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United States : [presentation given on September 6,
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Energy Policies and Diplomatic Relations with the United States

Submitted as a Capstone Project Report in partial
fulfillment of a Master of Science Degree in
Professional Studies at the Rochester Institute of
Technology

Krenare Thaci

Date of Submission: August 2011

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EXECUTIVE SUMMARY

Energy policy is a hot topic around the world and it is a great concern, affecting our economic interests and presenting global challenges. Immense technological developments resulting from global warring are now emerging. Huge potential markets are anticipated for carbon trading. In order to shape the future of Energy Policy we must review the current energy situation, which has remained pretty much the same since the Arab Oil Embargo, shifts have taken place with renewables and energy efficiency. Since the Arab Oil Embargo, oil imports to the United States have doubled, reflecting demand growth as well as decline in domestic production. Therefore, it is more than due time to take serious and effective initiatives to improve future of energy policy.

This initiative should not be focused only in domestic front but also through diplomatic efforts that have an impact in the countries that play an important role in the energy sector, both as producers and consumers. Considering that some of these countries have a large amount of energy resources i.e. Saudi Arabia, Venezuela etc, it is of utmost importance that the diplomatic efforts should be in several fronts and in coordination with allies that will have an impact in energy sector in the medium and long term.

Energy concerns our interconnection with globalization, war on terror, and the growing gap between rich and poor. To deal with the issue of energy policy, the U.S. needs to develop strong diplomatic ties with the energy rich countries. The creation of positive relations between the U.S. and the countries that use oil, coal, nuclear, and renewable as their main source of energy production is vitally important. Appropriate energy policies will help strengthen of diplomatic relations that already exist and at the same time, increase the potential for developing strategic policies that address the great technological and economic challenges. These include:

- Risks associated with dependency on oil,
- Urgency of global climate,

- U.S. cooperation with other countries linked to their energy consumption needs,
- Creative approaches for improving future energy policies.

From a diplomatic point of view, it is much more comprehensible to establish these approaches now and not prolong it until the needs and issues become more pressing and state actors are forced to act in a more urgent state. Therefore, it is time for an ambitious new diplomatic approach to U.S. strategic energy policy; an approach that deals with the problems of oil dependence, climate change, and the developing world's lack of access to energy. What is needed is a determined, strategic energy policy that further develops diplomatic cooperation on energy matters between the United States Government and foreign governments and entities in order to assure strategic and economic interests.

Furthermore, from a diplomacy viewpoint I recommend the U.S. Government to adapt an approach, which will improve the energy policy coordination to deal successfully with today's complicated energy challenges. An improved coordination will integrate energy security into the core missions of the Department of State.

My recommendations to achieve purposeful, strategic energy policy that increases diplomatic cooperation on energy issues are:

- to develop global energy safety by applying a new diplomatic approach and cooperation with foreign governments and **entiti**
- to encourage consistent, diverse, and sustainable sources of all types of energy;
- to expand availability of renewable and clean energy sources worldwide;
- to reduce global dependence on oil and natural gas energy sources; and
- to involve in energy collaboration to improve strategic partnerships that develops **peace, security, and** democratic success.

This report contributes toward brining aboard new cooperation between the U.S. and countries that use oil, coal, nuclear, and renewables for their energy and power supplier.

These policy guidelines could be achieved through a deliberate diplomatic approach, which will represent an important step towards achieving a comprehensive

diplomacy and globally focused energy policy capable of overcoming today's energy challenges.

CHAPTER 1

1.0 INTRODUCTION TO U.S. DIPLOMACY AND ENERGY SOURCES

1.1 U.S. Diplomacy, Energy Diplomats, Global Finance and U.S. Energy Sources

Energy is the fundamental force driving industries, business, and the transportation of goods and services to serve the world economies. Energy supply and demand has an important role in our national security and the economic output of our nation and it is not unanticipated that the United States spends over \$500 billion annually on energy.

Oil, today, is a threat to our environment, destabilizes nations, and it is decreasing in supply. Approximately 35 percent of the power that we use on Earth is provided by oil. We are all aware that we will not be depended on oil forever; however, since we are on a transition phase towards a greener economy, we will need oil for a few more decades. So with this said, the question remains: What is the smartest way to bridge the gap and how do we do it?

Bridging the gap between the current oil economy and clean-energy economy will not be an easy task. Other option, such as hybrid cars powered by biofuel may be a lot more sustainable someday. However, sustainability is an economic perception as much as it is an environmental one. Cheap energy will always be more preferred verses expensive energy; therefore, the process of making alternative energy systems inexpensive will be time-consuming and unsure.

Therefore, one of the strategies, which could help bridge the gab towards a greener economy, is the creation of positive relations between the U.S. and the countries that produce oil, coal, nuclear, and renewable as their source. The development for positive relations demands conducting negotiations between representatives of groups of states.

Besides, the U.S. Department of State controls America's relationships with foreign governments, international businesses, and different people in other countries worldwide. The management of these relationships together is called diplomacy. State Department representatives are responsible for the President's foreign policy and to also help build a more free, wealthy, and secure world.

In this case, diplomatic approaches will involve means to improve U.S. cooperation with other countries linked to their energy activity and identify possible areas of collaboration for mutual benefits. This cooperation will also strengthen ties between U.S. and the countries which will collaborate closely in improving future energy policies and will result in recognizing the important role of energy in the future and the need for much more ambitious and creative approaches for improving future energy policies. In addition, U.S. needs to use effective diplomatic approaches in order to achieve future energy improvements, which would help create mutual trust, gain respect, and understanding, with foreign countries.

However, achieving a certain goal does require an effective diplomacy between nations. Therefore, since the U.S. Department of State manages America's relationship with foreign governments, it should pay particular responsiveness in managing vigorous affiliations with foreign governments in regard to diplomatic relations and energy policies. Appointing successful energy diplomats to negotiate with foreign governments in regard to effective future energy policies would be an effective approach toward accomplishing this goal. Outstanding diplomats include examples as: Richard H. Jones, Christopher Monckton and Steven Chu. Thus knowledge, diplomacy and policy experience on matters ranging from politics to trade negotiations and energy security helped to build ties between governments linked to their energy activity and identify possible areas of collaboration for mutual benefits.

¹According to this study one of the most outstanding energy diplomats' is Richard H. Jones. He was appointed as Deputy Executive Director of the International Energy Agency on 1 October 2008. Born at Barksdale Air Force Base in Bossier Parish, Louisiana and he received his BA degree in science from Harvey Mudd College in

¹ "Richard H. Jones." Singapore *International Energy Agency (IEA)*. Web. 09 Aug. 2011.

Claremont, California and have received a Master's Degree as well as his Doctorate Degree from University of Wisconsin, Madison.

Jones, a former American diplomat, brought to the International Energy Agency over thirty years of diplomatic and policy knowledge on matters of Middle East politics to trade consultations and energy security. Jones continued his career serving as an American Ambassador in Lebanon (1996-1998), Kazakhstan (1998-2001), Kuwait (2001-2004) and Israel (2005-2008). From the period of February through August 2005; Jones was the U.S. Secretary of State's Senior Advisor and Coordinator for Iraq Policy.

During his diplomatic career as Ambassador he gained a lot of knowledge and experience in energy policy. While serving as an American Ambassador in Kuwait; Jones held various discussions with international oil companies and he also had various meetings regarding product-sharing proposals with the Minister of Petroleum.

While serving his duty as an American Ambassador in Kazakhstan, he was the key connection among the U.S. government and some critical energy issues. While serving his duty in Saudi Arabia, Jones predicted, examined and reported everything in Saudi Arabia's policy that caused the collapse of world oil prices in 1986. Jones also reported on the progress of the Saudi petrochemical industry and had meetings with different officials to construct the first Iraq pipeline in Saudi Arabia.

Additionally, another outstanding energy diplomat whose considered to be an distinguished scientist is Dr. Steven Chu; a co-winner of the Nobel Prize for Physics in 1997 born in Saint Louis, Missouri in 1948. Dr. Chu has an impressive educational background holding an A.B. degree in mathematics, a Bachelor degree in physics from the University of Rochester, and a Ph.D. in physics from the University of California, Berkeley. As of his personal life, Dr. Chu is married to an extraordinary women Dr. Jean Chu, who has a D.Phil. in Physics from Oxford University and during her impressive career she has served as chief of staff to two Stanford University presidents and as Dean of Admissions.

²Now, Chu is the United States Secretary of Energy and is appointed to help President Obama implement determined plan to invest in clean energy, lower our dependence on foreign oil, challenge the global climate crisis, and generate new jobs.

Dr. Chu has dedicated his career to explore new answers to our energy challenges and prevent global climate change, which he considers as a task with even greater urgency serving as Secretary of Energy.

³Another notable energy diplomat is Christopher Walter Monckton. Born on February 14th 1952 he was a British politician and a public speaker. Monckton became known in the 1990's for his creation of the Eternity Puzzle, for whom he offered one million pounds to the person who solves it within four years. Monckton has no official educational background in science other than two certificates in school of mathematics taken at his early age.

Recently, Monckton has been known for his irregular views concerning climate change. Monckton challenges the views of Al Gore on global warming. Monckton believes that humanity is one of the causes of greenhouse effect by adding CO₂ to the atmosphere but he also doubts the amount of warming that will accrue and the damage that will cause. Additionally, Monckton also questions whether addressing CO₂ by taxing or if its regulation is cost effective. He takes more of a republicans stance compound with the "Democrats view of Gore.

Smart, effective energy use has huge potential to decrease energy consumption, increase economic development, and lower emissions worldwide, Skilled diplomats from different countries need to be joined together to negotiate global finance and energy diplomacy such as energy saving programs and policies. The U.S. needs to appoint experienced leaders and resume its efforts to build partnerships amongst governments to discuss climate change, reduce dependence on fossil fuels, and develop worldwide clean energy

² "Secretary of Energy Dr. Steven Chu | Department of Energy." *Energy.gov / Department of Energy*.

³ "Christopher Monckton - Viscount Monckton of Brenchley (£8,000 - £25,000)". Parliament Speakers.

economy. A good example that could determine the point to join leaders would be the meeting of May 11th 2010 when Assistant Secretary Cathy Zoi of the Department of Energy's Office of Energy Efficiency and Renewable Energy gathered leaders from fifteen countries to stimulate global alliance on energy-saving programs and policies. The collaboration of world leaders would encourage the promotion of energy-saving policies and help meet common challenges; this approach is a good opportunity to ramp up this goal.

These countries could join their efforts and provide support by funding significant projects that advance energy efficiency such as:

- Energy Efficiency Action through Capacity Building
- Sustainable Buildings Network to connect building efficiency organizations and construct current buildings more efficiently.
- Fund projects that will examine how energy efficiency determinations can influence funding from domestic sources, such as commercial banks.
- Another key incentive that could advance energy efficiency is The Energy Management Action Network for Industrial Efficiency that could deliver an extraordinary opportunity for policymakers and industry leaders to communicate regarding the functionality of industrial energy consumption.

Successful Policies for Energy Efficiency Indicators will accelerate determinations to improve and implement approaches for energy efficiency indicators that measure energy performance. Reliable presentation of better efficiency indicators will help countries encounter their energy and CO2 reduction aims.

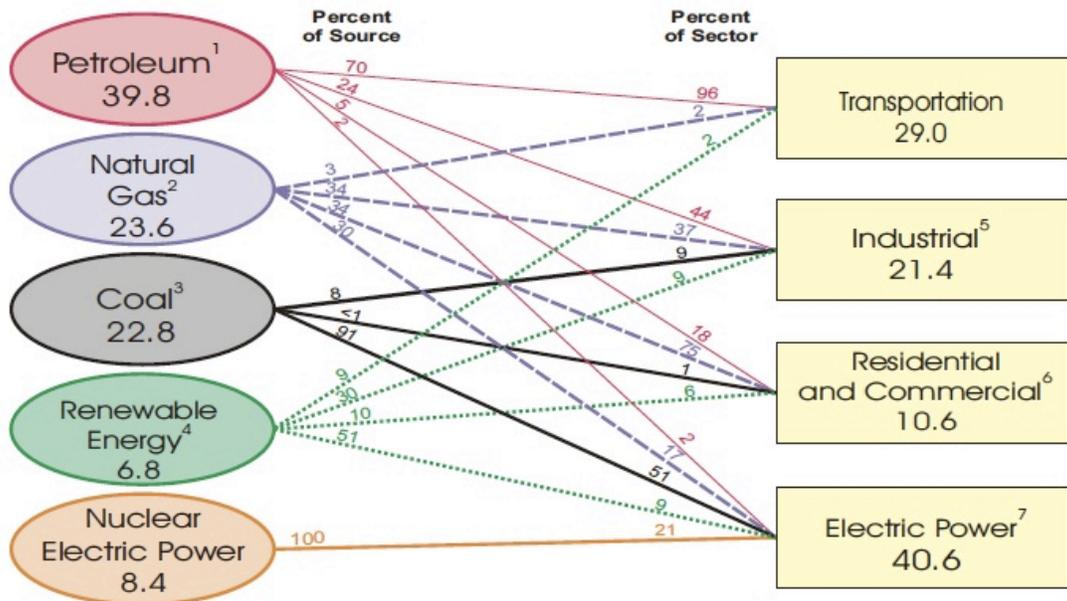
1.2 U.S. Energy Sources

This section is mainly focused on United States consumption and Production Energy Statistics. It provides details analysis of energy use in U.S. use of energy sources, the primary energy consumption by source, specifically each sector (commercial, residential, industrial and transportation) and the source that it used by each sector (oil, coal, wood, natural gas, petroleum etc.). The chapter further continues by analyzing energy production by source as well as detailed analysis of share of energy consumed by different sectors of economy.

Figure 1.12 U.S. Primary Energy Consumption by Source and Sector, 2009

Table 3.12 displays the number of Saudi students receiving U.S. military training from FY2002 through FY2007, with the total dollar value of the training purchased by the Saudi government (see below). For FY2003 through FT2007, this total value includes courses purchased using nominal amounts of IMET assistance.

U.S. Primary Energy Consumption by Source and Sector, 2007
(Quadrillion Btu)



¹Does not include 0.6 quadrillion Btu of fuel ethanol, which is included in "Renewable Energy."
²Excludes supplemental gaseous fuels.
³Includes less than 0.1 quadrillion Btu of coal coke net imports.
⁴Conventional hydroelectric power, geothermal, solar/PV, wind, and biomass.
⁵Includes industrial combined-heat-and-power (CHP) and industrial electricity-only plants.

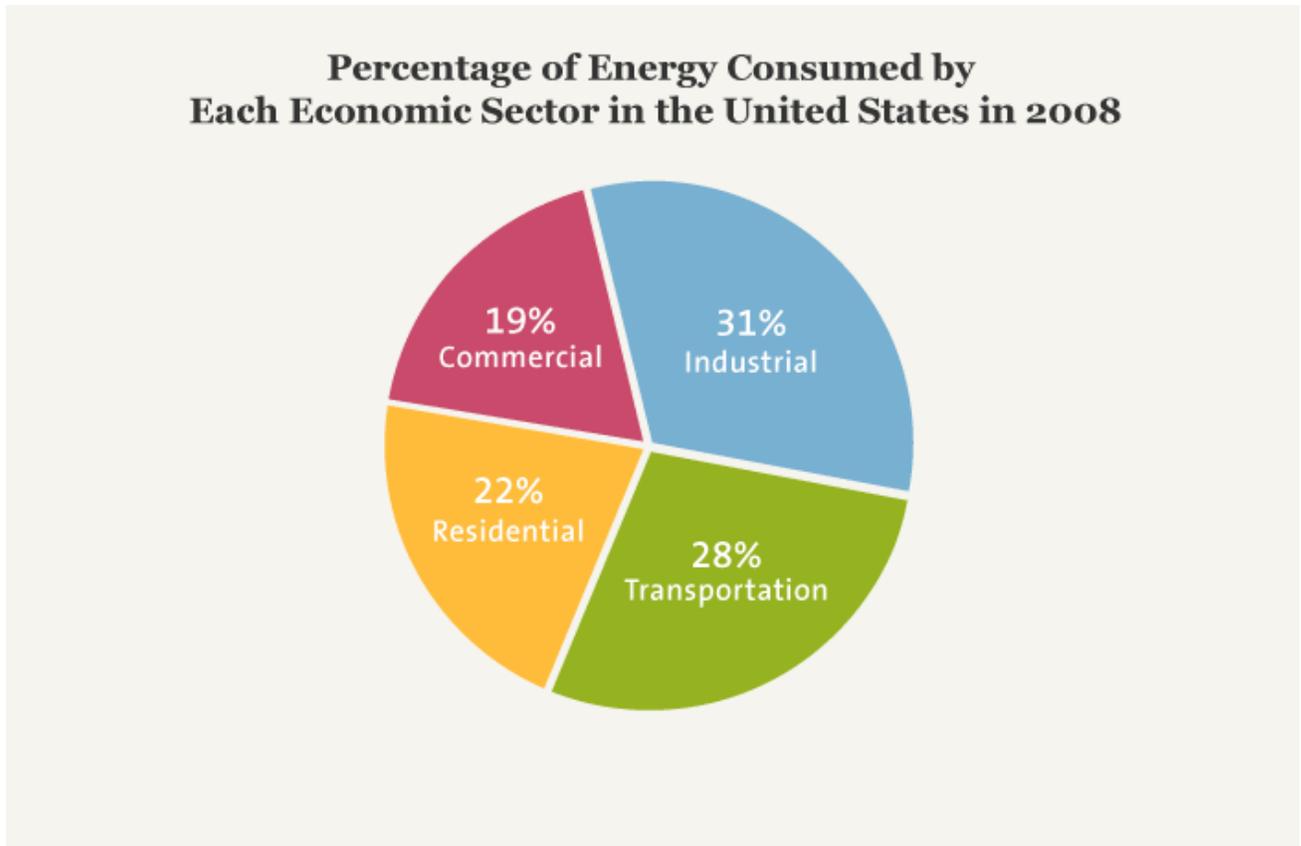
⁶Includes commercial combined-heat-and-power (CHP) and commercial electricity-only plants.
⁷Electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public.
 Note: Sum of components may not equal 100 percent due to independent rounding.
 Sources: Energy Information Administration, Annual Energy Review 2007, Tables 1.3, 2.1b-2.1f and 10.3.

Source: U.S. Energy Information Administration, Annual Energy Review 2009, August 19, 2010

Share of Energy Consumed by Energy Sectors by Major Sectors of the Economy

The United States is a highly developed and industrialized society. We use a lot of energy in our homes, in business, in industry and for personal travel and transporting goods.

Figure 1.14 Percentage of Energy Consumed by Each Economic Sector in the United States in 2008



Source: <http://needtoknow.nas.edu/energy/energy-use/>

Each Sector Plays an Important Role in U.S. Economy

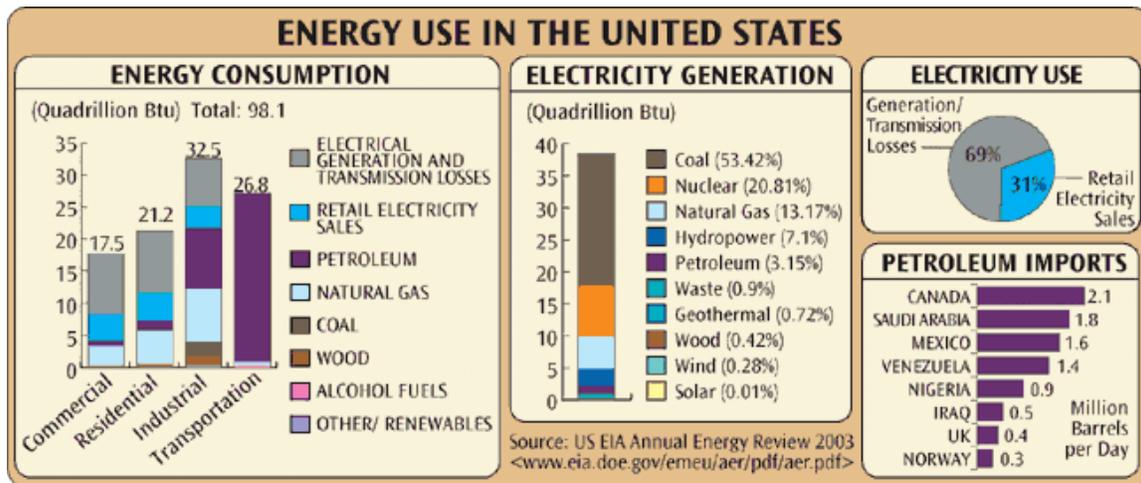
- The industrial sector includes facilities and equipment used for manufacturing, agriculture, mining and construction.
- The transportation sector comprises vehicles that transport people or goods, such as: cars, trucks, buses, motorcycles, trains, subways, aircraft, boats and even hot air balloons.

- The residential sector consists of homes and apartments.
- The commercial sector includes building such as office, malls, stores, schools, hospitals, hotels, warehouses, restaurants, places of worship and more.

Figure 1.15 Energy Use in the U.S.

Which Regions Use How Much of Which Natural Energy Resource?

For Heat, Electricity, Transportation, Agriculture, Industry



Source: U.S. Energy Information Administration Review 2003

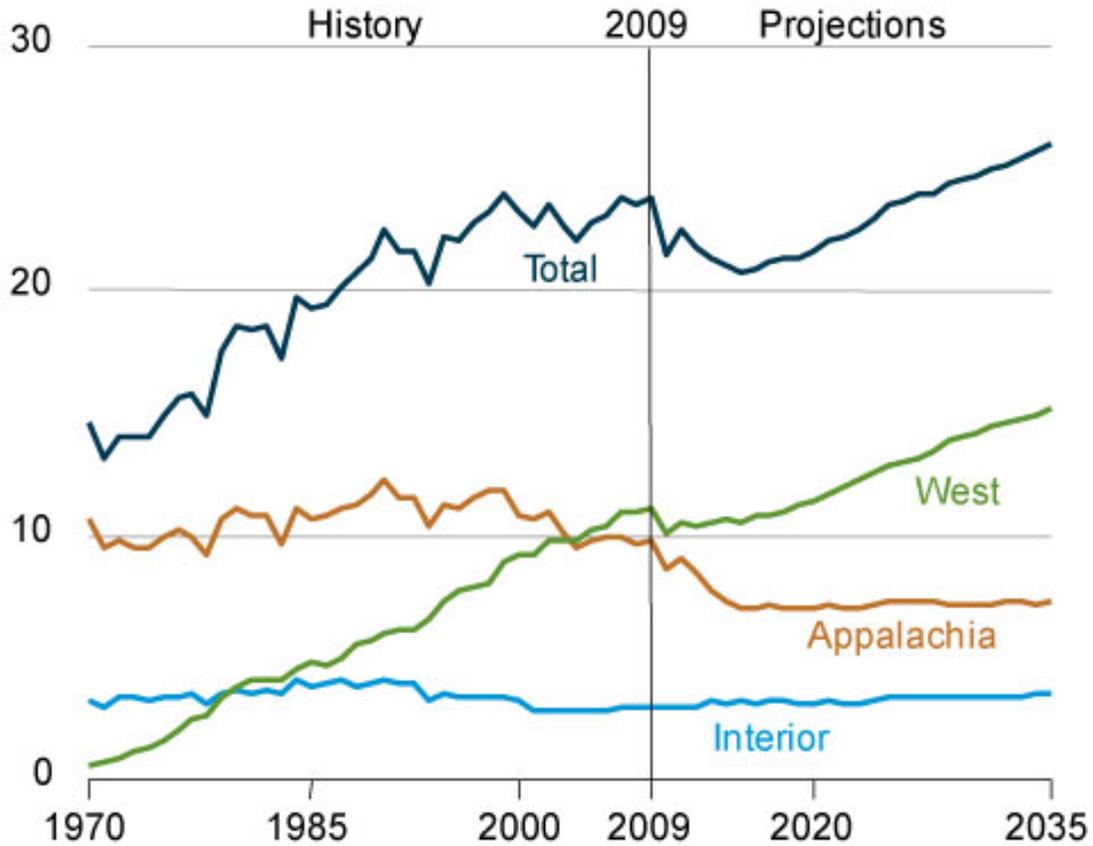
Coal

⁴Coal is one of the main fossil fuels, which is considered to be a true measure of the energy intensity of the United States. A quarter of the world’s coal reserves are located in the U.S. and energy substance of the nation’s coal reserves surpasses that of all the world’s known recoverable oil. Additionally, coal is also the pillar fossil fuel of the nation’s electric power industry, providing more than half the electricity consumed by Americans.

⁴ <http://www.energy.gov/energysources/coal.htm>

Figure 1.16 U.S. coal production projected to rebound by 2014 ›

Figure 101. Coal production by region, 1970-2035
(quadrillion Btu)



Source: Annual Energy Outlook 2011

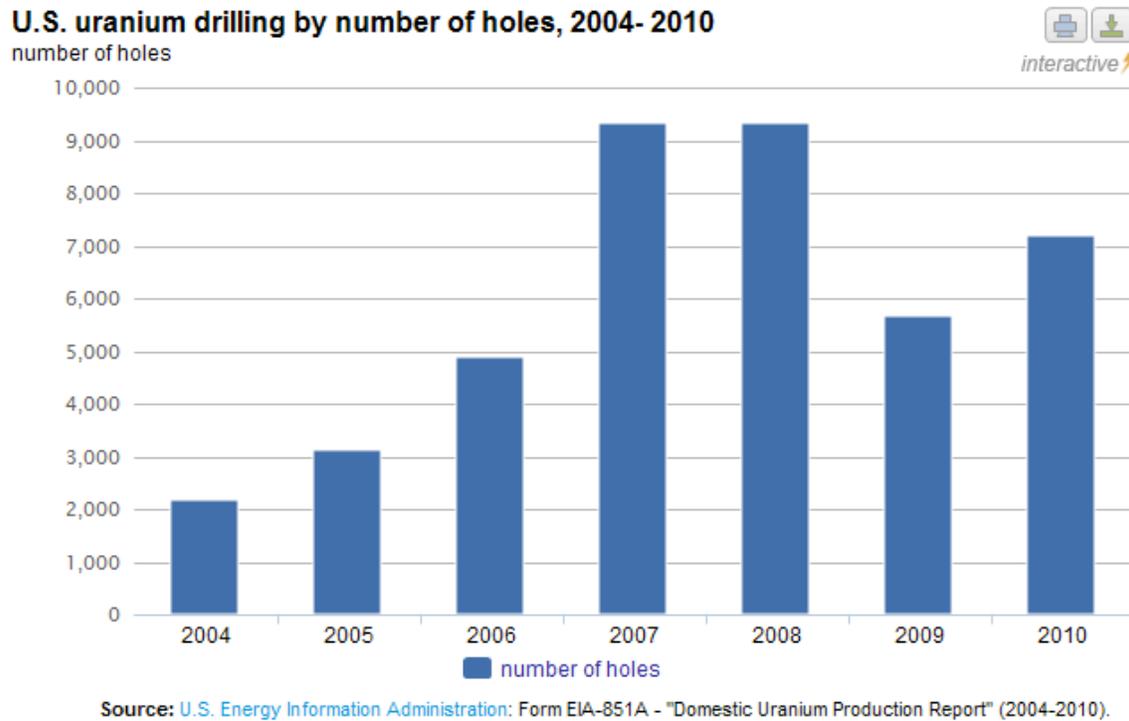
Nuclear

The program of Department of Nuclear Energy encourages safe, competitive and environmentally friendly nuclear technology to serve the energy requirements of the U.S. as well as energy needs of the world. During this century we have been facing substantial changes on energy and the environment; and the advantage of clean and safe nuclear energy has become more apparent. Nowadays, it has become a crucial task of the Department of Nuclear Energy research and development to improve the technology and

plan the way on introducing the next generation of nuclear power plants.

The Department of Nuclear Energy holds a great responsibility for space and defense nuclear power systems, progressive nuclear development, the management of nuclear facilities and nuclear fuel security.

Figure 1.17 U.S. Mine Production of Uranium, 1993-2010 ›



Source: U.S. Energy Information Administration: From EIA-851A

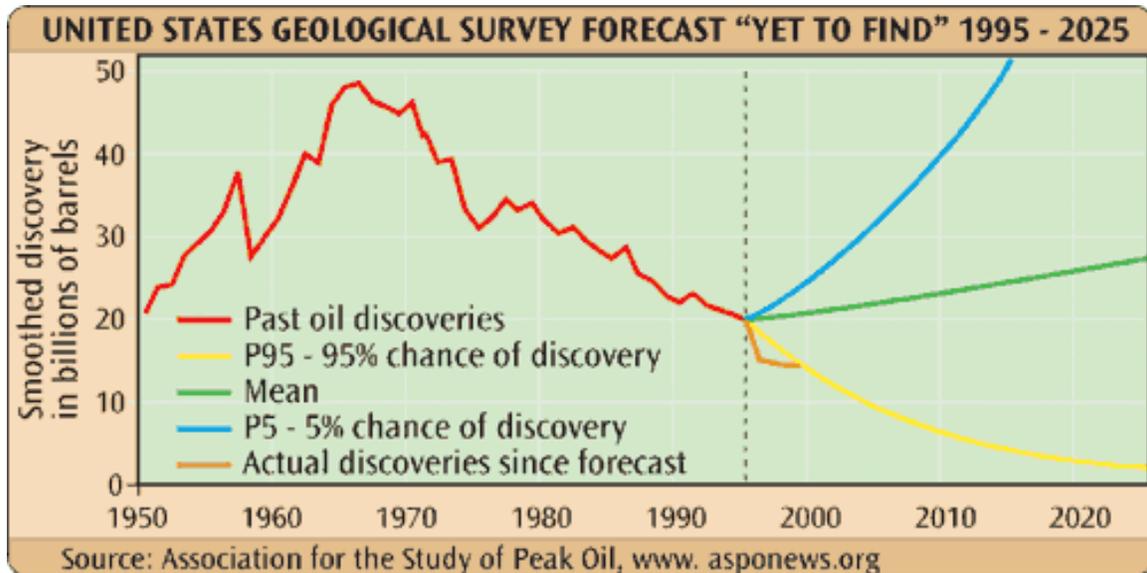
Oil

Oil is the essence of America's economy supplying 40% of our total energy demand as well as 99% of the fuel used on our vehicles. According to the Office of Fossils from the Department of Energy; energy concentrates on two concerns over oil such as the readiness to act to oil supply disturbances as well as having and maintaining the U.S. oil fields producing in the future.

Conferring to a report by the US Energy Information Administration (EIA), during the next two decades US energy demands are projected to rise by 62% for LNG, 33% for oil and 45% for electricity.

As Dick Cheney predicted (as CEO of the world's largest oil services company, Halliburton) in a 1999 speech to the International Petroleum Institute in London ⁵“By 2010 we will need on the order of an additional fifty million barrels a day. This is equivalent to more than six Saudi Arabia s of today's size”

Figure 1.18 United State Geological Forecast 1995 - 2025

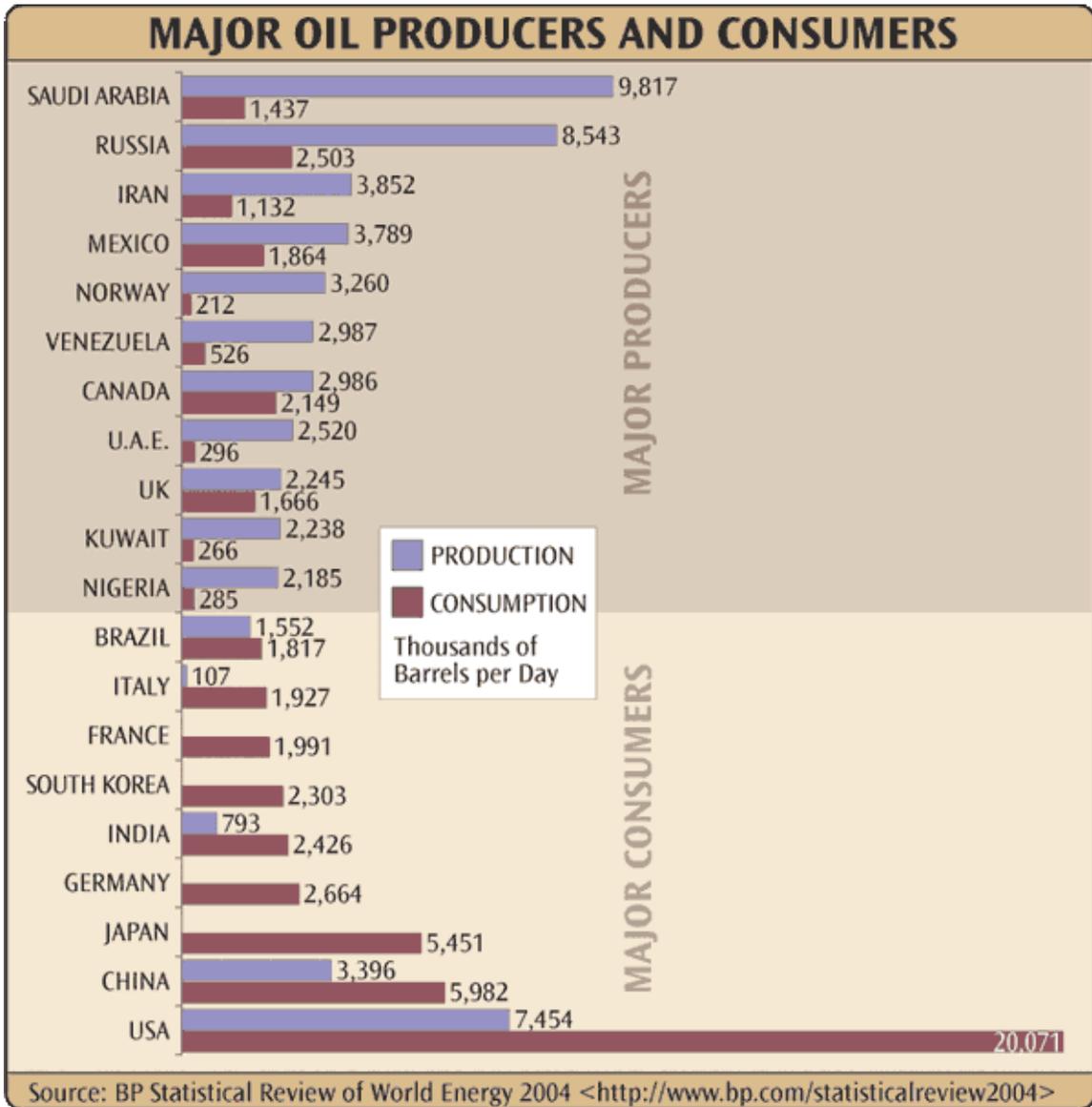


Source: Association for the Study of Peak Oil, www.asponews.org

Over the last decade the world economy and wealth has been developed on cheap and plentiful oil based energy. However, when oil reaches its production peak and as supplies decline and prices increase, we will continuously decrease the use of fossil fuel and at the same time we have to find alternate energy sources.

⁵ <http://www.theglobaleducationproject.org/earth/energy-supply.php>

Figure 1.19 U.S. Major Oil Producers and Consumers



Source: BP Statistical Review of World Energy 2004

This graph shows statistics for global oil producers and consumers where we see that during 2004 Saudi Arabia was the biggest oil producer where as the United States was the biggest oil consumer. Furthermore, it is presented in great details the amount of crude oil imported in the U.S. from world's biggest oil producers.

Top 10 U.S. Crude Oil Suppliers

United States imported US \$204.3 billion worth crude oil during 2007 from the world's top ten oil producers listed below.

Canada...US \$38 billion (17.8% of U.S. imports from top 20 oil-producing nations).

Saudi Arabia...US \$33.8 billion (15.8%)

Mexico...US \$30.3 billion (14.2%

Nigeria...US \$30.1 billion (14.1%)

Venezuela...US \$30 billion (14%)

Angola...US \$12.1 billion (5.7%)

Algeria...US \$11.5 billion (5.4%)

Iraq...US \$10.9 billion (5.1%)

Brazil...US \$3.8 billion (1.8%)

Kuwait...US \$3.75 billion (1.8%).

Other Leading Sources for American Crude Oil Imports

Russia, Norway and China provide well under 2% of American oil imports. This is despite the fact that these 3 countries are among the world's top ten oil producing countries.

United Kingdom...US \$2.54 billion (1.2% of U.S. imports from top 20 oil producing nations)

Russia...US \$2.5 billion (1.2%)

Libya...US \$2.4 billion (1.1%)

Norway...US \$1.1 billion (0.5%)

Indonesia...US \$369.9 million (0.2%)

Kazakhstan...US \$236.4 million (0.1%)

United Arab Emirates...US \$236.6 million (0.1%)

China...US \$140.9 million (0.06%).

Last year , America imported no crude oil at all from the world's

Fourth largest oil producer Iran

Twentieth largest oil producer Qatar

America's Fastest Growing Crude Oil Providers

Last year, the U.S. grew its oil imports at the fastest rates from the first 4 countries listed below which collectively account for about 3% of total American oil imports. Among the larger oil importers, Nigeria had the heights percentage gain in crude oil imports from 2006.

Kazakhstan...up 258.2% from 2006 and up 275.3% since 2003

United Arab Emirates... up 147.8% and up 244.5%

Brazil...up 133.9% and up 505.3%

Libya...up 131.3% (no imports from Libya in 2003)

Nigeria...up 120.6% and up 317.6%

Algeria...up 120.2% and up 841.8%

Indonesia...up 117.5% and up 122.9%

Canada...up 116.2% and up 269.3%

Saudi Arabia...up 111.2% and up 237.1%

Angola...up 107.4% and up 295.3%

Russia...up 102.7% and up 163.3%

Kuwait...up 100.5% and up 189.9%

America's Fastest-Declining Crude Oil Suppliers

China and Norway head the list of relatively small suppliers that generated the largest declines in U.S. imported oil in 2009.

China...down 70.3% from 2006 and up 127.4% since 2003

Norway...down 35.2% and down 52.6%

United Kingdomdown 12.9% and down 41.6%

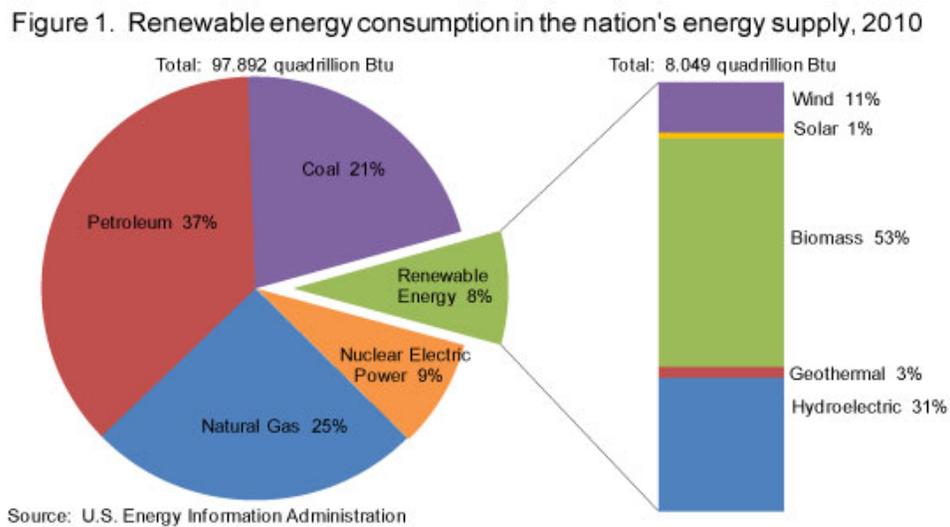
Iraq...down 2.5% and up 237.8%

Mexico...down 0.1% and up 211.4%.

Renewables

Renewable energy sources play a vital and increasing role in our nations' energy mixture. The U.S. Department of Energy is dedicated to continue its research and development of renewable energy and their adoption by the marketplace. The development of clean and renewable energy plays an important role in addressing the climate change and securing our energy.

Figure 1.20 Renewable energy consumption in the nation's energy supply, 2010



Source: U.S. Information Administration

As seen in this figure, 8% of U.S. energy consumption is met by Renewable Energy sources. Wind power meets 11% of nation's energy supply, Solar meets 1%, Biomass meets 53%, Geothermal 3% and Hydroelectric meets 31% in energy supply.

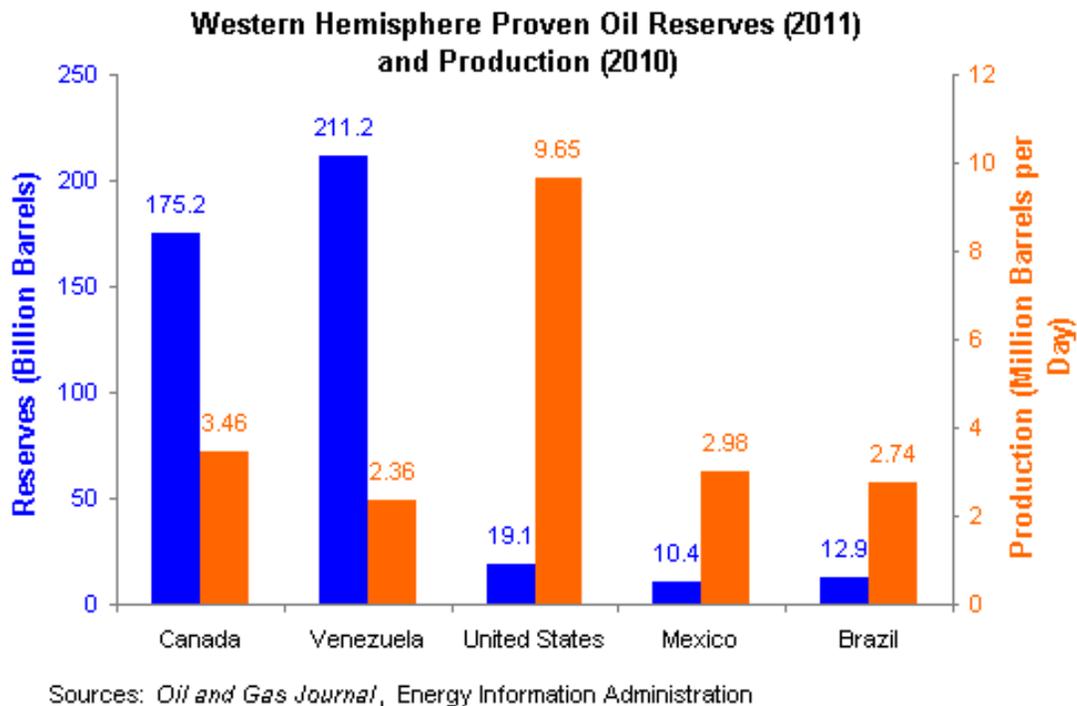
CHAPTER 2

2.0 U.S. ENERGY CONSUMPTION AND IMPORTS

2.1 Overview of U.S. - Venezuelan Relations

Venezuela is one of the world's largest exporters of crude oil and the largest in the Western Hemisphere. In 2008, the country was the eight-largest net oil exporter in the world. The oil sector is of central importance to the Venezuelan economy; it accounts for more than three-quarters of total Venezuelan export revenues, about half of total government revenues, and around one-third of total gross domestic product (GDP). As a founding member of the Organization of the Petroleum Exporting Countries (OPEC), Venezuela is an important player in the global oil market. Venezuela contains some of the largest oil and natural gas reserves in the world. It consistently ranks as one of the top suppliers of U.S. oil imports and it among the top ten oil producers in the world.

Figure 2.11 Western Hemisphere Proven Oil Reserves (2011) and Production (2010)



Source: EIA - <http://www.eia.gov/cabs/Venezuela/Oil.html>

According to Oil and Gas Journal (OGJ), Venezuela recorded 211.2 billion barrels of proven oil reserves in 2010, the largest amount in South America. Venezuela is a significant supplier of crude oil to the world market; in 2008, the country had net oil exports of 1.89 million barrels per day (bbl/d), eighth largest in the world and the largest in the Western Hemisphere. In recent years, crude oil production in the country has fallen, while domestic consumption has risen, causing a decline in net oil exports.

2.1 Exports

In 2008, Venezuela consumed about 750,000 bbl/d of oil and had net oil exports of around 1.89 million bbl/d. The United States is the largest destination of Venezuela's petroleum exports. In 2008, the United States imported 1.19 million bbl/d of crude oil and petroleum products from Venezuela, down from 1.36 million bbl/d in 2007.

Historically, Venezuela has been one of the most important suppliers of foreign oil to the United States, but that importance has diminished over time. In 1960, Venezuela's share of U.S. oil imports stood at 50 percent. Thereafter, it fell to 6.8 percent in 1981, before rising to 18 percent in 1996. Since then, the share has steadily declined, reaching 9 percent in 2008. Much of the recent decline has been led by falling exports of refined petroleum products, which have declined from 379,000 bbl/d in 1997 to 149,000 bbl/d in 2008. The U.S. Gulf Coast is the largest recipient of Venezuelan crude oil imports, with refineries there specifically configured to handle Venezuelan heavy crude varieties.

Besides the United States, other important destinations of Venezuelan petroleum exports include South America, Europe and the Caribbean, though much of the crude oil that is exported to the Caribbean is later re-exported as petroleum products to the United States or other locations. In recent years, Venezuela has prioritized the diversification of its petroleum export destinations away from the United States. One of the fastest growing destinations of Venezuelan crude oil exports has been China. In 2008, China imported about 120,000 bbl/d of crude oil from Venezuela, up from only 39,000 bbl/d in 2005.

2.2 Energy - Exploration and Production

Different industry analysts have unusual estimates on Venezuela's actual oil production; therefore it is very difficult to control its actual production of oil. However, Venezuelan government reports that Venezuela currently produces 3.3 million bbl/d of oil. Furthermore, other analysts from the same industry as well as Energy Information Agency (EIA) estimate that Venezuela's current oil production is approximately 2.8-2.9 million bbl/d of oil. These estimations clarify that the country has not fully overcome the strikes that happened during 2002-2003 and that other data such as the one from Venezuela's main bank, maintains a lower production amount.

An additional issue that complicates the relationship of Venezuela's estimation of oil production are methodological and classification factors. For instance, according to the estimations of Energy Information Agency; 2.5 million bbl/d out of 2.8 bbl/d is crude oil and 300,000 bbl/d is considered to be NGL.

However, it is undefined what other liquids are involved in the official estimates of 3.3 million bbl/d of oil production. In addition, another practical matter is the measurements

crude oil production. According to the analysis of some experts, associations count the extra-heavy oil produced as part of Venezuela's crude oil production. Where as other associations count the upgraded syncrude produced as part of Venezuela's crude oil production. This is somewhat about 10 percent less than the capacity of the original extra-heavy feedstock.

Previously, Venezuela frequently exceeded its OPEC crude oil production quota. However, since his election in 1998, President Chavez has maintained a policy of strong adherence to the country's quota, increasing oil revenues with higher world oil prices rather than increased production. In order to meet its quota obligations, Venezuelan government has rarely shut the some production and delayed bringing new capacity online. Most objective analysts suppose that Venezuela is currently producing well below its current quota of 3.22 million bbl/d of crude oil.

2.3 Diplomatic Issues

It has been several years since the U.S. officials have continuously expressed concerns about human rights, Venezuela's military arms purchases, Venezuela's relations with Cuba and Iran, and its attempts to export its brand to other Latin American countries. Additionally, U.S. officials have also expressed concerns on declining Venezuela's cooperation on anti-drug and antiterrorism efforts. Due to lack of cooperation on antiterrorism, the U.S. Department of State has forbidden the sale of defense articles and services to Venezuela. On March 1st 2008, there was a bombing in FARC (Revolutionary Armed Forces of Colombia) camp in Ecuador that killed the terrorist groups' second in command, and in the aftermath laptops were captured with files, which contained possible linkage of Venezuelan government supporting the FARC. For that reason, on June 8th, President Chavez insisted the FARC to put an end in its armed struggle, and to free all hostages. While both, the U.S. and Venezuelan officials were publicly speaking about the contribution of improving tensions in the U.S. relations, the U.S. political expressions appeared to have changed since the second half of 2006.

On the other hand, in September 2006 at the United Nations, Chavez spoke judgmentally of President Bush; however, the U.S. refrained from reacting to Chavez's personal attack critiques. Also on March 2006, while President Bush visited Brazil and Uruguay;

President Chavez led an anti-American public meeting in Argentina, but even then the U.S. refrained from reacting and ignored the critique. This reaction pointed out a focus on a positive agenda of U.S. engagement with Venezuela. In 2008, U.S. policy toward Venezuela appeared to be to refrain from getting into and unneeded conflicts or spats with President Chavez, and instead to focus on a positive U.S. agenda for the hemisphere. Assistant Secretary of State for Western Hemisphere Affairs Tom Shannon stated in July 17th, 2008 congratulations testimony that ⁶“ We remain committed to a positive relationship with the people of Venezuela and have the patience and the persistence necessary to manage our challenging relationship” (statement by Larry Palmer, July 27th, 2010 - page 13). Shannon pointed out in his testimony that Venezuela “for the first time in many years, expressed a willingness to explore improved relations with the United States”, including counter-drug cooperation, and that “we have told Venezuela that we would like to explore this diplomatic opening”.

Nevertheless, when Venezuelan officials expelled the U.S. ambassador Patrick Duddy, relations between the U.S. and Venezuela worsened, and even then the U.S. officials responded kindly with Venezuelan Ambassador Bernardo Alvarez.

On the other hand, President Bush criticized again Venezuela’s efforts against drug trafficking and determined that Venezuela had failed to hold on to its duties under international narcotics control agreement.

On June 25th, 2009 under Obama Administration, both countries publicized an agreement that was signed by the U.S. and Venezuela’s officials for the return of ambassadors. At the same time some observers are confident that the return of the ambassadors will mark a development in relations between the U.S. and Venezuela.

2.4 Discussion - The Impact of Diplomatic Relations on Venezuela’s Oil Exports

Current diplomatic relations between the U.S. and Venezuela are very complex. While searching for the background problem of this report, different articles written by popular scholars proved the fact that Venezuela has gone through many different strikes and disruptions regarding Venezuelan state oil Company PdVSA. These disruptions have had

⁶ <http://foreign.senate.gov/imo/media/doc/Palmer.pdf>

a negative impact in the U.S. because it has proved difficulties to keep up secure policy courses that could protect the nation from periods of volatility. In addition, these disruptions have had a huge effect indicating future improvement in energy policies and diplomatic relations between these two countries. However, my analysis shows that the conflict regarding oil will remain a destabilizing factor between the U.S. and Venezuela if not properly managed by effective diplomacy. The most efficient way to build good diplomatic relations between the U.S. and Venezuela is by creating bilateral cooperation with Venezuela on a variety of issues such as:

- Counterterrorism,
- Counter-narcotics,
- Energy,
- Commercial etc.

Venezuela has an extensive border of 1.370 miles with Colombia, which is a major transit route of Cocaine and heroine, destined for the United States. According to the International Narcotics Control Strategy Report (INCSR), Venezuela is one of the main routes for trafficking illegal narcotics out of Colombia due to a nonjudgmental and corrupt environment in Venezuela. The greater parts of narcotics passing through Venezuela are intended for the United States. Also, a growing percentage has started to go toward Western Africa as well as Europe. The corruption problem in Venezuela has been mixed by the transit of drugs, as has the increased level of crime and violence all over the country.

Therefore, the bilateral teamwork between the U.S. and Venezuela for signing an anti-drug cooperation agreement would allow both countries to build better diplomatic relations and will open the doors for future cooperation on different segments.

Additionally, U.S. - Venezuela commercial bond is strong. U.S. goods account for 25% of imports from Venezuela and about 60% of Venezuelan export go to the United States; making these two countries important trading partners. Furthermore, Venezuelans purchase U.S. machinery, transportation equipment, agricultural commodities, and auto parts. However, one of the most important segments between these two countries is oil.

Venezuela is the United States' one of the largest oil exporters. Thus, no matter how bad is the battle between the two nations; the important factor is petroleum and the importance of the petroleum trade relationship, which plays an important role to both countries economic stability.

Since the main interest to both countries is their economic stability and that relies on the petroleum trade; both countries should look for a potential significant step toward mending their tattered relationship. They should seek for a positive engagement, concentrating on areas where the benefit is in both nations' interest and this could mark a new beginning between the two countries.

Additionally, analysis shows that the continuation of full diplomatic relations between the U.S. and Venezuela reflects the important commercial ties between the two countries. First of all, the U.S. government should have the desire to create better relations with Latin America as well as the need for Chavez to change his image. A more diplomatic approach is likely to prove more effective in bringing the desired results in both countries and it could start by developing strong cooperation for mutual benefits and will result in developing better future energy policies and at the same time tying their diplomatic relations.

By being able to deal with these major problems, analysis show that a new period of constructive relations on respect between the U.S. and Venezuela might be possible and this will lead the two countries toward building stronger and more efficient diplomatic relations.

CHAPTER 3

3.0 THE FOUNDING AND FOUNDATION OF U.S. AND SAUDI ARABIA RELATIONS

3.1 Overview of the U.S. - Saudi Arabian Relations

⁷Saudi Arabia's has a unique role in the Islamic world; and due to its possession and control of the world's largest reserves of oil as well as its strategic location, remains an important ally of the United States. U.S. and Saudi Arabia's diplomatic relations were established during 1933 when the U.S embassy opened in Jeddah in 1944. Additionally, due to the growing oil-related U.S. presence in eastern Saudi Arabia, the U.S. opened an office in Dhahran in 1944.

Both countries share mutual concerns regarding the security of the region, oil trade, and sustainable development. The two countries have established close discussions regarding international, economic, and development matters such as the Middle East peace process and shared common interests in the Gulf. The availability of reliable sources of oil, especially from Saudi Arabia, remains very important to the United States as well as to Europe and Japan. Saudi Arabia is one of the primary sources of oil imports for the United States, which provides more than one million barrels/day of oil to the U.S. market. Therefore, the United States is the largest and main trading partner of Saudi Arabia, which also makes Saudi Arabia to be the largest U.S. export market in the Middle East.

Apart from U.S. and Saudi's economic ties, an established partnership between the two countries continues to be important in their relations. The presence of the U.S. Army Corps of Engineers has been present in the kingdom since 1950's and also has a role in military and civilian construction activities. A U.S. military training task that has been

⁷ Goldthay, Andreas and Jan Martin Witte. "Back to the future or forward to the past?"

established during 1953 at Dhahran, provides preparation and support to the Saudi armed forces in the use of arms and additional security-related services. During 1973, the U.S. established another security assistance organization (SAO) to help transform the Saudi Arabian National Guard. Recently, a security assistance organization was approved to lead and prepare a Facility Security Force, which is part of the Ministry of Interior and is funded through the U.S. Foreign Military Sales (FMS) program. The United States has sold military aircraft, air defense weaponry, armored vehicles and other equipment's to the Saudi Arabia. The U.S. announced a new Foreign Military Program (FMP) in September 2010 in support to the Saudi military service of defense modernization plans to sell fighter aircraft and helicopters.

Even though during the September 11th attack, fifteen of the suicide bombers in were Saudi citizens; Saudi Arabia remains America's one of the strongest partners fighting terrorism. During May 2003, a terrorist organization affiliated with al-Qaeda began an aggressive campaign of terror in Saudi Arabia where on the day of May 12th 2003 suicide bombers killed 35 people in attacks at three housing complexes for Westerners in Riyadh where 9 of them were American's. Terrorist attacks continued such as the attack which took place on November 8th, 2003 on the compound housing of foreigners who were working for Arab countries, where at least 18 people, including five children, died because of this attack, and more than 100 were seriously injured. Additionally, terrorists killed two American's on May 1st, 2004, in the Yanbu oil facility. The following attack was on May 29th, 2003 where terrorists killed one American and injured many more in attacks on an official building and housing compound in al-Khobar in the Eastern Province. The number of terrorist attacks kept on increasing and the following attacks were the killing of a BBC journalist who was shot and killed, then kidnapping of an American Paul Johnson, the attack of the U.S. Consulate in Jeddah, where five consulate employees were killed. As a result of these attacks, the Saudi government passed a new law in 2005 to increase punishment for terrorist-related crimes.

Saudi Arabia continues to be a strong partner of the United States in the campaign of terrorism, providing financial, military and diplomatic cooperation's. The first ever Counterterrorism International Conference took place in Riyadh on February 2005 and was funded by the Saudi Government. The Saudis were helpful in thwarting the printer

bomb attack planned o October 2010 against the United States. They also offered important information on the planned Times Square terrorist attack. Also, Saudi's work directly with U.S. law enforcement to ensure the security of both countries' national security interests.

⁸With one-fifth of the world's known oil reserves and low prices for the production, Saudi Arabia remains at the top of the Organization of the Petroleum Exporting Countries (OPEC). Saudi Arabia is a prominent supplier in oil to the United States, Europe and Asia. According to Energy Information Administration in 2008 Saudi Arabia reported exporting 1.53 million bbl/d of petroleum liquids of their total 8.4-million bbl.d million exports to the United States accounting for 12% of their total petroleum imports and ranking just behind Canada in petroleum exporting to the U.S.

In the beginning of 2010, Saudi Aramco changed the standards that it used for pricing crude oil exports to the United States. Saudi Aramco used the West Texas Intermediate (WTI) crude oil price ever since 1994, but will soon switch to the Argus Sour Crude Index (ASCI), mainly due to the ASCI is viewed to be more representative of the U.S. Gulf Coast sour crude market.

3.2 Energy

⁹Saudi Arabia is the world's second largest crude oil producer and it is the leading producer and exporter of petroleum liquids. As a result of its rapidly growing population and its development programs, the Kingdom is the fastest growing energy consumer in the Middle East. Due to recent explorations, refining capabilities and new drilling processes, the Kingdom will eventually count for more than half of the world's crude oil production capacity brought on-stream through 2020. The Kingdom supplies over 10 percent of the world's oil, therefore in order to further advance the industry, it is planning to spend \$60 billion on upstream and downstream processes through 2014. King Abdullah City for Atomic and Renewable Energy announced in April Saudi Arabia's persuasion of nuclear and solar energy use.

⁸ Oil Exports and Shipping." *LINK-FORCE GLOBAL*

⁹ The U.S. – Saudi Business Opportunities Forum » Energy/Renewable Energy."

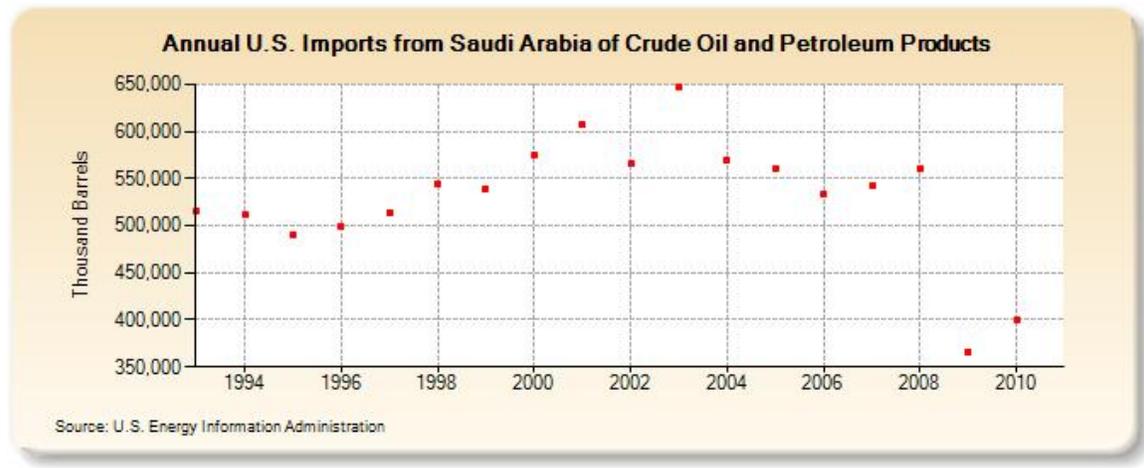
¹⁰It is hard to foresee how much political conflict to the status quo might develop in Saudi Arabia. Nevertheless it would be wise for the U.S. to predict potential changes on the horizon in that country. The reason of the importance of this prediction is not only because of its oil production, but also on many national security fronts. Therefore, the United States should continue collaborating with Saudi authorities and offer them calm support and encouragement in dealing with its difficult economic, political, social, and demographic challenges.

Nonetheless what does this apply to? Primary, U.S. military and intelligence agencies should continue their collaboration with the Kingdom's military and security forces. The security collaboration between the two countries has developed over the past ten years due to lasting threats posed by terrorist groups of an Iran on the rise. ¹¹"But this bilateral security cooperation should be delivered in a way that enhances the rule of law, encourages human rights practices, and quietly supports steps towards better governance, transparency, and oversight"(co-author Brian Katulis argued).

Along with, U.S. nongovernmental organizations working on democracy, governance, and human rights should continue reaching out to Saudi leaders calling for democratic improvement. U.S. diplomats should have a modest role in evaluating the political scene, showing their support for realistic reforms, and helping out as Saudi Arabia crafts a roadmap for political reforms. Nevertheless, the balancing act between the two countries is still difficult, therefore it is essential for the U.S. to defend the interest of its regional security and continue counterterrorism collaboration. This is a challenging task, thus it requires a well managed interagency method from the White House.

¹⁰ Confronting New Saudi Realities." Center for American Progress.

Figure 3.11 Annual U.S. Imports from Saudi Arabia of Crude Oil and Petroleum Products



Source: Energy Information Administration

3.3 Diplomatic Relations - Steps to Institutionalize and Make More Transparent Government-to-Government Relation

¹²The U.S. and Saudi Arabia could improve their diplomatic relations by increasing educational and professional interactions and co-developed cultural activities. The agenda to develop such commitment could have a result on building preexisting common interests in future energy policies. The Obama administration should promote U.S. - Saudi collaboration on global counterterrorism and regional security issues. Some of the areas where these two countries could cooperate and achieve mutual benefits are:

- U.S. - Saudi military cooperation
- Counterterrorism
- U.S. Arms Sales to Saudi Arabia

¹² *The U.S. – Saudi Business Opportunities Forum*

3.31 U.S. - Saudi Military Cooperation

The military program is an important pillar of U.S. - Saudi relations. The U.S. provides International Military Education and Training (IMET) to Saudi Arabia and military support could strengthen diplomatic relations between the two countries. The U.S. provides minimal IMET to Saudi Arabia and this permits Saudi Arabia to purchase military training at significantly reduced Foreign Military Sales (FMS) incremental rate.

This cooperation between the two countries could guarantee a sustained high level of Saudi participation at U.S. military institutions; improves technical abilities; exposes all levels of Saudi military staff and their families to U.S. thoughts, and policies; and increases knowledge of international standards of human rights, the rule of law, and the rule of residential control of the military. Table 3.12 shows the U.S. military training provided to Saudi Personnel from 2002 to 2007.

Table 3.12 U.S. Military Training Provided to Saudi Personnel

| | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 | FY 2007 |
|-------------------|---------|---------|---------|---------|---------|---------|
| Students Training | 1,110 | 1,664 | 596 | 416 | 524 | 849 |
| Value | \$57.4 | \$20.2 | \$21.1 | \$11.2 | \$8.9 | \$39.2 |
| (\$ Million) | | | | | | |

Additionally, another aspect that could lead the two countries toward improving their diplomatic relations is securing-related support. The security support is very important to Saudi Arabian government. This support is needed from the U.S. to help Saudis deal with the danger of Al Qaeda terrorism in their country. The security support could help protect the Saudi infrastructure, which is very important on ensuring global oil supplies. In addition, this plays an important role on securing the Saudi support for the United State's main concern on counterterrorism overseas and to strengthen Saudi Arabia against a

possible threat from Iran. By offering security support, the U.S. would secure Saudi's infrastructure; on the other hand, it ensures the U.S. with oil supply with stable prices. Therefore, this cooperation, which provides mutual benefits to both countries by ensuring countries toward strengthening their diplomatic ties, and opens many opportunities on cooperating for future energy policy improvements.

3.32 Counterterrorism

Another area where these two countries could join their efforts is current counterterrorism issues. This bilateral agreement of joining the efforts of U.S. and Saudi Arabia could reduce threats by violent extremists in the kingdom and it would further strengthen diplomatic ties between the two countries. U.S. officials have already recognized important Saudi domestic counterterrorism efforts however, they should further persuade the Saudi government to develop further and fight terrorism.

3.33 U.S. Arms Sales to Saudi Arabia

The potential unconventional threats from Iran, the danger of domestic terrorism, and the unresolved effects of ongoing volatility in Iraq, Yemen and Pakistan now represent the major threats to Saudi national security. Counterterrorism, border security, and intelligence are ongoing to react to these threats and the United States should seek to help advance the prevention and defensive capabilities of Saudi. Therefore, the Obama Administration has to carry on with this program and to engage with Saudi Arabia on these security issues via established mutual mechanisms.

3.4 Discussion

This chapter presented background information regarding U.S. and Saudi Arabia relations and it examined possible areas of cooperation for mutual benefit. U.S. and Saudi Arabia need to continue and strengthen their existing levels of cooperation, and take them to new directions. There are several areas of potential mutual benefits that they could discuss, including oil and gas collaboration, commercial companies' cooperation, and modify their cooperation into new areas such as carbon capture and sequestration, solar energy, science and technology.

The relationship between the United States and Saudi Arabia government was built during Cold War era, the two countries shared a common interest on securing Saudi's oil production as well as combating global Communism. Saudi Arabia has been and will continue to be the largest source of oil worldwide. However, the United States and Saudi Arabia have had a long, and very successful petroleum connection.

After the first post Cold War decade; the bilateral relations between the U.S. and Saudi Arabia remained strong in some areas such as defense cooperation, however it noticed sign of weakness in other areas. Political ties were challenged by the results of anti-U.S. terrorist attacks, differences over the revival of Israel-Palestinian fighting from late 2000 and on, and other concerns regarding political reform and human rights in the kingdom were basic irreconcilables in several U.S. and Saudi potential figures.

Ever since the Cold War era ended, the relations between the U.S. and Saudi Arabia have been put into a test due to the emergence of Al Qaeda terrorist threat and unstable regional security conditions in the Middle East. On the September 11th, 2001 terrorist attack, the participation of 15 Saudi nationals who were supporters of terrorism was confirmed and this has put into a dilemma Saudi Arabia's support for the U.S. Since 2003, U.S. and Saudi Arabia relations took better turn due to the increased official counterterrorism cooperation and their common concerns regarding Iranian foreign policy.

The ties between the U.S. and Saudi Arabia remained stable, and the U.S. continued to sell arms to Saudi Arabia, with over \$16.7 billion in possible Foreign Military Sales, which were approved by both the Congress and the executive branch from 2005-2009. Even though, the security cooperation between the U.S. and Saudi Arabia has improved since 2003, the September 11 attacks have put the two countries in a situation to face core challenges. The Commission in its final report identified these core challenges: defining a broader mutual cooperation that "leaders on both sides are prepared to publicly defend." The Bush Administration tried to meet this challenge by ongoing consultations with the Saudi Royal family, on issues that were a common concern for the both countries, such as:

- Energy policy,
- Finance,
- Israeli-Arab peace,
- Human rights, and
- Political and economic reform.

Additionally, during President's Bush visit to Saudi Arabia on May 2008, the Bush Administration publicized new agreements the two countries on nuclear cooperation, infrastructure security and visas.

CHAPTER 4

4.0 GATES TO REENFORCE U.S. RELATIONS WITH AUSTRALIA

(Placeholder1)4.1 Overview of Australia

The fourth chapter is concentrated on the U.S. and the two biggest coal producers; Australia and China. Australia possesses significant reserves of petroleum, natural gas and coal and it is one of the rare countries of Organization for Economic and Development (OECD) playing an important role on exporting net hydrocarbon; exporting about two-thirds of its total energy production. Australia used to be the world's biggest coal exporter and the fourth biggest liquefied natural gas (LNG) exporter in 2009. Australia's projections for the expansion of future energy exports seems promising since its proven natural gas reserves are growing along with Asian demand for both coal and LNG.

4.11 Coal

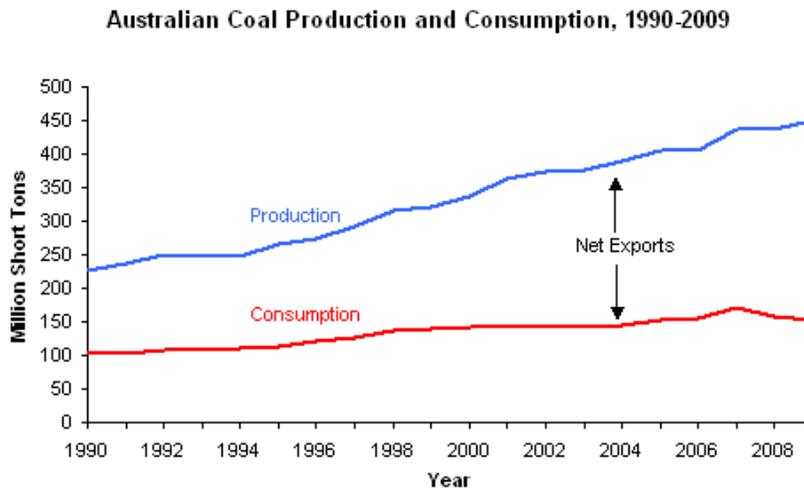
¹³During 2009, Australia possessed recoverable coal reserves worth 76 billion short tons (Bst), making it the world's fourth largest coal producer. However, it is the largest exporter.

4.12 Production

About 450 million short tons (MMst) of coal were produced in Australia during 2009 and during the past twenty years, coal production has grown by 34 %, with new developments continuing to come online in the future. The biggest black coal production takes place in the state of Queensland and New South Wales (NSW) where together they account for 97% of Australia's black coal production. South and Western Australia, Victoria and Tasmania have brown coal where it is used for domestic electricity generation.

4.13 Exports

Figure 4.14 Australian Coal Production and Consumption, 1990 – 2009



Source: EIA

Source Energy Information Administration

¹³ Mark P. Sullivan. "Venezuela: Political Conditions and U.S. Policy"

About 66% of Australia's coal productions were exported in 2009, where 300 MMst accounted for 28% of global exports where according to the Australian Coal Association, Japan imported over 40% of Australia's coal during 1008-2009. Other export countries include South Korea (15%), Taiwan (10%), India and China (9.5% each) and nearby 8% of its coal exports went to Europe.

Australia's export coal industry functions by 9 coal loading workstations, who's handling capacity reached 365 cubic feet per year and they are located in Queensland and NSW. More infrastructure projects are on their development stage and are projected that by 2014 to add about 130 million short tons to Australia's annual coal export capacity.

4.2. Energy - The U.S. and Australia Initiative to Address Environmental Challenges

The Governments of the United States of America and of Australia should identify that both countries share common concerns and responsibilities towards the environmental protection and conservation in their individual authorities, and they are both interested in developing global environmental improvement and protection. The Government of the United States and the Government of Australia are aware that they have similar environmental challenges. These challenges include the expansion of urban populations, concentrated industrial activity, and sustainable use of natural resources.

¹⁴In regard to the environmental challenges the U.S. and Australia share common goals in scientific development as well as in the development of technological initiatives such as improving the use of productive and sustainable natural resource, developing renewable energy, and developing agricultural technologies, such as biotechnology.

Both governments also realize the importance of mutual environmental actions and they both acknowledge the close collaboration among the two countries; their participation in international environmental conferences and their presence during important environmental discussions such as the management of national parks, the threat to the

¹⁴ Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) - Home Page.

species, Antarctica, oceanic matters, chemicals wastes, global climate change, forests, etc. The United States and Australia plan to continue their cooperation efforts and plan to further strengthen their bond in international debates considering environmental issues.

Additionally, both Governments also recognize their successful environmental collaboration in the region of Asia Pacific, including as members of the South Pacific Regional Environmental Program, the Asia Pacific Economic Collaboration conference and the Secretariat of the Pacific Community. The Governments acknowledge the meaning of these regional efforts and intend to further pursue mutual determinations to improve environmental stewardship and protection.

4.3. Diplomatic Issues

There are some additional potential areas of cooperation between U.S. and Australia relating better future energy policies. Diplomatic relations between U.S. and Australia are strong; however, this chapter identifies a common strategy that could improve Australia and America's future energy. Australia's and U.S. common interest could be advancing global environmental improvement and protection as well as the initiative in advancing science and technology to address environmental challenges. Both countries are concerned and have a similar responsibility toward the protection and preservation of the environment. A common interest where both countries can benefit could be advancing global environmental improvement and protection. Key similar environmental challenges that both countries are facing are: expanding urban populations, concentrated industrial activity and sustainable use of natural resources.

Another area where the United States and Australia could share a common goal is advancing science and technology proposals to tackle environmental challenges. Both countries could advance the initiative to develop the productivity of natural resource use and comprehensive observation, developing cleaner energy by using renewable energy resources, developing the initiative towards energy efficiency, as well as developing agricultural technologies, including biotechnology.

The United States and Australia should look forward to complete the mutual agreement on science and technology collaboration since both countries are partners in the Carbon

Sequestration Leadership Forum, the International Partnership for the Hydrogen Economy.

4.4. Discussion

¹⁵In order for both countries to build ongoing cooperation's toward achieving mutual benefits; both governments should aim towards regular consultancy and review continues cooperative activities and categorize areas for potential future cooperative activities by prioritizing them.

To further improvement their collaboration the Governments of the United States and Australia intend to consult frequently and analyse on-going cooperative events, recognize importance areas for possible upcoming cooperative activities, and evaluate other issues related to this statement. More specific, the both Governments need to consider mutual collaborative efforts to support other countries build capacity in the areas of teamwork on environmental matters, developing technology and science initiatives, collaboration in joint environmental actions and environmental cooperation in the Asia Pacific region.

According to my analysis, the most efficient approach to help improve environmental stewardship is if both countries cooperate and involve public participation. The cooperation of both governments and the involvement of public participation could help towards the protection and sustainability of natural resource management.

If the United States and Australia continue to cooperate and link their activities toward achieving bilateral agreement could help develop strong ties between the two countries and will help result in recognizing the important role of energy in the future and the need for much more ambitious and creative approaches for improving future energy policies.

¹⁵ Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) - Home Page

CHAPTER 5

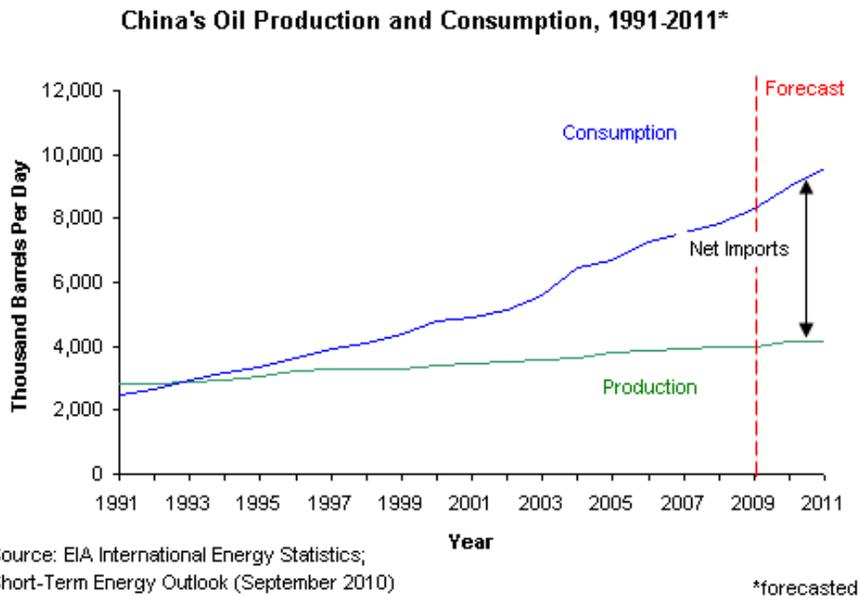
5.0 A STRATEGIC ECONOMIC ENGAGEMENT COULD STRENGTHEN

U.S. – CHINESE TIES

5.1 Overview of the U.S. and China Relations

Possibly due to the increased size of their population, China utilizes the second highest amount of energy behind the United States. The energy required and the rise in demand for oil has made China a vital factor within the oil market. China is also the leading producer and consumer of coal in the world even with a large number of resources underdeveloped. According to Energy Information Administration, China possesses 114.5 billion short tons of recoverable coal reserves, which is the third largest in the world only behind the United States and Russia. Their reserves also account for 13% of the world's total reserves. Coal accounts for 70% of China's energy use. In 2006, 50% of China's coal use was found in the non-electrical division while the other 50% came from electrical sector.

Figure 5.11 China's Oil Production and Consumption, 1991 - 2011



Source: EIA International Energy Statistics

Table 5.12 China's Coal Production, Consumption and Net Imports

Table 5.12 shows an overview of China's coal production, consumption and net imports.

| | Production | Imports | Exports | Consumption |
|---------------|-------------|---------|---------|-------------|
| Canada | 69373.2505 | 0 | 0 | 49152 |
| United States | 1072751.787 | 0 | 0 | 1000423.64 |
| China | 3209677.334 | 0 | 0 | 3308652.743 |

5.2. Energy - China's demand for clean technology could strengthen the diplomatic bond between the U.S. and China

This chapter continues by identifying possible areas of cooperation between U.S. and China in improving energy policies and diplomatic relations. In order for China to become more energy efficient; it needs to reduce green house gasses caused by using coal as its main source. However, in achieving this goal, China has to use clean energy technology. The U.S. is the global leader of clean technology; therefore, if the U.S. aims to improve the diplomatic relations with China, it needs to convince China to produce clean energy technology from the U.S. The demand for clean energy technology has been increasing in China, and it can be predicted that there could be an increase in demand for verified, high quality products and services. However, since China lacks expertise in energy technology and innovation, energy auditing, and energy management; the demand for clean energy technology opens opportunities in the market for international companies with sustainable business operations.

The increase demand in China for clean energy technology opens opportunities for the U.S. firms to enter Chinese clean energy market and to grow extremely. The ongoing development of Chinese market economy, the continuing increase concerns about energy security, as well as the increasing environmental pressure have all encouraged and have smoothed the process of clean technology entry into the market. China has been dealing with governmental pressure and effective market pull for clean technology development, which introduces challenges for China because of the technological requirements that are required to accomplish the governmental goals. Due to an ongoing increase demand of clean energy technology, the commercial markets for clean technologies in China are emerging at best. The increased demand presumes a growing demand for proven, high quality products and services, which opens opportunities in the market for sustainable business operations of U.S. companies.

China should fulfill the aim of a 20%_decrease in energy intensity; therefore, the Chinese government has already identified those main developments in technology and energy management. In order for China to achieve these objectives, they must achieve them through industrial, commercial, and residential sectors. Since China lacks expertise in energy efficiency technologies and innovation, energy auditing, and energy management; this would be a very good opportunity for the U.S. to try and link their cooperation with

China and come up with a wise decision where both countries benefit mutually. U.S. firms should expect an increasing demand in China for confirmed, high quality products and services in main areas such as energy service companies, energy efficiency auditing, wind farm operation and management, technological innovation of large scale turbines, in solar power there is an opportunity on aesthetic building integration of SWH's, and improved thin-film PC technology for power plants.

If the U.S. carefully considers barriers in developing business in China, than there is a good opportunity that these two countries could strengthen their ties and cooperate toward better future energy policies. Some of the things that the U.S. should carefully take into account is considering and understanding China's business culture as well as identifying and categorizing local associates, and developing good environmental relationship. Thus, this is one of the best and most useful ways for the U.S. to link cooperation's with China and to strengthen their bond towards building strong diplomatic relations and working together towards improving energy policies for the near future.

5.3 Diplomatic Issues

During George W. Bush Administration, diplomatic relations between the U.S. and China remained stable. However, the U.S. policy toward China now seems to be focused on competing reassessments. During 2005, the State Department revealed a new policy consisted a willingness to work cooperatively with a nondemocratic China and at the same time encouraging Beijing to develop into a responsible stakeholder in the global system. However, other U.S. policymakers were implementing more stricter stances on matters that include the U.S. and China diplomatic relations, stating their concerns regarding strong PRC economic growth as well as a more assertive and powerful PRC diplomacy in the international arena.

The issue with Taiwan (which the PRC considers a betrayer province) is the most sensitive concern between the U.S. and China. Many observers worry that this issue could lead to potential Sino-U.S. argument. During 2004, the PRC officials passed an "anti-secession" law, which created more tensions in the relationship. The intention of this law, which was adopted in March 2005, intended at limiting Taiwan's independence. The U.S. officials observed this action as a provoking action.

As a symbol of Taiwan's commitment to unification with China, Taiwan's President Chen Shui-Bian suspended the activities of the National Unification Council, mentioning the anti-secession law as a reason for his action. Meanwhile, U.S. concerns were raised by the PRC and Taiwan moves regarding cross-strait stability.

China's increasing global reach as well as the consequences of PRC economic expansion and political influence that have an effect on U.S. interest was another growing concern for the United States. Besides, China is steadily signing different contracts and agreements with countries around the world to feed its appetite for resources. Such agreements are: trade agreements, technological collaboration, bilateral security arrangements, oil and gas contracts, which are contracted with key U.S. allies where some U.S. observers view these actions as a threat to the United States. Even if these different activity involvements are the results of China's benign economic development, they may present future challenges for the U.S. economy and political interests. United States' greatest concern about China appeared to be driven by security calculations in Congress.

During 2005, bilateral trade economic agreements were matters of concern as well. The U.S. officials and members of the Congress criticized China's failure to stop piracy of U.S. intellectual property rights (IPR) and China's ongoing restraints on its currency valuation. In the February 5th 2005, the U.S. officials in the State Department Country Reports on Human Rights Practices graded China's human rights records as poor.

5.4. Discussion

If two world giants can join their forces and commit to each other to a long energy partnership, it could truly make a difference in the world. ¹⁶Since the United States and China are the world's two biggest environmental emitters they must find a way to collaborate at the center of a global effort. Tackling challenges of energy and climate in the agenda of the U.S. -China would show their joint forces cooperatively addressing

¹⁶ See Asia Society's Center on U.S.-China Relations & Pew Center on Global Climate Change, A Roadmap for U.S. China - Cooperation on Energy and Climate Change

climate imperative as well as the possibilities to reshape the restraints between the two countries in a progressive and comprehensive way.

¹⁷Meanwhile, both countries still rely seriously on coal to produce energy. Coal accounts for 50 percent of U.S. electricity generation and 80 percent of China's current electricity generation. Consequently, if United States and China cannot find a method to jointly address the problems caused by these emissions, the world will not agree on a plan for effective mitigation any time soon.

¹⁸Thus, cooperation between the United States and China is a critical and requisite step to gain the kind of confidence and trust needed to spearhead progress toward an effective global solution.

CHAPTER

6.0 JAPAN'S ANALYSIS BRIEF

6.1 Japan's Energy Profile

¹⁹Japan is the world's third biggest oil consumer and second biggest net importer of crude oil, however it is the world's number one importer of both liquefied natural gas (LNG)

¹⁷ "A Roadmap for U.S.-China Collaboration on Carbon Capture and Sequestration A Partnership." [Http://www.asiasociety.org/climate/](http://www.asiasociety.org/climate/). Lawrence Livermore National Laboratory S. Julio Friedmann, Nov. 2009. Web. 16 Aug. 2011.

¹⁸ " Foreign Press Centers. [Fpc.state.gov/documents/cat_desc/revisions/1868_829.htm](http://fpc.state.gov/documents/cat_desc/revisions/1868_829.htm)

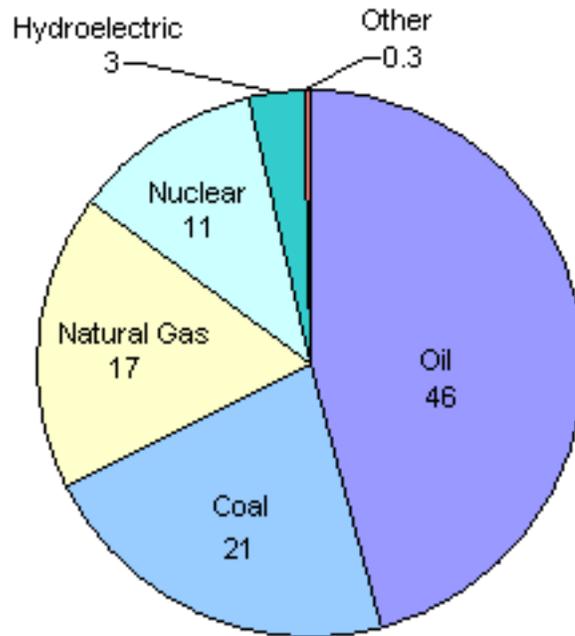
and coal. Since Japan possesses few domestic energy resources and lacks adequate domestic hydrocarbon resources, its domestic energy companies have vigorously pursued involvement in upstream oil and natural gas developments abroad and offer engineering, construction, and project management assistances for worldwide energy developments. Japan has a strong energy examination and improvement program that is supported by the government, which pursues security and develops the reduction carbon dioxide emissions program.

The most consumed energy resource in Japan is oil, even though its share of energy consumption has dropped from about 80% in the 1970's to 45% in 2009. Natural gas and nuclear power are increasingly important sources in Japan, ranking Japan to be the world's third largest consumer of nuclear power. Nevertheless, coal continues to account for a significant share of total energy consumption where as hydroelectric power and renewable energy account for a small percentage of total energy consumption.

¹⁹ "Plan B Updates - 94: Time to Rethink Japan's Energy Future | EPI." Earth Policy Institute – Building a Sustainable Future

Figure 6.11 Energy Consumption by Source in Japan, 2008

Energy Consumption by Source in Japan, 2008
(Percent)



Total: 22.3 Quadrillion BTU

Source: EPI from EIA

Source: EPI from Earth Policy Institute

6.2 Energy – U.S. and Japan’s Common Interest on Environmental Performance of the Vehicles

This chapter will focus on U.S. with Japan and France and will identify an approach on how could the three countries further develop cooperation for moving energy policies and diplomatic relations. One of the approaches that the U.S. and Japan could cooperate is support of future energy policies is by increasing the environmental performances of the vehicles. However, the approach that the U.S. and France could cooperate is to seek expansion of clean and affordable nuclear energy and for deeper commitment toward further research and development of future nuclear system. One of the main aims of this chapter is how to affect the creation of positive relations between the U.S. and Japan; in

support of future energy policies and how to strengthen diplomatic relations that already exists. The cooperation between the U.S. and Japan could be effective by linking on energy activities and to identify possible areas of cooperation for mutual benefits. Therefore, the two countries need to develop effective cooperation to create purposeful, strategic policies.

The potential where the two countries can link their cooperation for mutual benefits is by increasing the environmental performance of the vehicles. Leading companies of heavy duty and engine manufacturing are advised for a devoted cooperation regarding realistic and effectual fuel efficiency measurement metrics, methodology and rules between policy makers in U.S., Japan and Europe. Thus, the U.S. can link the cooperation with Japan in developing certain requirements, as well as metrics and methodologies to appraise fuel efficiency. These developments could provide required elements to advance the environmental performance of our vehicles and could intensify the effectiveness of goods transport.

Japan is leading the car industry technology by introducing fast and modern cars that cause less pollution to our environment and thus would help control greenhouse effect. The Toyota Prius is the world's first hybrid vehicle produced by Japan that runs on electricity and gasoline. Hybrid vehicles, led by Japanese technology, are a successful effort to prevent global warming and could help improve future energy policies.

Therefore, the U.S. could link the cooperation with Japan and encourage an increase of hybrid vehicles use in the U.S. This collaboration could strengthen the bond between the U.S. and Japan; it will serve the customers, as well as the environment, which is the main concern for improving future energy policy.

Hybrid vehicles are an important staple of vehicle fleets. Seeing the cost of gasoline has risen and it remained high in the last year, it would be wise to pass the legislation to increase the number of hybrid vehicles. The point of this act is to develop energy efficiency, decrease reliance upon gasoline products and to decrease emissions from all pollutants, highlighting the climate change emissions.

Hybrids are a desirable option; our government has the opportunity to form the future of the vehicle market and to let advanced technologies develop for both institutional purchasers and everyday customers.

Hybrid electric vehicles combine the best characteristics of conventional and electric vehicles to develop fuel and environmental performance. The technology of hybrid vehicle is wonderful; it has an engine and electric motor. These type of vehicles get their power from the inner ignition and from a battery powered electric motor. The outcome provides greater fuel efficiency results and cleaner emissions than most conventional cars.

Hybrid vehicles also have the idling capacity to turn their gasoline engine off when stopped. This mechanism reduces emissions and improves efficiency. This capacity makes the hybrid vehicles efficient and quiet in the city, when they are stopped at the light and when they are on the go on traffic.

A measurement for the ratio of the emissions could be developed based upon the dollars spent on fuel use. A good example would be analyzing a Toyota Prius, which has passed 100,000-mile distance. The cost of the fuel would be \$6,987 and the amount of fuel causes 26.7 tons of green house gasses to be emitted. A cost per ton could be reflected by the overall ownership price approximately at \$21,066 per 26.7 tons or \$789 per ton. If we compare this price to that of gasoline Chevy Impala whose price is approximately \$415/ton of dollars per ton related, it would make the cost per ton for the gasoline impala more favorable.

Nevertheless, the purpose of this achievement is to emit the smallest amount of emissions for a given dollar. The table below shows a cost comparison analysis for the standard vehicle, general cost and emission within the same class using the Chevrolet Impala's overall cost and emissions as the base against the Toyota Prius and E-85 sedan.

Table 6.12. Emissions Comparison Hybrid – E85 – Gasoline Vehicle Types

| | Fuel Miles Per Gallon 1 | Gallons of Fuel Used/100,000 miles 2 | Tons of Greenhouse gas Emissions tons/100,00 miles 3 | Fuel Cost 100,000 miles based on DOE GREET model 4 | Fuel Cost per 100,000 miles based on Contractor analysis 5 | Total Ownership cost based on Contractor analysis 6 |
|--|-------------------------|--------------------------------------|--|--|--|---|
| Hybrid Sedan (Toyota Prius) | 46 | 2174 | 26.7 | \$6,987 | \$6,007 | \$21,066 |
| Gasoline Sedan (Chevy Impala) | 22 | 4545 | 55.3 | \$14,653 | \$12,561 | \$22,932 |
| Small Hybrid SUV 4WD-4cyl, automatic (Ford Escape) | 28 | 3571 | 44 | \$11,493 | \$9,211 | \$25,912 |
| E85 Sedan (Chevy Impala) | 17 | 5882 | 43.3 | \$12,347 | \$11,949 | \$22,320 |
| Small Gasoline SUV 4WD-6cyl (Ford Escape) | 19 | 5263 | 64 | \$16,099 | \$14,554 | \$27,193 |

Source: Colorado Department of Public Health and Environment. “Hybrid, E85 and Gasoline Vehicles in Government fleets”

Table 6.12 compares emissions between Hybrid vehicles, E85, and Gasoline vehicles. This examination shows that Hybrid Sedan (Toyota Prius) spends 46 miles per gallon, which is a big difference compared to gasoline Sedan (Chevy Impala) who spends 22 miles per gallon. Additionally, Toyota Prius, which has passed 100,000 miles distance, uses 2174 miles of fuel, whereas Chevy Impala, which has passed 100,000-mile distance, uses 4545. Most importantly, the overall greenhouse gas emissions released by Toyota Prius after 100,000-mile distance is 26.7 tons, where the Chevy Impala’s is 55.3 tons. This table concludes that Hybrid vehicles are far more efficient and play an important role in improving our future energy policy.

Table 6.13. Five Vehicle Type Cost and Emissions Values

| | Prius | E85 Sedan | Gasoline Sedan | Hybrid Mid-SUV | Gasoline Mid-SUV |
|-------------------------------|----------|-----------|----------------|----------------|------------------|
| MPG | 46 | 17 | 22 | 28 | 19 |
| Gallon of fuel used | 2174 | 5882 | 4545 | 3571 | 5263 |
| Fuel cost @ 100,000 miles | \$6,327 | \$11,587 | \$12,180 | \$9,570 | \$14,104 |
| GHG emissions @ 100,000 miles | 26.7 | 43.3 | 55.3 | 44 | 64 |
| Total ownership cost | \$21,066 | \$22,320 | \$22,932 | \$25,912 | \$27,913 |
| | | | | | |

Table 6.13 compares the cost of five different vehicles and their emissions value. This table examines and concludes that the Prius is the most efficient and its cost barely differs from other vehicles that are of the same category.

Table 6.14. Energy Efficiency of Hybrid – E85 – Gasoline Vehicle Types

| | Efficiency Ratio Percentile $100 \times (E_0 - E_c)/E_0$ | Pounds saved (per 100,000 mile driven) dollar spent $(E_0 - E_c)TOC_2$ |
|-----------------------------------|---|--|
| Gasoline Sedan vs. Hybrid | 52% | 2.49 lbs saved/dollar spent |
| Gasoline Sedan vs. E85 Sedan | 22% | 2.49 lbs saved/dollar spent |
| Gasoline SUV versus hybrid SUV | 21% | 1.54 lbs saved/dollar spent |

Source: Colorado Department of Public Health and Environment. “Hybrid, E85 and Gasoline Vehicles in Government fleets”

Table 6.14 compares the energy efficiency of Hybrid, E85 and gasoline vehicle types. The examination of this table also concludes that the efficiency ratio percentile of gasoline sedan vs. hybrid sedan that has passed 100,000-mile distance is 52% and a pound saved per dollar spent is 2.49.

If the two countries can join their powers and link cooperation for mutual benefits by increasing the environmental performance of the vehicles, this cooperation could affect the creation of positive relations between the U.S. and Japan; in support of future energy policies and could strengthen diplomatic relations that already exist.

6.3 Diplomatic Relations

²⁰The cooperation of United States and Japan is the main interest of U.S. security in Asia and is important to regional stability and their cooperation continues to be based on shared vital interests. The U.S. and Japan alliances include stability in the Asia-Pacific

²⁰ "Japan." U.S. Department of State.

region, the protection of political and economic freedoms, human rights support and defending the prosperity for their societies and the international community as a whole. The United States currently has nearly 50,000 troops based in Japan, where about half of them are stationed in Okinawa. Japan provides necessary support to U.S. deployed forces, which are important for upholding stability in the region. United States and Japan have signed a Treaty for mutual Cooperation and Security where Japan hosts a carrier battle group such as the I5th Air Force, III Marine Expeditionary Force and elements of the Army's I Corps.

Over the past decade the cooperation between the U.S. and Japan has been further bonded over the agreement renewal on Host Nation Support of U.S. forces based in Japan, revised Defense Guidelines, which develop Japan's non-combatant responsibility in a regional contingency, and a continuing development called the Defense Policy Review Initiative (DPRI). The continues development of Defense Policy Review Initiative redefines responsibilities, assignments, and potentials of alliance forces and summaries important transformation plans, such as decreasing the number of troops based in Okinawa, increasing communication between U.S. and Japan commands, and increasing the cooperation in the area of ballistic missile defense. Secretary of State Hilary Clinton and Foreign Minister Hirofumi Nakasone signed the Guam International Agreement (GIA) in Tokyo; an agreement which obligates both countries to complete the transfer of approximately 8,000 U.S. Marines from army bases in Okinawa to new facilities in Guam built with the support of Japan.

Due to both countries' mutual technological and economic impact worldwide, their affiliation has become global in scope. They cooperate on different worldwide issues, such as support, collaborating on stopping the spread of HIV/AIDS, and protecting the environment as well as natural resources. U.S. and Japan cooperate in the development of Science and technology including mapping the human genome, investigation on aging, and international space investigation.

6.4 Discussion

Even though U.S. and Japan have good diplomatic relations, they could further strengthen their bond by cooperating towards practical and effective development of fuel-efficiency measurement metrics, practices and guidelines that could also be used worldwide.

The Governments of the U.S. and Japan should continue their collaboration to further encourage global policy cooperation and to deliver their knowledge to confirm that regulatory developments improve the industry's technological development within realistic time and economic constraints. ²¹"A coordinated global approach for our industry is the most effective way to contribute to achieving global fuel efficiency improvements from the road freight sector", (said Leif Östling, Chief Executive Officer of Scania and Chairman of the ACEA Commercial Vehicle Board). ²²"The world's leading commercial engine and vehicle manufacturers are well aware of the importance of fuel efficiency to their customers and support global efforts to reduce greenhouse gas emissions. Therefore, U.S. and Japan's cooperation in developing specific requirements, as well as metrics and methodologies to evaluate fuel efficiency, provides needed elements to further improve the environmental performance of vehicles and increases the efficiency of goods transport. That will serve both the customers and the environment," added Östling.

The coordination of technical standards between the U.S. and Japan's affecting heavy-duty engines and automobiles could further develop environmental performance and the road efficiency movement.

Some of the key topics to be considered for further collaboration would be:

- Continuing activities on fuel efficiency of heavy-duty vehicles
- Further developing for a worldwide accepted method for the certification of

²¹ Colorado Department of Public Health

²² U.S. Department of Energy – "Energy Sources"

heavy-duty hybrid electric vehicles

- Computer simulations use to calculate fuel efficiency of vehicle configurations and usage

Additionally, both countries should pursue additional cooperation concerning the introduction of legislative requirements in regard of market fuels. Their collaboration would ensure applicable, high-quality fossil and renewable fuels, which are available worldwide for today's vehicle technologies.

CHAPTER 7

7.0 FRANCE'S ANALYSIS BRIEF

7.1 France Energy Overview

France is the most important nuclear energy producer in the European Union (EU), which accounts for over 40% of its primary energy supply. France's energy import dependency is close to EU standards; however oil remains to be its second main source of energy. Gas has been gradually increasing; where as renewable sources, hydro and biomass play an important role as well on Frances' energy and e electricity mix, however transportation sector is the largest energy consumer. France is committed to nuclear energy and it is one of the European Union countries with the lowest CO2 per capita emissions.

Primary Energy Supply

²³Frances' primary energy supply has been gradually increasing, with a total increase of 21% during 1990- 2004. Oil and nuclear energy control the main supply of France and with a joint share of 73%. The share of nuclear energy is significantly greater than the EU-27 standard of 14%, which has increased by 43% since 1990. Even though natural gas has participated in total energy supply and it has developed in recent years, its share in the energy mix is still beneath the EU-27 standard of 24%. However, renewable energy sources contribute in primary energy supply at a very close level to the EU-27 standard.

²³ "France Energy Mix Fact Sheet."

Domestic Production

France is the largest producer of Nuclear Energy within EU, however the solid fuel production has decreased since 1990 and ended in 2004. About 13% of Frances' domestic production during 2004 accounted by renewable energy mostly biomass and hydro and it was slightly above the EU-27 average of 12%.

Imports by Energy Product

As mentioned early in this chapter, France is a major importer of oil and its main sources of supply include Norway, Saudi Arabia, the Russian Federation, Kazakhstan and Iran. Apart from oil, France also imports natural gas from Norway, Russia, the Netherlands, Algeria and Egypt. Additionally, the imports of gas increased by 55% over the period 1990-2004 reflecting growing demand

Electricity Generation

France nuclear energy is responsible for 78.3% of electricity generation, which is exceeds the EU-27 average (31%). During 2004, 59 nuclear power plants were installed and produced more than 115 Mtoe of energy, which is 43% more than during 1990.

Renewable sources, mostly hydro generation, produce 10% of electricity; coal and gas together produce around 12%. Transportation sector is the single most energy consumed sector in France and has remained rather constant in recent years.

In terms of energy consumption, trade shows growth of approximately 40% since 1990, which exceeds the EU-27 average of 15%. In terms of energy consumption, oil is a source, which dominates in terms of types of energy consumed, whereas gas and electricity follow.

7.2 Energy – United States and France Potentials to Increase Cooperation on Sodium – Cooled Fast Reactor Prototypes

The cooperation approach between the U.S. and France is to seek expansion of clean and affordable nuclear energy and for deeper commitment toward further research and development of future nuclear energy system. The best way for the U.S. and France to link their cooperation's in nuclear energy system. The best way for the U.S. and France to link their cooperation's in nuclear energy is to collaborate within the agenda of the

Global Nuclear Energy Partnership (GNEO) whose aim is to develop the use of clean and affordable energy. Furthermore, the U.S. and France could also join their efforts by doing further research and development of future nuclear energy systems.

Therefore, the U.S. Department of Defense (DOD) and the French Atomic Energy Commission could further join their efforts and expand their cooperation to further manage and develop the goal of deploying Sodium Cooled Fast Reactor Prototypes. The purpose of the sodium-cooled fast reactor is to produce clean and safe nuclear power, which used liquid sodium to transfer heat by burning the plutonium and other transuranic elements, which are radioactive wastes whose atomic number is greater than 92. An effective cooperation of both countries to develop this goal, results in increasing non-proliferation goals because sodium-cooled fast reactor produces clean and safe nuclear power.

The sodium cooled fast reactor are built by very advanced nuclear technology that are being researched until now and could possibly be used as an advanced recycling reactor, which is one of the major component of Global Nuclear Energy Partnership. The objective of Global Nuclear Energy Partnership is to accomplish advanced technologies that could be used to build these reactors; therefore, a prototype reactor is the first step to demonstrate the feasibility of these reactors. This corporate between the U.S. and France is further developing Nuclear Energy in a safe, secure and environmentally sustainable way highlights the strong diplomatic bond between these two countries.

U.S. and France could further cooperate to establish goals and other requirements for these prototype reactors such as identifying safety principles and other major technical improvements to reduce investments, operating and maintenance cost. An effective cooperation between U.S. and France will initiate key discussions on power level, types of reactors, fuel types and suitable agenda for possible deployment of prototype facilities.

The bilateral cooperation of the U.S. and France for expanding the use of clean and affordable Nuclear Power could also encourage other countries on signing the agreement of GNEP to improve future energy policies. The U.S./France cooperation on further expanding the research and development of future energy systems could broaden the opportunity for the use of clean and safe Nuclear Energy.

7.3 Diplomatic Relations with U.S.

Relations between the U.S. and France are effective and welcoming. Both countries conduct visits by officials and they frequently have mutual contact at the cabinet level, which has been very active recently. Both countries have similar policies on most security, economical and political matters. U.S. and France have differences in different issues however they are discussed openly and have not been tolerable to weaken their close cooperation that characterizes relations between them.

²⁴France is also a big supporter of NATO being one its top five troop contributors. France is keen to form European defense abilities, through united European military production plans and the expansion of EU battle group. French president Nicola Sarkozy supports the European defense progress that strengthens NATO, which continues to be the principal of transatlantic security.

Additionally, France and U.S. are close partners in counterterrorism efforts and they cooperate to observe terrorist groups. France has managed many requests from the U.S. regarding material under the Mutual Legal Assistance Treaty.

The two countries continue their close cooperation on different matters, especially in combating terrorism, efforts to restrict the production of weapons of mass destruction, and on regional issues, such as in Africa, Lebanon, and Kosovo, Iraq etc.

United States is France's eighth supplier and its eighth largest customer. The investment and trade amongst the two countries are very strong where an average of \$1 billion take place in commercial transactions. Nearly 2,300 French subsidiaries are in the U.S. providing more than 598,000 positions and that generate around \$306 billion in turnover. Likewise, the U.S. is the main destination for French investments and is the largest foreign investor in France, where more than 650,000 French citizens are employed and its combined investment have been estimated at \$86 billion in 2009.

²⁴ "France." U.S. Department of State.

7.4 Discussion

Expanding their cooperation to better manage Sodium-Cooled Fast Reactor (SFR) Prototype development could strengthen the existing French and U.S. diplomatic relations. Both countries should seek to further work together and determine goals and requests for sodium-cooled fast reactor prototypes such as identifying mutual safety principles and important technical innovations to decrease operating, capital, and maintenance costs. The teamwork between U.S. and French leaders will enable significant debates on power levels, reactor types, fuel types and a proper agenda for the possible deployment of prototype facilities.

²⁵Additionally, U.S. and France should pursue mutual infrastructure progress activities to influence current facilities and to support progress of the prototype reactors.

Conclusively, U.S. and France's further cooperation interests will bring potential to advanced fast reactor prototypes as projected by their national program's purposes. This collaboration will apply the technical proficiency and essential resources necessary to deploy sodium-cooled fast reactor prototypes.

CHAPTER 8

8.0 GERMANY'S ANALYSIS BRIEF

8.1 History of German/American Relations

The United States and Germany have developed a stable establishment of joint cooperation in a relationship that has changed considerably for the past five decades. The

²⁵ "US, France and Japan Increase Cooperation on Sodium-Cooled Fast Reactor Prototypes." Green Car Congress.

relations between the U.S. and Germany have been based on the highest levels of coordination and close consultations.

The U.S. policy toward Germany has long remained an ongoing security and a merge of close and essential relations with Germany, as a trading partner as well as allies sharing common institutions. Both countries are allies in NATO and they were working together to maintain peace and freedom.

Following the 9/11 attack, the U.S. and Germany have cooperated strongly to fight against international terrorism in different areas such as: judicial collaboration, intelligence sharing as well as blocking the financial assets of suspected terrorist. This strong cooperation between the U.S. and Germany has shown effective results and has strengthened even more their diplomatic ties.

8.11 Economic Relations between the U.S. and Germany

The mutual beneficial relations of trade and investment between the U.S. and German firms continue to be very important for domestic and global growth. There are many opportunities for the U.S. and Germany to link their bilateral cooperation in the sphere of economy and commercialism, including bilateral trade discussions, encouraging economic global development and reducing agricultural protectionism. The cooperation between the U.S. and Germany in the sphere of economic and political partnership has played an important role in making reunification a success.

The trade volume between the U.S. and Germany plays an important role in the economy of both countries; the U.S. is Germany's main trading partner outside of EU and Germany is the principal trading partner in EU. During 2007, there was an increase in the volume of bilateral trade in goods; German imports from the United States grew by 20.2% and its exports to the United States grew by 5.9%. This trade development was done due to the favorable results of the dollar/euro exchange rate on U.S. exports.

| | 2005 | 2006 | 2007 |
|--|-------------|-------------|-------------|
| German export to U.S. (USD billion) | 84.8 | 89.1 | 94.4 |

| | | | |
|---|-------------|-------------|-------------|
| German imports from U.S. (USD billion) | 34.1 | 41.3 | 49.7 |
|---|-------------|-------------|-------------|

This trade development was done due to the favorable results of the dollar/euro exchange rate on U.S. exports.

8.12 Military Relations

The U.S. and German share close cooperation to combat terrorism. Additionally, both countries have deep cooperation ties in disaster relief and attempts to resolve international conflicts. One of the closest cooperation in military between the U.S. and Germany relations was the deployment of German troops in Afghanistan and the Balkans, where Germany sent 7000 soldiers, and was the largest provider of troops after the U.S. The deep and close military relations that these two countries share reflex in mutual cooperative maneuvers where Germany sends units to U.S. every year to take part in joint maneuvers and they do intensive exchange on the future development of deployment procedures and weapon systems. The system of exchange accomplished by U.S. and Germany further contributors to the good military relations between the two countries.

8.2 Renewable Energy Cooperation between U.S. and Germany

Chapter eight focuses on renewable policies and then continues tackling U.S relations with Germany and Spain. Spain and Germany are leaders on renewable energies and there are much potential to build up bilateral collaboration between U.S. and these two European countries. One of the ways how they can cooperate and improve energy policies and diplomatic relations is by jointly promoting renewable energies.

²⁶The Transatlantic Climate Bridge formed by German government created initiative with the purpose of engaging Americans in the climate and energy arena. The purpose is to extend the word to all U.S. players interested in developing renewable energy, increasing energy efficiency, and decreasing carbon footprint. A good example would be First Solar Company based in Germany, who is the world's largest manufacturer of thin-film solar cells. This company is an exceptional example of a U.S. company succeeding in Germany due to a positive business climate for renewable energies.

Current corporations between Northern Virginia and Stuttgart, Schleswig-Holstein and Maryland, Wisconsin and Bavaria, South Carolina and Rhineland-Palatinate, and Pennsylvania and North-Rhine Westphalia were a good foundation for continues collaboration on a regional level.

Nonetheless, the introduction of the Transatlantic Climate Bridge in the U.S. has also introduced new relationships between Germany and a range of U.S. states and stakeholders. Many transatlantic occurrences and travel programs are presenting the opportunity for developing interaction and trade best practices between Americans and Germans. Due to these occurrences they have adopted good relationships and have increased transatlantic collaboration

8.3 Diplomatic Relations

The relationship between the United States and Germany has been an important point of U.S. involvement in Europe ever since the end of World War II and Germany continues to be a key partner in U.S. relations in NATO and the EU.

²⁶ "Interview with ambassador Klaus Scharioth." German Center for Research and Innovation

²⁷The policy of U.S. about Germany remains the preservation and consolidation of a vital relationship with Germany, not only as trading partners, but also as partners sharing common goals. Over the past decades, ever since Germany was divided, the United States served as a symbol of commitment by the military presence in West Germany preserving peace and security in Europe.

Both countries being NATO allies, they closely cooperate to maintain peace and freedom, such as the successful conclusion of the 1987 U.S. – U.S.S.R. Intermediate Range Nuclear Forces Treaty (INF), Conventional Armed Forces in Europe Treaty, military collaboration in peacekeeping efforts in the Balkans and encourage the development of open and democratic states through central and Eastern Europe.

Additionally, Germany has been an essential part of the United Nations mandated International Security Assistance Force (ISAF) in Afghanistan and it also helped by contributing 5,000-plus troops and it also directs the entire ISAF northern region, which covers one-fourth of the country

U.S. and German troops collaborate successfully in NATO and UN tasks worldwide due to their joint training and capacity building achieved at U.S. military installations in Germany. Additionally, Germany is the largest contributor to international peacekeeping operations in Kosovo with more than 10,000 troops on the ground. Following the September 11, attacks Germany have been a consistent U.S. ally in efforts against terrorism. United States and Germany, as two of the world's leading trading nations, share a common commitment to an open world economy.

Continues mutual cooperation between the two countries have helped them built a solid foundation of mutual cooperation in a relationship that has improved significantly over 6 decades.

²⁷ "Germany." U.S. Department of State

8.4 Discussion

²⁸United States and EU have been successfully joining potencies for decades to address the important challenges facing our society. They should further collaborate in order to tackle common challenges of climate change, energy security, and economic growth.

Both countries considered as powerful engines should continue collaborating together to maintain a stable climate and sustainable energy, since both are crucial to their economies and to their security. Known as powerful engines for transatlantic cooperation; they can continue working together on climate and energy policy and make a difference.

By joining American and German main players in politics, business, and society, they create a platform to see how Germany's new energy economy has presented opportunities for economic expansion and job creation and how this could be a lesson to U.S. developments.

According to my analysis, by working together U.S. and Germany can face challenges of a global economic recession and the increasing of global greenhouse gas emissions will only help to develop their relationship.

²⁸ "Germany." U.S. Department of State

CHAPTER 9

9.0 SPAIN

9.1 Spain Overview

Since the last IEA in-depth review in 2005, Spain has made significant progress in improving its energy policy. In Europe, the country is now leading in gas diversification and LNG development. Together with Portugal, it has set up the common Iberian electricity market, MIBEL, and has strong ambitions in developing it further. It has also become permanent in developing wind and solar energy technology, and succeeded in integrating large amounts of intermittent power in the electricity grid.

Along with other IEA member countries, Spain has set ambitious climate and energy security targets. Achieving these will require a transition to a low-carbon economy. Spain will need to increase its efforts to reduce CO₂ emissions, particularly in the transport but also the critical power sector. As fossil fuels still provide more than half of electricity, Spain will need to keep open all the options – including nuclear, renewables, and the technology of carbon capture and storage – for making its power sector less carbon-intensive. The country should also increase its efforts to limit peak electricity demand through energy efficiency.

Spain has substantially de-regulated its electricity and gas tariffs, and developed a financial plan to end the large deficit that built up under the previous tariff regime. Prices for many small electricity users, however, are still regulated and low enough to potentially distort the market. In addition, the still remaining subsidies for domestic coal production should be eliminated and replaced by direct social policy measures.

9.2 Energy - Wind Becomes Spain's Biggest Energy Source

²⁹ Spain has had major positive changes towards its energy policy since the last International Energy Agency review in 2005. In Europe today, Spain is the leading country for LNG progress and gas diversification. Spain, along with Portugal, has made the common Iberian electrical energy market, MIBEL, and is interested towards further development. This is also leading towards permanent development of solar and wind energy technology, and it has successfully put together huge amounts of alternating power in the electricity network.

Together with other countries of IEA members, Spain has strong and determined aims towards climate and energy security. In order to attain these goals a change to a low-carbon economy is required. In order to reduce CO₂ emission, Spain is required to raise its efforts, especially in the main transportation area and also the serious power division. For having its power division less carbon-intensive, Spain indeed needs to be open to all options such as: renewables, nuclear, and the technology of carbon capture and storage, given that fossil fuels still supply more than half of the electricity.

Spain has urbanized a financial plan to bring to an end the huge shortage that was created under the earlier tariff regime; therefore Spain has considerably de-regulated its gas and electricity taxes. For some electricity users, prices are still keeping pace and are low enough to potentially twist the market. Additionally, what is left of the financial supports for the domestic coal production should be removed and replaced by straight public policy actions.

²⁹ "Wind Becomes Spain's Biggest Energy Source | Renewable Energy News Article." Renewable Energy World - Renewable Energy News, Jobs, Events, Companies, and More.

9.3 Diplomatic Relations with U.S.

³⁰ According to International Energy Agency report on Energy Policies of IEA countries (Spain) Spain is the world's fourth-largest wind-power market. Highlighting the country's development in being chosen one of Europe's greenest nations, Spain realized wind power is becoming its leading source of electricity generation.

According to power network operator Red Electrica (REE) "Iberian wind farms generated 4,738 GWh of electricity in March to meet 21% of demand, 5% above the year-ago monthly rate, fuelled by heavier winds than usual".

Comparing from last March 2010, when clean energy met 48.5 percent of electricity demand, now it is 42.2 percent. Today, hydropower consists of 17.3%, solar energy 2.6%, coal-powered for 12.9%, and nuclear for 19%.

"This historic milestone reached by wind energy shows that this energy source, as well as being indigenous, clean and increasingly competitive, is also capable of supplying power to three million Spanish household" (AEE president Jose Donoso)

9.3 Diplomatic Relations with U.S.

Spain and the United States official relations date way and are personally connected in many fields. According to International Energy Agency report on Energy Policies of IEA countries (Spain) U.S and Spanish cooperation in NATO, defense and security relations between the two countries are regulated by the Mutual Defense Assistance Agreement signed on September 26, 1953 and the 1989 Agreement on Defense Cooperation, revised in 2003. Because of this agreement, Spain certified the United States to use some services at the Spanish military fittings.

These two countries also work together in numerous other areas, which are very important. The U.S National Aeronautics and Space Administration (NASA) and the Spanish National Institute for Aerospace Technology (INTA) together control the Madrid

³⁰ "Spain." U.S. Department of State.

Deep Space Communications and Complex in support of Earth Orbital and solar system exploration missions. The Madrid Complex is known to be one of the few largest tracking and data achievement complexes including NASA's Deep Space Network.

On June 7, 1989 a settlement of educational and cultural cooperation was signed. A new factor, which is in support by both the public and private divisions, gave a unusual measurement to the programs agreed out by the combined group for cultural and educational teamwork. These combined group activities balance the bi-national Fulbright plan for the following groups: graduate students, visiting professors, and postdoctoral researchers, which are one of the largest in the world and celebrated its 50th birthday in 2008. In addition to supporting these swap activities, the U.S Embassy also manages a curriculum of educational, cultural, and professional exchanges, and also managing high-level official stays between officials from Spain and U.S.

9.4 Discussion

Both countries, Spain and United States, should discuss various aspects related to energy dependence, security of supply, energy efficiency and renewable energy. This discussion would be a mutual interest in developing the Energy Services Companies. The U.S government is constantly promoting this industry because it wants it to have an even more important role in energy efficiency. According to Miguel Sebastián, the Spanish Minister of Industry, Tourism and Trade, the plans in place for the adoption of electric vehicles in Spain, a mode of transportation also backed by President Obama, who has set a goal of having a million plug-in hybrid vehicles on the road by 2015; therefore, Spain maintained its commitment to put in circulation a million electric cars by 2014.

All together, both of these countries should have the will to work together and come to agreements on renewable energy matters and help steady the energy supply, an assistance that would be an advantage both countries. Spain already came up with these agreements with Russia, Morocco and Algeria. However, it should finally suggest the making of a lasting group working together to discover and recognize areas of energy support. This group will develop experiences in three main key energy areas: solar, biofuels, and electric vehicles.

CHAPTER 10

FINAL DISCUSSIONS AND RECCOMENDATIONS

10.1 Realistic Strategies for our future Energy Policy

A major outcome from this project has been the increased awareness of the great importance of a strong network based on common values and interests between these countries current and future leaders. Good relationships ensure strong communications between respective leaders and will reduce conflicts and planning uncertainty. They ease the process of achieving common goals. More effective approaches to future energy improvements will result form mutual respect and understanding.

Good and lasting relations are always built when the interests of countries are met and they all see an interest from these partnerships. Therefore, addressing the question of how to affect the creation of positive relations between the U.S. and the countries that produce oil, coal, nuclear, and renewable as their source; in support of future energy policies; I recommended some of the areas that could be of great interest, and that could lead towards a more positive relationship.

- Develop global energy safety by applying a new diplomatic approach and cooperation with foreign governments and entities
- Encourage consistent, diverse, and sustainable sources of all types of energy;
- Reduce global dependence on oil and natural gas energy sources;
- Expand availability of renewable and clean energy sources worldwide;
- Get more involved in energy collaboration to improve strategic partnerships that develop peace, security, and democratic success. Consolidating strategic energy partnerships is essential for U.S. national security and global stability hence, it needs to strengthen global oil marketplace which will exacerbate the impact of competition over fossil fuel resources in international relations and destabilize U.S. foreign policy.
- The U.S. should work with both producer and consumer countries and find

common favorable solutions.

The result of these policies will show an improvement in future energy policies and diplomatic relations between the U.S. and the countries the united State will seek to collaborate in order to achieve these goals. This close cooperation will also speed the process of recognizing the important role of energy in the future and the need for much more ambitious and creative approaches for improving future energy policies. U.S. cannot overcome these energy challenges on its own, therefore it needs to collaborate with other countries to address shared threats to climate, security and development posed by global fossil fuel dependence.

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APPENDEXIES A

- Table 1.11 shows United States consumption and Production Energy Statistics. It provides details analysis of energy use in U.S. use of energy sources, the primary energy consumption by source, specifically each sector (commercial, residential, industrial and transportation) and the source that it used by each sector (oil, coal, wood, natural gas, petroleum etc.).
- Table 3.12 displays the number of Saudi students receiving U.S. military training from FY2002 through FY2007, with the total dollar value of the training purchased by the Saudi government (see below). For FY2003 through FT2007, this total value includes courses purchased using nominal amounts of IMET assistance.

- Table 5.12 shows an overview of China's coal production, consumption and net imports.
- Table 6.12 compares emissions between Hybrid vehicles, E85, and Gasoline vehicles. This examination shows that Hybrid Sedan (Toyota Prius) spends 46 miles per gallon, which is a big difference compared to gasoline Sedan (Chevy Impala) who spends 22 miles per gallon. Additionally, Toyota Prius, which has passed 100,000 miles distance, uses 2174 miles of fuel, whereas Chevy Impala, which has passed 100,000-mile distance, uses 4545. Most importantly, the overall greenhouse gas emissions released by Toyota Prius after 100,000-mile distance is 26.7 tons, where the Chevy Impala's is 55.3 tons. This table concludes that Hybrid vehicles are far more efficient and play an important role in improving our future energy policy.
- Table 6.13 compares the cost of five different vehicles and their emissions value. This table examines and concludes that the Prius is the most efficient and its cost barely differs from other vehicles that are of the same category.
- Table 6.14 compares the energy efficiency of Hybrid, E85 and gasoline vehicle types. The examination of this table also concludes that the efficiency ratio percentile of gasoline sedan vs. hybrid sedan that has passed 100,000-mile distance is 52% and a pound saved per dollar spent is 2.49.

If the two countries can join their powers and link cooperation for mutual benefits by increasing the environmental performance of the vehicles, this cooperation could affect the creation of positive relations between the U.S. and Japan; in support of future energy policies and could strengthen diplomatic relations that already exist.

APPENDEXIES B

During the research of my thesis I had two consultants from the higher ranks of Political Science and United States Diplomacy. The issue of energy policy and diplomatic relations is of an utmost importance and requires serious input.

From the policy position, the consultancy role has been kindly accepted by Mr. Ilir Ibrahim.

Director of External Relations in the American University in Kosovo

- Represent the University in all Public Affair events, including the media.
- Establish and maintain relations with peer universities, domestically and internationally.
- Responsible for fundraising, grant proposals and other donor support for the university.
- Oversea the university publications including the website
- Organize and moderate public forums at the university.

Previous Experience

- External Advisor to the Minister of Economy and Finance-Kosovo

- International Broadcaster
- Assistant Executive Director

Education: George Mason University - Fairfax, VA

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From the diplomacy position, the consultancy role has been kindly accepted by Mr. Fitim Gllareva.

Ministry of Foreign Affairs – Acting Permanent Secretary

Ranking career civil servant in the Ministry, responsible for its day-to-day management, including all Kosovo diplomatic and consular missions; established and organized the Ministry from its creation, recruited and hired its highly qualified personnel; established and organized all 17 embassies and 4 consular missions; conducted successful diplomatic negotiations on a variety of issues.

Previous Experience

- Office of the Prime Minister – Director for Coordination of International Cooperation and Regional Dialogue
- Office of the Prime Minister – Head of Division for Regional Dialogue, Office for Coordination of International Cooperation and Regional Dialogue
- Office of the Prime Minister – Executive Assistant to the Permanent Secretary

Education: Master's in Political Science, Sociology and Eastern European Studies, Friedrich Alexander University, Nuremberg-Erlangen, Bavaria, Germany.

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