

93401



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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!

Scholarship 2018 Geography

2.00 p.m. Wednesday 21 November 2018

Time allowed: Three hours

Total marks: 24

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

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

Carefully read the instructions on page 2 of this booklet.

Answer ALL three questions in this booklet. Each question is worth 8 marks.

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: **Fresh water in a geographic context**.

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. Key ideas should not be repeated in your answers to different questions.

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

QUESTION ONE

Critically evaluate the importance of different geographic processes that have led to issues related to quality of freshwater supplies.

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 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.

Apply a range of perspectives to critically analyse the impacts of freshwater issues on people.

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

Considering future global development, can we ensure fresh water sustainability? Discuss.

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 evaluate the importance of different geographic processes that have led to issues related to quality of freshwater supplies.

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PLANNING

- Climate change.
- Agriculture/Pollution.
- Natural - Industrial abuse of water.

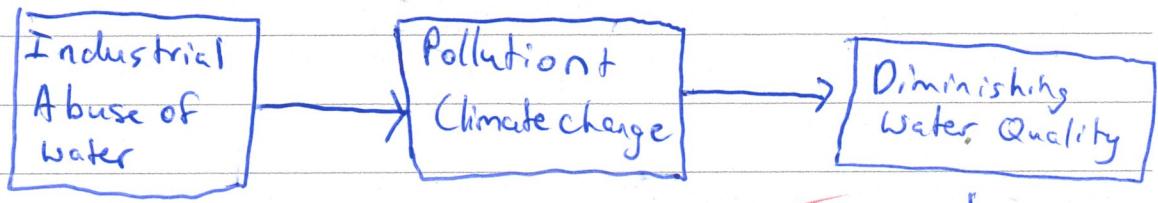
Jewon's

Begin your answer to Question One here:

"Water is the driving force of all nature." - Leonardo DaVinci. Without water, life will simply cease to exist. The world is currently in the midst of a global water crisis. 2.5 billion people lack access to water of acceptable quality for sanitation. This is due to the various roles that several geographic processes have had to play in the diminishing ~~water qualities~~ quality of water on this planet.

Processes including climate change and agriculture have greatly accelerated the increased the issues related to the quality of freshwater supplies. However, it is without a doubt that the various industrial processes used in this world have played the most significant role in issues related to water quality. ✓

Fig 1:



↓
Issues surrounding
freshwater quality
threatening life

Figure 1 clearly shows how the industrial abuse of fresh water leads to other issues which ultimately results in major issues surrounding water quality. Technology and industrialisation has advanced at an astonishing rate over the past few decades. It is this advancement which has allowed increased

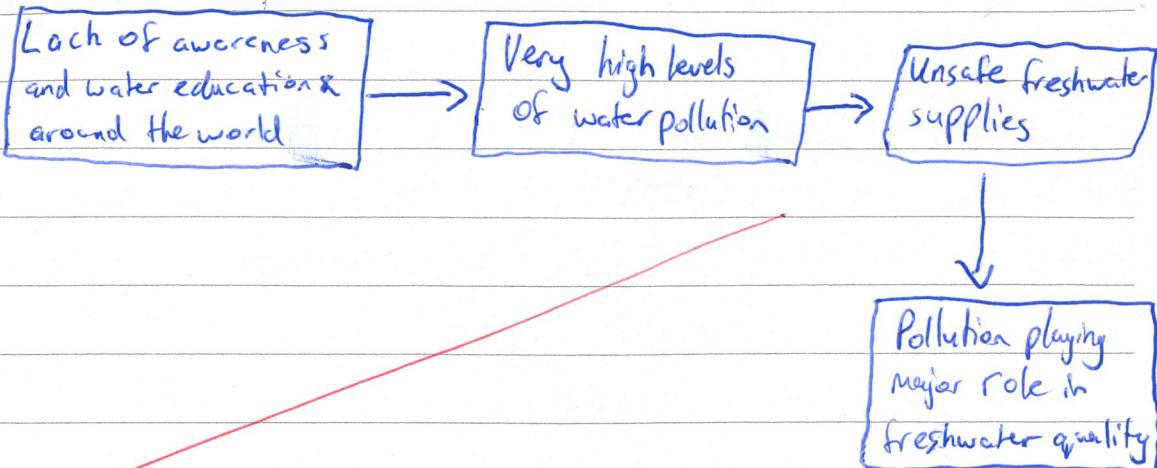
exploitation of such a precious resource to occur due to the various geographic processes that are accelerated by advancing technology. This can be clearly seen from the vast amounts of water used in various production processes. The paper industry in the U.S use 17,000 gallons of water per tonne of pulp alone in their production processes. 80% of this ~~waste~~ water is waste water which is not collected or treated and is just dumped in the various water ways. Industrial firms pay no attention to this and just continue to exploit such a precious resource to fulfil their greedy desires. Such abuse of water leads to immense effects on the quality of freshwater supplies showing how this process is very important when it comes to such issues.

Although industrial abuse has significant impacts on water quality, some may argue that other processes, such as climate change and pollution are more important. These factors also have major roles to play in the diminishing quality of water. In the year 2017, carbon emissions totalled to a staggering 37 billion metric tonnes from burning fossil fuels and other industrial processes. This greatly increases climate change which intensifies the impacts duration and flow-on effects of drought which will not only reduce water quality, but will also limit accessibility. Increased

carbon emissions leads to the acidification of water ways again showing how climate change plays a large role in ~~various~~ issues with water quality. ~~If this impact on water quality will be most profound in poorer countries which do not have the means to adapt.~~

As well as climate change, pollution is also an important factor process which greatly impacts water quality. As the world has become evermore advanced in their production processes, water ~~as~~ pollution is becoming more and more of an issue as proper & precautions are not being taken to ensure ~~before~~ its treatment and collection. ~~As well as industrialisation lead~~ Not only does ~~industrialisation~~ heavy industrial water use lead to pollution, but also the mentality of humans, especially those living in less economically developed countries. They do not realise the importance of such a vital resource in their lives and their abuse of it also diminishes water quality. Millions of people in India practice open defecation, dump dead bodies in water ways as well as household rubbish. ~~The~~ Consequently, the amount of toxins and dangerous bacteria found in The Ganges river in India is 3000 times more than the acceptable limit set by the World Health Organisation. This lack of education across the population greatly contributes to the process which is pollution and it significantly puts the quality of various freshwater supplies in imminent danger.

Fig 2:



Of all these points, it is the various preter processes that have arisen due to technology advancement that and industrial water abuse that has played the most significant role in leading to water quality issues. Although ~~factors including~~ climate change and pollution are important, it is the industrial abuse of water that has allowed these other processes to really take off. Without industry and technology, climate change and pollution would be nowhere near as significant as they are in the present day. This is clearly shown in Fig 1 ~~below~~ where it can be seen that the industrial abuse of water is the root cause of issues with global water quality, and one simply cannot argue with this.~~it~~

All in all, various geographic processes have led to water quality issues, the most significant being industrialisation. Looking into the future, sea issues will continue growing from this process if the current state of mind remains unchanged. Climate change, pollution

and many other processes will become severely worsened, hence why industrialisation is the devil! U

QUESTION TWO

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

Apply a range of perspectives to critically analyse the impacts of freshwater issues on people.

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PLANNING

③ Natural Environmental → Eco system reliance.

② Economic → Standard of living

S
P
E
N
T

① Social → Health/Hunger/Poverty/Inequality.

Begin your answer to Question Two here:

Humans class themselves as an intelligent race, yet we are so oblivious to the consequences of impacts of that freshwater issues can have on various parts of the world. By this projected that by 2035, 65% of the Earth is covered in water, yet only about 2% of this water is suitable for human consumption. Of this 2%, only one third is in accessible locations. When analysed from a range of perspectives, it is clear to see that this water scarcity problem has situation has drastic impacts on people. From a social perspective, it is the poverty and inequality that may arise. From an economic perspective, it is the standard of living of people that is affected, and from an environmental perspective, it is our reliance on the ecosystems that is severely jeopardised. It is the social impacts that will undoubtedly have the greatest impact on people.

Water is the key of life. Its quality is paramount in ensuring healthy citizens in a country and reduction of poverty. Freshwater issues in countries have the potential to lead to various disease outbreaks, leading to the collapse of an entire nation. Take for example the Havelock North campylobacter outbreak. 5000 people became sick with over three people were even killed by the outbreak. If such an outbreak has these effects on a very small New Zealand town, imagine the what would occur if an outbreak like this was to take place on a larger scale, in a less economically developed country. Masses of deaths

would occur, leading to immense poverty throughout the stricken country, heavily impacting people from this social perspective. Not only do health issues pose a threat from a social perspective but also inequalities can arise.

~~Even today, in 4 countries, a fifth of people in Ghana,~~ the freshwater issues have led to people being forced to walk kilometers on end to find suitable drinking water for their families. This has taken its toll more on females, reducing their ability to attend school and gain a proper education.

A 15 minute reduction in time to collect water saw an increase of 12% in female school attendance throughout Ghana.

~~Not only~~ While people are pouring buckets of water on their heads ~~as~~ in some parts of the world, others are carrying buckets of water on their head to supply their families with fresh drinking water. This goes to show, from a social perspective, how freshwater issues impact people by increasing health risks and inequalities. This impact is the most significant on people. UR

Economically speaking, water also plays pivotal roles.

The people of a country rely entirely on the economy to live lives they can enjoy. Water is huge in

various economies across the world, especially

New Zealand's. In the second quarter of 2018,

two thirds of New Zealand's exporters come from

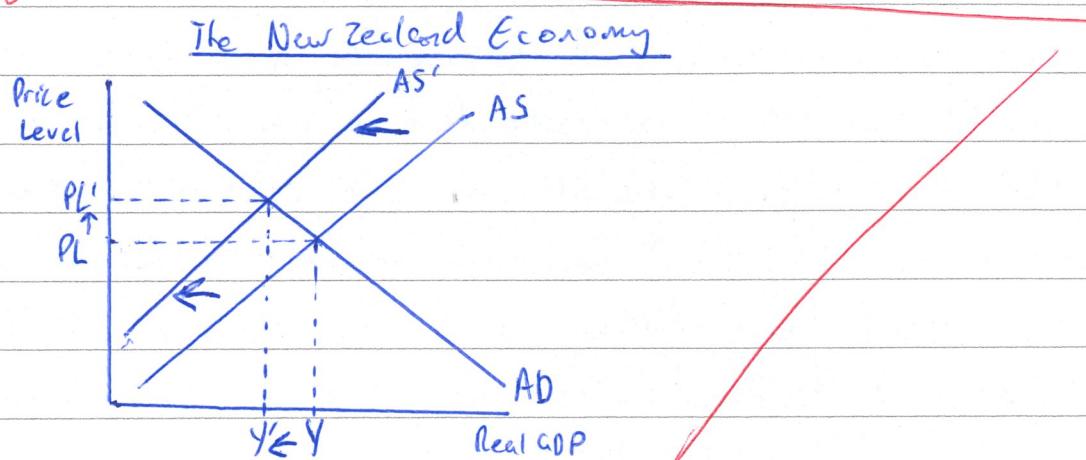
the agricultural industry which generated a total revenue of 3360 million dollars. ~~This~~ ~~revenue~~ This

is a huge amount of money that was brought in to the economy due to agricultural exports and

is spent in various sectors to improve ~~on~~ ~~the~~ the

standard of living in this country. Freshwater issues would mean agricultural issues in output would significantly decrease since it is so reliant on water to use for its irrigation. ~~The check this impact~~ The impact of freshwater issues on the NZ economy is shown in figure 1 below:

Fig 1:



Freshwater issues will lead to a decrease in aggregate supply in the economy as shown in Fig 1 by AS shifting to AS'. ~~The~~ The impact on agriculture is an example of this. This change causes real GDP to decrease from Y to Y' , meaning economic growth has decreased. A decrease in economic growth leads to a lower standard of living for people, showing how freshwater ^{issues} impacts people from an economic perspective. Although important, this ~~economic~~ perspective is not as important as the social perspective as ~~people~~ healthy people are what sustain an economy. Without healthy people, an economy that relies on water for revenue will cease to exist, hence why the social perspective is most important.

Does the state of the environment really affect people or is it just one big hoax? Obviously, it is the environment that dictates the purity of a country and

also the interdependence between ecosystems and populations. So the impacts of freshwater issues on the environment will carry significant flow-on effects to people. Water is the home of ~~over~~ millions of ecosystems, and each species of each ecosystem has a role to play in maintaining these ecosystems. ~~Ecosystems~~ Healthy ecosystems lead to better protection of freshwater sources, increased livelihood and improved climate stability. Freshwater issues impact all of these factors, which will in turn come back to bite the people. Figure 2 clearly shows this reliance on the environment and how water issues can affect this ~~if~~

Fig 2:

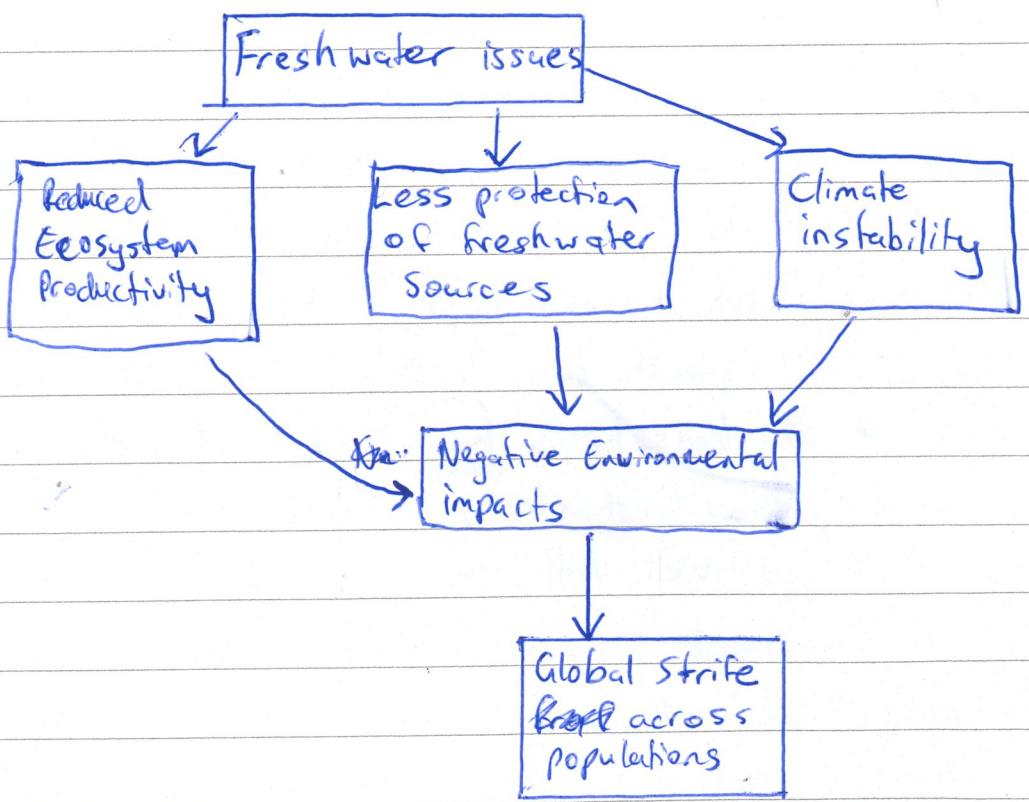


Figure 2 shows how environmental problems that come from freshwater quality issues will impact people negatively. //

Overall, the freshwater quality issues have significant

impacts on people, no matter what perspective you look at it from. However, it is clearly the social impacts that outweigh economic and environmental perspectives. This is because freshwater quality directly impacts ~~one's~~ a population's health from a social perspective. ~~whereas~~ In this day and age the ~~problem~~ issues impacts from an economic and environmental impact can be somewhat overcome. But how will this happen if healthy citizens do not exist to assist with these other issues. It is without a doubt that the social impacts are greatest ~~else~~ when freshwater issues arrive, and as Winston Churchill once said, "Healthy citizens are a country's greatest asset." U

QUESTION THREE

Considering future global development, can we ensure fresh water sustainability? Discuss.

Your answer must include:

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PLANNING

Political perspective - increased conflicts.
Technological solutions
Jevon's paradox

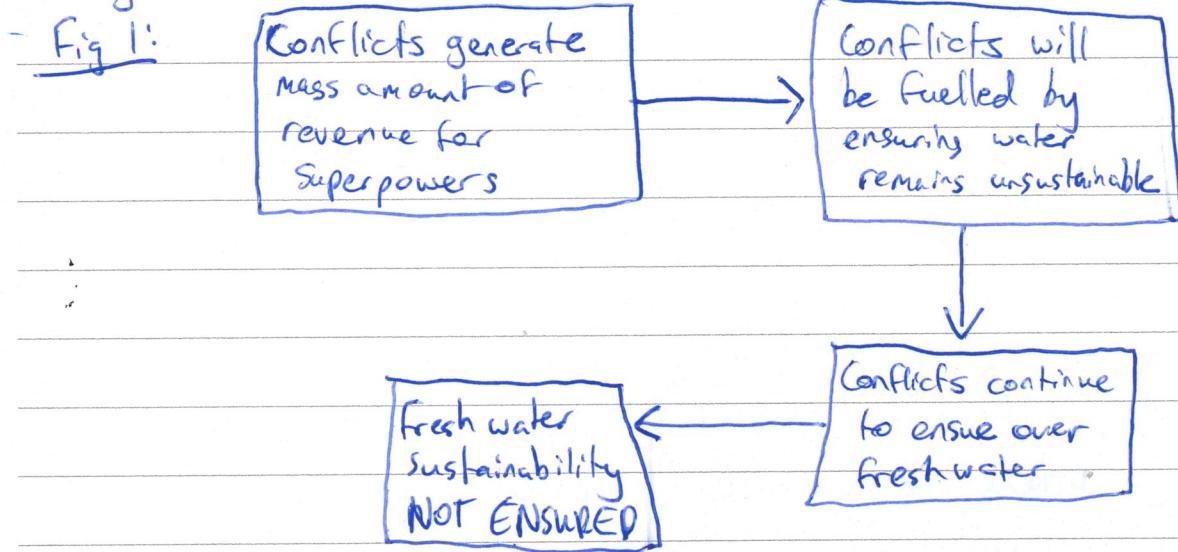
Begin your answer to Question Three here:

Humans are greedy creatures. It is rather disturbing the lengths some people will go to in order to fulfil their foul desires is rather concerning. It is this reality unfortunate reality that will obscure humanity from ensuring fresh water sustainability and availability for future generations, regardless of any future global developments. Greedy ~~government~~ governmental bodies will fuel conflicts between water, significantly impacting its availability to people. As well as that, technological solutions may become available, but even these will be exploited in the worst way possible. Fresh water sustainability is a crucial goal for the future of the human race, however, it is quite far fetched in terms of achieving this goal.

Conflicts over water have been present in this world for centuries. From the 430 B.C poisoning of water cisterns in Athens, to the murder of 1000 ~~big~~ Nigerian citizens in 2014 over water ownership, water has been the primary cause of many conflicts throughout history. ~~The global water crisis~~ As water becomes "the next oil" these conflicts ~~are likely~~ are definitely going to increase. Such conflicts will be used as weapon and strategic targets for superpowers, such as the USA, in order to boost their arms sales and make more money. In 2014, the U.S made \$40 billion from overseas arms sales. When they see an opportunity to spark a conflict, they will take it. As Kim DotCom said,

"There is no government more money hungry than the U.S government." The money for such superpowers will not come from a world where water is plentiful, nor from a world that is completely water deficient.

~~It seems~~ Money will come from a world where water is scarce and, from a political perspective, ^{fresh} water will continue to remain unsustainable to ensure these conflicts do not stop happening. Figure 1 shows how water sustainability will not be achieved ~~be~~ for this very reason:

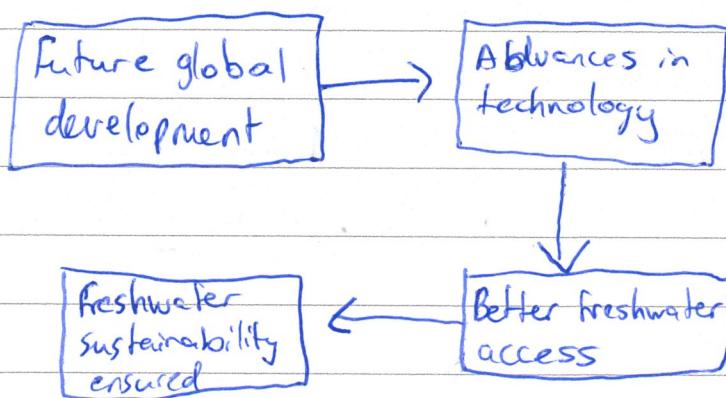


As clearly shown on figure 1, water sustainability will ~~not~~ be ensured.

Can technology save the situation the human race is currently in? Various new technological solutions have become available over the past few decades & in an attempt to reduce water scarcity. Processes such as desalination have seem to have greatly assisted with water scarcity and sustainability. In Israel, 5 desalination plants on the coastline

meet as much as 60% of the country's water needs. This allows water to be available for the consumption of Israel's population, significantly increasing the accessibility of water. Another example is the upgrading of irrigation systems throughout the U.S., in which billions of dollars was spent. This ensured more efficient irrigation systems were used on farms in an attempt to reduce water usage. Figure 2 shows how technology may help to ensure water sustainability in combination with future global development: //

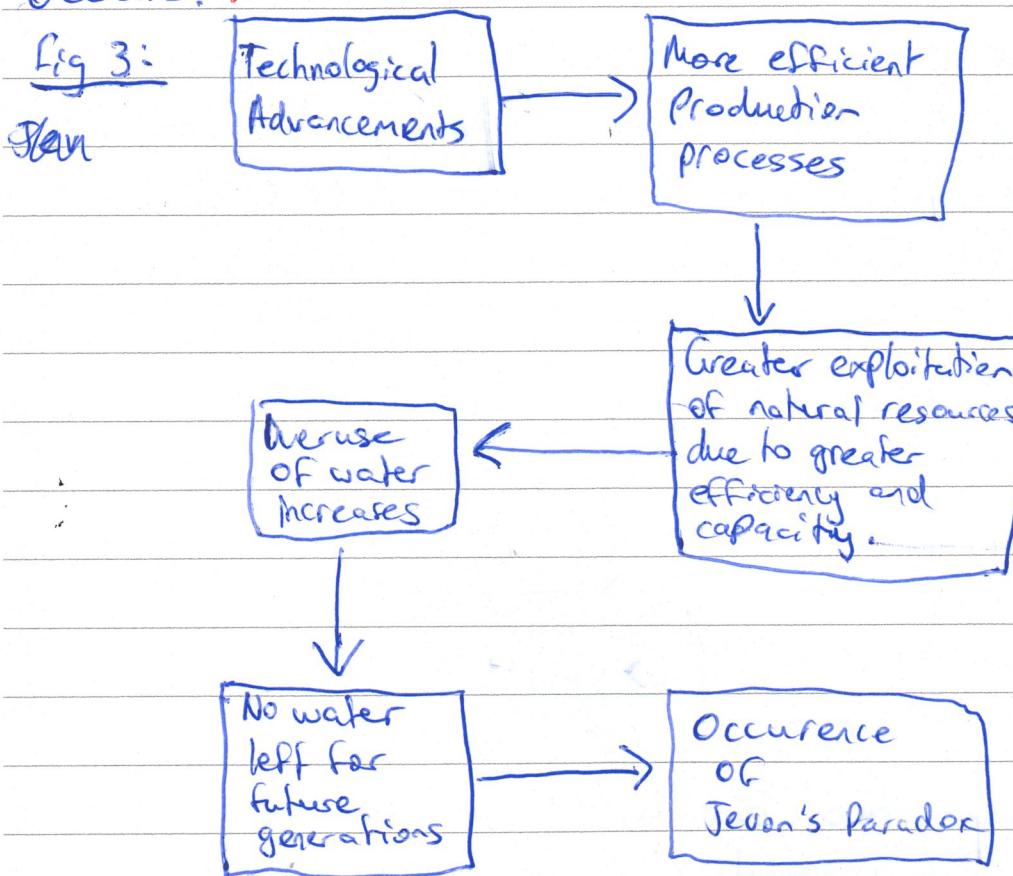
Fig 2:



As seen on figure two, one would believe that technology is the answer and global water fresh water sustainability can be ensured. //

Unfortunately, it cannot be expressed how incorrect this view point of view is. With the current greedy state of mind, it is very near impossible for global water sustainability to be ensured. Increased technological advancements will see firms and industry take even more advantage of the more efficient and profitable

technology processes that have become available which will do the opposite of the intended purpose of this new technology. This situation is referred to as Jevon's paradox and this will play a huge role in restricting freshwater sustainability. Figure 3 highlights the occurrence of Jevon's paradox how Jevon's paradox occurs:



It's clear without a doubt it can be seen from Figure 3 that water sustainability can never be ensured because of Jevon's paradox. The example cited previously, with the investment in U.S irrigation systems was ~~an~~ an example of Jevon's Paradox. Farmers used these new irrigation systems to increase production, in order to increase profits, which ended up increasing freshwater usage via irrigation by 15% over the next two years. ~~This poses a serious~~

Threat to Technological advancements pose a great threat to ensuring freshwater sustainability and are in no way the solution to the issue we are facing. //

It can clearly be seen that regardless of any future global developments, water sustainability will not be ensured. This is due to the way conflicts will be over water will be encouraged and by as a result of politics and how technological advancements will actually worsen the problem. To ensure freshwater sustainability, the current greedy mindset must change, corruption must be eliminated from this world, and only then does humanity stand a chance at ensuring fresh water sustainability. //