

SAVING WORD TOMORROW, TODAY



APPLIED SCIENCE AND ENVIRONMENT SUSTAINABILITY

“As our oceans warm from global change, Vibrant corals dissolve and collapse; Reefs in the Northern Red Sea Are sheltered from the stress. But local events Bring pollution; In the end They will Break. This is a moment, inspired by recent research which has found that excess nutrients from human activities may compromise the resilience.....”

ANELE ZIQUBU

TABLE OF CONTENT

1. Introduction.....	2
2. Impact of adverse on shipping industry.....	2
a- Delay in freight delivery.....	2
b- Risk of damaging goods.....	3
c- Marine accidents.....	3
3. Core climate change risk.....	3
a- Sea level rise.....	3
b- Ice accumulation.....	4
c- Hurricanes and cyclones on shipping industry.....	4
4. Several strategies to reduce the impact of climate change within the South African industry and supply chain.....	5
a- Tell our story, listen others and sharing information.....	6
b- Green our commute.....	6
c- Use energy wisely save money! Too.....	7
d- Divest from fossil fuels	
e- Eat for a climate stable planet.....	7
5. Conclusion.....	8
6. Reference.....	9

Climate Change is South Africa

Over the years climate change is been a major threat to the world, people are scared what will happen near the future. Climate change of the world varies from one decade to another, and a changing is natural and expected. Climate change is the natural cycle through which the earth and its atmosphere are going to accommodate the change in the amount of energy received from the sun. Climate change goes through warm and cold periods. This assignment is basically about the core climate change risks and impact cost for our local company called Nile Dutch which is one of the shipping industry in South Africa. Shipping company play an important role in our world, different types of cargo being transported are goods for consumers, food, raw material, car and fuel just to name a few. Than it will further describe the several strategies to reduce the impact within the South African logistics industry and supply chain.

Seventy percent of the earth's surface is made up of the oceans and seas. This large area of earth's surface used by humans mainly for fishing and transportation. Maritime industries are a group of business sector that involved in maritime transport. The sector could include industries such as shippers, ship builders, Port Authority, Banks and insurance. However, shipping transport and infrastructure that are facilitating shipping transport e.g. port are define as maritime industries. Shipping is the transfer of goods produced in one country, which are then taken to another country where those goods are in demand. According to (International Maritime Organisation) Sea transportation is responsible for the movement of 90% of the world's trade in terms of volume. Trade and commerce reinforce the economy of a country. By carrying the lion share of the international trade, sea transport is playing the most important role for the growth of the world's economy. However there are several risk that caused by climate change that are already affecting the shipping industries which will be further explain below.

Major Impact of adverse weather on maritime shipping

Delay in freight delivery

This is the most obvious disruption. Dealing with severe weather cannot only impede travel times, but it can make travel impossible altogether. Blizzards are one example of seriously slowing down travel times. Ice on roads can also stall travel times and even make driving along some paths not feasible. More extreme weather such as floods can also impact travel through tunnels, which prevents truck from connecting their freight. Rain in port also have a negative impact on shipping companies while loading cargo, rain may cause delay and company might lose customers.

Risk of damaging goods

Weather plays kind of a double role when it comes to how it can damage goods. First, the actual weather itself can impact freight depending on what is being transported. So, a truck is carrying food products and travelling through an area of extreme heat or cold, it must be properly equipped to deal with these temperature. If it is not, then the quality of the food can be degraded and part of or entire load wasted and that will cost a company a lot of money. The second way weather can damage goods is effect on navigating in adverse weather. Extreme weather can present dangerous conditions that can lead to accidents. An accident, if serious enough, can damage the freight being transported.

Marine Accidents

As I mentioned above shipping by sea accounts for 90% of global world trade by volume. With climate change making sea levels and the weather more volatile, the chances of marine accidents increase, international shipments are not able to make it to their ports where trucks the takeover.

Core Climate Change Risks in shipping industry

Sea level rise

Sarwar M.G (2006: para 4) stated that "When sea level rise rapidly, as they have been doing, even a small increase can have devastating effects on coastal habitats. As seawater reaches farther inland, it can cause destructive erosion, wetland flooding, aquifer and agriculture soil contamination, and lost habitat for fish, birds and plants. A rise in temperature will contribute to global sea level rise mainly in two ways, thermal expansion of water and melting of glacial and amount of ice. Firstly, penetration of heat into the ocean's water causes thermal expansion of the oceans or sea that cause rise in level. Secondly, large volumes of ice in polar region are melting due rise in temperature, which is also another cause of the sea level rise which all of these are caused by climate change". Ships uses sea daily and adverse weather as say cause a big loss to the shipping companies. Melting ice in polar region will drift away in North Pole will drift south due to current and in South Pole will drift North due to current that are circulating at sea. Ice that drifted away in polar region are major effect on ships that are navigating at sea and may cause a serious problem when a ship encounter it. Most ice that are drifted in poles are called icebergs. Are dangerous because they are huge and they float low in the water which can cause danger to the ships. They tend to flip over at times. When they flip over the energy is so great it can cause tsunamis and on occasion can trigger earthquakes. According to the ocean specialist they can also fall at any time which is hazardous to ships passing by even miles away. Ship hull structure may be damage by ice and cause a serious issues even loss of cargo and crew.



<https://www.google.co.zagcaptain.com%2Ftanker-damaged-by-ice-in-northern-sea-route-remains-stuc>

Sailing in sea ice is a navigational hazard that must be treated with the utmost respect. Whenever possible, avoid forcing manoeuvres in severe ice conditions. When operating in ice-covered waters, maintain continuous contact with the Regional Office of the Government Icebreaking Service and icebreakers for information about the latest ice situation. It is important to notify your hull insurers in advance of trade in icy regions, as some places may give you restricted hull cover. Vessels operating in high latitudes must be prepared to deal with heavy icing of the superstructure, weather deck, and exposed equipment. Under certain conditions, ice can grow rapidly and create a stability hazard, as well as an increased draft, and these situations have caused the loss of many vessels.

Ice accumulation has three causes:

- ▣ Fog combined with freezing conditions
- ▣ Freezing drizzle, rain, or wet snow
- ▣ Sea spray or seawater breaking over the vessel when the air temperature is below freezing

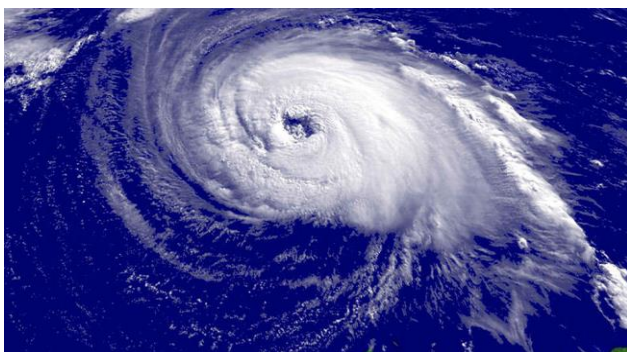
The first two rarely create any problems, but under certain conditions, they can very quickly create a substantial additional weight on the vessel and negatively affect the vessel's stability. The third cause is the most common. With low temperatures and high winds and seas causing sea spray, the only way to avoid a very critical situation may be to take shelter or alter course to minimise the spray.

Effect of Hurricane and Cyclone on shipping industries.

When a hurricane approaches port, ship captains must make hard decisions about speed and direction of approaching storms. The worst place for a ship to find itself is in the eye of a major hurricane, but the

second worst place is the harbour. Ships are built with hardened steel, but if left tied up to the dock, they can be easily damaged as waves push them against concrete pilings. If a ship were to break loose from the dock, it would turn into a floating wrecking ball. With top speeds ranging between 15 and 30 miles per hour, commercial ships don't move very fast. Their only hope is to leave early enough to cross ahead of the hurricane path, hoping they don't get nailed by the storm. But this is not like a foolish teenager's game of chicken with an approaching train. Hurricanes do not move on tracks and even the smallest veering of a storm in the direction of the ocean (east) will cause ships to get caught in its destructive path. When battling a storm at sea, size and mass are your friend. Ships are built of heavy steel and designed to be capable of riding out most storms. "says Konrad. "Even the largest ships however, like the 1,302 foot long, 170,974 ton container ship, Emma Maersk, can sink if she is beaten by massive waves for too long a period of time. This is why shipping companies keep a close eye on their ships and the path of all developing storms.

These risk are major danger to the company damage to the ship might cause loss of life and also loss of ships. Ship-owner might suffer loss lot of money to cover the perils of sea that has caused by these damaged. Cargo might not reached the final destination that will cause a big impact on the South African economy and also in people's needs. Navigating in adverse weather is a big problem on crew and might feel unsafety. Cyclone might cause a major damage to the infrastructure on the shoreline, port and other things. The following picture showing how cyclone happen at sea and this issues cause a serious damage to the ship.



Climate change hurricanes and typhoons at sea.

Several strategies to reduce the impact within the South African logistics industry and supply chain

All people need to participate on reducing climate change in South Africa, not only companies and government have to prevent climate change. Since climate change is caused by human activities burning fossil fuels so all people must play a role. In rural areas people do deforestation, use wood to cook and

also timber for housing. That also contribute to climate change, but my concerned is that many people they don't know what is climate change and how will it affect them. Than government must intervene by solving this issues, teaching people about climate change how it will affect them in near future.

Tell our story, listen to others and also sharing information.

A healthy planet and stable climate are not political issues. It's all about families, communities, energy systems and humanity's future. It's important to get everyone on board, working toward climate solutions.

People are more often influenced by friends than by experts, so making sure we to talk about climate change with friends and family. Tell our stories about changes we have been seen where we live, how climate change has affected us, and the changes we are making to lessen our impact. Encourage friends and family to explore the things they can do about climate change. This is the one best solution that can help to reduce climate change because climate change is mostly cause by human activities. Everyone need to participate on this issues but also government can play a major role by creating organisation that can teach people, learners in school to understand more about climate change and how it will affect them in future. Target must be learners especially in primary school because there are our future generations. We must save the earth for them, so all things that the organisation will teach people about how as people contribute to climate change will be mentioned below, and things we need to teach them that they should avoid to reduce climate change. Only things we need is small changes that cost us.

Green our commute

Transportation also contribute to climate-polluting emissions, a close second to the oil and gas industry. The many ways to reduce your transportation emissions will also make us healthier, happier and save a few bucks. Whenever and wherever we can:

- Taking public transit is best solution to avoid polluting our environment.
- Ride a bike is also a part of an exercise but also can save polluting our environment.
- Car-sharing can reduce vehicle on the road that can reduce car that polluting the atmosphere.
- Switch to an electric or hybrid vehicle.
- Fly less (if we do fly, make sure we offset our emissions).

Use energy wisely save money, too!

On a per capital basis, by getting more energy efficient, we will pollute less and save money. The small changes we make add up:

- Change to energy-efficient light bulbs.
- Unplug computers, TVs and other electronics when we are not using them.
- Wash clothes in cold or warm (not hot) water.
- Dryers are energy hogs, so hang dry when we can and use dryer balls when we can't.
- Install a programmable thermostat.
- Look for the Energy Star label when buying new appliances.
- Winterize our home to prevent heat from escaping.
- Get a home or workplace energy audit to identify where we can make the most energy-saving gains.

Divest from fossil fuels

Let industry know we care about climate change by making sure any investments us and our university, workplace or pension fund make do not include fossil fuels. Meet with our bank or investment adviser and/or join a divestment campaign at our university.

Eat for a climate-stable planet

"Eat food. Not too much. Mostly plants."

Here are simple changes we can make to our diet to reduce its climate impact.

- Eat meat-free meals.
- Buy organic and local whenever possible.
- Don't waste food.
- Grow our own.

Get more info on how to eat for the climate and how eating less meat will reduce Earth's heat. Ask information about climate change, communicate with people about climate change and teach those who are naïve about it.

Conclusion

Human-induced climate change has contributed to changing patterns of extreme weather across the globe, from longer and hotter heat waves to heavier rains. From a broad perspective, all weather events are now connected to climate change. While natural variability continues to play a key role in extreme weather, climate change has shifted the odds and changed the natural limits, making certain types of extreme weather more frequent and more intense. While our understanding of how climate change affects extreme weather is still developing, evidence suggests that extreme weather may be affected even more than anticipated. Extreme weather is on the rise, and the indications are that it will continue to increase, in both predictable and unpredictable ways. So everyone need to act on this issue not only government and companies but everyone must participate.

Reference

Allan, R. Soden B, 2008: *Atmospheric Warming and the Amplification of Precipitation Extremes*. *Science*.

Anon. 2015. *Climate change action/ Global goals*. <https://www.globalgoals.org/13-climate-action>(Accessed 28 September 2018).

Chapman, L. 2007. <http://www.Transport and climate change: Journal of transport geography Elsevier>. (Accessed 23 September 2018).

Sarwar, G.M. 2006. *Impact of climate change on maritime industries*. Available: http://commons.wmu.se/all_dissertations/276. Accessed 23 September 2018).

Tietenberg, T. 1984. *Environment and Natural Resources Economics: Environmental problems due to climate change*. 6th ed. New York. Scott: Foresman and Company.

