The I.C.E Competion Project

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Topic 2

Going Green: Focus on Energy

Research the sources of energy presently used in the area you live in and estimate the amount of CO2 emissions. Develop and describe a concept of gradually substituting the traditional sources of energy by forms of "green energy".

Going Green: Focus on Energy

All of the investigations and explorations conducted about global warming and the states responsible for its continued growth have lead us to believe that Africa has played a minimal to almost non existent role in the global warming crisis, and yet I believe Africa holds the key to solving global warming.

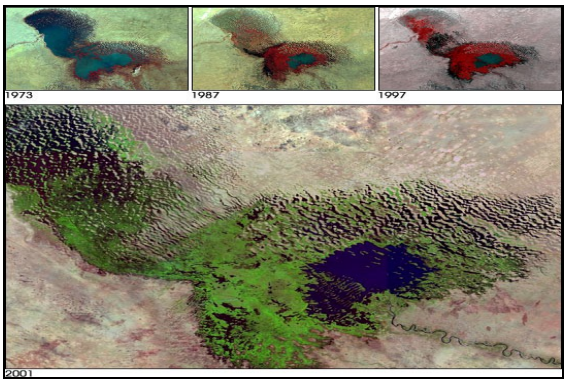
In my essay I'd like to focus on the various adversities that Africa and in particular Namibia and the rest of southern Africa has had to or is expected to undergo as a result of climate change. Further more I would like to explore the ways in which Africa would be able to stimulate and encourage the usage of green energy and bring about the reduction of carbon dioxide emissions not only on the African continent but on a global scale.

When we were first made conscious of global warming and the threat it posed, scientists could almost immediately identify the world constituencies largely responsible for the rapid increases in the world carbon dioxide levels. Needless to say of all the regions Africa had the lowest carbon dioxide production levels, and yet Africa is probably going to be one of the continents worst effected by global warming. Allow me to briefly mention a few examples taken from within the past 90 years to illustrate the impact of global warming on Africa.


In the top left corner we have a picture of Mount. Kilimanjaro and on the right we have a picture of Mount. Kenya. Kilimanjaro is the highest African mountain and Mount. Kenya is the second highest African mountain. Over the past 80 years Kilimanjaro has lost more than 82% of its ice cover. While Mount. Kenya has lost 92% of its ice over the last century. It is predicted that within 25-

50 years Africa's mountain glaciers will be gone.

On the bottom we have four images of Lake Chad. In the top left we have a picture of Lake Chad in 1973 and at the bottom we have a picture of Lake Chad in 2001. In the last 40 years Lake Chad has decreased by 75% going from 15000 sq miles to 500 sq miles.

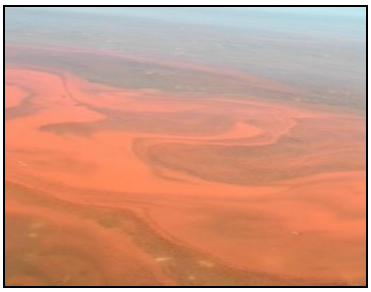


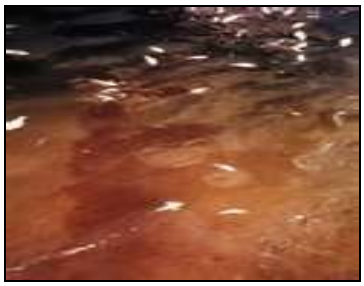
On the bottom left and right we have two images of southern Kenya in 2001 when Kenya experienced their worst drought in 60 years which left nearly four million people at the risk of starvation.

Here we have two images of the Western Cape Province in South Africa. In 2000 the Western Cape experienced their worst case of wild fire, after the first week over 120 fires had been reported.

In Namibia, during this year's rainy season, we experienced one of the worst floods in recent years. 92 people drowned and over 100 000, about 5% of Namibia's population, had been left homeless. The Namibian President declared it a state of emergency.

At the bottom we have pictures taken of the Namibian coast between January and February 2008 when we experienced a bout of red tide. Red tide occurs when a certain algae species has a sudden growth spurt. The algae produce organic compounds in the water which deplete oxygen in the water which sometimes causes other marine life to die. The strange thing about red tide occurring along the Namibian coast is that red tide rarely happens along the Atlantic coast because of the cold Benguela current but because of the increase in temperature in the oceans it is something that's starting to happen more frequently.





These are just a few examples of the effects of global warming. And so, even though Africa contributes the least to global warming we will still face some of the worst effects. That is why

we need to already start regulating our energy consumption and carbon dioxide production.

Electricity in Southern Africa is generated mainly through thermal or hydroelectric resources, with one nuclear facility in South Africa. The vast majority of petroleum consumed in Southern Africa is imported as only Angola and the Democratic Republic of Congo are net exporters. Natural gas is becoming more significant in the energy sector as gas fields in countries such as Mozambique, Namibia, South Africa and Tanzania are being developed to be applied as new energy sources. The Namibian government announced in October 2004 that gas from the $1 billion project, Kudu gas fields, which is being developed by the state-owned companies, Namcor and Nampower, in partnership with Energy Africa and Eskom would start flowing in 2009. The majority of Southern Africa still relies on the usage of biofeuls such as wood and charcoal as its primary source of energy.



When comparing Carbon dioxide emissions across the globe scientists found that in 1999 Africa had only produced .22 billion metric tons of carbon, where as regions such as the United States of America, Europe and China each contributed 5.47 billion metric tons, 3.25 billion metric tons and 2.89 billion metric tons of carbon dioxide to the atmosphere placing them in first, second and third place respectively in terms of carbon dioxide contributors. To break it down further, the total energy and carbon dioxide emissions of 2003 indicated that Southern Africa's total carbon dioxide emissions were 126.33 million metric tons, 1.8 percent of the world percentage. The majority of these emissions

were produced by South Africa who emitted 112.16 metric tons of carbon followed by Angola and Zimbabwe.



When dealing with electricity production and consumption Southern Africa faces various environmental problems, including water pollution, deforestation, desertification, pollution associated with oil and gas development, and a dramatic decline in biodiversity throughout the region.

During the past decade or so accumulating outside pressure has forced many African countries to regulate and become more conscience of their energy production and consumption, especially in terms of how it affects the environment. This has lead to various innovative projects being developed to create sustainable energy.

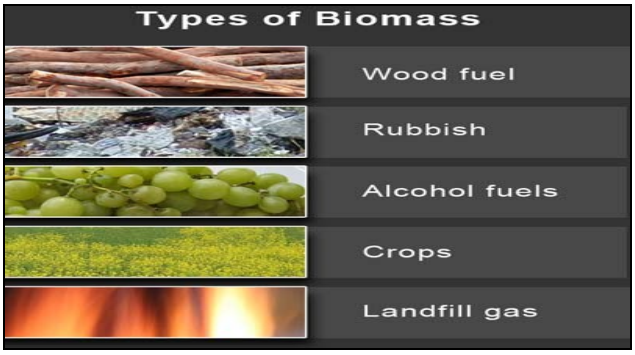
The Ruacana hydropower plant in Namibia generally produces about 50 percent of Namibia's electricity but because it is cyclic, electricity is not always guaranteed to be available, that's why the Namibian government has looked into the proposed development of a wind powered plant at Luderitz as well as potential hydroelectric supplies from the Kunene River on the Angolan border. This cycle is becoming more common amongst African countries as more and more states such as Mozambique, Lesotho, Swaziland, Zimbabwe, Zambia and Tanzania are commissioning the establishment of hydroelectric power plants.

The main predicament that we will have to challenge won't necessarily be the changes brought on by climate change but rather the task of implementing a sustainable source of "green energy" that would be easy to be used as an alternative.

Nearly 70% of Africa's total population live in rural areas or live in very poor conditions. Most of these people use biofeuls like

wood and charcoal as their main source of energy because it is cheap, easy to use and very efficient. It would be very unrealistic of us to tell people living in rural or poor communities to switch from burning wood to solar or hydro power as it is probably too expensive and generally out of reach for them. So for the time being I would propose the usage of biomass in rural communities as it is cost effective, easy to use and efficient.

Biomass refers to living and recently dead biological material. It also includes biodegradable wastes that can be used as fuel. Biomass might seem similar to using fossil fuels but its not the same because fossil fuels contain carbon which has been out of the carbon cycle for a long time, were as biomass is still part of the carbon cycle. And even during the combustion of biomass fuels, carbon dioxide is still released back into the atmosphere. Despite biomass being a renewable fuel it can still contribute to global warming. But generally it is seen as a net reducer of greenhouse gases because its use reduces the amount of methane gas that would otherwise have been released. Methane emissions have a 20 times greater global warming potential than carbon dioxide. By using biomass we aren't drastically changing the way we live but we are, to a certain extent, being environmentally friendly.



More and more African countries are being approached by investors from industrialised countries that want to acquire greenhouse gases emissions credits under the Kyoto Protocol to the United Nations Framework Convection on Climate Change. Investors have started expressing interest in implementing a

forestation and reforestation projects in areas such as Zimbabwe, the Democratic Republic of Congo (DRC) and Zambia. Most of the Southern African countries being approached are giving their approval and governments such as the Zimbabwean government have voted unanimously to fully engage in the carbon trade as it would provide short term foreign currency, which could be used for development purposes.

Africa has all the potential to not only overcome but to capitalise on our resources when dealing with global warming. If the proper measures were to be taken not only could we overcome climate change but we could thrive in the process and in doing so develop our own industries and financial systems.



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