Changes

From	To
In the past decade, shale gas experienced an extraordinary boom, accounting for only 1.6% of total US natural gas production in 2000, 4.1% by 2005, and an astonishing 23.1% by 2010.	In the past decade, the United States' oil and gas industry experienced an extraordinary boom, due to shale gas. Shale gas accounted for only 1.6% of total US natural gas production in 2000, 4.1% by 2005, and an astonishing 23.1% by 2010.
In 2007, Energy companies first began to realise that the United States of America contained large reserves of natural gas trapped in underground shale-rock formations, which is an easily-breakable soft rock that is formed from the compaction of silt and clay-size mineral particles, commonly known as mud (Minerals Education Coalitions, 2017).	In 2007, Energy companies first began to realise that the United States of America (hereon referred to as the United States, America, US or USA) contained large reserves of natural gas trapped in underground shale-rock formations, which is an easily-breakable soft rock that is formed from the compaction of silt and clay-size mineral particles, commonly known as mud (Minerals Education Coalitions, 2017).
Briefly, hydraulic fracturing, commonly known as fracking, is the process of injecting liquid at high pressure into underground rocks so as to force open existing fissures and extract oil or gas. The use of fracking since then has been continually rising, specifically in Texas, Pennsylvania, and Arkansas. As a result resulted, US natural gas production has spiked, with many electric utilities changing from coal to cheaper natural gas.	Briefly, hydraulic fracturing, commonly known as fracking, is the process of injecting liquid at high pressures into underground rocks so as to force open existing fissures and extract oil or gas. The use of fracking since then has been continuously rising, specifically in Texas, Pennsylvania, and Arkansas. As a result, US natural gas production has spiked, with many electric utilities changing from coal to cheaper natural gas.
The abovementioned oil embargo of 1973 not only led to the reorganisation of federal energy functions, but it also allowed the government to pay attention to the need for an emergency stockpile of crude oil. "Unlike the federal oil tracts set aside in the early part of the century, the	The abovementioned oil embargo of 1973 not only led to the reorganisation of federal energy functions, but it also allowed the government to pay attention to the need for an emergency stockpile of crude oil. "Unlike the federal oil tracts set aside in the early part of the century, the

government needed a reserve that could pump emergency oil into the market much faster than any oil field. Such a stockpile of crude oil had been discussed in the Eisenhower Administration but never implemented. On December 22, 1975, however, with the economy reeling from the first shock of oil shortages, President Ford signed the Energy Policy and Conservation Act, extending oil price controls, mandating automobile fuel economy standards, and authorizing creation of an emergency oil reserve. The final major piece of today's Fossil Energy organization, the U.S. Strategic Petroleum Reserve, began forming" (U.S. Department of Energy, 2016).	government needed a reserve that could pump emergency oil into the market much faster than any oil field. Such a stockpile of crude oil had been discussed in the Eisenhower Administration but never implemented" (U.S. Department of Energy, 2016). However, due to the oil shortage, President Gerald Ford signed the Energy Policy and Conservation Act on 22 December 1975. This in turn, allowed an extension of oil price controls, authorising the creation of an emergency oil reserve. This has resulted in today's Fossil Energy organisation, the U.S. Strategic Petroleum Reserve (U.S. Department of Energy, 2016).
Organization Authorizing Polarization Recognized	Organisation Authorising Polarisation Recognised
According to an of number studies, even though natural gas – a fossil fuel – is cleaner than coal, fracking alone, does not fix climate change.	According to a of number studies, even though natural gas – a fossil fuel – is cleaner than coal, fracking alone, does not fix climate change.
The key research questions posed for the study were: How has the rise of fracking impacted USA foreign policy towards climate change? What are the reasons for the limited success of the Kyoto Protocol? How does the 2015 Paris Agreement differ from the Kyoto Protocol? What lessons can be learnt from the experience of the Kyoto Protocol?	The key research questions posed for the study was: How has the rise of fracking impacted USA foreign policy towards climate change? Other research questions that were also posed for the study were: What are the reasons for the limited success of the Kyoto Protocol? How does the 2015 Paris Agreement differ from the Kyoto Protocol? What lessons can be learnt from the experience of the Kyoto Protocol?

In particular, why is the role of the US critical to ensuring the success of the 2015 Paris Agreement? Given the energy sector trends in the US, what is the likelihood of the US meeting the greenhouse gas emission targets for a low carbon future?	In particular, why is the role of the US critical to ensuring the success of the 2015 Paris Agreement? Given the energy sector trends in the US, what is the likelihood of the US meeting the greenhouse gas emission targets for a low carbon future?
Explain what fracking is, explains its advantages and disadvantages, why it is surrounded by controversy, and the water storage issue.	Explain what fracking is, discuss its advantages and disadvantages, why it is surrounded by controversy, and the water storage issue.
It then looks at state shifts and Obama's attempts to use the Clean Air Act, such that how he has been blocked in Congress, how things are changing, where fracking fits into this and whether it will be transitionary.	It then looks at state shifts and Obama's attempts to use the Clean Air Act, such that how he had been blocked in Congress, how things were changing, where fracking fits into this and whether it was transitionary.
The research was conducted by using both, quantitative – as well as qualitative data. Quantitative methods were used to collect data and figures, whereas a qualitative analysis was carried out in the form of critical analytical research. The primary objective of the research was to trace the successes and failures of the Kyoto Protocol to draw up a list of lessons learnt, which was achieved through an extensive review of existing literature on Climate Change and Green IPE. These lessons were then applied to the proposed 2015 Paris agreement, which is currently being ratified by member countries of the UNFCC, to critically analyze the possibilities of successes and failure in reducing global greenhouse emissions.	As the study only focused on the case of the USA, process-tracing was used. Process-tracing was used due to the study only focusing on the case of the USA. Process-tracing is a mode of causal inference based on concatenation. By relying on within-case analysis, process tracing privileges internal validity over external validity; in return for this constraint on generality, process-tracing has the potential to generate relatively complex explanations (Walder, 2012:67). Process-tracing provides micro-level evidence that decisions made by the USA directly influenced the environmental policy decisions globally. In this study, the method was firstly used for looking at the process of fracking, followed by its regulatory policies. Thereafter, USA's foreign policies surrounding energy and climate change during Bush's and Obama's administration.

Process-tracing was used due to the study only focusing on the case of the USA. Process-tracing is a mode of causal inference based on concatenation. By relying on within-case analysis, process tracing privileges internal validity over external validity; in return for this constraint on generality, process-tracing has the potential to generate relatively complex explanations (Walder, 2012:67). Process-tracing provides micro-level evidence that decisions made by the USA directly influenced the environmental policy decisions globally. In this study, the method was firstly used for looking at the process of fracking, followed by its regulatory policies. Thereafter, USA's foreign policies surrounding energy and climate change during Bush's and Obama's administration.	
As the US also possessed abundant reserves of coal supply, the US showed interest in the German technological advancements towards the latter stages of the war, when the scientists and technical documents were captured.	As the US also possessed abundant reserves of coal supply, it showed interest in the German technological advancements towards the latter stages of the war, when the scientists and technical documents were captured.
…US policymakers realised that energy and security of oil was no longer a matter should be taken lightly.	… US policymakers realised that energy and security of oil was no longer a matter that should be taken lightly.
Fracking can be traced back to the battle of Fredericksburg, Virginia, lasting 4 days from 11 to 15 December 1862, where civil war veteran Col. Edward A.L. Roberts experimented with the idea of firing explosive artillery into a narrow canal that clogged the battlefield.	Fracking can be traced back to the battle of Fredericksburg, Virginia, which lasted 4 days from 11 to 15 December 1862. During the battle civil war veteran Col. Edward A.L. Roberts experimented with the idea of firing explosive artillery into a narrow canal that clogged the battlefield.

The disadvantages to this are that firstly, a new natural gas facility will displace coal. Therefore, fracking is no sure bet for improving regional air quality.	The disadvantages to this are that firstly, a new natural gas facility will displace coal. Therefore, fracking is no sure guarantee for the improvement of regional air quality.
A fracking well is able to use up to 20 million gallons of water per fracking (Wihbey, 2015). Thereby impacting local water sources.	A fracking well is able to use up to 20 million gallons of water per fracking, thereby impacting local water sources (Wihbey, 2015).
It is just not smart policy to go headlong first – at massive scale – and only later discover the consequences.	It is not strategically advised to go headlong first – at massive scale – and only later discover the consequences (Wihbey, 2015).
Obama had boasted that their supply of natural gas will be available for one hundred years and is a big factor in drawing jobs back to our shores.	Obama had boasted that their supply of natural gas would be available for one hundred years and was a big factor in drawing jobs back into the country.
A recommendation of the Energy Task Force was that Congress exempts fracking from the regulations of the Safe Drinking Water Act. This was followed by the National Energy Policy Act of 2005 implementing Act.	A recommendation of the Energy Task Force was that the Congress should exempt fracking from the regulations of the Safe Drinking Water Act. This was followed by the implementation of the National Energy Policy Act of 2005.
However, groundwater can also be used to enhance surface water supplies where it is available in sufficient quantities.	However, groundwater – where it is available in sufficient quantities – can also be used to enhance surface water supplies.
	Repetition on page 44-45
Another argument against this type of investment claims that projects have focused mainly on sinks rather than on the transfer of environmentally sound technologies because the former are cheaper.	Another argument against this is that projects have primarily focused on sinks rather than on the transfer of environmentally sound technologies because the former are cheaper.
This problem is that this contributes to a smaller fall of emissions at a higher cost.	This problem contributes to a smaller fall of emissions at a higher cost.
"The concerted effort to discredit the scientific consensus over man-made global warming has	The continuous debates and efforts around combatting global warming has been existent in

been continuing for two decades in the United States, and shows no sign of weakening. It is very often described as an attempt on the part of corporate America, most notably the fossil fuel industries, to hinder governmental regulations on their activities. While emphasizing this dimension of the US climate denial movement, two additional factors which have been instrumental in blocking strong climate action. First, climate denial stems from the strong ideological commitment of small-government conservatives and libertarians to laisser-faire and their strong opposition to regulation. Second, in order to disarm their opponents, US climate deniers often rest their case on the defense of the American way of life, defined by high consumption and ever-expanding material prosperity. Therefore, US climate denial movement is best understood as a combination of these two trends". (Collomb, 2014:1).	the United States for almost two decades. It is very often described as an attempt by the companies of the fossil fuel industry to hinder government regulations on their activities. "While emphasizing this dimension of the US climate denial movement, two additional factors which have been instrumental in blocking strong climate action. First, climate denial stems from the strong ideological commitment of small-government conservatives and libertarians to laisser-faire and their strong opposition to regulation. Second, in order to disarm their opponents, US climate deniers often rest their case on the defense of the way of life, defined by high consumption and ever-expanding material prosperity. Therefore, US climate denial movement is best understood as a combination of these two trends". (Collomb, 2014:1).
Institutional asset owners associations and think-tanks such as the World Pensions Council (WPC) have observed that the stated objectives of the Paris Agreement are implicitly "predicated upon an assumption – that member states of the United Nations, including high polluters such as China, the USA, India, Brazil, Canada, Russia, Indonesia and Australia, which generate more than half the world's greenhouse gas emissions, will somehow drive down their carbon pollution voluntarily and assiduously without any binding enforcement mechanism to measure and control CO_2 emissions	Institutional asset owners associations and think-tanks such as the World Pensions Council (WPC) have observed that the stated objectives of the Paris Agreement are implicitly based on the assumption that United Nations member states (including high polluters which generate more than half the world's greenhouse gas emissions), "will somehow drive down their carbon pollution voluntarily and assiduously without any binding enforcement mechanism to measure and control CO_2 emissions at any level from factory to state, and without any specific penalty gradation or fiscal

at any level from factory to state, and without any specific penalty gradation or fiscal pressure (for example a carbon tax) to discourage bad behaviour. A shining example of what Roman lawyers called circular logic: an agreement (or argument) presupposing in advance what it wants to achieve" (United Nations Framework Convention on Climate Change, 2015).	pressure (for example a carbon tax) to discourage bad behaviour." This, according to academics is an example of circular logic, which is an agreement or argument that is formulated in advance as to what it wants to achieve (United Nations Framework Convention on Climate Change, 2015).
Barack Obama's commitment to addressing climate change has also been reflected in a number of rule-making decisions of the Environmental Protection Agency.	Barack Obama's commitment to addressing climate change had also been reflected in a number of rule-making decisions of the Environmental Protection Agency.
"The international climate change negotiations leading to and including the Copenhagen and Cancun Conferences of the Parties in 2009 and 2010 have shown a very different balance of power from those of the 1997 Kyoto round. This new world dis(order) was characterized by insecurity of the United States in the face of economic and political decline vis-a`-vis China; fragmentation of the Group of 77 developing nations negotiating bloc; and weakening of the European Union, which was cut out entirely from the group negotiating the Copenhagen Accord. In addition to old alignments of developing countries based on solidarity, negotiating blocs have fractured along lines of responsibility for climate change, capability to address it, and national vulnerability to climate risks. The roots of the worst stubbornness by the US in recent climate talks lie in growing insecurity about its ability to	"The international climate change negotiations leading to and including the Copenhagen and Cancun Conferences of the Parties in 2009 and 2010 have shown a very different balance of power from those of the 1997 Kyoto round. This new world dis(order) was characterized by insecurity of the United States in the face of economic and political decline vis-a`-vis China; fragmentation of the Group of 77 developing nations negotiating bloc; and weakening of the European Union, which was cut out entirely from the group negotiating the Copenhagen Accord. In addition to old alignments of developing countries based on solidarity, negotiating blocs have fractured along lines of responsibility for climate change, capability to address it, and national vulnerability to climate risks." The US's recent unwillingness to discuss climate change is due to its insecurity about its unability to provide jobs for

provide jobs for its workers in a future where all sorts of work is moving to China and India. The dynamics in Copenhagen between Chinese Premier Wen Jiabao and US President Barack Obama had the smell of an interaction between a rising and a declining hegemon, on an issue they both would have preferred to avoid: binding emissions reduction targets on greenhouse gases" (Roberts, 2011: 776).	its workers in the future, where emerging economies, like China and India, are growing at an exponential rate. (Roberts, 2011: 776).
Oil and Gas: "Despite low prices for crude oil and natural gas, the United States remains a major source of growth in oil and gas exploration and development, especially in shale and ultra-deep water resources. U.S. companies have developed advanced and cost-competitive techniques for extracting hydrocarbons from shale and hard to reach offshore oil and gas deposits, altering the U.S. oil and gas sector and the domestic energy landscape. These techniques have allowed many U.S. producers to remain competitive even with low international crude oil prices, making the United States the world's swing producer. As global oil and gas prices rise, production from U.S. shale formations is projected to increase substantially. In addition to shale, offshore oil and gas resources in the U.S. Gulf of Mexico and Alaska are highlighted as part of a five-year leasing program for high-resource areas under the U.S. Outer Continental Shelf Oil and Gas Leasing Program for 2017-2022, which is under development by the Bureau of Ocean Energy	**Oil and Gas:** The United States remain a major source of growth in oil and gas exploration and development, especially in shale and ultra-deep water resources, regardless of the low crude oil and natural gas global prices. U.S. companies have developed various advanced and cost-competitive techniques for extracting hydrocarbons from shale and hard to reach offshore oil and gas deposits As a result, many producers are able to remain competitive, in turn, making the United States the world's swing producer. As global oil and gas prices rise, production from U.S. shale formations is projected to increase substantially. In addition to shale, offshore oil and gas resources in the U.S. Gulf of Mexico and Alaska are part of a five-year leasing program under the U.S. Outer Continental Shelf Oil and Gas Leasing Program for 2017-2022. The leasing program has been developed by the Bureau of Ocean Energy Management within the U.S. Department of Interior. "Exporting crude oil from the United States has made the sector even more competitive, following the removal of crude

Management within the U.S. Department of Interior. Exporting crude oil from the United States has made the sector even more competitive, following the removal of crude oil export restrictions in December 2015. U.S. produced crude oil can now reach global markets and compete with other major oil and gas producing countries." (International Trade Administration, 2016)	oil export restrictions in December 2015. U.S. produced crude oil can now reach global markets and compete with other major oil and gas producing countries." (International Trade Administration, 2016)
"This includes a strong interest from U.S. utilities to address the potential effects of distributed energy resources. Since 2009, investment in the modernization of America's electricity infrastructure has increased dramatically, in large part due to the nearly US$ 8 billion in 99 public-private Smart Grid Investment Grant (SGIG) projects involving more than 200 electric utilities. These projects have helped push the deployment of smart meters to more than 40% of the country's 144.51 million electricity consumers. In addition to public-private programs like the SGIG, investor-owned utility investment in grid modernization continues to rise. For example, since 2001 investor-owned utility transmission system investment grew at a compound annual growth rate of over 20% reaching almost US$ 20 billion" (International Trade Administration, 2016).	This includes a strong interest from national utilities to address the potential effects of distributed energy resources. Since 2009, investment in the modernisation of the national electricity infrastructure has increased dramatically. This is in large part due to the Smart Grid Investment Grant projects, which involves more than 200 electric utilities, and costing approximately US$8 billion in 99 public-private partnerships (PPP). "These projects have helped push the deployment of smart meters to more than 40% of the country's 144.51 million electricity consumers. In addition to public-private programs like the SGIG, investor-owned utility investment in grid modernization continues to rise. For example, since 2001 investor-owned utility transmission system investment grew at a compound annual growth rate of over 20% reaching almost US$ 20 billion" (International Trade Administration, 2016).
Chapter 4: USA's Fossil Fuel Industry and Fracking	**Chapter 4: USA's Fossil Fuel Industry and Fracking**

4.1) Historical background to USA's Fossil Fuel Industry: From Coal to Petroleum to the current state	The purpose of this chapter is to provide a brief historical background to the USA's fossil fuel industry and how the fracking process (and industry) continued to increasingly dominate USA's fossil fuel industry. This will be achieved by explaining what fracking is, discuss its advantages and disadvantages, why it is surrounded by controversy, and the water storage issue. Related to the paper's theory and literature review, the chapter primarily relates to Green IPE in general. **4.1) Historical background to USA's Fossil Fuel Industry: From Coal to Petroleum to the current state**
Addition of chapter conclusion.	In conclusion, as the purpose of the chapter was to provide a brief historical background to the USA's fossil fuel industry and how the fracking process (and industry) continued to increasingly dominate USA's fossil fuel industry, it can be seen that in relation to Green IPE, the controversy of fracking. As US Vice President Dick Cheney had proposed an Energy Task Force to recommend energy policies, which in turn, recommended the Congress to exempt fracking from the Safe Drinking Water Act regulations. Therefore, in relation to the theory, US fracking policies disregard the conservation of the environment. However, there can be seen in the shift in environmental conservation policies during the Obama Administration which will be discussed in the next chapter.

Chapter 5: USA's Domestic Fossil Fuel Industry and International Climate Policy **5.1) The Energy Sector within the USA**	**Chapter 5: USA's Domestic Fossil Fuel Industry and International Climate Policy** The chapter will explain and discuss USA's domestic fossil fuel industry and the international climate policy. This will be done by locating the power of the domestic fossil industry, in the sense who owns, controls and drives it, as well as how powerful the federal government is, and what is the link to the fossil fuel industry. Followed by explaining the Kyoto Protocol, its limitations and Pledge and Review (that is, what are they, what role did the US play, and how the domestic forces share the US's approach to this) has traced these. In addition, an explanation as to what the impact of these domestic forces had on parties, public discourse, and how did the ruling elites respond to these pressures (if any). That is how Clinton, Bush Junior and Obama reacted to the domestic pressures and international policy engagements. In relation to the theoretical perspective of the paper, the chapter relates to Neo-Gramscian theory and Green IPE. **5.1) The Energy Sector within the USA**
Addition of chapter conclusion.	In sum, deep political polarisation over climate change prevents the United States from sending a clear signal to other countries that it is ready to address carbon emissions seriously and to lead the international process envisioned by the Paris Agreement. Potentially, the 2016 presidential

	election could upset Obama's climate leadership and put the United States back in a position where no credible federal climate policy initiatives exist. For the time being, therefore, the potential and willingness for the United States to lead is unclear. In relation to Green IPE and Neo-Gramscian theory, it can therefore be concluded that the US oil and gas industry is the most influential industries in the USA. This relates to the social relations described in Neo-Gramscian theory, such that the industry makes to elect relative representatives that will assist in furthering the goals of the industry, and secondly, a large amount of the national budget is provided to the industry for lobbying reasons.
Chapter 6: USA's Domestic Fossil Fuel Industry and Domestic Climate policy As mentioned above, the United States is considered a leader in the production and supply of energy, and is one of the world's largest energy consumers. U.S. energy companies produce oil, natural gas, coal, renewable fuels, as well as electricity from clean energy sources such as wind, solar, and nuclear power (U.S. Energy Information Administration. 2016)…	**Chapter 6: USA's Domestic Fossil Fuel Industry and Domestic Climate policy** The chapter aims to discuss the shifts in the fossil fuel industry with a rise of renewables. This is followed by discussing the state shifts and Obama's attempts to use the Clean Air Act, such that how he had been blocked in Congress, how things were changing, where fracking fits into this and whether it was transitionary. In relation to the theoretical perspective of the paper, the chapter relates to climate justice.
Addition of chapter conclusion.	In relation to climate justice, it can be concluded that the Obama Administration was a leader in preventing climate change. Although Obama was not able to have much influence in the Congress

	during first term, this however changed in his second term as president. The administration aimed to crack down on its oil and gas industry, by implementing the Clean Air Act and regulating the methane emissions, as well as aim to meet the international obligations for climate change.
Conclusion	From the paper, it can be seen that Green IPE focuses on the power of the fossil fuel industry. Whereas Neo-Gramscian theory relates to hegemony and the structural power within a state. And climate justice focuses on the policies of the fossil fuel industries. Therefore, with regards to the key research question posed for the study, it can be concluded that fracking is not a sustainable way to obtain natural gas and oil even though it makes us, the U.S., less dependent on foreign oil and gas (McBride & Sergie, 2015). Not only do the disadvantages outweigh the advantages, but the process of fracking breaks the laws of climate justice and sustainability. The rise of the fracking industry bolsters the nation's geopolitical status in many ways. Firstly, it provides low-cost hydrocarbons for energy-intensive industries like cement manufacturing and aluminium smelting, thus sparking a 'new industrial revolution' and strengthening the US economy. It is also to be noted that it helps liberate the US from constrictive ties to foreign despots. Furthermore, it advances the US's national security by rendering the it as being less vulnerable to political and security-related disruptions of its energy supply. In terms of power relations, former national security adviser to President Obama,

	Tom Donilon, mentioned that America's new energy independent position allows it to engage from a position of greater strength. Increasing US energy supplies act as a cushion that helps reduce its vulnerability to global supply disruptions and price shocks. It also allows the US to have an upper hand in pursuing and implementing its international security goals. Finding sustainable ways to obtain natural gas and oil is seen as the next option. … So far, however, deep political polarisation has represented a significant barrier to the U.S. leadership on climate change. Thus, while the Paris Agreement could become the start of a race to the top that sets the world on a path towards solving the climate change problem, it might also end as a failure, much like the Kyoto Protocol. The latter outcome is particularly plausible if the United States and other major emitters prove unable or unwilling to lead. However, as mentioned above, and newly-elected President Donald Trump's decision to exit from the Paris Agreement signifies that the fracking industry has a large impact on the USA's foreign policy towards climate change – a disregard for the impact of climate change. This will ensure that climate change occurs with even greater fury than previously assumed, posing an intensified threat to the safety and survival of US cities, farms, forests and coastlines. No other challenge we face even comes close in severity, scale and proximity.

Obama Administration	Past tense