

# Greenhouse effect essay sample

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- What causes climate change? Define the Greenhouse Effect

Greenhouse gases (GHG) allow sunlight to enter the atmosphere and absorb the heat produced by that light. Most of this heat energy is trapped within the atmosphere by the GHG while some of them are let out into the space. The phenomenon of atmospheric heating due to the GHG is called as the greenhouse effect. Gases such as carbon dioxide, methane, nitrous oxide and fluorinated gases form the greenhouse gases. Burning of fossil fuels, manufacturing processes, decay of organic matter, agricultural industries and emission of synthetic fluorinated gases from various industrial combustion processes lead to the emission of the GHG (Environmental protection agency, n. d).

## **Global warming and climate change**

Global warming causes rise in the average temperature around the globe. In the year 1880, the level of carbon dioxide was 285 parts per million (ppm). In 2013, the level was over 400 ppm. According to NASA's Goddard Institute for Space Studies (GISS), in 2013 the global average temperature was 14.6 °C (58.3 °F). In 1880, this value was 13.8 °C (56.9 °F) (Cole & McCarthy, 2014). The concentration of GHG is expected to double by 2050. This rise in average temperature is one of the main causes leading to climatic changes. The heated air can hold 4% more water for every 1 °F rise. Thus, warmer places would experience floods while cooler places could experience drought. Warm temperatures will also reduce the amount of dissolved oxygen in lakes, reservoirs and other large water bodies. This will put more stress on aquatic organisms (Union of concerned scientists (UCS), 2010). Global warming has accelerated due to a positive feedback mechanism. The

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burning of fuels introduces greenhouse gases into the atmosphere. This melts the permafrost, which in turn releases the trapped methane and carbon dioxide back into the atmosphere. Such a feedback mechanism is one the reasons for an alarming increase in severity of global warming (Hansen, 2012). Scientists predict that the sea level would rise by another 12 meters by 2100 because of the feedback. This kind of climatic trend was observed during the last ice age.

GHG emission by the U. S. and worldwide

In 2010, 84% of the total GHG emitted by the US was carbon dioxide.

Methane was 10%, nitrous oxide was 4% and fluorinated gases were 2%.

Sector-wise, the electric power industry emitted 34%, transportation emitted 27%, manufacturing industries emitted 21%, residential and commercial spaces emitted 11% and agricultural industry emitted 7% of the GHG (Center for climate and energy solutions, 2011). 42% of the global GHG emission is from the use of petroleum. Coal is responsible for 36% of the carbon emission. The US emits nearly 1/4th of the world's total carbon dioxide. The US is closely followed by China in global carbon emission. Globally, the consumption of gas produces approximately 8000 million metric tons of carbon. Burning of oil emits 6000 million metric tons of carbon. Coal produces nearly 3000 million metric tons of carbon. By the year 2030, it is estimated that developing countries will emit more than 40, 000 million metric tons, Eastern Europe and Russia will emit 20, 000 million metric tons and industrialized countries such as the US and China will produce 15, 000 million metric tons. If no major steps are taken to cut back on GHG emission,

there might be a 59% increase in 2030 when compared to the levels from 2004 (Harris & Roach, 2009).

### **Effect of GHG on economics**

Economics and GHG may not seem to be related; however, the economic analysis by Harris & Roach notes that the effect of climate change is unequal in developed countries and developing countries. A developed country would have the resources to battle climate change and hence would experience a loss of 1 to 1.5% of GDP. On the other hand, a developing nation would lose to 2 to 9% of GDP (2009).

### **Projections for the future climate based on how nations control the greenhouse gases**

If the current trend of global warming continues, nations could experience loss of land due to increase in sea water level, loss of glaciers and ice sheets, loss of crops owing to salt-water poisoning, drought, increased fuel costs, disease outbreaks, unnatural heat waves and increased accounts of natural calamities (Harris & Roach, 2009). Many species, such as the Monarch butterfly, could be extinct in the next few decades due to drastic environmental changes.

2) What is the real cost of oil?

a) Multiple costs of Iraq war

Wars have been waged for speed. Oil gives humans that desired speed. Thus, the real reason behind the war boils down to a very basic human nature: the need to acquire and control resources. Iraq has world's second largest oil reserves. Saddam Hussein's takeover of Kuwait meant he played a pivotal role in fixing oil prices in the world market. This led to Bush Sr.

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instigating Saudi Arabia, the largest producer of crude oil, against Iraq. The Saudi King believed this and allowed the US troops to be stationed on his soil. This action led to Osama bin Laden's imminent attack on the World Trade Center years later. During the Gulf war, the US held nearly three million barrels of crude oil off the world markets. By doing so, the US slowed down other war-waging nation within the Middle East. United States' oil-dependency on Iraq made the country look powerless politically. The fact that its arms could be twisted by an oil-bearing country, should it come to that, instilled unrest. This was an underlying factor for Bush Jr.

Administration to go after Iraq (Hiro, 2007).

As Dilip Hiro puts it, " In public, however, the Bush administration built its case on Iraq without any reference to its oil. The rationale for military action against Saddam Hussein's government in Baghdad was that he was in league with Al Qaida and that he was busily producing weapons of mass destruction to be passed on to terrorists or deployed against the United States and/or its allies in the region." All these facts point to the fact that wars are waged to satisfy man's primitive need for control (2007).

### **Iraq war and the human cost**

According to Colin Powell, invading a country is equivalent to breaking it to pieces. Quoting him, " If you break it, you own it." The Iraq war started in 2003 on the pretext that Saddam Hussein had a stash of weapons of mass destruction. Later such a stash was never found. A survey of Baghdadis revealed that only 23% believed that the Anglo-American were there to curb Saddam Hussein's dictatorship. The rest knew the invasion was to gain control over the oil wells. According to Professor Juan Cole, Iraq paid for the

war by sacrificing 400, 000 Iraqis. 70% of the death during the Iraq war were of Iraqi civilians. Before the war, only 17% of the 30 million Iraqis lived in slum conditions. However, 8 years after the war, nearly 50% of the population live in slum conditions. There has been an increase in 17-fold increase in congenital birth defects in the 8 years of the war period, mainly due to decaying uranium (Cole, 2011).

### **US body counts**

Nearly 4, 488 soldiers and 3, 400 contractors from the US died during the war (Coelho, 2013). The incidents of post-traumatic stress disorder (PTSD) during the Iraq war has seen a dramatic 3. 5 fold increase. 1, 558 soldiers have lost one or more limbs during their deployment (Fischer, 2014).

### **Financial cost**

Initially the US government anticipated a war expenditure of 60 billion. However, 8 years later, the cost of the war and the compensations for the veterans until the year 2053 come close to US\$ 2. 2 trillion, which with interest could grow to 6 trillion (Coelho, 2013; Trotta, 2013).

### **Lost democracy**

The war has rendered Iraq more corrupt than its pre-war era. This has led to denial of rights to children and women. There were no laws preventing prostitution or servitude prior to 2009. The corruption is so bad that most widows have never seen a penny allocated for their benefit. The 60 billion allotted for rebuilding Iraq's infrastructure was used for funding military activities and not for basic amenities such as roads and hospitals. (Cole, 2011).

## Refugees

1 million Iraqis have been displaced to Syria as refugees of the war.

## Health costs

The uranium used during the war has already begun to affect unborn fetuses. The war has flushed out more than 50% of the Iraqi doctors from the country. This had resulted in many Iraqis having to seek medical care in nearby countries (Coelho, 2013).

### b) Collateral damage

“ Collateral damage” is often viewed as a euphemism to mask the deaths of civilians during combat. Donald Rumsfeld interviewed on a national TV saying that the USA as a country wanted as little collateral damage as possible. However, the environmental analyses conducted using household surveys revealed a different picture. The use of heavy machine artillery, such as tanks, during the Iraq war caused crushing of the top sandy crust on the desert soil. This released the loose sand beneath, which resulted in an unusually high number of sand storms. Iraq has a few agricultural lands that face the wrath of such sand storms on a regular basis. The loosening of the sands during the Iraq war only made the problem worse.

The use of Freon fuels to suppress the exhaust particle release by the fighter aircrafts have depleted the ozone layer. At a global level, the emission of ozone-depleting materials by the civilian community is very low. However, the military emission during the Iraq war could be as much as a three month equivalent of the world’s civilian release level. The use of fire-retardants made up of halogenated materials has caused major damage to the ozone layer.

Similarly, tanks also used noise suppressants such as polychlorinated biphenyls (PCBs). When such tanks were destroyed during an attack, the PCBs leaked into the ground, thereby contaminating the ground soil. Oil was burnt along with metal to confuse the bombing aircraft guidance systems. The smoke that wafted from such burnings provided a smoke-camouflage to reduce visibility. These smokes not only caused air pollution, but also caused health problems (Jernelov, 2003).

c) Lessons of the Iraq War experience

### **Dependency on non-renewable resources can lead to power struggles**

Oil is one of the most important non-renewable resources in the current era. The very fact that the world's superpowers consume the most oil resources emphasizes the importance of oil as a mascot of supremacy. The Iraq war and the Gulf war, both began with the fear of loss of oil resources that have led to irreversible consequences to both human lives and the environment. This teaches us that for the sake of oil, ecosystems would be destroyed and human rights would be violated.

### **Realistic goals of military interventions**

The war was waged in anticipation of three positive outcomes, namely, improved governance in Iraq, the empowered status of Iraqi women and security for the US. None of these could be achieved from the war. This teaches one that the anticipated outcomes of a military intervention need to be realistic.



## **Legitimacy of the intervention**

When the military failed to find any stash of weapons of mass destruction, the US government changed its reason for attack on Iraq as a scheme to implement democracy. The legitimacy of the rationale was flawed in this case.

## **Military interventions cause massive collateral damage**

Any war leads to collateral damage not just in the form of civilian and military personnel death toll, but in the form of depletion of natural resources and permanent damage to the environment (Sky, 2013).

### 3) Extreme Oil: The Keystone Pipeline Debate

#### (a) Tar sands oil

Tar sand is also known as oil sand. It is a dirty mixture of bitumen, clay and sand. It is currently being considered as an alternate oil source and called as the Keystone XL pipeline. Alberta, Canada has the largest tar sand deposits. The size of the tar sand deposits is larger than the size of Florida State. The Canadian deposits, along with crude from the Bakken, North Dakota and Montana will be transported for refining using a 57, 000 Km long pipeline running from Canada to the Gulf Coast (Swift, Casey-Lefkowitz & Shope, 2011). Oil companies owning refineries in the Gulf Coast, such as Exxon Mobil Corp, Royal Dutch Shell PLC and Valero Energy Corp, are huge supporters of the Keystone XL project. The project was initiated by the Canadian oil giant TransCanada Corp. The company will also construct, operate and own the project (Litvan & Salant, 2013). The current energy policy of the US has three goals: 1) to have a secure and a constant supply of energy resources, 2) to distribute energy at affordable costs and 3)

production of energy source without harming the ecosystem. To achieve these goals, the US government is promoting domestic energy harvesting, such as the Keystone XL pipeline. Such a domestic supply will reduce import costs and generate American jobs (Behrens, 2013).

(b) Keystone XL pipeline proposal

TransCanada will be responsible for moving the tar sands oil from Canada through the US via a 35, 418 mile (57, 000 km) pipeline. Of these 35, 418 miles, 875 miles run from Hardisty, Canada and transits through Saskatchewan, Manitoba and enters the US at Morgan, Montana. The pipeline travels through South Dakota and finally ends at Steele City, Nebraska. From there it passes through Kansas, Missouri, and ends up in Wood River, Illinois. The 36-inch pipeline has a capacity of carrying 830, 000 barrels per day. The pipeline continues from south of Steele city via a previously constructed extension that runs up to Cushing in Oklahoma, which is an important U. S. crude oil distribution center. The crude is further transported to refineries in the Gulf Coast via Gulf Coast project pipeline (McElroy, 2013).

The project is highly controversial for a number of reasons. Firstly, the tar sands are located in the foothills of the Rocky Mountains, which are covered by the Boreal forest. This forest is house to many species of animals and is a breeding ground for many birds. Extracting the 2 trillion barrels of oil buried underneath all the forest would mean destroying a whole ecosystem. Secondly, one barrel of crude oil produced requires nearly 5 barrels of water. The tar sands are a dirty source of oil. The oil is extracted after spending energy on converting water to steam, which in turn melts the sand and

releases the crude oil. It is very difficult to refine tar sand to produce usable fuel. Thirdly, contrary to the popular view that domestic oil production will reduce the need for oil import from the Gulf countries, the produce from this project is thought to be mainly for exporting to Europe and Latin America. Fourthly, the crude oil Fifthly, and most importantly, tar sands oil refining will release 17% more greenhouse gases compared to traditional crude oil. The ball is in the US President's court. He needs to decide whether to go ahead with the project or not. A recent environmental assessment report declared the project safe and that the carbon emission through tar sand mining would have very little impact on climate change (Davenport, 2014).

(c) Groups opposing the Keystone pipeline and tar sands oil extraction

Some of the groups opposing the project are Sierra Club, Natural Resources Defense Council (NRDC), Indian Peoples Action and National wildlife federation (NWF).

According to the NWF, approval of the Keystone XL project will annihilate agricultural lands, destroy sage grouse and Sandhill crane habitat, affect fisheries, etc. Instead of depending on a dirty fuel as tar sand oil, it could be wise to spend money and time on cleaner forms of energy sources. (Pelej & Salmon, n. d)

Quoting Indian Peoples Action member George Price, “ We were acting on behalf of our indigenous brothers and sisters in the First Nations communities of Alberta, who have been affected most directly and severely from the contamination of their water, air and wild natural food sources. We also expressed that all life on Earth is being deeply affected and endangered by this filthy and completely unnecessary business.” (Engelfried, 2014).

Sierra Club reports that the project will result in the deforestation of ancient forests and utilize huge amounts of natural resources. The project could result in the formation of toxic lakes that could lead to cancer (DeRita & Valtin, 2010).

#### d) Groups supporting the Keystone Pipeline

All the oil companies mentioned in earlier paragraphs are supporters of this project. The Keystone project is merely a way to transport the oil. If this project is denied approval, then the same crude oil will be transported through rail. According to TransCanada, the developer of the pipeline, the oil extracted is not as dirty as it is portrayed. Venezuelan crude oil's carbon footprint match that of the Canadian oil sands. According to Exxon Mobil, the GHG emission during transport of tar sand oil is only 6% higher than regular crude oil. Also, in the past 2 decades, Canadian oil giants have reduced nearly 30% of the GHG emission during production of tar sand oil crudes. The report says that the company is ever working on improving ways to reduce GHG emission. One such way is using a paraffinic froth treatment (PFT) technology that reduces the overall life-cycle GHG emission (2012).

Bloomberg, another supporter of the pipeline, says “ The reason to approve the pipeline is that it would keep Canadian oil flowing to U. S. refineries in the most efficient way, within the bounds of safety, and this is reason enough.” (2013)

#### e) My position

I am against the Keystone project. In my opinion, none of the reasons such as the oil spills, the economy and the power struggle for oil matter. The mere fact that an entire ecosystem needs to be destroyed to mine the hard-to-

refine oil out tips the balance. Instead of taking this step, the government should spend the money on exploring other cleaner energy sources that virtual cause no more climate change.

## References

- Behrens, C. E. (2013). Energy Policy: 113th Congress Issues (R42756). Congressional Research Service. Retrieved from website: <https://www.fas.org/sgp/crs/misc/R42756.pdf>
- Casey-Lefkowitz, S., & Shope, E. (2011). Say no to tar sands pipeline: Proposed Keystone XL project would deliver dirty fuel at a high cost. Washington, DC: Natural Resources Defense Council. Retrieved from <https://www.nrdc.org/land/files/tarsandspipeline4pgr.pdf>
- Center for climate and energy solutions. (2011). Facts and figures. <http://www.c2es.org/facts-figures/us-emissions>
- Coelho, C. (2013). Iraq war: 190, 000 lives, \$2. 2 trillion. Brown University. Retrieved from <http://news.brown.edu/pressreleases/2013/03/warcosts>
- Cole, J. (2011, Dec. 14). Post-American Iraq by the numbers. Retrieved from <http://www.juancole.com/2011/12/post-american-iraq-by-the-numbers.html>
- Cole, S., & McCarthy, L. (2014). NASA finds 2013 sustained long-term climate warming trend. Retrieved from <http://www.nasa.gov/press/2014/january/nasa-finds-2013-sustained-long-term-climate-warming-trend/>
- Davenport. C. (2014, Jan 31). Report opens way to approval for Keystone pipeline. New York Times. Retrieved from <http://www.nytimes.com/2014/02/01/us/politics/report-may-ease-way-to-approval-of-keystone->  
<https://assignbuster.com/greenhouse-effect-essay-sample/>

pipeline. html? \_r= 0

DeRita, G & Valtin, (2010). Toxic tar sands: Profiles from the front lines.

Sierra Club. Retrieved from [http://www. sierraclub.](http://www.sierraclub.org/dirtyfuels/tar-sands/faces/TarSands.pdf)

[org/dirtyfuels/tar-sands/faces/TarSands. pdf](http://www.sierraclub.org/dirtyfuels/tar-sands/faces/TarSands.pdf)

Editors. (2013, Feb 19). The environmental case for the Keystone pipeline.

Bloomberg View. Retrieved from. [http://www. bloombergview.](http://www.bloombergview.com/articles/2013-02-19/environmentally-sound-reasons-to-allow-keystone-pipeline)

[com/articles/2013-02-19/environmentally-sound-reasons-to-allow-keystone-pipeline](http://www.bloombergview.com/articles/2013-02-19/environmentally-sound-reasons-to-allow-keystone-pipeline)

Engelfried, N. (2014, Feb 14). Indigenous organizing drives Montana tar

sands opposition. Truthout. Retrieved from [http://www. truth-out.](http://www.truth-out.org/news/item/21864-indigenous-organizing-drives-montana-tar-sands-opposition)

[org/news/item/21864-indigenous-organizing-drives-montana-tar-sands-opposition](http://www.truth-out.org/news/item/21864-indigenous-organizing-drives-montana-tar-sands-opposition)

Environmental protection agency. (n. d.). Climate change: Basic information.

Retrieved from [http://www. epa. gov/climatechange/basics/](http://www.epa.gov/climatechange/basics/)

Exxon Mobil Corp. (2012). Canada’s oil sands. Retrieved from

[http://corporate. exxonmobil.](http://corporate.exxonmobil.com/~media/Brochures/2012/iol_oilsands_brochure.pdf)

[com/~media/Brochures/2012/iol\\_oilsands\\_brochure. pdf](http://corporate.exxonmobil.com/~media/Brochures/2012/iol_oilsands_brochure.pdf)

Fischer, H. (2014). A guide to U. S. military casualty statistics: Operation new dawn, operation iraqi freedom, and operation enduring freedom (RS22452).

Congressional Research Service. Retrieved from website: [http://www. fas.](http://www.fas.org/sgp/crs/natsec/RS22452.pdf)

[org/sgp/crs/natsec/RS22452. pdf](http://www.fas.org/sgp/crs/natsec/RS22452.pdf)

Hansen, J. (2012, March). Why I must speak out about climate change.

Retrieved from [http://new. ted.](http://new.ted.com/talks/james_hansen_why_i_must_speak_out_about_climate_change)

[com/talks/james\\_hansen\\_why\\_i\\_must\\_speak\\_out\\_about\\_climate\\_change](http://new.ted.com/talks/james_hansen_why_i_must_speak_out_about_climate_change)

Harris, JM., & Roach, B. (2009). The economics of global climate change.

<https://assignbuster.com/greenhouse-effect-essay-sample/>

Medford: Global development and environment institute. Retrieved from [http://www.ase.tufts.edu/gdae/education\\_materials/modules/The\\_Economics\\_of\\_Global\\_Climate\\_Change.pdf](http://www.ase.tufts.edu/gdae/education_materials/modules/The_Economics_of_Global_Climate_Change.pdf)

edu/gdae/education\_materials/modules/The\_Economics\_of\_Global\_Climate\_Change.pdf

Hiro, D. (2007). Blood of the earth: the battle for the world's vanishing oil resources. Nation Books.

Jernelov, A. (2003). The environmental effects of the Iraq war. Project syndicate. Retrieved from <http://www.project-syndicate.org/commentary/the-environmental-effects-of-the-iraq-war>

Litvan, L & Salant, J. D. (2013, Apr 29). Keystone pipeline support enlists oil firms to U. S. Jews: Energy. Bloomberg, Retrieved from <http://www.bloomberg.com/news/2013-04-29/keystone-pipeline-support-enlists-oil-firms-to-u-s-jews-energy.html>

McElroy, M. B. (2013, Nov-Dec). The Keystone XL pipeline: Should the president approve construction? Harvard Magazine, Retrieved from <http://harvardmagazine.com/2013/11/the-keystone-xl-pipeline>

Pelej, J & Salmon, R. (n. d). Keystone XL tar sands pipeline. National wildlife federation. Retrieved from [http://www.nwf.org/pdf/Policy-Solutions/Keystone%20XL%20Fact%20Sheet\\_2.pdf](http://www.nwf.org/pdf/Policy-Solutions/Keystone%20XL%20Fact%20Sheet_2.pdf)

Sky, E. (2013, March 11). Iraq war: Six lessons we still need to learn. The Guardian. Retrieved from <http://www.theguardian.com/commentisfree/2013/mar/11/iraq-war-lessons-intervention>

Swift, A., Casey-Lefkowitz, S., & Shope, E. (2011). Tar Sands Pipelines Safety Risks. Washington, DC: Natural Resources Defense Council. Retrieved from

<https://assignbuster.com/greenhouse-effect-essay-sample/>

<http://www.nrdc.org/energy/files/tarsandssafetyrisks.pdf>

Trotta, D. (2013, March 14). Iraq war cost U. S. more than \$2 trillion, could grow to \$6 trillion, says Watson institute study. Reuters. Retrieved from [http://www.huffingtonpost.com/2013/03/14/iraq-war-cost-more-than-2-trillion\\_n\\_2875493.html](http://www.huffingtonpost.com/2013/03/14/iraq-war-cost-more-than-2-trillion_n_2875493.html)

Union of concerned scientists. (2010). Water and climate change. Retrieved from [http://www.ucsusa.org/global\\_warming/science\\_and\\_impacts/impacts/water-and-climate-change.html](http://www.ucsusa.org/global_warming/science_and_impacts/impacts/water-and-climate-change.html)