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**Energy Security  
of the United States of America**

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## **Bibliografický záznam**

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## **Abstrakt**

Tématem diplomové práce je energetická bezpečnost Spojených států amerických na počátku 21. století. Práce nejprve identifikuje energetickou bezpečnost jako relativně nový pojem politického diskurzu, jehož význam ještě není pevně definován. První část práce se proto snaží zpřesnit definici energetické bezpečnosti prostřednictvím obsahové analýzy akademických zdrojů, které se energetickou bezpečností zabývají.

Druhá část práce se konkrétněji zaměřuje na situaci Spojených států amerických. Identifikuje výzvy, se kterými se země v oblasti energetické bezpečnosti potýká, mezi něž patří především vysoký stupeň závislosti na ropných produktech, a nabízí přehled řešení.

Třetí část práce je případovou studií, jež se zabývá kampaní před prezidentskými volbami v roce 2008. Tato předvolební kampaň se odehrávala v době extrémních cen energií a především ropy, a návrhy hlavních kandidátů (Baracka Obamy a Johna McCaina) na zajištění energetické bezpečnosti se tak staly terčem velké pozornosti amerických médií i voličů.

Cílem práce je určit, který z přístupů nabízených zmíněnými kandidáty představoval pro Spojené státy lepší volbu z hlediska zajištění dlouhodobé energetické bezpečnosti země.

## **Abstract**

### **Klíčová slova**

Spojené státy americké, politika, energetická politika, energetická bezpečnost, prezidentské volby, prezidentská kampaň, Barack H. Obama, John S. McCain III.

### **Keywords**

United States of America, politics, energy policy, energy security, presidential elections, presidential campaign, Barack H. Obama, John S. McCain III.

**Rozsah práce:** 132 066 znaků

## **Prohlášení**

1. Prohlašuji, že jsem předkládanou práci zpracoval samostatně a použil jen uvedené prameny a literaturu.
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3. Souhlasím s tím, aby práce byla zpřístupněna pro studijní a výzkumné účely.

V Praze dne 7. ledna 2012

Bc. Ctibor Jappel

## **Poděkování**

Na tomto místě bych rád poděkoval PhDr. et Mgr. Kryštofu Kozákovi, Ph. D. za obětavou spolupráci při konzultacích tohoto textu. Dále bych rád vyjádřil díky vedoucímu diplomového semináře Doc. PhDr. Miloši Caldovi za kritiku prvních tezí předkládané práce a za vhled do problematiky psaní vysokoškolských kvalifikačních prací. Další velký dík patří Kláře – za to, že vydržela hodiny, které jsem strávil ponořený v ropě.

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**Zdůvodnění výběru tématu práce (10 řádek):**

Téma energetické bezpečnosti bezesporu patří mezi nejaktuálnější otázky jak v oblasti mezinárodních vztahů, tak v domácích politických debatách jednotlivých států. Jen s malou nadsázkou lze tvrdit, že život každého člověka na zemi je závislý na energiích produkovaných především spalováním fosilních paliv – a s touto samou platností lze prohlásit, že téměř každý stát na Zemi byl v posledním roce více či méně zasažen nečekaným vývojem na trzích s ropou či zemním plynem. Trpěli jak spotřebitelé těchto surovin (například středo- a východoeropské státy při lednové „plynové válce“ mezi Ruskem a Ukrajinou), tak státy ropu ve velkém vyvážející (světová finanční krize způsobila propad poptávky po surové naftě, a tak i pokles jejich cen).

Energetická bezpečnost je tedy nyní mimořádně aktuálním a přitažlivým tématem, jímž se zabývají akademici po celém světě, a role Spojených států amerických jako největšího spotřebitele ropy na světě je v této oblasti zcela klíčová. Můj výběr tohoto tématu diplomní práce lze tedy považovat za přirozenou reakci na aktuální dění na světové scéně.

**Předpokládaný cíl (10 řádek):**

Cílem práce je v první řadě popsat současnou situaci Spojených států amerických v oblasti energetické bezpečnosti a vystihnout problematické body, které mohou v budoucnu vyvolat prudké zvýšení cen paliv a energií v USA či dokonce jejich nedostatek. Druhým cílem práce je porovnat vize energetické politiky, které ve svých programech nabídli před prezidentskými volbami v roce 2008 kandidáti dvou hlavních stran (Barack Obama a John McCain) a na základě analýzy jejich přístupů posoudit, který program by Spojeným státům do budoucna umožnil snížit závislost na zahraničních zdrojích a přinesl trvaleji udržitelnou perspektivu rozvoje. Poslední sekce práce by se měla zaměřit přímo na opatření prezidenta Obamy, jež budou vstupovat v účinnost v průběhu jeho funkčního období.

**Základní charakteristika tématu (20 řádek):**

Události, ke kterým došlo na přelomu 20. a 21. století, přinesly celou řadu otázek, jimiž se společnosti globálního Západu v dřívějším období nemusely zabývat. Jednou z těchto otázek je také problematika tzv. energetické bezpečnosti.

Protože většina energie je v západních zemích (až na vzácné výjimky) vytvářena spalováním fosilních paliv a alternativní zdroje se prosazují jen pomalu, zaměří se tato práce především na dvě zásadní suroviny: ropu a zemní plyn. Jelikož prakticky po celá 90. léta 20. století byla cena ropy setrvale nízká, problematika energetické bezpečnosti byla v té době na okraji zájmu. Válka v Iráku, vzestup nových mocností (Čína, Indie) či fakt, že velké množství světových zásob ropy se nachází v zemích s nestabilním politickým prostředím (Rusko, Venezuela, Írán...) však dodaly problematice energetické bezpečnosti nový význam. Všeobecným trendem na trzích s ropou je nyní dlouhodobý vzestup cen této suroviny. Pokud se do rovnice přidá klesající počet nově objevovaných ropných zdrojů (a tedy možnost tzv. ropného zlomu – situace, kdy světová produkce této suroviny začne klesat), vyjde najevo, že pokud se svět nepřipraví na nové výzvy v oblasti zdrojů energie, způsob života v západních společnostech čekají prudké změny.

Pokud by k takovým změnám došlo, mezi nejostřeji zasažené by patřily Spojené státy americké. Tato země je největším spotřebitelem ropy na světě, z vlastních zdrojů však dokáže pokrýt pouze část své poptávky. Vzhledem k napjatým vztahům USA s řadou zemí vyvážejících ropu je navíc otázka energetické bezpečnosti ve Spojených státech bezprostředně propojena s bezpečností národní. Současná energetická situace USA si tedy žádá podrobnější analýzu, stejně tak jako si ji žádají nabízené cesty, jimiž by měla být americká závislost na zahraničních zdrojích ropy řešena. Takovou analýzu by měla nabídnout právě tato práce.

**Předpokládaná struktura práce (15 řádek):**

## 1. Úvod

**Část 1**

2. Charakteristika světového obchodu s ropou – hlavní producenti a hlavní spotřebitelé
3. Přehled vývoje cen ropy na světových trzích 1960 – 2009
  - 3.1. Významné události, které ovlivnily světové ceny ropy v období 1960 – 2009
  - 3.2. „Ropný zlom“ – mýtus, nebo reálná hrozba?
4. Charakteristika energetického sektoru ekonomiky USA – státní úřady, významné korporace, přehled odvětví podle spotřeby, spotřeba domácností
  - 4.1. „Obr na hliněných nohou“ – výhled do budoucna při zachování stávající energetické politiky
5. Alternativní zdroje – skutečná alternativa, nebo jen doplněk fosilních paliv?
6. Šetření a konzervace energií – když zateplování slouží národní bezpečnosti

**Část 2**

7. Srovnání energetických programů kandidátů na úřad prezidenta ve volebním roce 2008
  - 7.1. „Energetická bezpečnost je národní bezpečnost“ – John McCain
  - 7.2. „Zelená šance pro americkou ekonomiku“ – Barack Obama
8. Energetická bezpečnost v bodě nula. Jak politika Baracka Obamy promění americký energetický sektor – vize do budoucna
9. Závěr

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## List of Abbreviations

CIA	Central Intelligence Agency (United States)
EIA	Energy Information Administration (United States)
GDP	Gross Domestic Product
IEA	International Energy Agency
MBD	Million Barrels per Day
NYMEX	New York Mercantile Exchange
OECD	Organization of Economic Coordination and Development
OPEC	Organization of the Petroleum Exporting Countries
PBS	Public Broadcasting Service (United States)
VMT	Vehicle Miles Travelled
WTI	West Texas Intermediate

## Introduction

Despite the recent economic recession that occurred in a number of developed economies, the world as a whole is going through a unique period of economic growth: countries in the developing world are rising from poverty and hundreds of millions of their citizens are becoming able to buy electric appliances, motorcycles, even family cars – goods that only until recently were unreachable for many. This massive change of lifestyle requires abundant and regular sources of energy to power the modernizing nations.

As a result, by 2035 the world's population is expected to need 53 percent more energy than it used in 2008, with 85 percent of that increase taking place in non-OECD nations (U.S. Energy Information Administration, 2011a, p. 2).

Not that the world hasn't got the resources necessary to power its increasingly energy-hungry inhabitants. As Luft and Korin (2009, p. 13) note, "(t)he reality is that planet earth still holds energy resources for centuries to come, among them hundreds of years worth of coal, trillions of barrels of oil shale and tar sands, a huge endowment of methane hydrates locked under the seabed and substantial reserves of nuclear isotopes like thorium and deuterium and numerous minerals that can make energy storage devices like batteries." There is also a huge potential in renewable sources of energy. According to a 2011 projection by the International Energy Agency, solar power generators may produce most of the world's electricity within 50 years (Sills, 2011).

Everywhere in the world, however, there are political, economic, security, health, and environmental and technological barriers to the exploitation of each of the energy sources above. The ability of each nation to overcome or manage these barriers is usually referred to as "energy security".

Although energy security is on top of the national security agenda of every country (including the Czech Republic, which faces a number of energy challenges of its own), there is one nation in particular that has to deal with its energy vulnerabilities head on – the United States.

Not only is the U.S. the largest energy consumer in the world – it is also highly exposed to the market for one particular energy commodity: 38 per cent of all the energy consumed in the U.S. comes from petroleum (NEED Project, 2008, p. 46). Also, in its consumption, the United States is highly dependent on imported oil. Despite being the world's third largest producer of crude oil, the U.S. is able to cover only 51 per cent of its oil consumption from domestic sources; the remaining part has to be imported (U.S. Energy Information Administration, 2011b, Table 3.3a). The total amount of crude oil imported to the United States in 2008 stood at 11.3 million barrels per day – MBD\* (IndexMundi, 2011a) and under a „business-as-usual“ scenario, this amount is expected to rise, potentially reaching fifteen MBD in 2015 and up to twenty-one MBD in 2030 (Duffield, 2008, p. 22).

At this point we should note that the "business-as-usual" scenario from three years ago has been somewhat disrupted by the economic recession of 2008–2009 that also triggered a decline of U.S. energy consumption: while the

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\* 1 barrel = 42 U. S. Gallons = approx. 159 liters

U.S. consumed 20.7 MBD of crude oil in 2007, this figure decreased to 18.7 MBD in 2009 (IndexMundi, 2011b). However, once they pull out of the recession and its aftershocks, the economies of the main world energy consumers (the United States, the Euro area and Japan) are expected to start growing again (International Monetary Fund, 2010, p. 13), further adding to the increased demand for energy in the developing countries. Therefore, we expect that the United States (and the world) will be facing a protracted period of high commodity prices in the near future.

### Relevance of the Topic

If a period of relatively costly energy can be expected, we can also expect a discussion about energy security to become a mainstay in American political campaigns of the future (a trend visible at least since the 1970s). This thesis intends to serve as a case study of the last time energy prices reached such a level that it secured them a top spot in the political discussion – the 2008 presidential campaign.

The campaign took place over a period of time when the price of oil reached its highest nominal price ever (\$147.27 for a barrel of WTI crude during trading on the NYMEX on July 11, 2008), pushing both presidential candidates to add ambitious energy security measures to their agendas and deliver a number of speeches and proposals on the topic. We intend to compare the measures offered both by then-Senator Barack Obama of Illinois and Senator John McCain of Arizona, the presidential contenders, and to pick the one we believe to be more beneficial to the energy interests of the United States.

## Structure and Main Questions

During the process of researching for this thesis, we found out that there is no single definition of energy security, i.e. one that would describe its position within the fields of economics, politics and international relations. As a result, in the first part of the thesis, we will try to find a comprehensive tool for analyzing the two energy security strategies from 2008 by providing an answer to the question: *What exactly is energy security?*

In the second and third part of the thesis, we will apply this tool to analyze the current state of energy security of the United States of America. While the second part will define the challenges the United States faces, in Part 3 we will offer an evaluation of the proposals Barack Obama and John McCain made to overcome these challenges.

We understand these two proposals were only used in a presidential campaign and did not undergo the scrutiny of a real policy-making process in the Congress and Senate – John McCain's strategy was defeated at the polls in 2008 and Barack Obama's administration first decided to focus on a number of different initiatives, namely healthcare reform, and later got involved in the impasse with Congress over taxes and the budget. Still, the two strategies constitute the two latest attempts to offer a comprehensive energy security strategy for the United. Therefore, we expect that even future U.S. leaders will draw from these strategies (or challenge their assumptions) and use them as springboards (or punching bags) for their own energy security proposals. That

makes it logical to ask the second research question: *Which of these proposals would make the U.S. better off?*

The overall goal of this thesis then lies in the combination of these two parts: we intend to find a comprehensive definition of "energy security" and apply it on the United States. Such an approach will enable us to make certain recommendations in the area of energy policy. While we know it may be an ambitious task, the ultimate goal of this thesis therefore lies in answering the third question: *What should the United States do to increase its energy security?*

## Discussion of sources

The topic of energy security has been widely discussed in the United States at least since the oil crises of the 1970s, and it became an important issue for other countries even earlier (arguably when Great Britain decided to convert its Royal Navy from a coal-powered fleet to an oil-powered one just prior to World War I). It is therefore quite surprising that there is not a single comprehensive and respected resource on the topic. An *opus magnum* of energy security still does not exist.

However, if there is one author that could be expected to write such a book in the future, it is definitely Daniel Yergin. Dubbed "America's most influential energy pundit" by the New York Times (Garner, 2011), he is the author of *The Prize: The Epic Quest for Oil, Money, and Power* (Simon & Schuster, 1991). This volume is basically a history of oil from its discovery to 1990. While it is not a book dedicated to energy security as such, but rather a selection of important events in modern history that revolved around oil, it served as a background for a significant part of the research for this thesis.

In his most recent volume, *The Quest: Energy, Security, and the Remaking of the Modern World* (Penguin Press, 2011), Yergin tries to answer the perennial questions of energy policy: What will the future of energy look like over the next 50 years? Are we running out of oil? Is natural gas the answer? Is global warming a real danger? Such questions need to be asked by anyone studying the future of energy systems in the world, and they are very useful when analyzing the present energy needs of the world.

For country-specific information, one must turn to compilations of case studies and to academic journals. *Energy Security Challenges for the 21st Century: A Reference Handbook* by editors Gal Luft and Anne Korin (Praeger Security International, 2010) offers an overview for each of the main players in the energy field (Russia, China, the United States, European Union, countries of the Caspian Basin etc.). On the other hand, *Energy Security: Economics, Policies, Strategies and Implications* by editors Carlos Pascual and Jonathan Elkind (Brookings Institution Press, 2009) focuses not on countries, but on concepts: there are chapters on climate change and its effect on energy security, on energy independence or on how energy markets are influenced by free trade (or a lack thereof) and globalization.

Every attempt to assess the state of energy security of any country would be pointless without data: exports, imports, consumption and energy effectiveness are the key to analyzing energy policies and their outcomes. Luckily, there is a great amount of resources in this area: many U.S. federal institutions offer vast pools of tables and charts on their websites. The primary resource for this thesis was the United States Energy Information Administration, the statistical and analytical agency within the U.S. Department of Energy. The Central Intelligence Agency also offers a series of country-specific energy profiles through its publicly available World Factbook. Another important source of world energy data has been the International Energy Agency.

To keep up with the quick developments of the world energy markets and the political debates about energy security, we used the world's respected news

media, such as *The New York Times*, *The Economist* and the Bloomberg and Reuters wire services.

## **PART 1**

### **What is Energy Security?**

## Defining Energy Security

Finding a common definition of energy security is difficult, perhaps even impossible. Energy security means different things to different countries, based on their energy needs, the abundance of their sources and their geographical location. Other factors also come into play, including the domestic politics, international relations, and the economic system of each country.

There are, however, certain common aspects of energy security that apply to all states, whether they are energy exporters or importers, free-market countries or centrally planned economies. As Daniel Yergin (2006) writes, in order to ensure a stable flow of energy at a predictable price to power their economies, countries must:

- 1. Diversify their supply.** Multiplying one's supply sources reduces the impact of a disruption in supply from one source by providing alternatives.
- 2. Create a back-up.** Providing for a "security margin" in the energy supply system provides a buffer against shocks and facilitates recovery after disruptions. This kind of resilience can come from many factors, including sufficient spare production capacity, strategic reserves as well as carefully conceived plans for responding to disruptions.

From this point on, however, the ways of ensuring energy security start to divert from each other. This chapter intends to describe these what kind of energy security challenges countries face and how differently they approach them.

## Identifying Energy Needs

To begin with, each country has different energy requirements that relate to the two main energy usage sectors: electricity and transportation. Each of these sectors poses different types of energy security challenges.

### *Electricity and Transportation*

The first sector is electricity. Throughout the world today, electricity is produced from coal (40 %), natural gas (22 %), hydroelectric power (16 %), nuclear power (14 %) and biomass, solar, wind or geothermal energy (3 %). Only 5 % of the world's electricity is made from petroleum. (U.S. Energy Information Administration, 2011a, p. 86).

What this means is that energy resources in the sector of electricity generation are highly diversified and, as a result, the security challenges in this area are not that severe in most countries – although exemptions do exist, among them Brazil, which gets 90 % of its electricity from hydroelectric generators, which makes the country vulnerable to power supply shortages in drought years (Wadia, 2001).

Such a diversity of sources does not exist in the second major sector that uses substantial amounts of energy – transportation. Here, oil is the primary energy source, accounting for over 96 % of energy used in this sector throughout the world (U.S. Energy Information Administration, 2011d, p. 31).

This distinction between electricity and transportation shapes countries' perception of energy security. Some countries, for example Russia and Saudi Arabia, are almost fully energy independent, relying on their rich domestic energy resources to provide them both electricity and oil for their transportation

needs, while other countries (like the United States or France) are almost self sufficient when it comes to their electricity supply – the former thanks to its coal reserves and the latter due to its massive nuclear power industry – but are highly dependent on oil imports to power their transportation needs (Luft and Korin, 2009, p. 6).

Such dependence is not limited to resources only. There is a number of countries that are not only dependent on imported energy but whose energy supply lines are facing constant threats of cutoffs. Russia's 2008–2009 gas cutoff to the Ukraine, which in turn reduced supply to the EU (Mosolova and Polityuk, 2008), as well as repeated threats by Iran's President Mahmoud Ahmadinejad all show that the energy weapon is still alive.\*

On the other hand, even countries rich in their energy resources can face severe energy security challenges. One such case is also Iran, which has the world's third largest reserves of oil, yet it is still energy dependent on foreign sources due to its inadequate and outdated refining capacity (Luft and Korin, 2009, p. 7).

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\* As recently as in December 2011, Iran threatened that it could block oil shipments in the Strait of Hormuz, a strategically important corridor that allows access to the oil-exporting countries of the Persian Gulf (Sanger and Lowrey, 2011).

## Defending Energy Interests

The result of such a variety of energy needs among different countries is that there is no single "handbook" of rules that, if followed, would ensure sufficient energy security to each nation. Instead, we can find a number of principles or nations usually follow to assert their positions on energy markets and shield themselves from the disruptions in the supply of energy. These principles can be divided into two groups that follow the distinction between *realism* and *idealism* in the field of international politics.

### The Realist Approach

The realist approach suggests that nations compete for scarce energy resources to satisfy their energy needs. In the realist's point of view, states are the central actors in the international system and they adopt rational policies in the pursuit of power and/or security (Frankel, 1996, p. xiv). Realists assume that the real issues of international politics can be understood by the rational analysis of competing interests defined in terms of power (Smith, 1986, p. 219).

### *Consumers, Producers and Other Players*

One of the typical forms of such competition of interests is the dichotomy between countries that export energy (i. e. producers) and countries that have to import energy (i. e. consumers).

#### ***Producers***

The position of energy producers is to seek security of demand – the assurance that their production will be purchased at a fair price so that their budgets can expect a steady and predictable inflow of revenues. Guaranteed demand

is particularly important nowadays, at a time when many gas and oil fields have passed their production peaks and development of new fields requires advanced technology and enormous investments over long time periods (Luft and Korin, 2009, p. 9).

The common interests of energy producers mean that they have developed a number of international treaties and mechanisms to promote these common interests. Out of these, the 13-member OPEC is the most influential. OPEC holds 78 percent of the world's proven oil reserves and produces about 40 percent of the world's oil. During the 1960, OPEC member states took control of their own national oil resources through massive nationalization of in-country oil field and infrastructure assets. This allows the cartel to have a dominant position on the supply side and the ability to influence the price of oil through its regular meetings in Vienna where members decide on their production quotas (Jaffe, 2009, p. 78).

Another important player on the producer/exporter field and therefore a large power in the world's energy markets is Russia. Though not a member of OPEC, it occupies 13 percent of the world's territory with less than 3 percent of the world's population, but the country owns 34 percent of global natural gas reserves (world's largest), and some 13 percent of global oil reserves (U. S. Energy Information Administration, 2011f). Russia already surpassed Saudi Arabia in being the world's largest oil exporter and supplies 30 percent of the EU's oil and almost a half of its gas. As inhabitants of the Central European region know very well, Russia is using its oil and gas exports not only as a powerful economic asset, but also as a foreign policy tool that helps it either

create alliances (for example with Germany) or punish countries with different foreign policy values (as is the case with Ukraine).

Another way Russia attempts to achieve and improve its security of demand is by controlling the supply routes (particularly pipeline corridors). With the demand for energy growing, pipelines are getting longer and are crossing more than a single country. While they can bring regional stability, transit revenues and wealth to the countries that they cross, they can also create instability and competition among exporters over access to markets. In this, Moscow's desire to see a pro-Russian regime in Georgia in the hope of bringing the strategic Baku-Tbilisi-Ceyhan pipeline (BTC) under Russian control was one of the main reasons for the conflict between Russia and Georgia in 2008 (Skarbo and Petre, 2008).

### ***Consumers***

The second major group consists of energy consumers. While energy-exporting countries wish to ensure reliable demand for their produce, the importing states strive for diversity of energy supplies to maximize their security.

Despite the commonality of interest in a broad range of supplies, within the consuming community there are different sets of concerns that are met with different policy responses. As Luft and Korin write (2009, p. 10), "(f)or Americans, energy security is about oil and transportation. For Europeans, natural gas poses the most difficult challenges, as the EU becomes increasingly dependent on Russian gas. On both sides of the Atlantic, there are efforts under way to formulate an updated energy security strategy, but in both the United

States and the EU progress is slow due to political gridlock and lack of consensus on key issues."

As result, instead of developing a long-term energy security strategy, the approach to energy security adopted by most of the consuming countries is the creation of mechanisms to withstand supply disruptions and mitigate their impact. This is most commonly done through strategic petroleum reserves and multinational mechanisms like the International Energy Agency (IEA), which in case of disruption oversees the emergency allocation and distribution of oil among consuming countries of the Organization of Economic Coordination and Development (OECD). This emergency system was set up to offset major disruptions that threatened the global economy and stability, not to manage prices. Since the system's inception in the 1970s, a coordinated emergency drawdown of strategic stockpiles has occurred only twice: on the eve of the Gulf War in 1991 and in the autumn of 2005 after Hurricane Katrina (Yegin, 2006).

### ***Transit states***

In recent years, a third group of countries started playing an increasingly important role in the energy security discussion – transit states. These countries are essential bridges connecting exporters with their markets. For energy-starved India, countries like Pakistan and Afghanistan are important bridges to Iran and Turkmenistan where significant natural gas reserves are known to exist. Georgia is an essential land bridge for oil flowing from the Caspian through the Baku-Tbilisi-Ceyhan pipeline. One of the most important transit countries in the world is Turkey, which provides a bridge between energy resources of the Middle East, Russia and the Caspian Sea and the western markets. Turkey is

becoming increasingly critical to European energy security as the EU seeks ways to become less dependent on Russia. But in the geopolitical game Turkey's rise as an energy bridge to Europe is viewed in Russia as challenge, as it undermines Russia's security of demand by providing Europe with alternatives (Luft and Korin, 2009, p. 12). As a result, Russia is very active by itself in developing partnerships with individual European countries, such as with Germany (Kramer, 2011).

### *Power Challenges*

Countries facing severe energy security challenges tend to shape their international priorities accordingly. For example, China's scramble for African and Middle Eastern oil has drastically increased its interest and presence in those regions. Until the early 1990's, which was the time China turned into a net oil importer, it did not even have diplomatic ties with many African and Middle Eastern countries. But today, as China's dependence on those regions for its energy supply is growing, so does its inclination to get involved in the region's politics and provide generous foreign aid to energy-rich countries (Blas and Manson, 2011).

Other international vulnerabilities drive Chinese energy policy as well. First, China is located far from its petroleum suppliers. In 2007, 30 percent of U.S. oil imports came from Canada and Mexico, both countries that border the United States and lie securely within its sphere of influence. Meanwhile, China relies on long-haul tankers maneuvering through dangerous straits for 90 percent of its imported oil. Second, China suffers from poor geologic endowment, with only 1.1 % of proven world oil reserves (bp.com, 2010, p. 6).

Third, Chinese demand is increasing faster than world supply can keep pace. China is already the world's second-largest energy consumer and its increase in total energy consumption between 2005 and 2010 was projected to comprise 40 percent of the global increase (Howell, 2009, p. 191).

At the top of China's national energy security concerns are the Malacca Straits, through which 80 percent of China's oil imports must pass on their way from the Persian Gulf and Africa. Oil tankers in the Straits, only 1.7 miles wide at one point, risk collisions, oil spills, hijacking, piracy, and terrorism. China is also worried that the U.S. Navy, which acts as a de-facto policing force in the Straits, might blockade China's oil in the event of a war with Taiwan. This concern has led China to invest heavily in the development of modern deep-water navy and in a strategy dubbed by some as a "String of Pearls" to extend China's influence along the sea lanes of communication that connect the country to vital energy resources in the Middle East and Africa (Luft and Korin, 2009, p. 7).

Domestic policies and politics also tend to influence how nations approach their energy needs and vulnerabilities. In this case, the prime example is the European Union. The EU as a whole is currently the third largest energy consumer in the world, but comprises of 27 member states, each facing a different set of energy security challenges that are generally unwilling to have Brussels dictate the form of energy consumed and power generated on a national level. National governments largely retain the right of determining their own energy future, based on national access to resources, nationally determined and developed power grids and generating facilities, and differing and competing national decisions taken on the desirability of one type of power generation over

another. As Kevin Rosner (2009, p. 172–173) writes, "(i)n practice the absence of any common EU energy policy has allowed the Russian Federation in particular to divide EU members from one another and in some cases has allowed it to succeed in gaining access to strategic assets that would fall under an external policy control regime (*author's note: namely pipelines*). There is at least at present no evidence for optimism that there will be a substantial change in this absence of policy." As a result, the EU's efforts to secure alternative routes for oil and gas resources from Central Asia have been successfully thwarted by Russian interests, to the detriment of supply diversification for EU members (Coalson, 2011). Such lack of internal mutuality of interests as well as common external policy has led to a great level of uncertainty about Europe's energy future. Concurrently, European imports of oil and gas are increasing with no realistic prospects of abating (Rosner, 2010, p. 173).

### **The Idealist Approach**

Idealism, the other approach towards defending one's energy interests, is marked by the prominent role played by international law and international organizations in its conception of policy formation. One of the most well known tenets of modern idealist thinking is democratic peace theory, which holds that states with similar modes of democratic governance do not fight one another. In an idealist's point of view, nation states delegate some of their powers to international bodies that seek progress through mutual cooperation.

Such a view of energy security was outlined by Elkind (2010, p. 119–148), who offers a different view on energy security, taking power struggles and the ambivalence of consumers v. producers out of play and instead proposing a list

of global elements of energy security that applies to all actors in the area of energy security.

Elkind claims that there are three traditional dimensions of energy security – availability, reliability, affordability – and also a new, non-traditional one, environmental sustainability. According to his theory, nations should strive to reach these goals in unison.

### *Availability*

First and foremost, energy security stems from the availability of energy goods and services. According to Elkind (2010, p. 122), availability requires the existence of commercial energy markets in which buyers and sellers trade energy – these markets can take shape only when parties agree on terms that accommodate the commercial, economic, political, strategic and other interests of buyers, sellers, and shippers. Mutuality of interest among the players in the value chain is therefore a prerequisite of energy security.

Creation of energy markets requires physical resources, capital investment, the efficient application of technology, proper legal and regulatory frameworks, products that comply with legal and regulatory requirements, and societal acceptance of the given energy service. As this listing shows, the idea of availability is not quite as simple as it may seem.

Furthermore, over recent decades, oil and gas developments have depleted the relatively easy-to-access petroleum reserves; because of that, future gas and oil developments will involve deposits that are generally:

- scarcer, with fewer super-giant fields being discovered,
- farther from existing demand centers,
- deeper and harder to extract, often involving deepwater locations, high pressure, or high sulfur content,
- located in poorer countries, with risks of political instability and poor governance,
- located in areas where governments restrict access, whether as a matter of cartel membership, as in OPEC, or in response to other policy priorities, such as environmental concerns,
- costlier to develop.

(Elkind, 2010, p. 123)

As a result, certain energy resources may be abundant but commercially unavailable due to technology gaps. Other energy resources may be available using current technology. Therefore, the notion of availability becomes quite complicated, but if countries can cooperate on removing the obstacles, the world's energy markets could become much more stable and countries could achieve increased energy security.

## **Reliability**

Reliability involves the extent to which energy services are protected from interruption. Energy is an essential building block of economic activity; it enables modern daily life. Interruptions jeopardize the ability to run factories, illuminate hospitals or heat houses. In certain cases, therefore, energy reliability

can be a matter of life and death. Ways to enhance energy reliability include the following:

- diversifying sources of supply,
- diversifying the supply chain used for processing, transporting, and distributing energy,
- increasing the reserve capacity of energy networks such as pipelines and power generation and transmission systems,
- reducing energy demand, which can ease the burden on overstretched distribution infrastructure,
- creating emergency stocks,
- developing a back-up infrastructure,
- disseminating timely market information to prevent speculation

(Elkind, 2010, p. 125)

The notion of redundancy, reserve capacity, and emergency stocks is worth additional scrutiny. As noted before, many parts of the energy economy are exceptionally capital expensive. That is certainly the case of transmission lines, fuel stocks, and extra capacity for power generation or fuel refining. A key challenge, therefore, is determining who pays for the planned redundancy.

Another point goes to the importance of information. Many aspects of contemporary energy markets are truly global. Demand or supply dynamics in one corner of the world trigger reactions – price volatility, fuel switching, capital investment choices – far away. For example, a recent accident at the Fukushima Daiichi nuclear plant triggered a German decision to abandon nuclear

energy altogether, resulting in increased demand for natural gas (Reuters, 2011). For that reason, a steady and unobstructed flow of information, especially information about energy prices, is essential for ensuring the reliability of energy systems.

### **Affordability**

Roughly 1.8 billion people worldwide suffer from what is called energy poverty – they do not have electricity in their homes. However, the affordability element of energy security is not only whether energy prices are low or high relative to disposable income. The *volatility* of prices is even more central. Price shocks often cause serious humanitarian or economic hardship, even political instability, as energy consumers struggle to cope with unexpected financial burdens. Prices reflect market circumstances and signal market expectations, which in turn influence consumer choices and investment decisions, whether in favor of consumption or conservation. However, even in wealthy countries, when prices deviate seriously from established expectations, consumers find it hard to make rapid changes in their energy consumption.

On the other hand, a call for an increased affordability of energy might lead governments to adopting policies that make energy cheaper for consumers (e.g. lower taxes or certain forms of subsidies). That is not always the right approach. Consumers naturally tend to prefer inexpensive energy, at least in the short run, because low energy prices allow them to spend their disposable income on other things. The problem with energy policies that place a high priority on low prices is that low prices fail to reveal the full impact of energy use. There are therefore incompatible with true energy security because the

expectation of low prices encourages consumption, discourages investment in higher-efficiency manufacturing, discourages new energy development (especially for higher-cost, lower-emission technologies), and makes buyers vulnerable to price shocks when their expectations prove wrong.

Getting prices right is one of the absolutely central prerequisites to enhancing energy security. Only energy prices that convey the full cost of energy consumption stimulate appropriate consumer responses (Elkind, 2010, p. 127).

## Sustainability

In the past, definitions of energy security typically did not include environmental considerations. However, a contemporary approach to energy security must place emphasis on environmental sustainability for several reasons:

**1. Energy infrastructure is typically long lived.** Decisions made today have long-term implications for how energy is produced, converted, stored and used. An automobile bought today will be used for at least three to five years, maybe longer. But even then, it will likely live on for a decade or longer in the hands of second-hand buyers. The coal-fired power plant that a utility company builds today will be an investment based on twenty-five years of use or longer; that means that decades of carbon emissions will stem from one near-term decision. With two new coal-fired plants coming online every week in China alone, current decision-making is creating the environmental reality that will shape people's lives around the world for decades to come.

**2. Promoting energy security without promoting sustainability will promote the use of technologies and practices that will exacerbate climate**

**change.** For example, a massive push substituting petroleum with liquid ethanol led to a sharp increase in the prices of food in 2007–2008, while also causing massive deforestation in tropical areas (Wroughton, 2008). Also, some studies show that the agricultural methods used for growing crops that are used to produce liquid ethanol can in fact produce more carbon emissions than the use of petroleum itself and that "(u)sing good cropland to expand biofuels will probably exacerbate global warming" (Searchinger et al., 2008, p. 3).

**3. Climate change will clearly affect energy systems profoundly.** For example, rising sea levels will require redesign and reconstruction of the transportation infrastructure that serves energy systems – from oil terminals to shoreline rail and road systems (Elkind, 2010, p. 129).

### **A Triumph of the Realists?**

From the paragraphs above, one may get the sense that the achieving a common recognition of the idealist approach towards energy security is an impossible goal. It would require energy producers to remove all market barriers (cartels, production quota), while energy-consuming countries would need to recognize all the externalities caused by the use of energy, something that would most likely involve higher taxes on energy consumption. At the same time, both groups of countries will be required to invest large sums of money into more efficient technologies, safeguard infrastructure and conservation.

The slow progress that takes place in the area of limiting global greenhouse gas emissions shows us that a major breakthrough in common energy security in the near future is highly unlikely.

## The Energy Security Myth: Energy Independence

“Let this be our national goal: At the end of this decade, in the year 1980, the United States will not be dependent on any other country on the energy we need to provide our jobs, to heat our homes and to keep our transportation moving.” (Moore, 1975, p. 2)

**U.S. President Richard Nixon, January 30, 1974**

“I am tonight setting a clear goal for the energy of the United States. Beginning this moment, this nation will never use more foreign oil than we did in 1977 – never.” (Carter, 1979)

**U.S. President Jimmy Carter, July 15, 1979**

One more issue that is often mentioned in the energy security debate deserves a closer scrutiny. It is the notion that energy security must involve not being dependent on foreign energy sources. In fact, two U.S. presidents proposed that energy security equals to *energy independence* – that a state becomes the most secure when it is able to cover its energy consumption using only domestic sources. But while politicians have often used this point of view in their election campaigns, analysis of academic resources offers a different perspective.

The underlying premise of the idea of energy autarky\* seems to be that the less oil the United States buys from abroad, the more insulated the U.S. economy will be from the fluctuations of world oil prices and their consequences.

However, according to several sources, the logic of such premise does not seem to work in the environment of a globalized economy. Nivola and

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\* Autarky = the quality of being self-sufficient

Carter (2010, p. 106) use a comparison between the price of crude oil in the United States and the United Kingdom to prove that even a net oil exporting country is exposed to the same price shocks that influence countries that import lots of oil: The United Kingdom has been a self-sufficient country in terms of oil since the 1980s thanks to its reserves in the North Sea. However, its citizens were no better insulated from the rise of the global price of oil that occurred between 2000 and 2007.

Another point that supports the argument that energy security does not equal energy independence is that although the U.S. economy today has to import about 60 per cent of the oil that it consumes, it is actually less, not more, sensitive to rising international oil prices than it was under President Richard Nixon, when it imported only about a third of U.S. consumption (Nivola and Carter, 2010, p. 107)

Nivola and Carter further analyze the relationship between movements in oil prices and the rates of U.S. economic growth (Nivola and Carter, 2010, Figure 5-2). The United States fell into recession following the first energy crisis (the shock that followed the Arab oil embargo in 1973). The U.S. economy suffered again from the second oil shock associated with the Iranian revolution in 1979–1980, and the same effect occurred – albeit less markedly – around the time of the Gulf war in 1990. After that, however, subsequent oil price spikes, like the one starting in 1998, did not seem to take that much toll on the economy (the severe drop in U.S. growth after 2008 occurred due to a financial crisis, not an oil price hike). The increased energy efficiency of the U.S. helped it to overcome price hikes with much less damage.

Another example of the difference between energy independence and energy security becomes obvious when we look at the challenges that faced the United States after hurricanes Katrina and Rita hit the coast of the Gulf of Mexico in late summer 2005. The reliability of U.S. energy supplies was temporarily undermined due to problems affecting *domestic* supply lines. More than 100 oil and gas production platforms in the gulf were damaged by the storms, and nearly 20 percent of the country's refinery capacity was taken out of service. The country's only deepwater oil import facility, the Louisiana Offshore Oil Port (LOOP) was also disabled for a time after each of the storms. The country experienced major energy security challenges regardless of the fact that the interrupted parts of the supply chain were completely within U.S. control. Access to imported fuel was actually critical to restoring a reliable energy supply inside the U.S. market after Katrina and Rita.

It is certainly true that reducing dependence on foreign oil imports might be desirable for other policy reasons. For example, current U.S. consumption of foreign oil contributes to a massive trade imbalance because the nation transfers hundreds of billions of dollars overseas each year. (...) Nonetheless, even if the United States had zero dependence on foreign oil, it would face energy security challenges as a result of its considerable energy intensity. Domestically produced oil – or economic substitutes for oil – would be just as subject to price fluctuations in an integrated global oil market as current imports are. In times of high global prices, U.S. producers of petroleum or ethanol would be tempted to export production, which could squeeze supply for domestic consumers.

As a result, it is obvious that the words of politicians are not a legitimate source for an encompassing definition of energy security. When we ask *What exactly is energy security?*, the answer is far more complex than just being independent from oil imports.

## **PART 2**

### **The Costs of Being Dependent on Oil**

## Measuring the Impact of Dependence

The United States is the largest energy consumer in the world, which has some serious implications for the national economy.

The situation is particularly challenging with respect to oil. The world demand for this resource is projected to increase from 87.1 million barrels per day (MBD) in 2010 to 88.2 MBD in 2011 and 89.6 million MBD in 2012 (U. S. Energy Information Administration, 2011g). While oil is the world's major source of energy, it also increasingly suffers from political geographical obstacles to the development of new production capacities, especially nowadays, when many oilfields are nearing their peak capacity.

Such limitations apply to the U.S. as well. In the past, the U. S. had been a net oil exporter, and it still has significant oil reserves – but an important part of them is located in areas that are environmentally protected, and therefore, under the current legislation, the oil be extracted.

Currently, about 49 % of the oil and petroleum products consumed in America come from abroad. Such a level of reliance on foreign supply of oil brings along a number of external costs. The purpose of this chapter is to summarize all these costs. To begin with, the costs of U.S. foreign oil dependence can be divided into two broad categories: direct and indirect.

### Direct Costs

Direct costs are the actual costs that result from U.S. dependence on imported oil. These costs could be further divided in two groups – recurring costs associated

with importing large quantities of oil, and the harm caused by periodic oil supply disruptions (so called „oil shocks“).

## Recurring costs

### *Wealth Transfers Abroad*

The actual price of oil in the world market is higher than the competitive price would be (Parry and Darmstadter, 2003, p. 11). One of the reasons is that in many oil-producing countries, governments rather than market forces determine the amount of oil produced – oil resources in these countries were nationalized or are exploited by a monopolistic organization. Oil exporting countries also coordinate their export levels in order to influence world prices – this coordination usually takes place through cartels, most notably the Organization of the Petroleum Exporting Countries (OPEC), but it often involves OPEC non-members, too.

Since the domestic oil price in the U.S. is set by the (uncompetitive) world oil market, U.S. consumers transfer a part of their wealth to producers, both in the U.S. and abroad. The size of this transfer is equal to the quantity of oil imported by the U.S. multiplied by the difference of the actual market price of oil and what the competitive world price would be. Several attempts to calculate these costs have been made (Duffield, 2008, p. 33): the first study, conducted by Oak Ridge National Laboratory, set the competitive oil price at \$9.10 per barrel for the period 1972–1991. Using this number, the study found out that \$1.2 trillion in 1990 dollars had been transferred to foreign producers over the abovementioned period (\$1.9 trillion in 2008 dollars). A later study lowered the

transfer to \$1.16 trillion in 1998 dollars for years 1970–1999, using \$11.27 as the world competitive price over that period.

### *Price Premium*

Another aspect of U. S. dependence on foreign oil that is mentioned in the literature (and one also related to imperfect competition in world markets and therefore generating wealth transfers away from the U. S.) is a price premium stemming from the U. S. power in the global market. Because U. S. consumption constitutes a substantial fraction of total global petroleum consumption, if U. S. customers increase their demand for oil, there is a significant effect on world demand, and the world oil price is likely to increase. This is called a monopsony power. Estimates of the price premium vary from \$0 to \$4 per barrel (Parry and Darmstadter, 2003, p. 20).

### *Loss of Potential Gross Domestic Product*

The result of U.S. dependence of foreign oil, and the subsequent transfer of wealth abroad as well as the price premium, is a decrease in domestic gross domestic product (GDP). „While beneficial to U.S. oil producers, higher oil prices raise the real cost of domestic and imported oil for U.S. businesses and households, thereby crowding out other opportunities for consumption and saving“ (Toman, 2002, p. 21). Therefore, the economy can produce less with the same use of other factors of production (capital, labor, materials, etc.).

How large are these losses? Duffield (2008, p. 33) uses the data from the same Oak Ridge study that assumed competitive oil price of \$9.10 over 1979–1990. Using this number, the study estimates a potential loss for that period at \$1.4–\$2.1 trillion in 1990 dollars, i. e. \$2–3 trillion in 2008 dollars.

## Oil Shocks

The world price of oil had been very stable from the 1940s to 1970s. However, after that period, the world witnessed a number of supply disruptions. First, after the U.S. intervention in the Arab-Israeli War in October 1973, OPEC unilaterally raised the price by about 70 per cent (from about \$3 to \$5 per barrel), and its Arab members decided to scale back oil production by 5 per cent per month until Israel withdrew its forces. In March 1974, Arab oil-producing countries restored the production, but oil prices remained at the new, higher levels.

The second oil crisis occurred in October 1978, when Iranian oil workers went on strike. Many companies, refiners, and governments reacted by building up their inventories, therefore increasing the scope of global oil shortfall to as much as 5 MBD. The price of oil increased from \$13 in October 1978 to \$41 in November 1979, and later stabilized at around \$34 in mid-1980's.

The third shock occurred only two years later, in September 1980, with the outbreak of the Iran-Iraq war. The war removed ca. 4 MBD from the market. Prices shortly jumped up to \$42 per barrel, but following a quick reaction of Saudi Arabia that increased its oil output, they returned to \$32.5 by 1981.

The fourth shock occurred in 1990, following Iraq's invasion into Kuwait. This crisis was short-lived, too. Following another quick reaction of Saudi Arabia, by January 1991, prices had fallen back to pre-war levels of \$16.5 from \$33 in October 1990 (Duffield, 2008, p. 40–41).

We might also consider the year 2008 to be the fifth oil shock – because of the increased demand from India and China, world oil prices have reached their absolute highest level (unadjusted for inflation) of \$147 in July 2008 (Econbrowser.com, 2008). Although the price fell as low as \$34 per barrel in February 2009, it has been rising steadily since that time, reaching \$72 per barrel (West Texas Intermediate Crude Oil) in December.

### *Effects of Oil Shocks*

As Duffield (2008, p. 41–42) notes, sudden increases in oil prices influence the U.S. economy in three ways:

- 1.** Oil consumption and oil production are relatively unresponsive to price increases (inelastic). Therefore, it can take some time before higher prices result in significantly lower demand. In the meantime, consumers must pay high prices for the imported oil, which reduces their income and purchasing power.

- 2.** Over the longer term, the country's potential economic output might be reduced because of a prolonged oil price hike. Firms that are unable to find other sources may use less energy, which reduces the amount of output they can produce with a given supply of labor and capital. Productivity will therefore decrease.

- 3.** The economy's adjustment costs to the price hike (e. g. the costs of substituting the old and ineffective energy-using equipment with newer technology) are higher in the case of a sudden oil shock than they would be if the economy was able to adjust in the long run.

What are the costs of these disruptions? Oil shocks are usually followed by a recession in the U.S. (Greene and Ahmad, 2005, p. 28). The same applies to the oil price hike in 2008. Duffield (2008, p. 43) summarizes the results of different studies, concluding that the total macroeconomic adjustment costs imposed by oil shocks reached \$1 to \$3 trillion (without including the consequences of the 2008 oil shock). However, he also concedes that some economists have questioned whether the recessions were caused by high oil prices, or rather by misconceived monetary or other policies.

## Indirect Costs

### *Costs Associated With the Use of Automobiles*

These external costs are not directly associated with U.S. dependence on foreign oil, but rather with a certain aspect of U.S. lifestyle – the use of the automobile as the preferred transportation means of choice. Because part of these costs is direct economic cost stemming from the use of petroleum, they deserve to be included in this chapter.

Parry (2005) offers an analysis of automobile usage costs. Three of these externalities (air pollution, global warming, and oil dependency) are of more use for this paper, because they are referred to as per-gallon external costs, and can therefore be directly connected with the use of petroleum (the more petrol is used, the higher the cost). The other two external costs (caused by traffic congestion and traffic accidents) can rather be linked to the use of automobiles as such, regardless of what fuel they use. Parry refers to them as to per-mile costs.

### *Local Air Pollution*

There are many ways in which air pollution from automobiles influences the economy: ash particles and smog formation have an effect on human mortality and morbidity, as well as impair visibility and harm local ecosystems. Damages from emissions vary across regions, with population exposure as well as geographic and climate conditions affecting the severity of its effects. Nonetheless, according to Parry (p. 3), „a reasonable central estimate for the nationwide damages from local emissions might be (...) around \$0.40 per gallon.“

### *Global Warming*

Studies put the present value of damages to the market sectors of the world economy from future climate change induced by today's greenhouse gas emissions at below \$50 per ton of carbon, which is equivalent to less than \$0.12 per gallon of gasoline (Parry, 2005, p. 3). However, the exact cost of global warming induced by gasoline usage are hard to estimate because these calculations do not take into account the possibility of a sudden climate change that could have catastrophic consequences (such as the reversal of the Gulf Stream), or social and political upheavals caused by climate distress. As a result, the exact future cost of global warming is highly contentious.

### *Traffic Congestion*

There are some external costs caused by traffic congestion – usually calculated as the number of hours people are late to work and therefore couldn't participate in wealth creation. According to one study quoted by Parry, the best assessment of traffic congestion costs for passenger vehicles is \$0.05 per mile (p. 5).

### **Traffic Accidents**

It is hard to say what exact influence more automobiles on American roads have on mortality rates: Extra driving by one driver might increase the likelihood that other drivers will crash, but drivers may also compensate for higher traffic volumes by driving slower and more carefully. Studies used by Perry have put the marginal external cost of traffic accidents at around \$0.02 to \$0.07 per mile (p. 6).

### **Policy Implications**

The data summarized above shows that the energy policies promoted by the U. S. government (which have traditionally emphasized inexpensive retail energy) do not reveal the true cost of petroleum usage. On the other hand, since the 1970, western European and Japanese policies have sought to discourage consumption by using taxes to raise retail energy prices (Elkind, 2010, p. 128) and to account for the externalities caused by automobile traffic.

While U. S. citizens undeniably benefitted from the lower cost of gasoline at American pumps, the external costs of petroleum usage had to be incurred somewhere else – namely in the area of U. S. foreign policy.

## Dependence and its Impact on Foreign Policy

As a result of its dependence on imported oil, the U.S. has a vested interest in keeping the world price of oil low and stable. This kind of interest resulted in a number of poor foreign policy decisions regarding oil-producing countries, notably in the Middle East. This chapter offers an overview of such decisions.

### Iran

During most of the 1970's, the United States unconditionally supported the shah of Iran. In the view of the U.S. government, Iran under shah's rule provided a defensive bulwark against the Soviet Union and enhanced the region's overall stability (Litwak, 1984, p. 143). In exchange for U. S. support, in November 1977, the shah publicly promised to oppose any oil price hikes by OPEC (Yergin, 1991, p. 645–646)

The U.S. exported huge amounts of military equipment to Iran without any conditions – the U.S. never engaged the shah on the subject of human rights and even exported crowd-control equipment, including tear gas, to the country as revolutionary events unfolded there in 1978. In order not to offend the shah, successive U.S. administrations have also limited intelligence gathering within Iran. As a result, U.S. operatives had no contact with opposition elements, and the civil unrest in 1978 caught U.S. officials by surprise, leaving them unprepared to respond to the events that eventually lead to the Islamic revolution in 1979 (Duffield, 2008, p. 111–112).

## Iraq

Later, after the fall of the shah, the U.S. turned the focus of its Middle-Eastern diplomacy towards Iraq. Following the Islamic revolution, Iran had become the main threat to U.S. interests in the Persian Gulf. "With (the shah's) departure and the arrival of a hostile Islamist regime in Tehran, the United States was left strategically naked in the Persian Gulf, with no safety net" (Sick, 2003, p. 293). For lack of better alternatives, the United States soon settled on Iraq as a prime vehicle for protecting its regional interests (Duffield, 2008, p. 112)-

United States supported Iraq in the Iran-Iraq war (initiated by Iraq in 1980), providing the country with economic aid, military intelligence, and arming the Iraqi army during the conflict. Just as in the case of Iran before, the U.S. government tolerated a variety of transgressions by Saddam Hussein's regime, which engaged in an extensive use of chemical weapons against both Iranian forces and its own Kurdish minority. Although the Reagan administration's support to Iraq in the 1980s helped to prevent Iranian victory, it also enabled Iraq to pose a greater military threat to its neighbors and become a major source of instability in the region in the 1990s and 2000s – instability that in fact lead to higher oil prices (Duffield, 2008, p. 115).

## Afghanistan

A very similar pattern can be observed in the case of Afghanistan. Following the Soviet invasion of Afghanistan in 1979, President Carter authorized the CIA to provide weapons and ammunition to Afghani resistance fighters – the mujahedeen. The program continued under the Reagan administration until the Soviet withdrawal in 1988. Besides the traditional cold war objective of

preventing the expansion of Soviet influence, one of the reasons for such support were concerns about the threat that Soviet military presence posed to Persian Gulf oil supplies. After the Soviet forces withdrew in 1988, the U.S. and its allies lost interest in Afghanistan and did little to help rebuild the war-destroyed country. Afghanistan fell into a state of anarchy, allowing the radical Islamist movement Taliban to take over the government in 1996. Taliban-led Afghanistan later became a safe haven for al-Qaeda, providing the organization with bases to train terrorists that committed the attacks of 9/11 as well as other terrorist acts around the world.

### **Saudi Arabia**

When it comes to oil, by far the most important U. S. bilateral relationship has been with Saudi Arabia. U. S. interests in Saudi Arabia have derived first and foremost from the country's unrivaled oil resources. Since the 1970s, Saudi Arabia has possessed between 20 and 25 percent of the world's proven oil reserves.

Fortunately for policymakers in Washington, American and Saudi interests with regard to oil production and pricing have overlapped considerably (Duffield, 2008, p. 116). As a result, the United States has not needed to engage in substantial diplomatic efforts to achieve its principal objectives vis-à-vis the Saudis. The primary objective of U. S. policy towards the country since the first oil shock has been to enlist Saudi help in stabilizing the international oil market and moderating prices. As in the case of Iran in the 1970s, the main tool used to further U. S. oil-related interests has been the sale of military goods and services.

On several occasions, however, these sales have created apparent conflicts with other American goals in the region.

First, the buildup of the Saudi military has at times conflicted with the security of Israel. Second, the United States has been reluctant to promote political, economic, and social reforms in Saudi Arabia or to press the government to modify external and internal policies that have raised concern in Washington (Duffield, 2008, p. 121). Few pairs of countries have been *less* alike than the United States and Saudi Arabia. For example, until recently, the kingdom possessed no representative bodies or meaningful elections. Criticism of the royal family, the Saudi government and religious leaders has been legally forbidden and strictly monitored, and the country has placed restrictions on the public and professional roles of women. As Hanson (2002, p. 27) observed, "(n)o country in the world is more hostile to the American idea of religious tolerance, free speech, constitutional government, and sexual equality".

### Policy Implications

The examples above make us believe that U.S. dependence on foreign oil has often distorted the conduct of its foreign policy with regards to the Middle East, leading to misconceived actions. In all the cases, actions originally intended to improve U.S. energy security eventually lead to a decrease in general security: money, weapons and intelligence were transferred to authoritarian regimes that supported terrorism and denied its citizens basic human rights. U.S. credibility in the world was undermined: instead of promoting human rights and the rule of law, several U.S. administrations courted extremist movements, often breaking the laws of their own country (for example by secretly transferring U.S. military

equipment through third countries in violation of arms exports legislation, as was the case in the Iran-Contras affair).

The outcomes of these distorted policies are even more apparent today. Shortly after the Iran-Iraq truce in 1988, Iraq invaded Kuwait. „Saddam Hussein did what his Gulf patrons had earlier paid him to prevent. Having turned back the threat to the Gulf from Iranian fundamentalism, he overran Kuwait and confronted his Gulf neighbors in the name of Arab nationalism and Islam“ (Esposito, 1997, p. 57). Although Operation Desert Storm in 1991 freed Kuwait, the administration of George Bush at that time decided not to overthrow the government of Saddam Hussein.

Only after the attacks of 9/11 did the U.S. government initiate a military action to topple Saddam Hussein's regime in Iraq. The public image of these military efforts was marred from the very beginning not only by the use of a discredited evidence that Iraq was developing weapons of mass destruction, but also by accounts that Saddam Hussein „had once been America's friend“. Photos of Saddam Hussein shaking hands with former Secretary of Defense Donald Rumsfeld (at that time special envoy of President Reagan) in 1983 appeared in the media (Borger, 2002). The initial bad perception of the Iraq campaign even intensified with the increase of the number of terrorist attacks in Iraq and with the deteriorating security situation in the country.

In Afghanistan, the Taliban regime was overthrown in 2001 by mujahedeen organized in the Northern Alliance with the support of U.S. forces. However, the current U.S.-backed government in the country still faces a Taliban-led

insurgency and even a prolonged American military presence in the country fails to deliver needed security.

It can be said with certainty that in Afghanistan, the U.S. forces are still carrying the burden of previous bad decisions motivated primarily by the U.S. dependence on foreign oil. If the issues of both Afghanistan and Iraq were approached in the past with more deliberation (a nation-building effort in Afghanistan after the defeat of Soviet invasion, promoting a democratic change in Saddam Hussein's Iraq in the 1980's), many of the problems the U.S. now faces would not have appeared or would have been less intense.

## Reducing the Costs of Dependence

After we have discussed the costs of the U.S. dependence on (foreign) oil, the conclusion is clear: there are massive external costs caused by U.S. dependence on foreign oil. We will now provide an overview of the several approaches that are available to lower the dependence and therefore mitigate the costs. These approaches generally fall into three categories: reducing the consumption of oil, improving efficiency, and increasing domestic production of oil.

### Reducing Consumption

The first way offered to lower U.S. consumption of oil is to discourage demand, mainly through the use of taxes and fees. Professor Steve Running from the University of Montana considers this way the only one possible – „only a price signal of gasoline costing \$6 per gallon“ will open the way to other ways of reducing U.S. foreign oil dependency, such as increasing efficiency and promoting alternative fuels (author’s interview with Steve Running, 2009).

The U.S. government imposes excise taxes on gasoline, diesel, and other liquid fuels used in transportation. However, their purpose has never been to discourage demand for oil. They have rather been justified as a means to fund the federal highway program. The current U.S. gasoline tax rate is \$0.40 per gallon, which is five to ten times less than in some other countries. Drivers in Japan pay \$2.15, in Germany \$4.01, and in the UK \$4.22 in gasoline taxes per gallon (Duffield, 2008, p. 65).

To mitigate the costs connected with petroleum usage outlined in his study, Parry (2005, p. 9) offers a tax on mileage instead of per-gallon gasoline tax and argues that economically efficient tax on mileage to account for externality and fiscal considerations would be \$0.14 per mile, which is equivalent to \$2.80 per gallon at the current level of fuel economy (the average fuel efficiency of U. S. automobile fleet is 20 mpg, i. e. 11,76 litres/100 km).

### **Improving Fuel Efficiency**

There have been several attempts in the past to increase the fuel efficiency of U. S. automobile fleet – first, in 1974, the Nixon administration imposed a fifty-five-mile-per-hour federal speed limit. According to one estimate, the speed limit saved 2.5 billions of gallons of gasoline and diesel in 1983 alone (Duffield, 2008, p. 66). Because of the falling gas prices, however, the limit was relaxed to sixty-five miles per hour in 1987, and fully repealed in 1995.

The other approach to increasing fuel efficiency has been imposing fuel economy standards for vehicles sold in the United States. The Energy Policy and Conservation Act of 1975 set up the Corporate Average Fuel Economy (CAFE) program, that established separate standards for passenger cars and light-duty trucks. The standard for cars rose from the initial level of 18 mpg in MY (model year) 1978 to 27.5 mpg in MY 1985. It was slightly relaxed later, but returned to 27.5 mpg in MY 1990, where it has remained until today (the standard for light trucks is 20.5 mpg).

On May 19, 2009, president Barack Obama proposed an entirely new federal standard with the goal to achieve an average fuel economy standard of 35.5 miles per US gallon (39 mpg for cars and 30 mpg for light trucks) in 2016.

The goal of the plan is to achieve a reduction in oil consumption of approximately 1.8 billion barrels over the life of the program (Office of Press Secretary, 2009).

There are, however, certain doubts about the outcomes of increased fuel efficiency. One study used the model of Scottish economy to calculate the „rebound“ and „backfire“ effects of increasing energy efficiency and came to rather surprising conclusions: „we find that an improvement in energy results in an initial fall in energy consumption, but this is eventually reversed: positive output and substitution effects associated with lower effective energy prices ultimately outweigh the direct efficiency effect.“ In other words: lower energy prices (achieved thanks to improved efficiency) eventually lead to an increase in the demand for energy, outweighing the benefit of better efficiency (Hanley, McGregor, Swales, and Turner, 2008, p. 705).

The authors further conclude that „(t)hese results are not what advocates of energy efficiency would anticipate or wish for, but they are important for the appropriate conduct of energy policy. (...) The results presented here imply that in order to ensure that increased energy efficiency generates improvements in local sustainability indicators it is necessary to counteract the positive competitiveness effects that occur due to the fall in the cost of production in energy-intensive sectors. This could be achieved by the introduction of a (higher) tax on energy use or a carbon tax“ (p. 705–706).

## Increasing domestic production

Another way of reducing U.S. dependence on foreign oil is by increasing the amount of oil that is produced domestically. U.S. oil production has dropped by more than 33 per cent since 1973, and this trend wasn't stopped even by the construction of the Trans-Alaska Pipeline that has been bringing substantial amounts of oil from Alaska's North Slope since 1977. Alaskan oil production peaked at 2.0 MBD in 1988, covering about 20 per cent of U.S. oil output at that time. Production has since fallen by more than a half (Duffield, 2008, p. 75).

However, increasing domestic production of oil requires huge capital investments without ensuring the desired effect: for example, during the 2008 presidential election campaign, John McCain proposed opening up environmentally sensitive offshore zones to oil drilling in response to the jump in oil and gas prices at that time. However, the Energy Information Agency (EIA) projected that this proposal would have almost no effect on oil prices since production will only reach 200,000 barrels a day (0.2 percent of projected world production) and achieve peak production only as late as in twenty years (Baker and Szembrot, 2008, p. 1).

Authors Baker and Szembrot instead argue that if the U.S. government had increased mileage standards after 1985 (at that year, the standards were actually somewhat relaxed and later pegged at the 1985 level of 27.5 mpg for passenger cars and 20.5 mpg for trucks) at the rate of 0.4 mpg per year for both cars and light trucks, then the standard for cars in 2007 would have been 36.8 mpg and the standard for light trucks would have been 28.3 MPG. The average for the 2008 fleet of cars on the road would then be over 32 miles per gallon. According

to the authors, such an increase in standards would save the U.S. over 3,300,000 MBD in 2008 only – about sixteen times more than the increase of production that could be achieved in 2027 by adopting McCain’s offshore-drilling plan (Baker and Szembrot, 2008, p. 2).

### **Policy Implications**

If we ask *which approach to lower the U.S. consumption of oil will achieve the outcome most effectively?*, the answer is not clear. Professor Steve Running suggests that only increased taxes will improve fuel efficiency and encourage the development of alternative fuels. Others argue that the gas efficiency levels of cars should have been regularly tightened in the past, and link this conclusion to proposals to open new offshore drilling facilities. The benefits of regularly adjusting fuel efficiency standards would save so much oil, the study says, that any new drilling on American soil would not be necessary for many years to come.

As a result, it is obvious that any attempt of a future administration to mitigate the costs of U.S. foreign oil dependence will have to use a mixed approach: i.e. combining both reducing domestic consumption through imposing a higher tax on petroleum, and increasing efficiency by setting up fuel consumption standards and promoting the development and commercial use of alternatives such as hybrid cars, buses and other forms of public transport, as well as alternative fuels.

## **PART 3**

### **Analyzing Energy Security Proposals**

## How We Analyzed

To analyze the proposals of John McCain and Barack Obama, we developed the following set of priorities that we believe an ambitious and comprehensive energy security plan should deal with and that are based on the definition of energy security described in the preceding chapters.

### **1. Energy effectiveness**

The significant factor that contributed to the lower sensitivity of the U. S. economy to energy shocks in the recent years is a decrease in its energy intensity – to produce a dollar of GDP, it now requires about 40 per cent less energy than it did twenty-five years ago. As a result, the inflationary (and then contractive) impact of energy-price hikes seem to have subsided over time. When energy inputs play a proportionally smaller part in generating overall output, the economy tends to absorb higher fuel prices more easily. (Nivola 2010, 108).

Therefore, we expect a good comprehensive energy security strategy to offer solutions for increasing energy effectiveness – for example fuel efficiency standards, taxation of consumption, or some way of promoting the use of public transport and carpooling (or other forms of energy conservation).

### **2. Diversification**

Experience has shown that efforts to maintain energy security countries must abide by several principles. Multiplying one's supply sources reduces the impact

of a disruption in supply from one source by providing alternatives, serving the interests of both consumers and producers, for whom stable markets are a prime concern. As a result, each energy security policy should aspire to increase the number of energy sources a country uses to power its economy.

In the case of the United States, where transportation is the primary concern, diversification means offering and supporting alternatives to petrol. These may include ethanol-based fuels, hybrid vehicles, electric vehicles (EVs) and other forms of providing cars with power, including technologies that are currently in the development stage (such as hydrogen-powered vehicles).

### **3. Resilience**

Another guiding principle of energy security is resilience, a "security margin" in the energy supply system that provides a buffer against shocks and facilitates recovery after disruptions.

Resilience can come from many factors, including sufficient spare production capacity, strategic reserves, backup supplies of equipment, adequate storage capacity along the supply chain, and the stockpiling of critical parts for electric power production and distribution, as well as carefully conceived plans for responding to disruptions that may affect large regions. Any energy security proposal should therefore meet these challenges head on.

### **4. Integration**

The United States needs to recognize the reality of integration of the world energy markets. There is only one oil market, a complex and worldwide system

that moves and consumes about 86 million barrels of oil every day (Yergin, 2006). For all consumers, security resides in the stability of this market. Secession is not an option for the U. S.

Therefore, any attempts to achieve self-sufficiency are futile. A well-thought energy security strategy for the United States should admit this fact and focus on improving the stability of the world oil market, instead of trying to isolate the domestic energy system.

## **5. Information**

The last principle is the importance of information. High-quality information underpins well-functioning markets. On an international level, the International Energy Agency has led the way in improving the flow of information about world markets and energy prospects. That work is being complemented by the new International Energy Forum, which holds regular meetings of energy ministers and which seeks to integrate information from producers and consumers. (Yergin, 2006).

Information is no less crucial in a crisis, when a mixture of actual disruptions, rumors, and fear can instigate consumer panics. In such situations, governments should counter panics by providing high-quality, reliable and timely information. The U.S. government can promote flexibility and market adjustments by expediting its communication with companies and permitting the exchange of information among them, with appropriate antitrust safeguards, when necessary.

## Barack Obama

Senator Obama has been critical of the energy policy of his predecessor, George W. Bush. "Saying that America is addicted to oil without following a real plan for energy independence is like admitting alcoholism and then skipping out on the twelve-step program\*," Obama said in 2009 (CBS News, 2009), referring to President George W. Bush's 2006 State of the Union address. In this address, President Bush referred to the fact that the U. S. is addicted to oil that is "often" imported from "unstable parts of the world" (Washingtonpost.com, 2006). The Bush speech seemed to be a continuation of the way of thinking of some previous U.S. presidents who thought that getting rid of the dependence on foreign oil is a magic solution to all of U.S. energy woes.

In August 2008, at a time of peaking oil prices, Obama unveiled his "New Energy for America" plan, which included measures to reduce U.S. dependence on foreign oil and to provide "short-term relief to American families facing pain at the pump" due to high gas prices. According to the plan, Obama would impose a windfall profits tax on oil companies and use the proceeds to provide a \$1,000 tax rebate for married couples and a \$500 tax rebate for individuals. Those rebates would "offset the entire increase in gas prices for a working family over the next four months; or pay for the entire increase in winter heating bills for a typical family in a cold-weather state," Obama said.

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\* Twelve-Step Program = a set of guiding principles promoted by the international mutual aid movement Alcoholics Anonymous. The steps include, among others, admitting an addiction, examining past errors and learning to live with a new code of conduct.

Obama also said in August 2008 that he supports the sale of 70 million barrels of oil from the Strategic Petroleum Reserve "for less expensive crude, which in the past has lowered gas prices within two weeks." This statement signaled a shift of position for Obama, who in July 2008 said he did not believe the United States should use that reserve supply.

Obama also said he would attempt to reduce oil consumption by 7.64 million barrels a day by 2025 from current levels. He also said he would invest \$150 billion over 10 years toward new alternative energy technology, and to "accelerate the commercialization of plug-in hybrids, promote development of commercial scale renewable energy, invest in low emissions coal plants, and begin transition to a new digital electricity grid."

Obama has said Americans will have to change their behavior to reduce energy consumption. "We can't drive our SUVs and eat as much as we want and keep our homes on 72 degrees at all times... and then just expect that other countries are going to say okay," Obama said at a May 2008 campaign rally in Oregon (AFP, 2008).

Obama has also said that he supports tax breaks and loan guarantees for users of clean energy sources like ethanol and blended fuel E85. More controversially, Obama, whose home state of Illinois has a large coal-mining industry, supported coal-to-liquid (CTL) fuel legislation under consideration in Congress, even though some experts say that converting coal to liquid fuels might cause even more carbon dioxide pollution than gasoline. Obama explained his support for CTLs, saying they "will create jobs and lessen our dependence on foreign oil." Obama broke ranks from many of his fellow Democratic senators

voting for the 2005 Energy Policy Act, which authorized tax incentives and loan guarantees for energy production that avoids greenhouse gases, including renewable sources as well as nuclear reactors.

At a debate in January 2008, Obama said he would support more nuclear power if it could be made cost-efficient and safe, and the waste stored effectively. He noted, if that can be done, "then we should pursue it because what we don't want is to produce more greenhouse gases." (Council on Foreign Relations, 2008a)

In June 2008, Obama said he would close the "Enron loophole," a legislative provision pushed through Congress by Enron lobbyists in 2002 that Obama says allows oil speculators to escape federal regulation and gouge fuel prices. Obama said that loophole prevents the Commodity Futures Trading Commission from effectively overseeing the oil futures market and investigating "cases where excessive speculation may be driving up oil prices."

Obama also said he would implement a windfall profits tax on oil companies. Revenue from that tax would be invested in "mechanisms to reduce the burden of rising prices, such as expanding resources for the federal Weatherization Assistance Program, increasing federal support for state and local-level efforts to relieve the burden of rising energy prices on low and moderate-income families, and helping permanently expand the Low Income Home Energy Assistance Program, which helps families pay their heating and cooling bills," the Obama campaign said in June 2008.

Obama criticized proposals for a gas-tax holiday, which he says would "take \$3 billion a month out of the Highway Trust Fund and hand it over effectively to our oil companies." (ABC, 2008). Obama also opposed domestic oil exploration (CNN, 2008a), arguing that it would not immediately lower gas prices for American consumers. Still, in August 2008, Obama said he might be willing to support some offshore drilling as part of a broader compromise on energy policy. "My interest is in making sure we've got the kind of comprehensive energy policy that can bring down gas prices," Obama said (CNN, 2008b). "If, in order to get that passed, we have to compromise in terms of a careful, well thought-out drilling strategy that was carefully circumscribed to avoid significant environmental damage – I don't want to be so rigid that we can't get something done."

### Assessment

Obama's proposal successfully passed our five-part test. The policies Barack Obama proposed focused on energy effectiveness, diversification, resilience, integration and information. However, at the same time, some of the policies promoted by Barack Obama were contrary to the energy security of the United States. One of these policies is the proposal to sale 70 million barrels of oil from the Strategic Petroleum Reserve to lower the price of gasoline at oil pumps. While this policy could reduce the strain being put on American citizens and businesses over a short period of time, in the long term, this policy would not only mean giving up a portion of the back-up reserve of the United States (thus harming the resilience element of energy security), but it would also be contrary to the assumption that only putting the right price on oil could promote the use

of more effective and environmentally sustainable sources of energy. "Lowering the price of oil" shouldn't therefore be a goal of a government.

Another point where Obama's policies skewed towards populism could be found in his proposal to curb speculation in energy markets. Indeed, it seems that certain levels of speculation took place on the energy markets. A report by Reuters (Sheppard and Doering, 2011) describes one occasion in 2008 when "The CFTC said the traders amassed large physical positions at a key U.S. trading hub in Cushing, Oklahoma to create the impression of tight supplies that would boost prompt oil prices. Later, they dumped those barrels back onto the market, causing prices to fall and racking up profits from short positions they had accrued in futures markets (...)" On the other hand, just like we described earlier, the world's energy markets are heavily interconnected and it cannot be conclusively determined that the action of one trader in Oklahoma would lead to such a tremor in the world oil market, especially if we are talking about a drop from \$147 (August 2008) to \$30 (at the end of the year).

## John McCain

Senator McCain, the Republican candidate, also distanced himself from the policies of his Republican predecessor, George W. Bush. McCain said the next president "must be willing to break with the energy policies not just of the current administration, but the administrations that preceded it, and lead a great national campaign to achieve energy security for America." McCain said he supported an "all of the above" approach to energy security, meaning he would "support the development of alcohol-based fuels, establish a permanent research and development tax credit to support energy innovation, and (would) encourage an even-handed system of tax credits for renewable energy sources like wind, solar, and biomass," McCain campaign foreign policy adviser Douglas Holtz-Eakin wrote in an August 2008 memo (Sweet, 2008). Under a McCain presidency, the United States would "stop sending \$700 billion a year to countries that don't like us very much" in exchange for oil, McCain said in his September 2008 speech at the Republican National Convention (Council on Foreign Relations, 2008b).

McCain went so far he called his energy security plan "The Lexington Project" after the town of Lexington, Massachusetts, where the American Revolution began in 1775. Revealed in June 2008, The Lexington Project called for the expanded use of the U.S. domestic oil supply, among other proposals. McCain said he would lift federal restrictions on domestic oil exploration in the United States. Although he has stressed the importance of refuges like the Arctic National Wildlife Reserve, he said in June 2008 that the "stakes are high for our

citizens and for our economy." As a result, he stated that, a "broad federal moratorium stands in the way of energy exploration and production. And I believe it is time for the federal government to lift these restrictions and to put our own reserves to use." (Council on Foreign Relations, 2008c).

McCain was a strong proponent of nuclear energy, and pledged in a November 2007 Foreign Affairs article to "greatly increase the use of nuclear power." (McCain, 2007). According to the Lexington Project, McCain will "put his administration on track" to build 45 new nuclear power plants by 2030 "with the ultimate goal of eventually constructing 100 new plants. He is in favor of storing nuclear waste at Nevada's Yucca Mountain site. "I have supported storage but I also am cognizant and respectful about the environmental and other provisions that have to be met in order for Yucca Mountain to be a suitable place for storage of spent nuclear fuel," McCain said in June 2008 (Cooper, 2008). McCain also said he would help create an international nuclear waste repository, but has not indicated where it would be located.

He also supported federal subsidies for the nuclear industry, although he opposed similar subsidies for solar energy or ethanol (Carnevale, 2008). In 2003 and 2005, McCain, alongside the independent Senator from Connecticut Joe Lieberman (I-CT), proposed the Lieberman-McCain Climate Stewardship Act. The act, which would have established a "market-driven system of greenhouse gas tradable allowances," aimed to limit carbon dioxide emissions. That act was never passed. In early 2007, McCain and Lieberman reintroduced the act, saying that it would "harness the power of the free market and the engine of American innovation to reduce the nation's greenhouse gas emissions substantially enough

and quickly enough to forestall catastrophic global warming." Later versions of the McCain-Lieberman legislation included billions of dollars in subsidies for nuclear energy companies.

McCain opposed proposals to impose a windfall profits tax on oil companies. "All a windfall profits tax will accomplish is to increase our dependence on foreign oil, and hinder exactly the kind of domestic exploration and production we need," he said in June 2008. In spring 2008, McCain called for a suspension of the gas tax between Memorial Day and Labor Day. He has called high gas prices "a regressive tax," disproportionately affecting the "lowest income Americans" (Curry, 2008).

In June 2008, McCain said he planned to issue a "Clean Car Challenge" to encourage U.S. automakers to create a car that does not emit carbon. He said he would offer a \$5000 tax credit to each consumer who purchases such a car, when it exists.

McCain also proposed a \$300 million "prize" for the development of a car battery that "has the size, capacity, cost and power to leapfrog the commercially available plug-in hybrids or electric cars," he said in June 2008 (Council on Foreign Relations, 2008d).

## Assessment

In many ways, Senator McCain proposed a plan similar to the one offered by Barack Obama. His policies focused on energy effectiveness, the diversification of sources as well as on environmental sustainability. However, we view the

policies of John McCain to offer be skewed too much to the policies of the predecessor, George W. Bush. McCain's program of domestic oil drilling seems to be on the verge of trying to isolate the United States from the world oil market and to prolong its dependence on hydrocarbon fuels. Here, we have to point out that in the campaign, John McCain's vice-presidential running mate, Governor Sarah Palin of Alaska, promoted the idea of domestic drilling even more.

In the media coverage of the 2008 presidential campaign, Palin's support for domestic drilling became petrified in the chant "Drill, Baby, Drill" she used during the vice-presidential debate with Senator Joe Biden. She said: "The chant is 'drill, baby, drill.' And that's what we hear all across this country in our rallies because people are so hungry for those domestic sources of energy to be tapped into" (Washington University, 2008).

Palin also supported drilling for oil in the Arctic National Wildlife Refuge [ANWR]. In an August 2008 interview with Business Week, Palin said she thinks some members of Congress "have misconceptions" about ANWR, and described the area of energy focus as "a swath of land that's about 2,000 acres in size—and that's out of a 20 million-acre plain that has been set aside." Palin also said the wildlife in the area would not be harmed by drilling because the state of Alaska has stringent oversight and would "even ramp up that oversight to a greater degree if people would understand the importance of unlocking that swath of land and let the development begin." (Bartirromo, 2008).

While we view domestic drilling for oil as one of the tools for diversifying the sources of energy, the value of drilling in the ANWR is highly contentious.

Also, we think that McCain's plan for a massive buildup in the U.S. nuclear capacity will expose the U. S. to a new kind of energy dependence, this time on nuclear power.

Finally, it needs to be noted that just like Barack Obama, John McCain offered energy policies that could be considered highly populist: among them is the proposal to suspend gas taxes between Memorial Day and Labor Day (Memorial Day typically marks the start of the summer vacation season, while Labor Day marks its end). The idea of such a suspension goes directly against our view that governments should put a price on gasoline and all the external costs associated with its use.

## Conclusion

The 2008 presidential election took place in a difficult time, especially in terms of American energy needs. The price of crude oil reached its all-time high of \$ 143.70 on June 6th, 2008 posing a huge burden of American's family budgets as well as the account sheets of U. S. businesses.

Given how heated the presidential race of 2008 eventually became, it may be relatively surprising how similar the energy proposals of the two candidates were. It has to be noted that the most surprises came from Senator McCain: being faithful to his image as a "maverick" candidate, he offered solutions highly unpopular among the Republican establishment, such as proposing a cap-and-trade system to reduce the level of U.S. CO<sub>2</sub> emissions and offering tax credits for renewable energy sources.

It also has to be noted that the proposals of both candidates approach the fields that we chose for this analysis – i.e. effectiveness, diversification, resilience, information and stability – in a serious and determined way. This determination was marred only by a limited number of populist misconceptions, including the idea of temporarily releasing emergency stocks from the U.S. Strategic Oil Reserve (promoted for some time by both candidates as it would make gasoline at the pumps cheaper). Such a decision would barely help the energy security of the United States of America. It would, in fact, undermine the "security margin" of the U.S. energy system.

However sound the proposed policies of both candidates were, we hold the view that these policies were focused too much on the short term – both candidates mentioned "lowering the price of oil" in their campaigns many times, instead of focusing on a long-term energy policy. While lower prices of oil would certainly help the economy in the short term, they do not offer a long-term solution to the energy needs and the developments in the world oil markets. As a result, the United States is still in the need for a long-term strategy to approach the energy security challenges the country faces.

It also has to be added that our conclusion is that if any future administration is to mitigate the costs of U.S. foreign oil dependence, it will have to use a mixed approach: i.e. combining both the reduction of domestic consumption through imposing a higher tax on petroleum, and increasing efficiency by setting up fuel consumption standards and promoting the development and commercial use of hybrid cars, buses and other transportation means, as well as alternative fuels.

While the two candidates offered many ways of promoting the use of alternative energy sources in the transportation sector, they both failed to offer a comprehensive plan to tax the use of petrol, which would encourage a more efficient usage of motor vehicles. In fact, the candidates proposed either *lowering* the tax levied from the use of petrol (McCain) or taxing the companies that produce and sell petroleum, but not the consumption thereof (Obama). In this particular case, we are afraid that sensitivity of Americans towards higher taxes influences the energy security of the nation in a negative way.

## Resumé

Výsledkem výzkumu diplomové práce "Energetická bezpečnost Spojených států amerických" je zjištění, že oba dva kandidáti během prezidentských voleb v roce 2008 (Barack Obama a John McCain) předložili obsažné a dobře propracované strategie pro zlepšení energetické bezpečnosti země. Dle našeho názoru lze strategii Baracka Obamy považovat za prospěšnější, neboť akcentuje všechny prvky energetické bezpečnosti, zatímco strategie Johna McCaina dává příliš důrazu na rozšíření těžby ropy na území Spojených států a dále na jadernou energii, čímž vystavuje zemi nebezpečí závislosti na omezeném množství zdrojů (v tomto případě na ropě a na jádru).

Zároveň jsme došli k přesvědčení, že dlouhodobý odpor amerických voličů vůči vyššímu zdanění znemožnil politikům předložit skutečně všeobjímající strategii energetické bezpečnosti: tedy takovou, která by prostřednictvím vyšší spotřební daně ocenila všechny externality, jimiž americká společnost trpí v souvislosti se svou závislostí na benzinem poháněném automobilu jako na hlavním dopravním prostředku. Vyšší spotřební daň by motivovala občany USA i americké firmy k hledání alternativ k benzinovým motorům, čímž by napomohla tomu, aby se USA zbavily své nadměrné energetické závislosti na palivech získávaných z ropy – právě tato závislost na jednom zdroji energie je přitom největší překážkou energetické bezpečnosti USA.

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\* Requires reader registration

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## Appendices

### Appendix 1: Energy Security Policy by John McCain

***Author's note:** This is the energy security policy as it was presented by John McCain's presidential campaign on the official webpage of the campaign, [www.johnmccain.com](http://www.johnmccain.com). The document was accessed on Dec 12, 2008. We reprint the document here, keeping its original format. As of Jan 6, 2012, the site is nonexistent and the document cannot be viewed online.*

#### Expanding Domestic Oil And Natural Gas Exploration And Production

**John McCain Will Commit Our Country To Expanding Domestic Oil Exploration.** The current federal moratorium on drilling in the Outer Continental Shelf stands in the way of energy exploration and production. John McCain believes it is time for the federal government to lift these restrictions and to put our own reserves to use. There is no easier or more direct way to prove to the world that we will no longer be subject to the whims of others than to expand our production capabilities. We have trillions of dollars worth of oil and gas reserves in the U.S. at a time we are exporting hundreds of billions of dollars a year overseas to buy energy. This is the largest transfer of wealth in the history of mankind. We should keep more of our dollars here in the U.S., lessen our foreign dependency, increase our domestic supplies, and reduce our trade deficit – 41% of which is due to oil imports. John McCain proposes to cooperate with the states and the Department of Defense in the decisions to develop these resources.

**John McCain Believes In Promoting And Expanding The Use Of Our Domestic Supplies Of Natural Gas.** When people are hurting, and struggling to afford gasoline, food, and other necessities, common sense requires that we draw upon America's own vast reserves of oil and natural gas. Within the United States we have tremendous reserves of natural gas. The Outer Continental Shelf alone contains 77 trillion cubic feet of recoverable natural gas. It is time that we capitalize on these significant resources and build the infrastructure needed to transport this important component of electricity generation and transportation fuel around the country.

#### Taking Action Now To Break Our Dependency On Foreign Oil By Reforming Our Transportation Sector

**The Nation Cannot Reduce Its Dependency On Oil Unless We Change How We Power Our Transportation Sector.**

## **John McCain's Clean Car Challenge.**

John McCain will issue a Clean Car Challenge to the automakers of America, in the form of a single and substantial tax credit for the consumer based on the reduction of carbon emissions. He will commit a \$5,000 tax credit for each and every customer who buys a zero carbon emission t car, encouraging automakers to be first on the market with these cars in order to capitalize on the consumer incentives. For other vehicles, a graduated tax credit will apply so that the lower the carbon emissions, the higher the tax credit.

**John McCain Will Propose A \$300 Million Prize To Improve Battery Technology For Full Commercial Development Of Plug-In Hybrid And Fully Electric Automobiles.** A \$300 million prize should be awarded for the development of a battery package that has the size, capacity, cost and power to leapfrog the commercially available plug-in hybrids or electric cars. That battery should deliver a power source at 30 percent of the current costs. At \$300 million, the prize is one dollar for every man, woman and child in this country - and a small price to pay for breaking our dependence on oil.

**John McCain Supports Flex-Fuel Vehicles (FFVs) And Believes They Should Play A Greater Role In Our Transportation Sector.** In just three years, Brazil went from new cars sales that were about 5 percent FFVs to over 70 percent of new vehicles that were FFVs. American automakers have committed to make 50 percent of their cars FFVs by 2012. John McCain calls on automakers to make a more rapid and complete switch to FFVs.

**John McCain Believes Alcohol-Based Fuels Hold Great Promise As Both An Alternative To Gasoline And As A Means of Expanding Consumers' Choices.** Some choices such as ethanol are on the market right now. The second generation of alcohol-based fuels like cellulosic ethanol, which won't compete with food crops, are showing great potential.

**Today, Isolationist Tariffs And Wasteful Special Interest Subsidies Are Not Moving Us Toward An Energy Solution.** We need to level the playing field and eliminate mandates, subsidies, tariffs and price supports that focus exclusively on corn-based ethanol and prevent the development of market-based solutions which would provide us with better options for our fuel needs.

**John McCain Will Effectively Enforce Existing CAFE Standards.** John McCain has long supported CAFE standards – the mileage requirements that automobile manufacturers' cars must meet. Some carmakers ignore these standards, pay a small financial penalty, and add it to the price of their cars. John McCain believes that the penalties for not following these standards must be effective enough to compel all carmakers to produce fuel-efficient vehicles.

## **Investing In Clean, Alternative Sources Of Energy**

**John McCain Believes That The U.S. Must Become A Leader In A New International Green Economy.** Green jobs and green technology will be vital to

our economic future. There is no reason that the U.S. should not be a leader in developing and deploying these new technologies.

**John McCain Will Commit \$2 Billion Annually To Advancing Clean Coal Technologies.** Coal produces the majority of our electricity today. Some believe that marketing viable clean coal technologies could be over 15 years away. John McCain believes that this is too long to wait, and we need to commit significant federal resources to the science, research and development that advance this critical technology. Once commercialized, the U.S. can then export these technologies to countries like China that are committed to using their coal - creating new American jobs and allowing the U.S. to play a greater role in the international green economy.

**John McCain Will Put His Administration On Track To Construct 45 New Nuclear Power Plants By 2030 With The Ultimate Goal Of Eventually Constructing 100 New Plants.** Nuclear power is a proven, zero-emission source of energy, and it is time we recommit to advancing our use of nuclear power. Currently, nuclear power produces 20% of our power, but the U.S. has not started construction on a new nuclear power plant in over 30 years. China, India and Russia have goals of building a combined total of over 100 new plants and we should be able to do the same. It is also critical that the U.S. be able to build the components for these plants and reactors within our country so that we are not dependent on foreign suppliers with long wait times to move forward with our nuclear plans.

**John McCain Will Establish A Permanent Tax Credit Equal To 10 Percent Of Wages Spent On R&D.** This reform will simplify the tax code, reward activity in the U.S., and make us more competitive with other countries. A permanent credit will provide an incentive to innovate and remove uncertainty. At a time when our companies need to be more competitive, we need to provide a permanent incentive to innovate, and remove the uncertainty now hanging over businesses as they make R&D investment decisions.

**John McCain Will Encourage The Market For Alternative, Low Carbon Fuels Such As Wind, Hydro And Solar Power.** According to the Department of Energy, wind could provide as much as one-fifth of electricity by 2030. The U.S. solar energy industry continued its double-digit annual growth rate in 2006. To develop these and other sources of renewable energy will require that we rationalize the current patchwork of temporary tax credits that provide commercial feasibility. John McCain believes in an even-handed system of tax credits that will remain in place until the market transforms sufficiently to the point where renewable energy no longer merits the taxpayers' dollars.

### **Protecting Our Environment And Addressing Climate Change: A Sound Energy Strategy Must Include A Solid Environmental Foundation**

**John McCain Proposes A Cap-And-Trade System That Would Set Limits On Greenhouse Gas Emissions While Encouraging The Development Of Low-Cost Compliance Options.** A climate cap-and-trade mechanism would set a limit

on greenhouse gas emissions and allow entities to buy and sell rights to emit, similar to the successful acid rain trading program of the early 1990s. The key feature of this mechanism is that it allows the market to decide and encourage the lowest-cost compliance options.

**How Does A Cap-And-Trade System Work?** A cap-and-trade system harnesses human ingenuity in the pursuit of alternatives to carbon-based fuels. Market participants are allotted total permits equal to the cap on greenhouse gas emissions. If they can invent, improve, or acquire a way to reduce their emissions, they can sell their extra permits for cash. The profit motive will coordinate the efforts of venture capitalists, corporate planners, entrepreneurs, and environmentalists on the common motive of reducing emissions.

### **Greenhouse Gas Emission Targets And Timetables:**

**2012:** Return Emissions To 2005 Levels (18 Percent Above 1990 Levels)

**2020:** Return Emissions To 1990 Levels (15 Percent Below 2005 Levels)

**2030:** 22 Percent Below 1990 Levels (34 Percent Below 2005 Levels)

**2050:** 60 Percent Below 1990 Levels (66 Percent Below 2005 Levels)

**The Cap-And-Trade System Would Allow For The Gradual Reduction Of Emissions.** The cap-and-trade system would encompass electric power, transportation fuels, commercial business, and industrial business – sectors responsible for just under 90 percent of all emissions. Small businesses would be exempt. Initially, participants would be allowed to either make their own GHG reductions or purchase "offsets" - financial instruments representing a reduction, avoidance, or sequestration of greenhouse gas emissions practiced by other activities, such as agriculture – to cover 100 percent of their required reductions. Offsets would only be available through a program dedicated to ensure that all offset GHG emission reductions are real, measured and verifiable. The fraction of GHG emission reductions permitted via offsets would decline over time.

### **Promoting Energy Efficiency**

**John McCain Will Make Greening The Federal Government A Priority Of His Administration.** The federal government is the largest electricity consumer on earth and occupies 3.3 billion square feet of space worldwide. It provides an enormous opportunity to lead by example. By applying a higher efficiency standard to new buildings leased or purchased or retrofitting existing buildings, we can save taxpayers substantial money in energy costs, and move the construction market in the direction of green technology.

**John McCain Will Move The United States Toward Electricity Grid And Metering Improvements To Save Energy.** John McCain will work to reduce red tape to allow a serious investment to upgrade our national grid to meet the demands of the 21st century – which will include a capacity to charge the electric cars that will one day fill the roads and highways of America. And to save both money and electrical power for our people and businesses, we will also need to

deploy SmartMeter technologies. These new meters give customers a more precise picture of their overall energy consumption, and over time will encourage a more cost-efficient use of power.

### **Addressing Speculative Pricing Of Oil**

**John McCain Believes We Must Understand The Role Speculation Is Playing In Our Soaring Energy Prices.** Congress already has investigations underway to examine this kind of wagering in our energy markets, unrelated to any kind of productive commerce, because it can distort the market, drive prices beyond rational limits, and put the investments and pensions of millions of Americans at risk. John McCain believes that where we find abuses, they need to be swiftly punished. To make sure it never happens again, we must reform the laws and regulations governing the oil futures market, so that they are just as clear and effective as the rules applied to stocks, bonds, and other financial instruments.

**John McCain Does Not Support A Windfall Profits Tax.** A windfall profits tax on the oil companies will ultimately result in increasing our dependence on foreign oil and hinder investment in domestic exploration. Jimmy Carter put a windfall profits tax in to place with little to no useful results.

## Appendix 2: John McCain's Energy Policy Speech

**Author's note:** *Following is a transcript of John McCain's speech on energy policy in Las Vegas on June 25, 2008, during which he revealed the ambitious Lexington Project. The speech was recorded by the New York Times and the transcript can be accessed online at <http://www.nytimes.com/2008/06/25/us/politics/25text-mccain.html?pagewanted=all>*

You know, some might think Vegas an unlikely setting for a discourse touching on energy conservation. And in the interest of brevity, I'll just skip the part about air conditioning and neon lighting, ok, and move right on..

Political campaigns have a way of settling on a few great questions, with little regard for the expectations of pundits, and even less concern for the carefully crafted strategies of the candidates themselves. These questions are rarely easy. Politicians usually avoid them for just that reason. So it is good when events intrude on the familiar routine of stale soundbites, staged rallies, over-managed messages, and turn to the concern of the people themselves. In this election, the price and security of energy in America is one of those great questions.

It is an urgent question because the rising price of oil has brought hardship to our country, and threatens to bring much more. Gasoline, well over four dollars a gallon is bad enough all by itself, but it also affects the price of everything else. The cost of living is rising. The value of paychecks is falling. Many of our citizens can't keep up, and we need to think of them first. As a country, we find ourselves caught between the rock of slower growth and the hard place of inflation. All of this, in large part, because the price of oil is too high, the supply of oil is too uncertain, and we depend on oil too much.

Energy security is a vital question because it concerns America's most fundamental interests, and above all the safety of our citizens from the violence of the world. All the tact of diplomacy can't conceal a blunt reality. When we buy foreign oil, we are enriching some of our worst enemies. And in the Middle East, Venezuela, and elsewhere, these regimes know how to use the power of that wealth.

In the case of Iran, despite our own sanctions, they use it to pursue nuclear weapons. They use it to threaten Israel and other democracies. Elsewhere, oil wealth threatens and allows undemocratic governments to control their own people -- to crush dissent and to subjugate women. They use it to finance terrorists around the world and criminal syndicates in our own hemisphere. These are the some of the most stagnant and oppressive societies on Earth, held back by oil-rich elites who would not last long if their own people had a choice in the matter. From these elites, we get the oil that fuels our productive economy. From us, they get the money that preserves their unjust power. Moreover, by relying upon oil from the Middle East, we not only provide wealth to the sponsors of terror -- we provide high-value targets to the terrorists themselves.

Across the world, as you know, are pipelines, refineries, transit routes, and terminals for the oil we rely on. And Al Qaeda terrorists know where they are.

Even if these other interests were not in the balance, America would still need to follow the straightest path to energy security, because of a threat literally gathering around the Earth itself. Back when Americans first learned to associate the word "energy" with the word "crisis," we didn't fully understand how fossil fuel emissions retain heat within the atmosphere. We didn't know that over time these greenhouse gasses could warm the planet. We didn't know they could melt glaciers and ice sheets, or raise the waters and alter the balance that sustains life. Good stewardship, prudence, and simple common sense demand that we act to meet this challenge, act quickly, and act together, and I know we can do it.

Energy security requires unity because it is not just one issue among many -- another box on the candidate questionnaire. Our country's need for a safe, clean, and affordable supply of energy is not just one more competitor for attention in Washington, one more special interest in an overcrowded field. The great issue of energy security is the sum total of so many problems that confront our nation. And it demands of us that we shake off old ways, negotiate new hazards, and make hard choices long deferred.

This is a matter that has confounded nearly twenty Congresses and seven presidents. Yet even now our energy debates carry the echoes of ten, twenty, or even thirty years ago. We hear the same calls for new energy taxes, instead of new energy production. We are offered the same agenda of inaction -- that long recitation of things we cannot do, energy we cannot produce, refineries we cannot build, plants we cannot approve, coal we cannot use, technologies we cannot master. The timid litany of limitations goes on and on. And it says more about the culture of Washington than it does about the character of America.

In the same way, energy bills are debated, passed, and signed into law with little serious thought to energy reform -- but never without the familiar corporate handouts and fighting over scraps of pork. Even now, some in Washington still seem to think the best plan is a direct, heartfelt appeal for Saudi sympathy, as if that conveyed anything other than weakness. In the way of new ideas, get this -- in the way of new ideas a majority of the House of Representatives actually voted in favor of suing OPEC, as if we can litigate our way to energy security.

Ladies and gentlemen, America is going to meet this great challenge, but we are not going to do it as a supplicant or as a plaintiff. We are not going to meet it with words at all. We are going to meet it with action. And we are going to meet this challenge in a way that's consistent with the character of our nation. Three decades of partisan paralysis on energy security is enough. Since I am not president, I cannot say the buck stops here -- but I will say that it must stop now.

Should I be entrusted with the honor of that office, I will break the stalemate in Washington, and I will put this country on a course to energy security. I will authorize and support new exploration and production of America's own oil and

gas reserves -- because we cannot outsource the solution to America's energy problem.

Opponents of domestic production cling to their position even as the price of foreign oil has doubled and doubled again. They were against it when a gallon of gas cost two dollars. They are still against it when a gallon of gas cost well over four dollars. And we're left to wonder what it will take to shake their faith in this dogma of dependence on foreign oil. As for me, my convictions place a priority on the well-being of people who cannot afford these ever-rising prices. Every year, we are sending hundreds of billions of dollars out of the country for oil imports, much of it from OPEC, while trillions of dollars' worth of oil reserves in America go unused. As a matter of fairness, we must deal with the here and now, and assure affordable fuel for America by producing more of it ourselves.

Fairness also requires that we reform the oil futures market. We must purge the market of the reckless speculation, unrelated to any kind of productive commerce, that has inflated the price of gasoline -- at the expense of working men and women across our country. With new regulations, I intend to assure integrity in oil-futures trading, and to protect the public interest.

The need for more production extends as well to another long-neglected source of energy, and that's nuclear power. Here, too, opposition to this clean and proven technology has more to do politics than with the merits. The experience of nations across Europe and Asia has shown that nuclear energy is efficient. It is safe, it is proven, and it is essential to America's energy future.

Therefore, if I am elected president, I will set this nation on a course to building 45 new reactors by the year 2030. And I will set the goal of 100 new plants to power the homes and factories and cities of America. This task will be as difficult as it is necessary. We will need to recover all the knowledge and skills that have been lost over three stagnant decades in a highly technical field. As Nevadans are well aware, we will need to solve complex problems of moving and storing materials that will always need safeguarding. We will need to do all of these things, and do them right, as we have done great things before.

Perhaps no achievement would do more to secure our energy future than the mastery of clean-coal technology. From Wyoming to West Virginia, America's coal resources are greater than the oil riches of any kingdom of the Middle East. Burning coal cleanly is a challenge of practical problem-solving and human ingenuity -- and we have no shortage of those in America either. So, as president, I will commit two billion dollars each year, until 2024, to clean-coal research, development, and deployment. We will build the demonstration plants. We will refine the techniques and equipment. We will deliver not only electricity but jobs to some of the areas hardest hit by our economic troubles. And in the end, we will make clean coal a reality.

The strategy here is to produce more, use less, and invent new ways of doing both. And inventing new ways is what we Americans do. What we need most right now is better and faster innovation in the cars and trucks we drive. And

government policy is supposed to serve this purpose. Yet the highest fuel efficiency standards are useless if violations incur no serious penalty. Incentives for the purchase of fuel-efficient cars are too often the handiwork of lobbyists, with all the inconsistency and irrationality that that involves. Support for corn-based ethanol has been a case study in the law of unintended consequences, distorting food markets through cropland competition, depriving America of better and cheaper alternative fuels.

In each case, our government has sought the right objectives, but often with very bad execution. And this failure of leadership must end. Standards in fuel efficiency serve a great national goal, and in my administration the penalties will assure compliance. In place of the current patchwork of incentives and credits for hybrids and other carbon-cutting vehicles, we will issue a Clean Car Challenge to the automakers of America, in the form of a single and substantial tax credit to buyers based on the reduction of carbon emissions. For every automaker who can sell a zero-emissions car, or nearly so, we will commit a 5,000 dollar tax credit to each and every customer who buys that car. For other vehicles, whatever type they may be, the lower the carbon emissions, the higher the tax credit.

Instead of playing favorites among the lobbyists, our government must also level the playing field for all alcohol fuels that break the monopoly of gasoline, to lower both gasoline prices and carbon emissions. This can be done with a simple federal standard to hasten the conversion of all new vehicles in America to flex-fuel technology -- allowing drivers to use alcohol fuels instead of gas in their cars. Whether it takes a meeting with automakers during my first month in office, or my signature on an act of Congress, we will meet the goal of a swift conversion of American vehicles away from oil.

At the same time, we must not overlook the possibility that one day our cars can run without burning liquid fuels at all. Instead, cars can run on battery power alone, or as plug-in hybrids using both liquids and electricity. Some talented engineers are on the case, but this is a national priority and we must give it national focus. To add urgency to the mission, we'll offer a prize: 300 million dollars -- one dollar for every citizen -- to the creator of a battery package of a size, capacity, cost, and power far surpassing existing technology. In the quest for alternatives to oil, our government has thrown around enough money subsidizing special interests and excusing failure. From now on, we will encourage heroic efforts in engineering, and we will reward the greatest success.

At this moment, some of the best minds in our country are also at work discovering or perfecting alternative technologies. They are not tilting at windmills -- they're building them. They are capturing the boundless powers of the sun, the tides, the mighty rivers, and the warmth of the Earth itself. Yet for all the good work of entrepreneurs and inventors in finding cleaner and better technologies, the fundamental incentives of the market are still on the side of carbon-based energy.

Even with oil running at about 140 dollars per barrel, these new alternatives have yet to take the place of oil in our economy for two basic reasons: our infrastructure is outdated and our production capacity has been constrained. And this has to change this has to change as we can make the great turn away from fossil fuels. To lead in this effort, our government must strike at the source of the problem -- with reforms that only Congress can enact and the president can sign.

We must do this in a way that gives American businesses new incentives and new rewards to seek, instead of just giving them new taxes to pay and new orders to follow. The most direct way to achieve this is through a system that sets clear limits on all greenhouse gases, while also allowing the sale of rights to excess emissions. And this is the proposal I will submit to the Congress if I am elected president -- a cap-and-trade system to change the dynamic of our energy economy.

For all of the last century, the profit motive basically led in one direction, toward machines, methods, and industries that used oil and gas. Enormous good came from that industrial growth, and we are all the beneficiaries of the national prosperity it built. But there were costs that we weren't counting, and these have added up now, in the atmosphere, in the oceans, and all across the natural world. And what better way to correct past errors than to turn the creative energies of the free market in the other direction?

Under the cap-and-trade system, this can happen. In all its power, the profit motive will suddenly begin to shift and point the other way toward cleaner fuels, wiser ways, and a healthier planet. As never before, the market would reward any person or company that seeks to invent, improve, or acquire alternatives to carbon-based energy. It is very hard to picture venture capitalists, corporate planners, small businesses and environmentalists all working to the same good purpose. But such cooperation is actually possible, and this reform will set it in motion.

My friends, America's dependence on foreign oil was a troubling situation 35 years ago. It was an alarming situation twenty years ago. It is a dangerous situation today. And starting in the term of the next president, we must take control over our own energy future, and become once again the master of our fate.

In recent days I have set before the American people an energy plan, the Lexington Project, the Lexington project -- remember that name -- named for the town where Americans asserted their independence once before. And let it begin today with this commitment: In a world of hostile and unstable suppliers of oil, this nation will achieve strategic independence by 2025.

This pledge is addressed to all concerned -- to those abroad whose power flows from an accident of geology, and to you, my fellow Americans, whose strength proceeds from unity of purpose. Together, we will break the power of OPEC over

the United States. And never again will we leave our vital interests at the mercy of any foreign power.

Some will say this goal is unattainable within that relatively short span of years - it's too hard and we need more time. Let me remind them that in the space of half that time -- about eight years -- this nation conceived and carried out a plan to take Americans to the Moon and bring them safely home. In less than a third of that time, they gathered the energies of my father's generation built the industrial might that overcame Nazi Germany and imperial Japan. That is the scale of our achievement when we set our minds to a task. And that is what this country can do when we see a danger, and declare a purpose, and find the will to act.

As president, I will turn all the apparatus of government in the direction of energy independence for our country -- authorizing new production, building nuclear plants, perfecting clean coal, improving our electricity grid, and supporting all the new technologies that one day will put the age of fossil fuels behind us. Much will be asked of industry as well, as automakers and others adapt to this great turn toward new sources of power. And a great deal will depend on each one of us, as we learn to make smarter use of energy, and also draw on the best ideas of both parties, and work together for the common good.

This Project is not a plan calibrated to please every interest group or to meet every objection. That is how we arrived to our present predicament. That is how energy policy in Washington became a long list of subjects avoided, options ruled out, and possibilities foreclosed. Nor can I promise you that the long-term success of this Project will bring instant relief. In the mission of energy security, some tasks are the work of decades and some are the work of years. And they will take all the will and resolve of which we are capable. But I can promise you this. Unless we begin this mission now, nothing will change at all, except for the worse. And when we succeed in the hard reform ahead, your children will live in a more prosperous country, and in a more peaceful world.

This is a test of foresight, of political courage, and of the unselfish concern that one generation owes to the next. It is a test of our nation's ability to deal with serious matters in a serious way. It is even a test of America's character, of our capacity to respond to pressure and to overcome adversity. We must put our country first. Americans don't hide from history or acquiesce in playing its victims. We make history, and we make the future better than the past. In my life I have seen the character of Americans tested, and tested in the most extreme circumstances, and I never doubt that Americans can do hard things and do them right. That is what is asked of us right now, once again, and together we will see the mission through. Thank you.

## Appendix 3: Energy Security Policy by Barack Obama

**Author's note:** *This is the energy security policy as it was presented by Barack Obama's presidential campaign on the official webpage of the campaign, [www.barackobama.com](http://www.barackobama.com). The document was accessed on Dec 12, 2008. We reprint the document here, keeping its original format. As of Jan 6, 2012, the site contains only materials relating to Obama's 2012 presidential campaign and the original document from 2008 cannot be viewed online.*