

Research Article

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Energy Transactions and the Climate Shift

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Abstract

The extraction and extensive usage of energy has always had harsh ramifications on the environment. The negative effects of this excessive use has not remained within specific boundaries, but has moved beyond. Today, the global consequences of the upstream and downstream sectors in hydrocarbon industry are much visible. Severe implications of energy business like drilling, oil spills and gas flares could be seen as damaging factors around the world. Negative impact such as earthquakes, acid rains, health hazards, mass displacement and degrading land and river streams has been noted time and again. The paper intends to address the issue of extensive energy usage, which denies slowing down worsening its impact on environment. The central theme of the paper is that, the increasing consumption markets have globalized the energy business in all direction, further discussing the concerns that lie from the start point of extraction to finally reaching the end user, challenging the environment. A paradoxical shift in the energy consumption has resulted in the century's biggest eventualities called global warming. Hence, the necessity for safeguarding the environment is being felt globally, specifically to reduce greenhouse gas emissions, one of the major causes of climate change. The paper provides a brief discussion on hydrocarbon independence, which has brought alternative energy sources under debate. The paper attempts to review the global economic growth with the energy use, while promoting a sustainable development.

Keywords: hydrocarbons, upstream, downstream & sustainable development.

Introduction

The economic growth and development has been the impact of advancement in the energy industry, with advanced technology. As compared with the earlier times where there were few major consumers, today many developing economies are energy dependent to convert themselves into economic realities. Today, hydrocarbons have become the basic pillar that has advanced the industrialization process. The geographical areas that are rich in oil and gas reserves are S. & Cent. America, Europe & Eurasia and lately, Africa. Nevertheless, the Middle East dominates the world energy proven reserves and its exports. "Global oil production dropped even more rapidly than consumption, falling by 2 million b/d, or 2.6 per cent, the largest drop, again, since 1982. Global natural gas trade ... contracted by 2.1 per cent in 2009....."¹. However, the post – recession energy (hydrocarbon) movements have attracted the global attention. While, the overall consumption pattern declined, this phenomenon is bound to change and has already hit the road of recovery.

Discussion

A New Energy Paradigm

The 21st century geopolitics of energy is no longer constrained by limited factors such as geology, geographical location or available resources. It has further moved to another level of issues, where energy *per se* has rose as a prime bone of contention between the global players. Today, the energy market has expanded from the Middle East to Europe & Eurasia and further to the African continent. With this, the market also sees a whole new set of players joining the gamble for the energy resources, as the global demand exceeds. The ever – growing demand for energy supplies, climate change at a rapid pace and concentration of petrodollars in few hands, all of these issues generate concerns for the future. This has also rose

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the curiosity and a feeling of insecurity amongst the consumers and producers alike.

With the industrialized nations, predominantly the west, today, many other regions are rising to the forefront, most notably Asia. "In 1970, Asia consumed 15 per cent of the total global energy consumption. In 2000, Asia consumed 27 per cent, and it is expected that Asia will consume 35 per cent by 2030"². "Despite the economic slowdown in exports and domestic demand in the past year, China's demand for energy remains high. China has emerged from being a net oil exporter in the early 1990s to become the world's third-largest net importer of oil in 2006. China consumed an estimated 7.8 million barrels per day (bbl/d) of oil in 2008, making it the second-largest oil consumer in the world behind the United States"³. While, "in 2009, India was the fourth largest oil consumer in the world, after the United States, China, and Japan"⁴. The global financial crisis could not reduce the energy consumption, infact the demand continues to rise specifically in the transportation sector, as the vehicles (car) sales and ownership is set to increase in the coming years.

"The rise of the new Asian economies is due to the shift from traditional production patterns, where the economies concentrated on agriculture and manufacturing, to become a knowledge oriented economy. This has also raised the needs of the people, aspiring for a better and luxurious life. This inturn has shifted the demand pattern to a higher level, attracting a considerable volume of global energy"⁵. Countries like India and China are increasing their industrial capacity, and for this energy security is inevitable. For instance, "since 1995, the number of cars in China has almost tripled and it is expected that there will be more than 50 million cars in China by 2010"⁶. Hence, today the world is witnessing a paradigm shift, where there is rise of new energy players which is causing a shift in the direction of energy trade, with a rise in its volume. The entry of new players also exhibits their involvement in oil rich areas around the world. Thus, the intense pressure on environment and the new competition has brought the alternative energies under debate. The changing paradigm will see the world in a different energy scenario. The soaring oil and gas prices, shifting climate and environment degradation has led to a slow and gradual transition from oil and gas to other alternatives, like nuclear. "As we enter the Energy – Climate Era, that changes: We now understand that these fossil fuels are exhaustible, increasingly expensive, and politically, ecologically, and climatically toxic. That's the line we've crossed"⁷, as rightly put by Thomas L. Friedman.

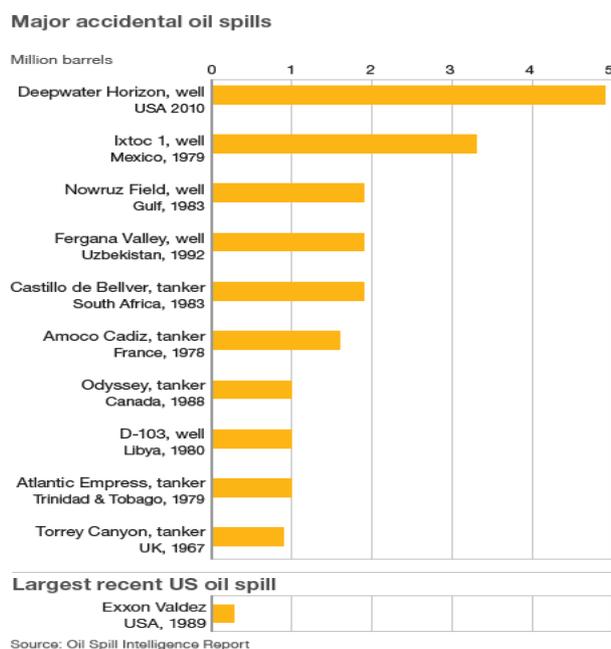
Energy Business and Implications

The oil and gas operations have had wide range of effects on the ecological balance. These effects have been seen on environment and have questioned the very existence of the local population. The oil companies have also come under

scrutiny for the negative effects and neglect for the environment. The energy industry has been in the news for the worst oil spills that have adversely affected the agricultural and fishing economy. Oil spills happen due to age old oil installations, leak in the pipelines or tankers in the ocean or due to collision. "When countries are at war, one country may decide to dump gallons of oil into the other country's oceans. Terrorists may cause an oil spill because they will dump oil into a country's ocean. Many terrorists will do this because they are trying to get the country's attention, or they are trying to make a point to a country. Illegal dumpers are people that will dump crude oil into the oceans because they do not want to spend money on decomposing their waste oil. Because they won't spend money on breaking up the oil (decomposing it) they will dump oil into the oceans, which is illegal. Natural disasters (like hurricanes) may cause an oil spill, too. If a hurricane was a couple of miles away, the winds from the hurricane could cause the oil tanker to flip over, pouring oil out"⁸. In any ways, oil spills have adverse effects, the recent Louisiana oil spill (2010) is the largest oil spill till date. "The ruptured BP oil well in the Gulf of Mexico gushed an estimated 4.9 million barrels (205.8 gallons) of oil in approximately three months,"⁹.

Oil spill in oceans and land cause immense environmental damage. Birds and marine species face a long term effect. "The Exxon Valdez oil spill (1989) killed somewhere between 250,000 and 500,000 seabirds, plus a number of shore birds and bald eagles. killed thousands of sea otters, hundreds of harbor seals, roughly two dozen killer whales and a dozen or more river otters"¹⁰. The oil spills not just have severe effects offshore, but also affect fertile land and habitat of the people living nearby. Nigeria is wrecked by oil spills due to the aging infrastructure of the oil companies and accidental leakages. Large oil spills have turned once fertile agricultural land into wastelands, while the oil flowing into waterways have destroyed the fishing grounds. As many as 546 million gallons of oil spilled into the Niger Delta over the last five decades, or nearly 11 million gallons a year, a team of experts for the Nigerian government and international and local environmental groups concluded in a 2006 report¹¹. The spills also led to displacement of the people, making their settlements uninhabitable, leaving the pasture and livestock dead. "When oil starts mixing in water, it can change composition and becomes what's known as "mousse". This is a sticky substance that clings even more to whatever it comes in contact with. Many marine animals don't know to avoid a slick and some fish may even be attracted to it as it can resemble food"¹². "It is estimated that approximately 706 million gallons of waste oil enter the ocean every year, with over half coming from land drainage and waste disposal;....."¹³.

Graph 1¹⁴:



Source: "Major Accidental Oil Spills".

Natural calamities like earthquakes are also one of the causes of the oil industry. "It is scientifically proven that drilling or pumping out gallons of oil out of the ground, creates earthquakes. These earthquakes can trigger volcanoes by cracking the earth's crust"¹⁵. Gas flares around the world are burning millions of dollars worth of natural gas every day. The flares cause terrible damage to the environment by giving out toxic acid rains, which contaminates the land, drinking water and releasing toxic gases into the environment. The natural gas could be used or sold for energy, but rather is burned into the atmosphere.

The immediate relief measures or remedial packages reach the areas of oil spill that are commercially and financially critical, while the underdeveloped regions which have been substantial oil exporters have been neglected for years. The Gulf oil disaster has attracted the world's attention, while "Nigeria, for example, is the fourth largest supplier of U.S. crude oil and has oil spills nearly every week. More than 7,000 oil spills took place off Nigerian shores between 1970 and 2000"¹⁶, which has destroyed the basic and important occupation of the region, agriculture and fishing. Yet, not much attention is delivered to this part of the world.

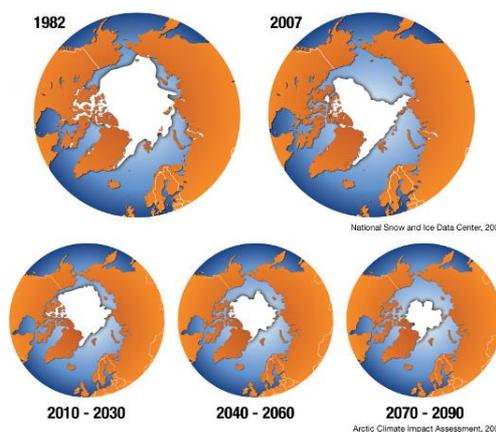
A major Climate Shift

The extensive use of oil and gas that has already threatened the flora and lifeforms, but has also resulted in a major climate shift that has put the ecological balance in a critical state. In the 20th century, a notion began to emerge that the

greenhouse gases are contaminating the earth's atmosphere. Much of the energy radiated by sun is absorbed and the rest is radiated back into space. Naturally occurring gases traps some of this energy and drive it back to earth, warming it. The changing climate has caused severe droughts, food insecurity and swapping of crops, poverty, changing rainfall patterns, rise in the sea level, melting glaciers, floods, tsunamis, new infectious diseases and viruses, all of this causing instability and domestic turmoil. And, as the population of the world grows, the energy demand will continue to increase, which intum will release more CO2 and other greenhouse gases, making the climate warmer.

Changing weather has shifted the rainfall pattern causing severe droughts threatening the food production, thereby increasing poverty. Rise in the sea levels results in disastrous floods and tsunamis, displacing the people and economy. Melting glaciers in the Arctic (Graph 2) and Greenland for instance, would result in the excess rise of sea levels, that would eventually move into cities. According to IPCC, some ecosystems will be affected more adversely, for instance, "Africa, because of low adaptive capacity and projected climate change impacts; while, Asian and African megadeltas, due to large populations and high exposure to sea level rise, storm surges and river flooding"¹⁷. Drying and warming atmosphere would also result in the spread to unknown or new diseases or viruses. A catastrophic effect of global warming would be a potential biological threat (bioterrorism), due to spread or evolution of a new species of a worm or a parasite, in search of new breeding grounds. And, as the weather becomes hotter, people might get infected by these.

Graph 2¹⁸: Decline in the Sea Ice of Arctic Ocean.



Source: "Warming happening more quickly than predicted".

The past happenings cannot be changed, the point is how can we stop or reduce the future CO2 and other emissions. As long as the industrialized nations consume fossil fuels and the demand increases in the industrializing nations, the greenhouse effect will prolong. For years, the greenhouse gases have been released into the atmosphere, however the

recent years have seen an increase, leading to intense environmental pressure causing fluctuations in the climate. These changes at a point are irreversible. It is believed that it's the human activity that is driving the temperatures up. The way in which the world is consuming energy, and emitting the gases in the atmosphere is opening the doorway for many threats in the years to come. We can evade such horrifying concerns from rising, if we control our demand and switch over to alternative sources, and stop ignoring the environment.

Conclusion

The threats perceived due to the greenhouses gases are evident as ever. Global warming is one of the major challenges that the world faces today. The impacts of climate change are global and diverse. Hence, drastic measures need to be taken, to curtail adverse greenhouse effects. It is well evident that there is a climatic shift, however the question is how can we curtail or slow down the process by shifting from fossil fuels to alternative sources of energy. This will also mitigate the problem of oil spills. Thus, it is essential to pursue a global environmental outlook that will have a strategy for the changing ecosystem. Resource management and environmental concerns cannot be achieved by a nation alone, there has to be global commitment, guided by a common philosophy of sustainable development. This is feasible through a stringent and firm corporate – government policy. This will also encourage the local entrepreneurs to initiate and develop services to improve environment, promote the use alternative and renewable energies, provide employment and reduce poverty, making people self – sufficient. The outcome of these measures is positive and challenging, while the investments and skills are required to proceed, bearing in mind that the funds allocated are used appropriately. Hence, the costs to curtail the greenhouse effect are much less, as compared to do nothing about it. The Asian economies such as India also shares the desire of affordable energy, made available to its consumers at reasonable prices and without harming the environment. To make this possible, advancement in science and technology and assimilation of these technologies will be crucial.

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