

APPLIED SCIENCES FOR SUSTAINABLE DEVELOPMENT

HOW CLIMATE CHANGE WILL HAVE AN EFFECT ON LOCAL COMPANIES: 12 OCTOBER 2018

REHNOLEN NAIDOO

WHAT IS CLIMATE CHANGE?

“The climate can be described as the average weather over a period. **Climate change** means a significant change in the measures of climate, such as temperature, rainfall, or wind, lasting for an extended period – decades or longer. The Earth's climate has changed many times during the planet's history, with events ranging from ice ages to long periods of warmth. What's different about this period of the earth's history is that human activities are significantly contributing to natural climate change through our emissions of greenhouse gases. This interference is resulting in increased air and ocean temperatures, drought, melting ice and snow, rising sea levels, increased rainfall, flooding and other influences.” (“What is climate change ? :: Environmental Protection Agency, Ireland”)

WHAT CAUSES CLIMATE CHANGE?

climate change can be caused by two factors, these factors are natural factors and the most common one, which is human activities. Examples that contribute to climate change under natural factors are, change in the sun's intensity and slow changes in the earth's orbit around the sun. factors that contribute to climate change under human activities are CO₂ emissions, methane and nitrous oxide emissions and emissions through land use changes such as deforestation. (“What is climate change ? :: Environmental Protection Agency, Ireland”)

SA SHIPYARD

the south African company that I have chosen in which I feel climate change will have a huge impact on is SA SHIPYARD. SA Shipyard is a Durban based company situated in Rotterdam road, Bayhead. They are a shipping company that designs, builds, repairs and maintains ships, tugs and other types of vessels. They were established in 1960, making the company 58 years old. They are the largest shipyard in Southern Africa. The company has about 500 staff that are employed in total and has about 400 persons who work in the dock daily, either repairing building or undergoing maintenance of ships.

CLIMATE CHANGE FACTORS THAT WILL CAUSE CHALLENGES FOR SA SHIPYARD

although all work done on ships like repairs, building and maintenance is done under an enclosed area, there are several factors that I personally feel will give the company challenges. These factors are:

RAIN: rain may not affect the process of building or repairing ships directly but will affect the workers

because it may become an uncomfortable environment for them to work in and may delay the process. Alternatively, rain may prevent staff from travelling to and from work because of transport problems.

Because of rain, the company will be affected because, rain may become a safety hazard for the workers and this will cause a delay in productivity which ultimately means that the company will lose money which will have a negative impact on costs for the company.

FLOODS: flooding will affect the process directly because it can cause damage to equipment being used and can also cause damage to infrastructure. This can result in closure of the shipyard and work being stopped.

The result of flooding could mean spending money on purchasing new equipment or spending money to repair equipment because it could cause physical damage to assets, infrastructure to operations and performance as well .it will also mean a big delay in productions which results in time being lost which further results to revenue being lost. Flooding also becomes a safety hazard and could cause possible minor injuries to the workers and if such had to happen it would mean that the company would have to spend money to pay for bills of the injured workers. So, the overall outcome of a food happening is the company loses money, irrespective whether it is a big loss of small loss. Once again it will have a negative impact on costs for the company.

HEATWAVES: south Africa is known for their warm weather conditions and Durban especially experiences very hot and humid weather. Heatwaves would mean that workers would most likely be forced to stop work because of the extreme conditions.

The outcome of a heatwave means that it becomes a health and safety hazard because it could cause health problems for workers like dehydration, heat strokes, fatigue and other health problems. It also becomes an uncomfortable environment to work in and if any injuries happen to take place on work property, the company would be liable to pay for any hospital bills. This will also mean a delay in productions, which means money being lost and will mean it will have a negative impact on costs for the company.

RISING /HIGH TEMPERATURES: unfortunately, SA shipyard is situated on the Durban coast that experiences very high temperatures. Because of these high temperatures, corrosion is a big problem and as a result rust will start to seek in on the equipment and the materials being used to build or repair the ship.

Rising temperatures could mean that corrosion will become a long-term concern, it may not affect the machinery instantly but will eventually cause damage to machinery and materials used to build or repair

ships. this could most likely mean replacement of machinery and equipment and it will cause a dent in the company financially because these machines are designed for specific purposes and it they are very expensive. So eventually it is going to have a negative impact on costs for the company. (Dyer,J .2018)

TROPICAL CYCLONES: south Africa is not one to experience natural disasters, but we cannot predict the future and therefore must consider the damage a tropical cyclone can have on the company.

Tropical cyclone could cause rough seas which could cause damage to ships that are in the dry dock being repaired. This is a very small concern however the company must be prepared for all types of situations.

A result of Durban experiencing a cyclone could mean damage to infrastructure, damage to equipment and machinery, possible damage to the company property and could possibly cause damage to ship in the dry dock that are being repaired. This could instantly mean replacement of machinery and equipment, which means a lot of money being spent. If there is damage to company property it would have to be attended to immediately for the safety of the staff and so that some sort of work can be done so that some money is still coming in. if there is any damage to any ships that were being repaired or built it will definitely cause a strain on the company financially because this would mean more working hours and that would mean more labour from workers which will mean paying the workers additional wages. Also purchasing of more materials to build or repair a ship will cost money and if these materials are imported, delay in time means further loss in revenue. Lastly, a cyclone could cause serious injuries and loss of lives as well. This would mean the company paying hospital bills and forking out money that needs to be payed to families that lost their respective family member. The result would mean disaster for the company and a big financial loss which will have a negative impact on costs for the company which could take a lot of time and sacrifice to make the money that was lost. . (Dyer, J .2018)

GALE FORCE WINDS: in the case of these high-speed winds, problems may arise in the dry dock. The gale force winds will affect the workers who might have to stop work as a safety precaution. objects, equipment as well as materials might be moved around at rapid speeds.

The rapid movement of materials and objects becomes a safety hazard because it could injure workers but could also damage ships that are being repaired or built. The environment could become unsafe for the workers and for any ships that undergoing repairs. This will mean a delay in productions and loss in money, however it might not amount to a big loss in money. This however does still mean it will have a negative impact on costs for the company.

POSSIBLE SOLUTIONS TO THESE CLIMATE CHANGE FACTORS

RAIN: a possible solution that could prevent any delay in productions due to rain is to have company vehicles for workers to use because the problem could be no available means of transport for some and for others who cannot drive ,the company could possibly run shuttles to central areas of the city which could make things easier and convenient for the staff and for the company. Although it may cost the company some money but in comparison to having less staff at work and not being able to continue with productions, I would say this is a convenient and efficient solution. . (Dyer,J .2018)

FLOODS: weather is an unpredictable phenomenon and excessive rain could lead to flooding. possible solutions to prevent flooding and prevent any machinery and equipment being damaged would be to install enough drains on site but to also make sure that they are designed correctly because often the problem isn't that there aren't enough drains but because they are not designed correctly. Since SA shipyard is situated in one of the port entrances, all water from drains can run directly into the water. To create further safety and prevention of flooding, the dry dock should have lock tight doors that is water proof, so in the case of a sudden and drastic flood happening, the dock should be able to close the doors and save any damage to any machinery and equipment and it will keep the workers safe as well. The result of this solution will not cause big delays of might not cause any delay at all in productions and therefore no money will be lost due to simple and effective plans. .(Dyer,J .2018)

HEATWAVES: the heat in Durban can become unbearable and it can make the workers uncomfortable. A solution would be to install heat detection alarms and sensors that would sound an alarm when the temperatures exceed a state that the human body will not be able to function properly. Another solution would be to install cooling systems only powerful enough to cool the workers down and to lower the room temperature levels for the workers to work. the reason it should only be powerful enough for the workers is because if it is too powerful it can affect any machinery and equipment. The outcome of this it may cost the company some money, but it will prevent long delays and will not having the workers being overworked and fatigued out. (Dyer,J .2018)

RISING/ HIGH TEMPERATURES: Durban is known as the warmest place to be and for tourists and local citizens its nice but for coastal companies its not so nice because of corrosion. A solution to this would be to make sure that all materials, machinery and equipment are galvanized, this will mean that they are now rust resistant because its been coated with a special liquid. It may not be a permanent solution because working next to the ocean means there is always going to be corrosion, however it will save the company money. This solution will prevent the company from replacing machinery and equipment at an earlier stage and costing them big money. A solution for the workers would be to wear heat resistant material uniforms so that in an event of any fires nearby they will be protected and will

not be able to get burnt. (Dyer,J .2018)

TROPICAL CYCLONES: in the event of a tropical cyclone ,the most important thing would be safety of staff and because weather plays a big part in building or repairing of these ships at SA shipyard, a solution, a slightly expensive solution would be to employ a meteorologist , this would benefit the company with all forms of weather because employing a meteorologist means he or she would constantly monitor weather patterns and would be able to advise the staff that they should take precaution. Another solution would be to set up some sort of barriers and safety measures, something like a basement so that everyone can go underground and will be safe and will not risk the loss of anyone's lives and will save the company money. (Dyer,J .2018)

GALE FORCE WINDS: a simple solution to preventing these high-speed winds from causing any danger to workers and damage to the ships would be to close the door in the dry dock, a dry dock may not have a door but with these unpredictable weathers that we experience it will be advisable to design a door and have it in place. In doing so not only will we prevent any damage to workers but won't have any delays in production because the workers can still work behind closed doors. As mentioned above under tropical cyclone, the hiring of a meteorologist will be a benefit to all forms of weather and in this case the meteorologist will be able to pick up these drastic weather changes in advance and advise everyone. The outcome is no one will be injured, and work can still go on. The company will not have any delay in productions and therefore no money will be lost. Although money will be spent on having a door in place as well as employing a meteorologist, in the long run this will save the company a lot of money, especially with the unpredictable weather changes happening currently. (Dyer,J .2018)

CONCLUSION

in todays current situation, weather is becoming very unpredictable, not even meteorologists can give out an accurate reading of the weather. However, as humans we can reduce the impact that we are having on the atmosphere by reducing emissions such as NO₂ and CO₂ emissions. One may ask how can us humans reduce CO₂ emissions, the answer is simple, through ways like measuring carbon footprints, reducing energy use, investing in renewables and the most efficient one, learning to adapt to climate change. Climate change isn't something we can defeat so our best option is to adapt to it. ("7 Ways to Reduce CO₂ Emissions in Industry and Fight Climate Change", 2018)

with regards to the company I chose, SA shipyard, they are going to experience those factors I have mentioned above, if they haven't started to experience them already. All companies will be affected by climate change and like I have mentioned the best way to overcome climate change is to adapt to it. the factors I have mentioned are the most crucial factors that will have a direct impact on the costs for the

company, especially because of the location of the company and because what they manufacture. The solutions that I came up with are solutions that I think will help benefit the company in the best way possible and which will help them save money in different ways but also help the company grow at the same time. They will not fix the problem of climate change affecting these companies because as I said before, climate change cannot be fixed but these are the best ways in which my company can adapt to the climate change.

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