



Stats:

GHG:



- Electricity & heat : ③ ④ ① → esp. relevant in richer countries p4
- agriculture : ④
- industry : ②
- Buildings (11%) : ①



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

There are many cultural processes that have and still do contribute to climate change, both directly and indirectly. While all these are human population, urbanisation, energy consumption, agriculture and deforestation, while all are linked in different ways, it could be said that one has a more significant contribution to the changing climate.

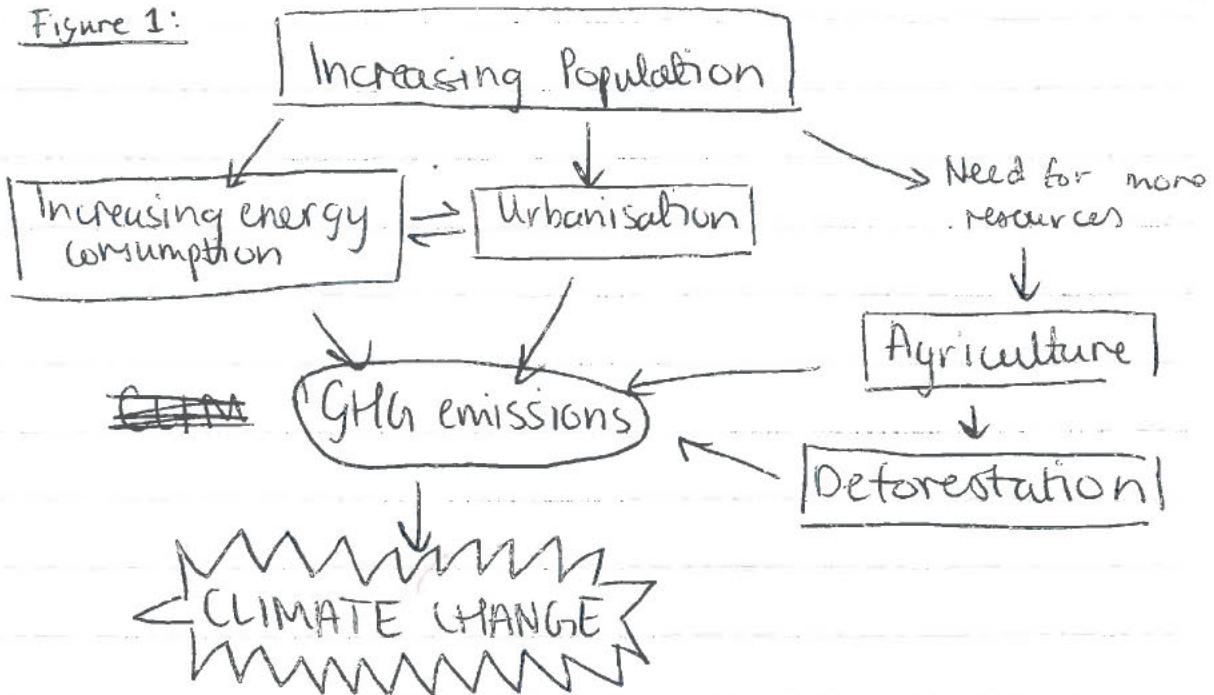
Firstly, to analyse the extent that each process has contributed to climate change, we must first define what the contribution is, allowing us to compare and contrast, and then justify the most significant contribution. We shall use carbon emissions - or more generally, greenhouse gas emissions (GHGs) to quantify these contributions.

According to multiple sources, the greatest contributor to GHG emissions is the 'energy sector' - (p4, p7, p8). In 2013, 72% of global emissions were due to this cultural process, and energy consumption is increasing every year. The US emissions grew by 2%^{due to energy}. In 2018, China's emissions grew by 2% in 2019 (global growth rate is 2%). This increase in energy consumption, and thus in GHG emissions, is caused by rising population and economic growth. It is not surprising then that the greatest contributors to CO₂ emissions come from the richest ~~and~~^{and/or} and most populous countries - (p4), with the US ~~in the~~ and China in the lead, followed by India. ~~As population increases,~~ while energy consumption therefore may

stem like the ~~big~~ greatest contributor to climate change, it is caused by population growth - another cultural process, and so is not the most significant.

~~See~~ Figure 1, below, illustrates how the concepts are all linked: ~~if~~

Figure 1:

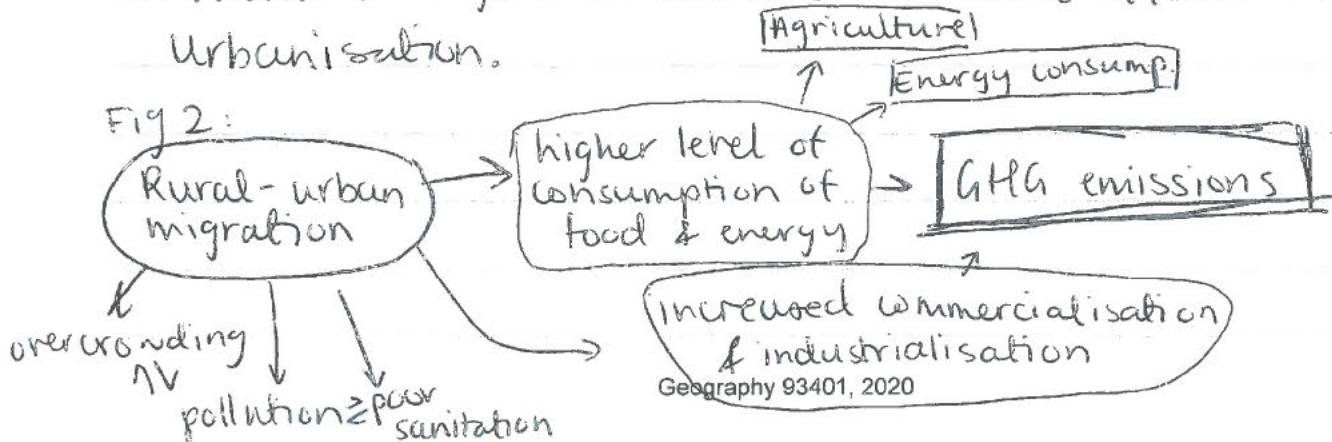


in Fig. 1

In As seen above, urbanisation is another cultural process that is closely linked to increasing energy consumption and increasing population.

As Page 6, Figure 6 ~~illustrates~~ says, "urban areas account for 71-76% of the world's CO₂ from energy use - " and a significant portion of total GHG emissions.". Figure 2 below shows some effects of urbanisation.

Fig 2:



While this implies that urbanisation is the main contributor to GHG emissions and therefore climate change, it is important to note the reason for urbanisation - an increasing population. With this rapid shift in population, unless the economy & technology grows in conjunction, the continents most affected will not be equipped to handle it, and so the effects cannot be mitigated or reduced. Since 90% of ^{pop growth & urbanisation} ~~urbanisation~~ will occur in Asia and Africa, this will have catastrophic effects ~~on~~ on the climate (p 6).

The 2nd highest contributor to global GHG emissions, according to P4, is Agriculture, with 24%.

17% of this is direct, and 7-14% through changes in land use (P8). Since agriculture is the cause of about 80% of tropical deforestation, these 2 cultural processes are inherently linked and can be analysed together. Agriculture produces GHGs through NO₂ emissions from soil, fertiliser etc. and also CH₄ from ~~grazing~~ ruminant animals and rice cultivation.

Deforestation contributes 25% of GHGs, since forests are the greatest carbon sinks - holding 2x the CO₂ than is currently found in the atmosphere.

Deforestation reverses the carbon negative effects, and puts all that stored C back into the atmosphere. Soy and Palm oil plantations, cattle ranching, and logging are the main causes of deforestation. According to P9, Fig. 10, ~~the lowest~~ ^{with} livestock and large and small scale

agriculture are the greatest causes of severe deforestation. In New Zealand, over 70% of emissions are due to agriculture, compared to the 24% globally. This is a serious issue for us made personal by the Canterbury Dairy Farming industry. Again, it seems as though agriculture and deforestation are the most significant contributors to climate change, but once more we must look at Figure 1 and see that it is a consequence of the increasing population.

The final cultural process is human population increase, and is the cause of each of the other processes, both directly and indirectly.

For this reason, it is the most significant process that contributes to climate change.

This does not mean that by fixing overpopulation we can fix the climate, however, but, as the IPCC stated - population growth is "a key impediment" to limiting global warming, and therefore the most significant contributor - although perhaps not the most pressing issue overall.

QUESTION TWO

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

With reference to different perspectives, have positive impacts on society from the use of fossil fuels outweighed the negative impacts? Discuss.

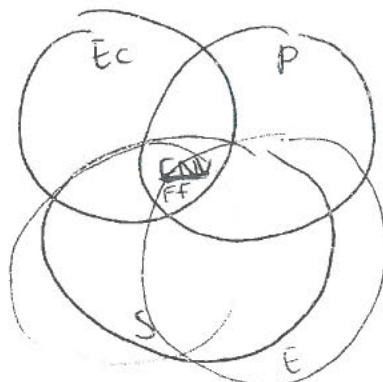
Your answer must include:

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

PLANNING

Perspectives

- global o pos
- local
- rich o neg
- poor



+

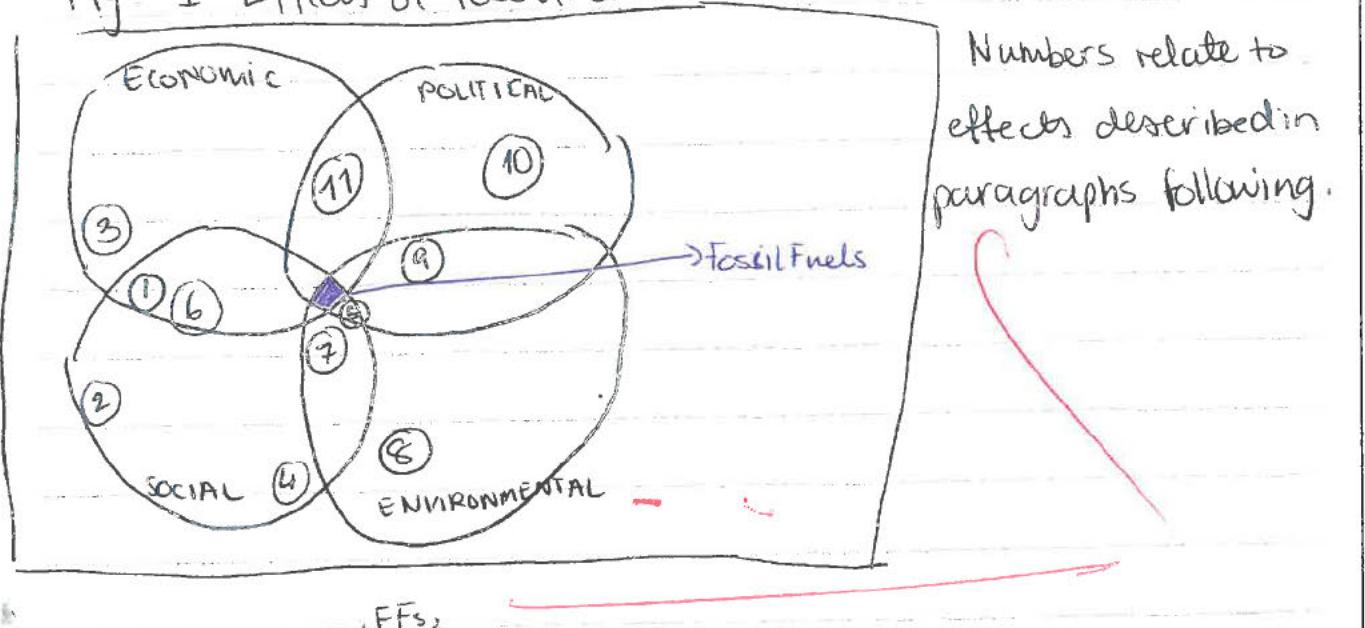
- Ec. p10 - out of poverty ①
- Ec. technology ②
- Ec. more reliable food ③
- Ec. jobs! money :) ④
- ④. health
- ⑤. rights

-

- .waste E ⑤ ✓
- .health E/S ⑥ ✓
- .water use E/P ⑦ ✓
- .indigenous S/P ⑧ ✓
- .p15 P ⑨
- .p17 - corruption P ⑩ ✓
- .economy E ⑪ ✓

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

Fig. 1: Effects of fossil fuels



FFs,

Fossil fuels effect a wide variety of people, places, businesses and environments, and so there are conflicted opinions and experiences regarding them. While most climate activists are against FFs, many economists and politicians are in favour, and both sides experience positive and negative impacts of FFs.

There is no denying that FFs have benefitted society.

The Industrial Revolution changed the world as we knew it, allowing the invention of technologies^① that have saved lives, created jobs, and built cities. FFs have allowed us, for the last few decades, to prosper, and develop in many human rights aspects such as ~~of~~ decreasing food poverty, respecting women's rights, and spreading education (p10.) Additionally, the FF industry has created many jobs^② and helped the economy both globally, nationally, and locally.

In NZ, Taranaki's oil and gas exploration created 7070 jobs, and, put \$1.57 bill into the GDP, in 2015^③ (P11). This means that FFs have great economic impacts. Furthermore, while FFs do have an impact on global warming, this is also ~~not~~ regarded as a good thing by some. Medical researchers found that cold-related deaths reduced by 10 \times the amount that heat^④ related deaths increased. (P10) Not to mention, the effects of ~~heat~~ rising temperature on vector-borne diseases^④ was minimal, meaning that health-wise, the positives outweigh the negatives. However, these all come from 2 articles (P10 + 11), and other sources have varying opinions.

FFs have a ~~large~~^{large} impact on the indigenous communities in many regions, including NZ, as land is taken and used for ~~'resource~~ extractivism' (P14). Not only does this directly impact them as their ancestral, rightful land is stolen and destroyed, but also their reputations get ruined if they try and object. (5) This is a social, political, and environmental issue. Similarly, FFs ~~have~~ disproportionately effect poorer countries, such as island states or ~~as~~ some African countries. ~~These~~ Africa produces less than 4% of GHG emissions and yet climate change will cost them up to \$10.6 bill a year to mitigate. (6)

Another social effect of FFs are the health effects. Though P10 emphasised the benefits of global warming, the use and extraction of FFs have a direct negative effect on health (P12 & 13). Coal 'is a 'dirty fuel' which can be up to 50% toxic materials that must be removed.⁽⁶⁾ These chemicals often leak into water ways, killing many animals and plants and eventually tracking through the food chain to reach humans. 25% of the 55% of chemicals traced by researchers (13.75% of all projected) caused cancer or other sever damages to neurological, endocrine, immune systems etc. (P13). In the US, pollution from coal plants resulted in 13200 deaths, and \$100 bill a year in health costs.⁽⁷⁾ Moreover, the amount of water required for mass extraction of coal, oil, & gas (through fracturing) is around 6 million gallon per well. When we already suffer from droughts and polluted water across the globe, this kind of water use is unacceptable.⁽⁸⁾ ~~However, politicians~~

The social and environmental damages of FFs are already extensive, and they are only part of the story. P17 shows a figure (1b) that ~~also~~ demonstrates the connection between corruption and the oil industry. "The trend line of corruption ranking is nearly parallel to the oil exports." As a higher % of exports is oil, the country becomes

'increasingly corrupt - with the exception of Islamic countries.' (10)

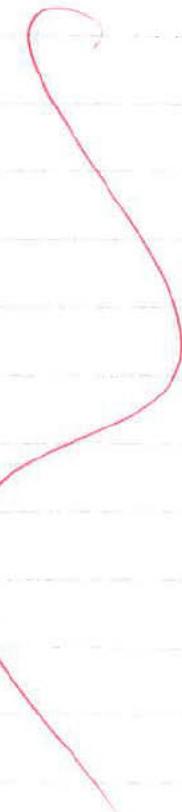
Similarly, as countries become more reliant on ~~that~~ oil exports, their economy suffers - a contrast to the 1st & 2nd sources/opinions - p10&11.

On p18, we hear of 3 countries with high % of oil exports. Russia has over 70% of its ~~energy~~ exports being oil - 50% of its budget intake.

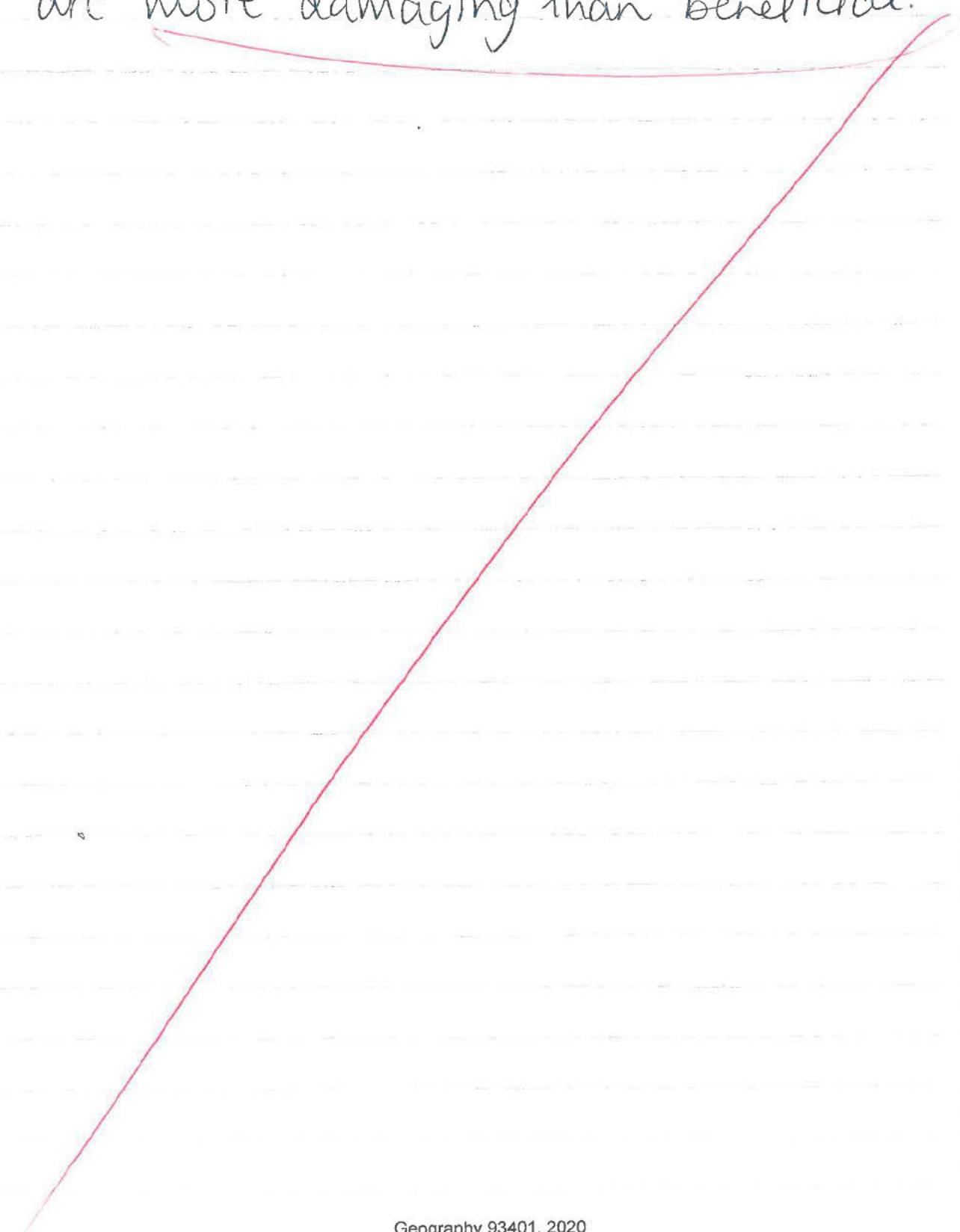
The World Bank itself has had to warn Russia, as the non-diverse economy means that as oil prices fall, so does the economy. Colombia and Venezuela are the same; the Colombian peso has declined by 37.86%. since oil prices began to drop in 2014; in Venezuela with oil being 95% of its exports, corruption grew and HDI (human development index) fell. (11)

Figure 2:

| Positives | Negatives |
|-----------|-----------|
| (1) | (5) |
| (2) | (6) |
| (3) | (7) |
| (4) | (8) |
| | (9) |
| | (10) |
| | (11) |



As we can see from Figure 1, there are a variety of perspectives due to the diverse effects of FFs. But as Fig 2 shows, the negative impacts far outweigh the positives, and so overall, fossil fuels are more damaging than beneficial.



QUESTION THREE

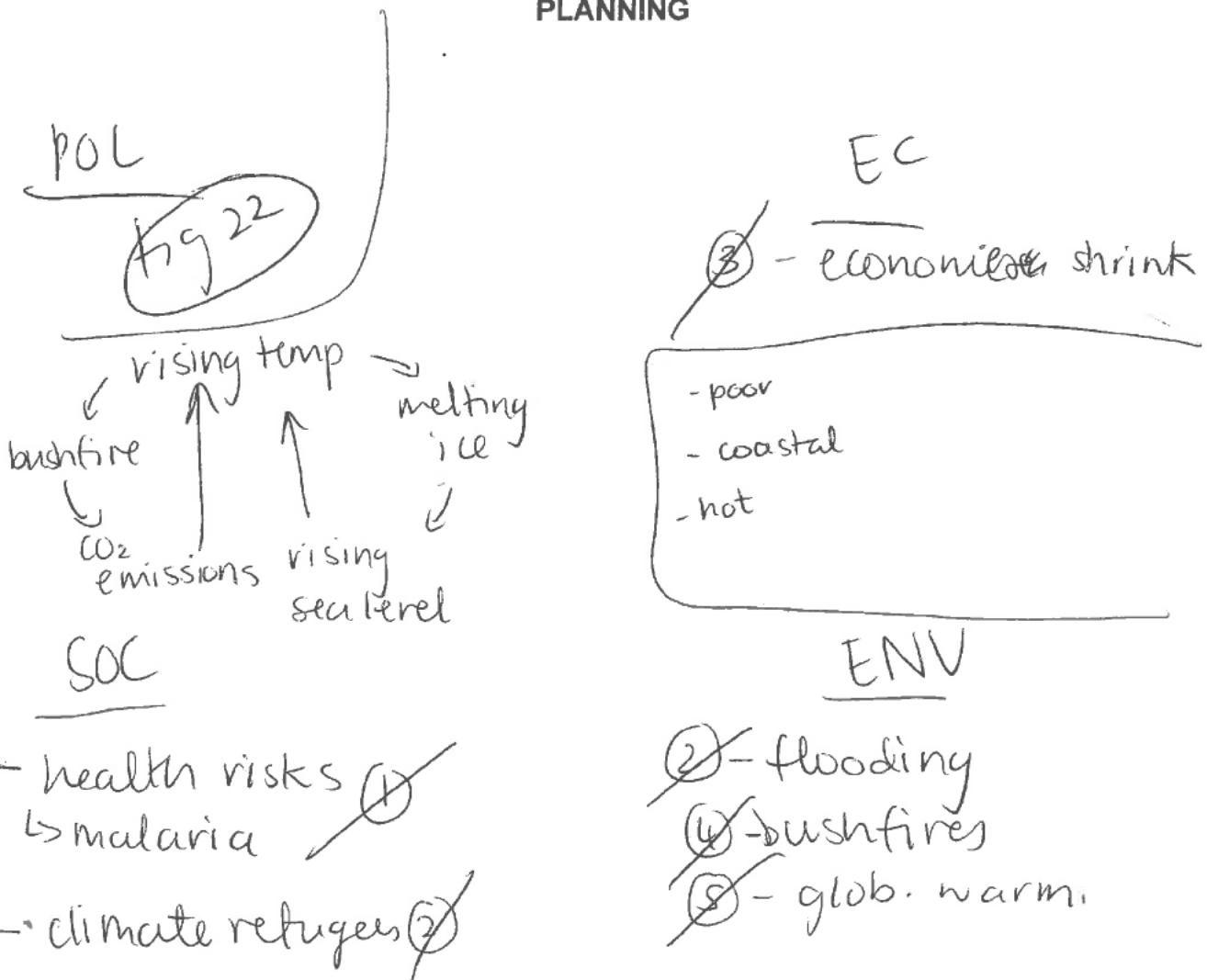
"Twenty-five years ago people could be excused for not knowing much, or doing much, about climate change. Today we have no excuse." — Desmond Tutu

With reference to different perspectives, critically evaluate the predicted future impact of climate change on human societies across the globe. Who will be most affected?

Your answer must include:

- specific information from the resource booklet
- knowledge and insight you have gained from your studies in geography
- convincing communication.

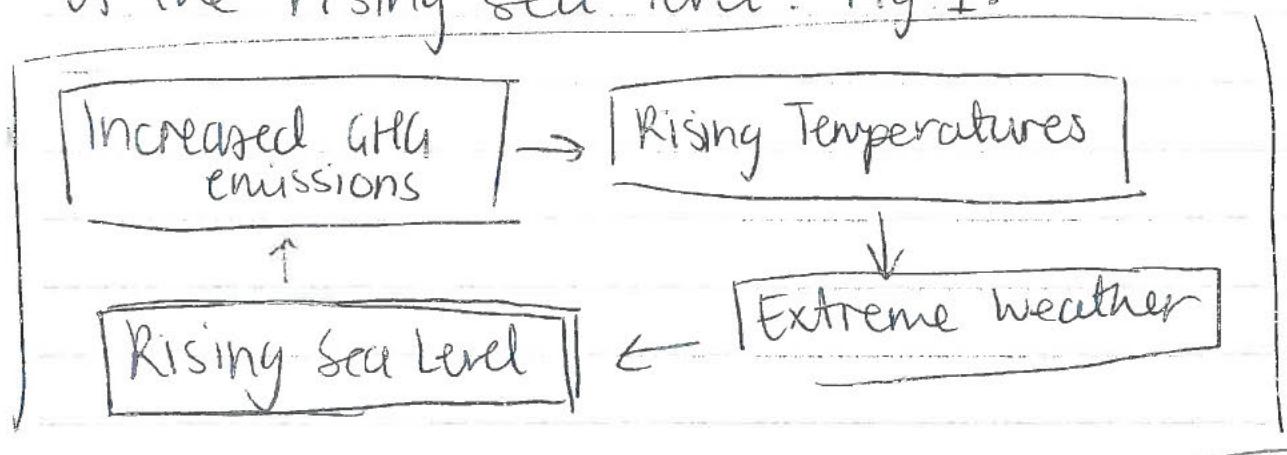
PLANNING



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

Climate change will effect millions of people globally - it already does. However, many nations will be disproportionately affected, even when they are not responsible for the changing climate.

One of the main effects of climate change is the rising sea level. Fig 1:



This will effect coastal regions, and especially island nations like the Maldives, or Pacific Islands.

~~These~~ These places don't have the infrastructure to cope with these rising sea levels as they

② stand, by 2050 the islands may not even exist.

* numbers relate to Fig 3. at back

Already, we see extreme weather patterns, and increased flooding in areas that may not even be coastal. I, personally, have been affected by this, as some family members died in the flooding of Kerala in 2018-19.

↳ India

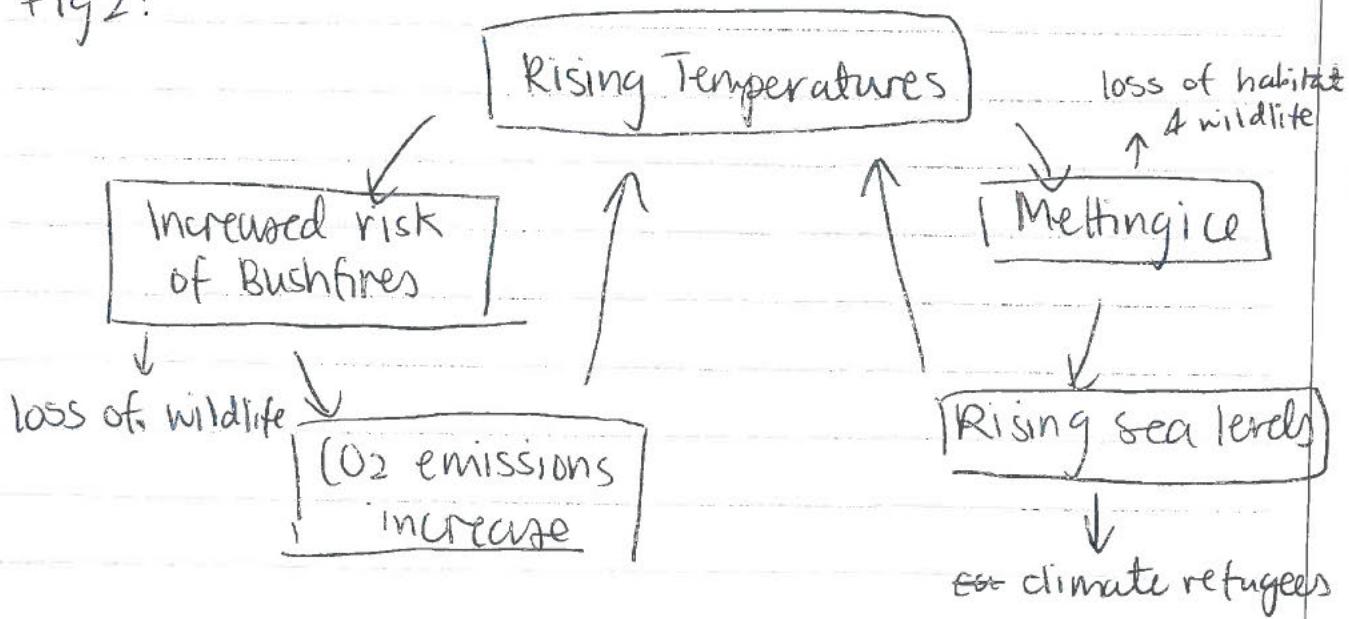
As P21 says, countries around the equator that already experience heavy rainfall in monsoon seasons are disproportionately affected by global warming. ~~Being~~ ⑤

Bangladesh has 6 million climate refugees (more than the entire population of NZ), and this would double in 2050. This becomes a political and social issue as well as environmental at this point, as countries fight to prevent future flooding, but weak infrastructure and dense population leaves them vulnerable. This is especially true for poorer nations.

On that note, according to page 20, many African countries are extremely vulnerable to climate change. The increasing temperature leads to health issues like cardiovascular failure, and additionally, water and vector borne diseases increase as temperatures rise ~~does~~ especially the West Nile Virus (P24) - perhaps explaining the ~~per~~ high vulnerability in African countries. Furthermore, (P25) malaria will be more prevalent as the parasite thrives in warm areas. In poor countries without the healthcare to treat these illnesses, or the technology to develop cures, these small changes can prove fatal for the population.

So far, these issues have been affecting poor countries, however there are some issues that are more environmental than socio-political, such as the increased risk of bushfires. ④ (P22) In Australia, one of the hottest and driest countries, climate change is resulting in more extreme conditions in summer, an earlier start to bushfire season, and a 25-70% increase in very high-extreme fire danger days. This will happen in New Zealand too, with a 71% increase ~~in~~ by 2040. Additionally, the bushfires would cause the carbon-sinks (forests) to become carbon sources, furthering climate change and acting as a tipping point. see fig 2.

Fig 2:



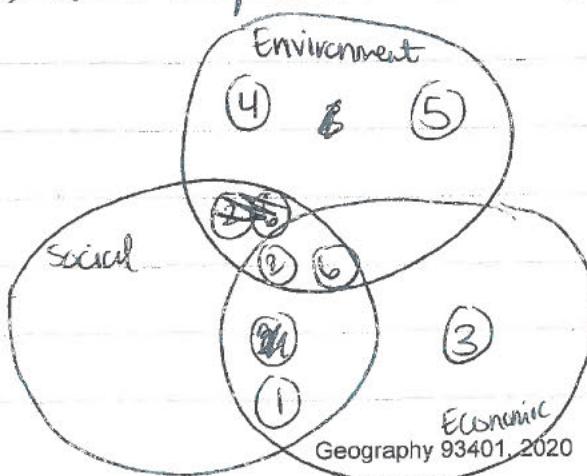
Once the above cycle starts, it is extremely difficult to stop, as the feedback loop continues increasing climate change.

Finally, all countries will be affected economically as global warming leads, indirectly and directly to loss of jobs and income. ③. The US is predicted to lose 10.5% of its GDP by 2100 down to 2% if the Paris Agreement is followed. Russia, Canada, UK, Switzerland, India, Japan, NZ, all will suffer between 4-12% of their GDP to ~~lose~~ some aspect of climate change. This effect is not limited to richer countries, all will ~~feel~~ see a significant loss in GDP/economy as climate change progresses.

All of these 5 effects together show which countries are most affected ~~as~~ as ~~des~~ illustrated by Figure 19 (P20).

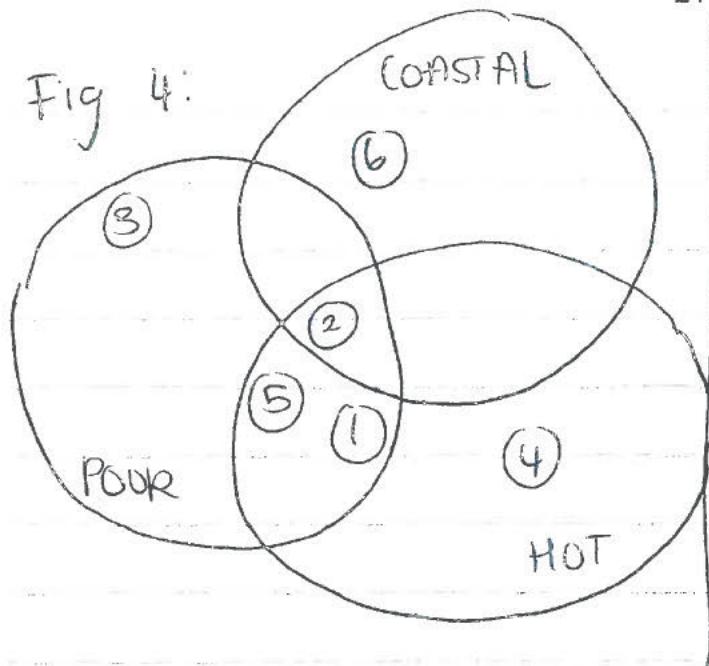
Poor, coastal areas - especially those that are low lying - are most badly affected, both socially, environmentally, AND economically. Hot, ~~hot~~ dry countries will also suffer, but with appropriate infrastructure they may be able to mitigate the effects of climate change, where poor countries cannot.

Fig 3:



Figures 3 and 4 show ~~the~~ the different effects of climate change, and now

Fig 4:



they disproportionately affect poor regions. Countries like Bangladesh which are poor, coastal AND hot will experience most negative effects of climate change, where countries like the US will only experience a few - such as the economy shrinking, and rising sea levels. It is an unfortunate fact that those countries who contributed least to GHG emissions and to climate change will feel the most significant effects.

