

PALACKY UNIVERSITY IN OLOMOUC
Faculty of Arts
Department of Politics and European Studies

Jiří Hudec
Energy Policy-Making in the United States

Diploma Thesis

Supervisor: Mgr. Markéta Žídková, Ph.D., M.A.

Olomouc 2011

I hereby declare and confirm that I wrote this thesis on my own based on referred bibliography.

Prohlašuji, že jsem tuto práci vypracoval samostatně na základě uvedených pramenů a literatury.

Olomouc, 13. 4. 2011

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Abstract

Hudec, Jiří. *Energy Policy-Making in the United States*. Diploma Thesis, Department of Political Science, Faculty of Arts, Palacky University in Olomouc 2011, 105.

The goal of the thesis is to explain the implications of energy security for the United States. It exposes the policy-making process, status of the main actors, national security policy and how energy consumption patterns influence the formulation of energy security strategy for a nation. As it is shown here, energy and national security is tightly connected issue for many politicians, private companies, interest groups and civic organizations, as we have heard about various proposals but, in the end, only small changes affected the direction of politics regarding this issue.

The thesis is divided among five chapters. First provides theoretical background for understanding the political actors as well as the policy-making process. The second concerns about security approaches and history of security policy-making in the United States and energy security itself. Third analyzes history of the energy consumption and fourth use of the primary energy sources. Finally, the last fifth chapter is concerned with application of the Energy Independence and Security Act of 2007 on renewable energy sources. Based on the results, it shows whether there are two separated policies on energy issues.

Key Words: Energy Security, Policy-Making Process, Coordination of the Actors, Energy Consumption, Primary Energy Sources, Renewable Energy, Energy Independence and Security Act of 2007

Abstrakt

Hudec, Jiří. *Energy Policy-Making Process in the United States*. Diplomová práce, Katedra politologie a evropských studií, Filozofická fakulta, Univerzita Palackého v Olomouci 2011, 105.

Cílem této diplomové práce je vysvětlit význam energetické bezpečnosti ve Spojených Státech. Práce analyzuje procesy vytváření politiky, status hlavních aktérů, národní bezpečnostní politiku a energetickou spotřebu, které ovlivňují formulaci energetické bezpečnostní strategie. Jak je zde ukázáno, energetika a národní bezpečnostní politika jsou úzce propojené problémy pro mnoho politiků, soukromých společností, zájmových skupin a občanských organizací. V porovnání jejich návrhů a konečného výsledku můžeme ale pozorovat jen malé změny, co se týče společného směřování v těchto oblastech.

Práce je rozdělena mezi pět kapitol. První nabízí teoretická východiska pro pochopení politických aktérů a procesu vytváření politiky. Druhá kapitola se zabývá teoretickými přístupy k teorii bezpečnosti, historii bezpečnostní politiky v USA a samotné energetické bezpečnosti. Třetí kapitola analyzuje historii energetické spotřeby a čtvrtá vyhodnocuje význam primárních energetických zdrojů. Konečně pátá kapitola se zabývá aplikací Zákona o energetické nezávislosti a bezpečnosti z roku 2007 na obnovitelné energetické zdroje. Na základě těchto výsledků je ukázáno, zda-li opravdu existují dva politické procesy ohledně energetické politiky v USA.

Klíčová slova: energetická bezpečnost, proces vytváření politik, koordinace aktérů, energetická spotřeba, primární energetické zdroje, obnovitelné energetické zdroje, Zákon o energetické nezávislosti a bezpečnosti z roku 2007

Acknowledgments

I would like to express my gratitude to Dr. Markéta Žídková for her generous support and ideas during writing this thesis. I also would like to thank to Sarabeth Brockley for her time she spent correcting my grammar and stylistic mistakes, for which I am indebted to her.

Introduction

January 25th, 2011...

President Barrack Obama is giving his annual State of the Union Address to the people of the lited States, a tradition presented prior to each new fiscal year by the current President of the United States to the members of the U.S. Congress. This closely watched monologue is based on current political and economic conditions; it usually contains an evaluation of the current condition and forecast for the future strategy of the national and foreign policy from the President's perspective.

A significant part of Obama's speech was dedicated to a topic that consistently appears in speeches regularly since the 1970s. Richard Nixon's State of the Union was the first to have such a heavy concentration on one agenda. The implications within the speech highlighted use of energies in the public and private sectors. Energy policy and security is an issue that none of the Presidents since Nixon would forget to include among his priorities. In 1973, the United States faced an unprecedented oil crisis, when prices of oil skyrocketed due to boycott efforts of the Organization of the Petroleum Exporting Countries (OPEC). It was one of the first effective policy tools used in reaction to American support to Israel in the Yom Kippur War (Kissinger 1999, 772-774). America had to question for the first time its efficiency in energy consumption and distribution when resources experienced this international embargo.

Since 1970s, energy security and energy independence were commonly used words in every presidential campaign, diplomatic sphere, and State of the Union Addresses. It was during Reagan's presidency and after his reforms, which liberalized the market with oil, so the USA could continue the import rate at the same average as it did since the 1950s (Klare 2009, 12-14). As a consequence to low prices in 1980s, oil production and the search for new rigs slowed down, which affected

research and development (R&D) for other energy sources and innovations in sectors dependent on oil, the transportation is among the first. For some time it looked again that the problem is solved, which turned to be very shortsighted.

The 1990s brought back similar issues, of which 1980s problems could put on a sidetrack. The breakup of the Soviet Union caused the United States to emerge as the only superpower, however new regional powers were on rise and their demand for energy sources was growing. A question had to be asked then: can a country really be considered the superpower while its whole economy, including military expenditures, is largely dependent on foreign sources of energy supplies? This was a question to be answered again in subsequent years and rested along-side a vast spectrum. In 2000s same problems continue to be at the stake, which brings us back to the traditional January speech delivered to Congress. In Barrack Obama's words, "*America has to do what it has done for over 200 years: reinvent itself*" (Obama 2011).

As can be seen from this overview, energy policy is an issue that is difficult to deal with. However, even though each president's administration since the Nixon era had certain ideas, the problem is still striking. Why could the United States, even though they acknowledged the problem already 40 years ago, still have not found a comprehensive solution that would reflect national security needs? This work tries to verify a following hypothesis:

Interests of particular players in the energo-field cause difficulties in achieving goals formulated by the official national security concepts formulated primarily by the presidents of the United States.

By the official national security concepts are meant documents, strategies and presidential speeches that are issued or given by the

Presidents or their administrations during their terms, which are compared with the actual political outcomes. The energy-field is a summary of all actors that in some degree affect in some stages the energy policy-making process. This thesis' goal is to explain the implications of energy security for the United States. It exposes the policy-making process, status of the main actors, national security policy and how energy consumption patterns influence the formulation of energy security strategy for a nation. As it is shown here, energy and national security is tightly connected issue for many politicians, private companies, interest groups and civic organizations, as we have heard about various proposals but, in the end, only small changes affected the direction of politics regarding this issue.

This research is conducted with the empiric-analytical approach as through a case study. A single case study generally does not give general answers to the topic, because they cannot use a comparison as a substitute for experiment, therefore they cannot control a value of any variable. But they rather analyze the case, which can serve as a starting point for further studies or support a broader theory (Drulák 2008, 32-34). A valuable case study has a strong testimony value that cannot be easily disproved and helps with qualitative explanations, in other words, a case study is much more accurate if they try to find "whether" and "why", than to find out "how much". In these days, there is a certain belief in social sciences that quantitative research studies have much more trustable conclusions, because they can be statistically verified. It may be true in some cases and scenarios, however, their current (over) application sometimes loses its sense and their results can be difficult to verify in broader terms as well as in qualitative research (Johnson and Reynolds 2005, 84-86). For this reason, this thesis will be a qualitative research approach trying to answer the questions of whether and why

there is a lack of coordination in energy security policy that restricts any comprehensive solutions.

This hypothesis contains two variables, independent variable, which is the *interest of particular players* that will be applied on dependent variable *goals formulated in official national security concepts*. Choosing only one independent variable is not because of a lack of the others, but rather because this work wants to focus on the pure connection between the actors during policy-making process and energy security itself. Having reviewed the literature and data regarding this topic, there is a limited number, which would be directly concerned with reasons behind U.S. energy security failures over past decades. This thesis wants to contribute to deepen the understanding of this issue.

We also need to understand what exactly texts define as energy security, because as these words may seem quite “straightforward”, every political subject, interested group and other actors see something else behind it. Energy security is a term that can be understood in many ways, but the most common way is to describe it as low or no dependency on foreign energy sources. This can be achieved in a way that the United States can possibly adapt policies that would at least decrease in the long-term period their dependence on outside sources (Yergin 2008, 37-39). But not everyone understands a problem in this way, as the presence on the world energy sources market and contracts with close allies can be seen as energy security goal as well. Energy security in a similar case can also mean just not to import resources from countries, which are not allies of the United States (Shaffer 2009, 93-94).

In order to answer the research question, the thesis is divided among five chapters further divided on subchapters, which are rationally structured from analysis of the actors and problems to particular case. The conclusions prove or disprove this research. The first chapter is concerned with theoretical and political background for further research.

It shows how the political system of the United States works as well as it defines the actors that affect the policy-making process in general. More precisely, it will try to define the President as a head of the executive branch and at the same time a person who is in charge of national security policy formulation. In order to see how much is that true, the second part of this chapter will describe the policy-making process with all its direct and indirect actors. The conclusions are substantial for the following chapters, where energy policy and its development are described.

The second chapter is focused on the security theory and policy in the United States. First, it defines the security approaches and their current trends of development. Then, it uses these approaches in a modern history of U.S. security policy and points out a gradual domination by the executive branch. The second chapter will also focus on energy and its involvement in security policy during past decades. The conclusions of this chapter provide details on the statement that energy security formulation is difficult to coordinate, as it is the concern of primarily the executive branch. This is shown on the last bill that was concerned with energy security.

The third chapter analyzes energy consumption in the United States as the biggest consumer of energy in the world. It is based on evaluation of energy consumption patterns in history that led into today's amounts. Based on those facts, how the residential, commercial, industrial and transportation sectors developed during past decades, it will serve for deeper evaluation of energy policy in the USA. This chapter also defines transportation sector as the main problem for energy insecurity.

The fourth chapter is analyzing the primary energy sources and their use in consumption sectors. This chapter evaluates each source in accordance with its possible energy security factor of use. It and the

previous chapter (each from different stand though) will give us data that will be used in order to evaluate pros and cons of energy policy of the United States in terms of foreign dependence as well as its distribution.

Finally, the last chapter focuses on renewables as particular source of energy and analyzes their influence as well as consumption patterns. The reason behind this choice is that after analysis of energy security and energy consumption patterns as well as sources of energy, it can be said that the renewable energy is source that by its nature does not need to be a direct goal of energy security strategy, as it is not dependent on importation and at the same time it is not exhaustible. For this reason, it is argued that development of this mainly domestic issue would provide support for coordination with foreign energy security issues. On this source of energy will be shown, if the energy security and home energy policy is coordinated or if they support themselves. For this purpose, the Energy Independence and Security Act of 2007 is used in support, which is often seen as a first larger incentive for the coordination of energy and security policy.

As all chapters are concerned with interconnected issues in order to be brought together in the end, the sources and literature are also divided according to the chapter division. In general, the coverage of the energy security issue is broad, also because its growing popularity in past years, which makes it sometimes harder to find a reliable source. However, as the coverage of most of the chapters is sufficient, the last chapter deals with a problem of lack of research on President's Obama energy policy. Although two years of his presidency is not a long enough time, some evidence of his direction can be seen in his statements as well as in his choices of his staff regarding security and energy.

For the first chapter, U.S. Constitution played a pivotal role as a basis for definition of the actors that play important role in security policy and policy-making process today. It however needed further

analyses, which would deeper explain role of the President and his relationship with the Congress. For this reason, it was used book by William E. Hudson (2006), which among other issues, stresses the problems of division of powers in the USA. Hudson argues that the peril of this setting may bring future disagreements on important policy issues that may put the country into political gridlock. In partial disagreement, on this view, Peter W. Rodman (2009), former senior fellow at Brookings, provides in his book where he describes position of the President not only based on legitimacy given by the Constitution, but also by democratic legitimacy, which justifies his growing controls over the security and foreign policy. In the second part of this chapter regarding the policy-making process theory is important a book by Richard Norton (2010), where he develops certain approaches for the explanation of policy-making process and proposes even his approach, which includes non-political actors in the process among others.

This approach will play its part in this thesis as well and as will be shown, other authors support it too. One of them is Elena Kagan (2001), an Associate Justice of the Supreme Court, and she also describes the policy-making process itself, which will later, regarding the national security policy, use authors of the book *U.S. National Security: Policymakers, Processes & Politics* Sam C. Sarkesian, John Allen Williams and Stephen J. Cimbala (2008), trio of political science professors from Loyola University Chicago and Pennsylvania State University. These authors show a comprehensive approach on security policy, when they use theories and backgrounds of regular policy-making process. Peculiarities of this process also analyzes Cody M. Brown (2008), who is critically analyzing security policy from the view of the Congress.

The second chapter goes deeper in security policy. Even though it uses some of the books already mentioned before, the main focus is on the theory and history of security policy in the United States. One of the

most important books is by Barry Buzan and Ole Weaver (2003) from the University of Copenhagen, where they describe in detail security approaches that react on security development after 9/11 attacks can explain national security development. For this research is important, because it uses so called common security, which divides security on more dimensions as it argues that the old national security approach cannot analyze current security development anymore. However, it is important to include critics of this approach, among them Stephen Walt (1991), professor of international relations at Harvard University. He criticizes this approach for the shallow analyses it provides, because it includes too much extra things to sift through to get to the core of the problem. As the background theory for international structure theory is used a legendary book *Man, the State and War* by Kenneth N. Waltz, professor emeritus at the Columbia University.

Regarding national security history were mainly used article by the authors from National Defense University Alan G. Whittaker, Frederick C. Smith, and Ambassador Elizabeth McKune (2010), which describes the history of security policy-making process from its initial use during the World War I until today. The history of it and further development is connected, as authors say, with creation of the National Security Council (NSC) as an advisory body for the President. Importance of the NSC also stresses in his report Richard A. Best Jr. (2011). Both authors among others, which I mention in the text, argue that this body over time is more powerful than it was intended in the beginning and agree that this body is a “brain” for national security formulation. The last part of this chapter is concerned with energy security itself. As previous authors were writing about security only, it did provide a basis of further development into this topic. The authors like Brenda Shaffer (2009), professor at the University of Haifa, Jonathan Elkind (2010), the principal deputy secretary at the Department of Energy, or Gal Luft (2009), a

director of the Institute for the Analysis of Global Security, use the basic theories and add new for the definition. The most important part is their used approaches that define energy security and which will be used throughout rest of this thesis. As this work wants to show the duality of energy security in the United States, this part also deals with the *Energy Independence and security Act of 2007* (HR 6), and analyzes its main provisions regarding this issue.

In the third chapter, first part is focused on energy consumption history and for that purposes I used, among others, a book by David E. Nye (2001), professor of American History at the University of Southern Denmark, which is dealing with this history of energy consumption from the theory of “technical momentum” that basically describes how the consumption was developed over the time and argues that “technical momentum” brought it into current levels of consumption, which are the highest in the world. Comparison with other consuming countries and more “technical” approach describes in his book Vaclav Smil (2005), professor at the University of Manitoba in Winnipeg, which also gave me basis for the following chapter.

The fourth chapter deals with primary energy mix and analyze each source separately. In both third and fourth chapter are used data from the Energy Information Agency (EIA), which is a body of the Department of Energy (DOE) and provides detailed analysis of each segment of energy, especially in the United States. Their data play an important part during the decision-making process as well as for analysis in this thesis. However, as it is an U.S. agency, not all aspects could be included in their results, therefore, in these chapters, are used data by the British Petroleum (BP) that operates throughout the world or the International Energy Agency (IEA) that is part of the OECD. Both sources of data will serve as a “double-check” of information provided by the EIA.

Finally, the last chapter is concerned with renewable energy in national security policy. This chapter in its first part will use again the data mainly from the EIA as well as research articles that can further analyze the data. The second part, however, deals with particular bills, which will serve as sources for my conclusions. Among them is already mentioned HR 6, further the *American Recovery and Reinvestment Act of 2009* (HR 1) as well as documents recently issued by the White House, such as the *National Security Strategy 2010* and the *Blueprint for Secure Energy Future* (2011). Because of quite new issue and President, it is difficult to find secondary sources that would further analyze these issues.

This list of the bibliography does not include an overwhelming majority of sources that are used in this thesis. It rather points out the most important one, which shaped this work, but there are plenty of primary sources from organizations, which deal with particular sources of energy, for instance. Also, the whole text is full of practical and particular examples, which were based on memories of the direct actors, such as the former National Security Advisor Henry Kissinger (1999), secretary of State Madeleine Albright (2003) or journalists who witnessed these events like Bob Woodward (2010). Further, there are used articles from the scientific journals like *International Affairs*, *CQ Researcher*, or reports from the Congressional Research Service and Council on Foreign Relations, Brookings Institute and other think tanks. Besides that, I used common periodical articles of important news corporations, like *The New York Times*, *The Washington Post* or *The Wall Street Journal* as well as sources from official governmental websites.

1. Policy-Making Process: The Theoretical Overview

This chapter focuses on theoretical background for this thesis. Conceptually, in order to see energy security and its far-reaching influence in the United States, we need to understand the main actors, which affect it. This is constructed into theories that can explain these actors as well as the interaction between each of them. The first part is concerned with the U.S. President and his position within the U.S. policy-making structure. The point is to show his range of executive powers, which are key to understand the security policy formulation in the United States. However, this thesis does not want to imply that other two branches of power would be less important, but rather to show the president's administration as an "engine" of the national security policy, which is controlled by the other two branches. The second part of this chapter will focus on policy-making process that is crucial for understanding the interaction between the legislative and executive branch and how the legislation process is made from the beginning to its end. The purpose of this chapter is to show how the separation of powers restricts the coordination policy coordination between these two branches, which will be a theoretical background for the following chapters.

1.1. The Presidency in the United States: Powers and Limitations

The United States of America is a federal constitutional republic with significant separation of powers between the legislative, executive and judicial branch, which is based on a system of checks and balances. The purpose of this system is that no one of these branches can significantly get dominant over the other and the whole system is legally derived from

the Constitution, passed in 1788, which has not been changed since then (Lind 2006, 8-9). This could happen, because the Constitution offers such broad definitions that there are not any exact details for the three branches of powers, therefore any changes in the Constitution were not needed and could be done within this one's framework or separately as amendments to the Constitution (Hudson 2006, 26; Lind 2006, 12).

The United States has a presidential system, where the President is the head of the executive branch elected maximally twice for a four year period (U.S. Const. Art. II, § 1). President powers are anchored in the Constitution that divides them on those, which can be carried out by the President alone and those where he needs approval by the Congress. Among the rights without approval is the Commander-in-Chief of the army or *"from time to time"* (U.S. Const. Art. II, § 3) inform the Congress about current state of the Union, which happens usually in the beginning of every year. He also has the right of veto for any proposal passed by the Congress. Vetoed proposals can be voted down if they are passed again with two-thirds majority in both chambers, of the Congress, the House of Representative and the Senate.

Regarding the powers, where he needs an approval by the Congress, the Constitution says that

"he shall have Power, by and with the Advice and Consent of the Senate, to make Treaties, provided two thirds of the Senators present concur and he shall nominate, and by and with the Advice and Consent of the Senate, shall appoint Ambassadors, other public Ministers and Consuls, Judges of the supreme Court, and all other Officers of the United States, whose Appointments are not herein otherwise provided for, and which shall be established by Law: but the Congress may by Law vest the Appointment of such inferior Officers, as they think proper, in the President alone, in the Courts of Law, or in the Heads of Departments." (U.S. Const. Art. II, § 2).

This means that the President needs approval by the Senate in order to appoint high officials, federal judges, secretaries, and ambassadors. This shows his limited powers even in foreign affairs, as other decisions like signing international treaties need also contra-signature from the Senate. The power of legislative branch goes even further, as the *“Congress can remove the President from the office, but reverse cannot happen”* (Peterson 1994, 220).

These limitations show little encouragement for the dominance by the President regarding the security policy formulation. We can see that there is not formulated an exact range and distinction of all his rights and that it shows rather that bigger control is given to the Congress. However, during the history the president’s power proved to be more flexible, therefore the explanation we need must be in other aspects (K. King 2010, 22). The Constitution is according to some scholars (Neustadt 2007, 282; Peterson 1994, 220-222; Rodman 2009, 5-14) only one source of his legitimacy, but the application of his powers could be determined by another one – the democratic legitimacy. While the constitutional one is taken from the definition of the Constitution and is legally rooted, the second is based on a principle of elections and a popular mandate that goes beyond rights and powers and is more dependent on each president’s personality and authority (Rodman 2009, 9-11).¹

The constitutional legitimacy, as will be shown further, does not go hand in hand with the expectations put on the President, which, however, do not correspond with his real possibilities. The President is elected as a leader, but once in his office, he is more like a clerk (Neustadt 2007, 275; Peterson 1994, 225-226). The additional influence and powers can be, therefore, seen through the democratic legitimacy. The influence of the democratic legitimacy can be seen from the beginning of the

¹The projection of the President’s authority could be seen in the words that President Jackson once said: *“Each public officer who takes an oath to support the Constitution*

Constitutional Convention, as most delegates that time were influenced by George Washington as a model for an executive power under a single person² (Sarkesian, Williams and Cimbala 2008, 69-73), whose personality supported by democratic legitimacy can collect power of the President as it is understood today. But one single person can also decrease the presidential authority and powers because of his faults (or faults of his administration) for years to come.³ For this reason it is argued the right amount of power of the President has to be derived from each separate President more than just to follow the Constitution, which more or less offers the basis. Therefore, the national security policy must be also seen through each President individually, in order to understand, how much the administration could formulate and affect the security policy.

1.2. The Policy-Making Process

The policy-making process is special and complex as the whole U.S. political system and there are several approaches that facilitate general understanding of the process. First, formulated by C. Wright Mills, argues that the process is made by elites and does not need to reflect the public interest. The elites are changeless and control whole process, but Robert Dahl partly disagreed with it and developed his approach, which says that even though it can be elites who really decide, they are rarely the same,

² Among the Presidents who used extensively and tried to expand their powers is, besides George Washington, also is Andrew Jackson, Abraham Lincoln, Theodore Roosevelt, Woodrow Wilson, Franklin Roosevelt as well as Ronald Reagan or Bill Clinton. All these men have in common political skills (democratic legitimacy) and setting of the Congress that allowed them to deepen their powers. Compare Sarkesian, Williams and Cimbala (2008) and Rodman (2009).

³ This is what happened to President Nixon and his successor after the Watergate affair. The Congress used this scandal to gain more power and public lost trust in President for following years (Grimmett 2004).

so the policy is rather a question of compromise, as these elites change over some time period (Sarkesian, Williams and Cimbala 2008, 168).

Both these approaches are based on philosophical backgrounds arguing that policy is essentially in the hands of elite and cannot be influenced by any actors beyond. Later they were criticized for the lack of detail that could deeper explain all aspects of the policy-making process (Norton 2010, 5-10). This tries to cover the third approach that, in addition to previous ones, presumes that policy is made via various procedures that contain public opinion polls, elections, pressure of the constituents on elected representatives and interest group advocacy.⁴ From all those three, the last one will be used as a full coverage for understanding of the policy-making process, especially the one regarding the national energy security policy, because of a strong interest of non-governmental actors⁵ that affect this policy-making.

Regardless, these three different approaches, the policy-making process itself can be described in four stages (Sarkesian, Williams and Cimbala 2008, 170). First, the policy issue is shaping the policy and formulates the problem. It can be initiated from various sources such as a bureaucracy, the President and his staff, interest groups, federal court system or the Congress. There are also important indirect influences such as the media. The second stage, the approval, is the actual process, which can formally go through legislative and executive procedures. Major policies also need financial resources and certain time for its implementation. The whole process of approval is made through debates in the Congress, congressional hearings, interest groups interventions and lobbyism. Implementation, as a third stage, shows how the policies

⁴ More detailed analysis about these approaches, see Richard Norton's (2010) policy-making analysis, Elena Kagan's (2001) analysis of presidential administration.

⁵ Such as PACs, interest groups or think tanks as well as the position of the NSA, which can be described as non-governmental, since he lacks any powers or confirmation by the Senate compared to the others (Whittaker, Smith and McKune 2010). See chapter 1.2.2. for details.

are carried out. This is a time for bureaucracy, because it translates the decisions made by legislative body into a practical form. In this stage it is also important how supporters and opponents will affect the policy interpretation and revision (Moe 2007, 350-351). The last fourth stage, the feedback, is basically an evaluation of the response, which can affect or spark a new policy issue and bring us back again to the first stage.⁶ Since each stage is affected by different actors, it gives rather smaller chance to a “solitaire game” of elites only, however, among the actors can be found some with bigger role (Schattschneider 2007, 597-599).

The most important factors in the legislation or policy-making process are the Congress and the bureaucracy. The Congress operates on the basis of standing committees, where is important the majority party, as it chairs to most committees, as well as the party leaders themselves. Without support or approval of any of these chairpersons, it is almost impossible to push any new policy. Important is also cooperation among the single members and staff that affect the chairmen (Hudson 2006, 34-35). The Congress also plays important part in security policy-making, which is derived from the constitutional powers regarding the control of the President.

If the Congress is important in the beginning of the process, the bureaucracy is important during its output. However, here the most important thing is the organizational character, technical skills, administrative structure and institutional loyalties than affection to the President (Sarkesian, Williams and Cimbala 2008, 172-173; Moe 2007, 353), as the bureaucracy oversees the implementation process with the executive branch. Therefore, the whole output of the approved policy depends on how the bureaucracy will interpret it and how will put the policy in force. The bureaucracy also plays important role during policy

⁶ Similar stages also in detail formulates Kagan (2001) or Sapolsky, Gholz and Talmadge (2009).

formulation as it supports the decision-makers with substantial documents and information.

1.2.1. National Security Policy-Making Process and Congress

National security policy-making process has slightly different phases that cannot be applied to regular policies, although they follow the same pattern (Brown 2008, 78). First, there might be higher level of secrecy that may be needed if the issue relates with enemies or adversaries. Second, there might be a request for expediting process during time of crises or natural disasters. Third, in many cases the process might be related with other countries or foreign groups that are not affected by the U.S. law. And finally, the instruments for carrying out the national security policy are the foreign services, the military and intelligence agencies, which often operate abroad and have to follow laws of that country (K. King 2010, 21-25).

Therefore, the President may face difficult decisions, as the sensitive issues are at the stake, on the other hand, the public and media require fairness and ethical behavior, therefore generally, the most essential part being discussed in the Congress is a debate over the defense budget and final shape of the national budget, because budget approval discussions are connected with national security issues.⁷ Sometimes if the issue is not directly connected with the security issues, the budget approval can depend on it too.

This brings certain problems that affect the national security strategy itself. There is a problem that these strategies affect domestic politics too and may have a negative impact on it. If the strategy fails, it is likely that it can erode the credibility of the whole administration. Also

⁷ This is a case during Clinton's Administration, when the budget approval was criticized for the proposal that supported homosexuals openly serving in the military. The issue was also linked with the security (Sarkesian, Williams and Cimbala 2008, 200).

the process is dependent on many institutions that play important role, which makes it difficult to formulate “straightforward” policy. For this reason, there could be asked a question about the President’s role in the process, which was often described as managerial (Whittaker, Smith and McKune 2010, 26) and needs broader support and good organization with other bodies in the Executive branch in order to be successful.

The beginning of the policy-making process regarding the foreign and security issues is based on relations between the President and the Congress. The Congress authorizes the wars, approves treaties, pays the bills for diplomatic and military actions and holds accountable the executive branch performance through hearings, investigations and reports and has to know the National Security Strategy (NSS) of the Administration (Best Jr. 2011, 24).⁸ Although there is most of the time close cooperation between these two branches, sometimes the President needs to use different strategies in order to pass his plans or proposals. This happens mostly when foreign issues are being discussed, since the Congress is mostly focused on home policies and single members are concerned about constituents, interest groups and other interests in their districts (Hudson 2006, 31). In the cases of disagreements, the President can decide to enforce the national security policy and strategy through distancing himself from the Congress and provide minimum information for it. The danger of this action, however, is that public as well as the members of the Congress can perceive it as an act of isolation of others from major decisions (Kagan 2001, 2250-2251). However, if the President uses this tactics, he usually defends his proposals through

⁸ A right to know the strategy no later than 18 month from the inauguration of the new President, that the Congress has, was passed in *Goldwater-Nichols Defense Department Reorganization Act of 1986*. The whole situation could happen because of Iran-Contra scandal during the Reagan Administration, which undermined the dominant position of the executive branch in security matters. Compare Kissinger (1999) and Sapolsky, Gholz and Talmadge (2009).

often-public speeches or directly through the media in order to oppose the Congress.⁹

The whole legislation process of national security can be seen through different perspectives. The rational actor perspective assumes that decisions are based on the desire to promote a clearly identified national interest, and that all the costs and benefits of the various options are weighed in order to make a choice. The organizational behavior perspective maintains that differing organizations within government exert influence on the decision-making process with an eye to promoting the interests of those organizations. Decisions are often made to protect the interests of these organizations, rather than to advance generic national interests. The governmental politics perspective offers a different twist on this idea. Rather than presenting the idea that organizations are having the most influence on the decision process, the governmental politics model sees that role as being filled by the decision maker's closest and most powerful advisors. The fourth perspective, which has been labeled as the cognitive perspective within, argues that the decision maker's personal beliefs, values, experiences, and emotions are much more influential in reaching a decision than the other perspectives would suggest (Norton 2010, 9).¹⁰

Initially, Congress was seen as the main branch of the Government and although the President got powers in foreign affairs, the Founding fathers wanted to make sure that he would not dominate the policy-making process (Hudson 2006, 34). So, the President would have power to react in emergencies, but Congress would control the war policies, which would speak for the organizational behavior during the policy-

⁹ This is case of George W. Bush in 2007, when he tried to bypass the Congress and pressed the public for further military deployment in Iraq (Liasson and Chadwick 2007).

¹⁰ Similar approaches also uses Nikolas K. Gvosdev (2010) or Kay King (2010) for her analysis of Congress's impact on national security policy-making, however she uses slightly different parameters.

making process. But over time, even though the responsibilities have increased, Congress by the nature of this institutional structure has it difficult to respond quickly and efficiently (Rodman 2009, 5). That would mean, together with the democratic legitimacy of the president, inclination towards the cognitive and governmental politics.

This is because of few reasons. The institution of Presidency lies on a single person who heads the Government and its hierarchical structure, but the Congress has much bigger fragmentation inside as well as it is difficult to charge with responsibility one person only, since the smallest organizational units are committees (K. King 2010, 13). Moreover, the President is elected directly as the only official, which gives him broad trust.¹¹

The power of the Congress is, however, in the functioning. Most important parts are the committees, where bills usually start and where the chairmen of those committees decide about their fate as well as the leaders of the parties. This can be even more relevant, if one party controls the Congress and another controls the presidency (Zinn 2005, 543-549). This process of cohabitation may be an obstacle and can lead to political gridlocks and many confrontations as happened many times in the past.¹² On the other hand, if the President is from the same party as the majority in the Congress and even a leader of it, such position can give him freedom over the security issues without deeper care about the politics in the Congress.

The whole success of the national security policy-making process is, indeed, conditioned by a strong personality and leadership of the President (Sarkesian, Williams and Cimbala 2008, 196). Therefore, in

¹¹ For further information see chapter 1.1., where is this issue described in detail.

¹² For example, during the Nixon's presidency, the Democrats controlled both houses of the Congress and strengthened by the Watergate scandal, some Republicans supported them too. That led to pass the War Power Resolution, which provided the Congress power to ask for consultations with Nixon about every action regarding the U.S. Armed Forces use (Grimmett 2004).

order to successfully forgo the whole process in the Congress, the main burden lies on the President and his attitude towards it, no matter what party has currently the majority.

1.2.2. National Security Policy-Making Process and Outside Actors

As was already mentioned before, the whole process is not linked only with one channel connecting Congress with Presidential Administration, but several others affect the policy-making. Among them are the media, political parties and interest groups (Hudson 2006, 223; Sarkesian, Williams and Cimbala 2008, 200). All these factors create separate channels that can work both against and for the successful policy process.

It can be argued that public political views are simplified, but they can also be transformed into certain preferences and formally articulated by some interest group into a single issue (Schattschneider 2007, 598). Nevertheless, in any case, the public support is one of the factors that depend on success of the President's policy. As in previous chapter, the President must appear as a leader in order to get support. Questions about his performance in foreign affairs and security issues can lose its credibility.¹³ Besides his political results, the President, as a public figure, is also judged on personal bias of every voter, which can be precondition for his success on a basis how he can react, for instance, with social, economic or geographical groups.

However, in case of national security, the policy cannot be carried out based only on public opinion. The public mostly views the security issues as minor problems, except during time of crisis, also not every security issue can be brought out to discuss with public, because of its secrecy character. There is also aspect of the Congress and media, which

¹³ That happened in second term of the President Reagan, when he chose ineffective new cabinet or during President Clinton's first term, when he failed to appropriately react on the conflicts in Somalia, Haiti and Bosnia and Herzegovina (Rodman 2009, 208).

can define such policy to the public in their own standard that can be totally different than the President's one (Sarkesian, Williams and Cimbala 2008; Sapolsky, Gholz and Talmadge 2009).

If the view of public is important because of their voting power, not less important are the media that deeply influence the public opinion. As it is written in the First Amendment, the Congress cannot make any law that would forbid "*the freedom of speech, or of the press*" (U.S. Const. Am. 1). This gives the media considerable power in the U.S. system that raises a dilemma about their role in national security policy, as the secrecy is one of the main priorities.

During the second half of the 20th century, the media became global and as such could affect relations between two countries or even work as mediators during some crisis.¹⁴ The global range of the communication network also means that public can see all what is happening in a real time (so called CNN effect), which was expedited by the Internet (Hamilton 2007, 626-628). These developments can enable the public to express their opinions regarding this issue much faster than it was able before. Besides their global coverage, the media may also have political agenda that promotes certain partisan interests through investigative journalism¹⁵ as well as any Administration can widely use strategy in order to improve the public opinion about some criticized issue, which brings the issue from global back to home politics (Toobin 2007, 638). The media in the political sense are powerful mediators between public and the government, whose position is important in order to reach certain policy successfully.

¹⁴ Media played important role during the Cuban missile crisis. When the conflict went out publically, President Kennedy and Soviet premier Khrushchev negotiated through it (Kissinger 1999).

¹⁵ This happened, when President Clinton's personal conduct led to his possible impeachment or during President Bush presidential campaign regarding his military service/non-service. Compare Albright (2003) and Sarkesian, Williams and Cimbala (2008).

But mediators are also the interest groups that can also affect the policy-making process, however, each group can have different rationale behind its functioning. They may follow single policy issue as well as the whole concept in one political area. The biggest appearance of these groups is during the legislative process in the Congress (Wright 2007, 606-607).

Some of these groups or individuals were further institutionalized as the Political Action Committee (PAC), which are often used by various groups like corporations, business, trade unions, labor unions, and health organizations in order to advance the political outcome and influence the elections. With emergence of the PACs also comes a problem of the soft and hard money that is used to support directly or indirectly the candidate or proposal.¹⁶

Another form of influence is through the think tanks, which are political players on their own and can provide to each political party their reports or activities such as advocating certain policies. However, these “factories” for new ideas primarily do not serve during legislative procedure, but are valuable sources of information for the President and the NSC as well as they can provide service for the President during the legislation process (Sarkesian, Williams and Cimbala 2008, 215). Together all these groups (PACs, lobbyists, think-tanks) have strong external influence on the Congress, which is vulnerable to their persuasions, which is often in accordance with the President’s or political parties’ views and there is not any near-future will that this would change.

Regarding national security policies, the impact of these groups is significant. The Congress holds powers that can significantly affect the

¹⁶ The function of the PAC and other groups was few times challenged in the Congress, when the donations were limited to a ceiling, however two years later this ceiling found the Supreme Court as unconstitutional (Hudson 2006, 228). And today there is not any new proposal that would change it.

future of these policies in terms of spending, for instance. The same applies for the political issues, when relationship with one country can influence the home economy.¹⁷ Even though these groups primary focus on home politics and policies, their action affect the foreign policy with similar measure (Schattschneider 2007, 600). Moreover, these groups can cause problems for the national security strategy plans, if they coordinate their program with members of Congress as well as bureaucrats from the executive. Then there is almost impossible to anyhow affect the policy making from the outside and sometimes from even different department within the Government.¹⁸ Therefore the whole national security policy-making process is based on competing policy preferences, where each one is supported by variously folded groups than one single way to define the policy.

¹⁷ That was, for example, when Bill Clinton lifted economic embargo with Vietnam in order to support home economic growth. Also significant influence by these groups was during the creation of the NAFTA (Sarkesian, Williams and Cimbala 2008).

¹⁸ This issue was many times brought regarding the Department of Defense (DOD), where corporate lobbyists, members of the Congress from districts, where these firms operate, and federal contractors from the DOD cooperated together (Sapolsky, Gholz and Talmadge 2009).

2. The Concepts of Security and Security Policy in the United States

The second chapter is concerned with the theory of security and its approaches, which will give us a background for the national security policy of the United States (history and current settings). The evolution of the national security policy will be shown on the creation of the National Security Council (NSC) that is a main advisory body for security issues and strategy formulation of executive branch as well as body for security policy coordination between departments and agencies themselves. This chapter will also explain emergence of national security linkages with the energy security, which has become issue of last 40 years, but institutional projection of its importance happened in late 2000s. The purpose of this chapter in this thesis is to show on security policy, particularly on energy security, that its formulation is in hands of the Executive branch, which makes it difficult to coordinate with the Congress.

2.1. The Concept of Security in Theory

The understanding of term security developed during the 300 years history in different perspectives, but today there are, basically, two approaches for its understanding (Buzan, Weaver and de Wilde 2005). The first approach was a traditional view, where the focal point was national security, dominated the international relations for the most of 20th century and was supported by exponents of realistic theory. The second approach developed in 1980s, which offered broader explanation, which conceived the first approach as too narrow for sufficient explanation of modern world. The common security gives explanation on

new subjects and dimensions developed during the 1980s, which were not included in first approach.

The national security¹⁹ approach comes from traditional realistic approach and it sees the security as problem of military security of states, which function in international system without any organization, which is anarchy. This concept is based on view that state is an undividable unit that can operate by itself and is the only unit, which can operate in the anarchic system. The anarchy, in this manner, is space, where is not other superior entity that would control the states, therefore the size of army is the only scale, which can describe differences between countries (Waltz 2001, 159-186).

This approach was legible for last 300 hundred centuries, however, during end of the Cold War, national security approach could not cover the system, which remained (Buzan and Weaver 2003, 43). The question was about new security issues that were beyond the military dimension and concerned the economic, environmental or humanitarian issues. The concept of common security is based on assumption that there is no need for security through eliminating the enemy, but rather through cooperation with him. The concept of cooperation brought new aspects and allowed to include the issues that were out of this topic before. It went from security of a state to security of its citizens as a main subject of the new security theory (Balabán, Duchek and Stejskal 2007).

The new approach put topics into various dimensions. Besides the political-military dimension (the only dimension in previous approach), there is an economic dimension that concerns about the financial means for security against outer threats as well as ensuring the financial stability. The environmental dimension is focused with climate changes and natural disasters. And finally the social dimension deals with values

¹⁹ Note that here is the national security mentioned as a theoretical approach, whereas in following chapters it is a broader term for the U.S. policy.

like cultural traditions, religion, and common identity (Buzan and Weaver 2003). For the purpose of this thesis, common security as an approach will be used in order to apply the energy security as a new element in national security strategy. However, it is important to be careful about this concept, as some critics (Walt 1991, 223) point out that this theory has a stretching tendency that tries to include more issues and the real purpose, the security, is disappearing. Therefore, a careful selection of the issues is essential.

2.2. Security Policy in the United States: Historical Perspective

A need for better-institutionalized coordination of foreign and security policy did not come until almost half of the 20th century. During the history of the United States, policy coordination was centered to the President as Commander-in-Chief of the armed forces (U.S. Const. Art. II. § 2) that gives him broad powers in foreign affairs, which expanded much more during 20th century.

Given limited U.S. foreign involvements for the first hundred or so years under the Constitution, the small size of the armed forces, the relative geographic isolation of the Nation, and the absence of any proximate threat, the President, or his executive agents in the Cabinet, provided a sufficient coordinative base (Best Jr. 2011, 2).

The need for coordination was not priority until the beginning of the 20th century, but the fact that coordination of executive bodies was more feasible than the coordination of the legislative is shaping the structure of the security policy-making until now.

The first big change, WWI, asked, however, for better coordination and for that reason was in 1916 established the Council of National Defense by law, which granted the President right to appoint an advisory commission of outside specialists to support the Council. The Council

itself was intended as an economic mobilization-coordinating group and excluded the Secretary of State (Whittaker, Smith and McKune 2010, 6). However, the statute limited its scope only for this purpose, so there was not an intention for further development after the war and in 1921 was dissolved.

A similar pattern as one before the Great War continued until 1938, when again new international events began to concern the country. This time the State Department took a first step, when the Secretary of State, Cordell Hull, proposed to President Franklin Roosevelt a creation of a committee for the purposes of dealing with these various threats. The President approved this proposal and created the Standing Liaison Committee (or just the Liaison Committee) that contained the Secretary of State, the Chief of Staff of the Army and the Chief of Naval Operations (Rodman 2009, 16).

This marked a first interdepartmental effort for broader coordination, although limited without clear scope of rights and rather for information exchange purposes than for policy formulation. This informal committee developed into established weekly meetings that in 1945 led to formal creation of the State, War, Navy Coordinating Committee (SWNCC) with its own secretariat and subcommittees. The creation of this committee in the end of the war after capitulation of Germany and Japan shows growing interest in coordinated steps on the international field and some kind of recognition that there is no return to the prewar lack of systematic and complex coordination (Best Jr. 2011, 4) as well as it showed how geographical isolation of the United States exclude security strategies for the international interactions. The United States followed realistic theory in the international relations and security studies that was already for two hundred years in Europe a common tool to perceive the international politics as an anarchic order with importance of power (Buzan and Weaver 2003; Waltz 2001), but the

United States were always aside for most of their existence. Of course the needs of the war demanded security policy already before, but a complex security strategy was not developed until this time.

2.3. National Security Council as a Coordination Body for the National Security Policy

The NSC was created not as an independent body through an explicit law, but rather as a part of a formation and restructuration of military and civil agencies and departments. This was stated in the National Security Act passed in 1947 (Brown 2008, 7-10). It is important to point out that the Act brought controversial changes in other aspects such as the unification of the military, so it caused that time less attention. Therefore the concept was positively accepted in the Congress as well as in the Executive branch, however it brought issues about its organization settings, membership, assurance that it would be a civilian organization, since the military was to be unified under one Secretary, or whether this project would need approval by the Senate (Whittaker, Smith and McKune 2010, 6-10). The final function of the NSC was set as following:

(a) (...) The function of the Council shall be to advise the President with respect to the integration of domestic, foreign, and military policies relating to the national security so as to enable the military services and the other departments and agencies of the Government to cooperate more effectively in matters involving the national security.

(b) In addition to performing such other functions as the President may direct, for the purpose of more effectively coordinating the policies and functions of the departments and agencies of the

Government relating to the national security, it shall, subject to the direction of the President, be the duty of the Council

(1) to assess and appraise the objectives, commitments, and risks of the United States in relation to our actual and potential military power, in the interest of national security, for the purpose of making recommendations to the President in connection there with; and

(2) to consider policies on matters of common interest to the departments and agencies of the Government concerned with the national security, and to make recommendations to the President in connection therewith. . . .

(d) The Council shall, from time to time, make such recommendations, and such other reports to the President as it deems appropriate or as the President may require.

(50 USC 402)

The members of the NSC were decided to be the President, the Secretary of State, Defense, Army, Navy and Air Force (later the Secretary of Defense), and the Chairman of the National Security Resources Board (later the Director of National Intelligence). This setting was confirming the line set to fulfill the role in ensuring that the industrial base would be capable supporting national strategies. Although the NSC was created in 1947 and got a wide support, it was placed as part of the Executive Office of the President in 1949 (The White House 2009). President Truman rarely attended any meeting, because he found the whole project as a weakening burden to his powers. That, however, was true until an

outbreak of the Korean War in 1950, when Truman started to appreciate this mode of cooperation (Best Jr. 2011, 7-8).²⁰

The role of the NSC changed after end of the Cold War, when the United States needed to cover more issues (like international economics, banking, health issues) than traditional military and foreign policy. This went along with new approach of the security studies, the common security approach, concerned more with human security and maintaining the basic functions for each country than until that time a common vision of the national security seen through strong military and active diplomacy, although they still play an important part (Buzan and Weaver 2003). The applied sectorial approach, therefore, is concerned with multiple security topics that can only in common functioning achieve the security of today's country. Therefore the NSC needed to be reformed in order to react on new threats.

This did not happen until the President Clinton's Administration established in 1993 the National Economic Council (NEC) that was designed to coordinate the economic policy-making process with respect to domestic and international economic issues. The head of this Council is also a part of the NSC in order to fully coordinate security and economic issues (Daalder and Destler 2009, 206). Similar rationale led President George W. Bush to establish the Homeland Security Council (HSC) a month after the 9/11 attacks in order to ensure a coordination of homeland security-related activities of executive departments and agencies and effective development and implementation of homeland security policies, which are primarily concerned with terrorism, weapons of mass destruction (WMD), natural disasters or pandemic influenza (Brown 2008, 78). As these new councils show structural approach, it is

²⁰ Similar stand had President George W. Bush before the 9/11 attacks, but also in his case it is obvious that his relations deepened afterwards as following security strategy is based on coordination with the NSC (NSS 2002).

also important to say that statutory members in all of them were almost the same.

2.3.1. Current NSC Organization Structure

The current setting of the NSC is similar to one from 1947. The President chairs the NSC and he calls the meetings. The NSC statutory members are the President, Vice President, and the Secretaries of State, Defense and Energy.²¹ Besides them, it also has two statutory advisors, the military advisor (Chairman of the Joint Chiefs) and the intelligence adviser (Director of National Intelligence) (The White House 2009). As Richard Norton says: “[T]he structure of the National Security Council, with its hierarchical layers of increasingly senior interagency working groups, was designed to ensure the president is presented with well-vetted alternative courses of action” (Norton 2010, 5). In other words, the biases will be better suppressed, if this body will always play its full role.

The coordinator of this body is the National Security Advisor (NSA), the most visible person in the NSC. The NSA is not a statutory member, but traditionally a coordinator of the agenda among other statutory members, informer of the President’s decisions as well as he has to keep the President informed. Mainly because of influence by Kissinger and Brzezinski, the importance of the NSA became a central one, which even caused discussion whether the NSA should be subject to the Senate approval and testify before congressional committees, as are officials from other Government departments and agencies participating in the NSC (Daalder and Destler 2009). That however, does not have enough support and there are also voices against any connection between the Congress and the President’s personal NSA. The rationale behind it is

²¹ In 2007, when the Energy Security Act was passed, the Congress added the Secretary of Energy as a new statutory member to the NSC, see Chapter 2.4.

that “[t]he entire national security system must have confidence that the [National Security Adviser] will present alternate views fairly and will not take advantage of propinquity in the coordination of papers and positions. He must be able to present bad news to the president and to sniff out and squelch misbehavior before it becomes a problem. He must be scrupulously honest in presenting presidential decisions and in monitoring the implementation process. Perhaps most important, he must impart the same sense of ethical behavior to the Staff he leads” (Best Jr. 2011, 30).

The professionals who work under the NSA create the National Security Staff, the Advisor’s aides and army of assistance for the NSC operation. Most of them have been military officers, foreign services officers or civil servants who previously served either in military or foreign affairs. During past administrations, it can be observed growing importance of this staff compared with aides from other statutory departments and agencies (Brown 2008, 81-82). On the other hand, importance of this staff varies from one administration to another, therefore “the operation of the national security policy process is the result of what the President decides. [R]egardless of organizational charts or procedural memos produced by each administration, the actual processes are shaped by what the POTUS [President of the United States] wants” (Whittaker, Smith and McKune 2010, 12). However, each President rarely canceled changes made by his forerunners. They rather maintain the previous reforms and settings or customize them according their needs.²² In addition, each president delegates own additional members, attendees or topic area speakers. So, even though the President has the final word, any changes in sense of removing previous decisions are not likely.²³

²² This is a case of Obama’s decision merging the Homeland Security Council’s staff with the staff from the NSC, but keeping those two bodies separately (Meyer 2009).

²³ This is also because of constitutional legitimacy of the President. For further information see Chapter 1.1. and Neustadt (2007) or Peterson (1994).

The NSC does not have same relationship with the Congress as the departments and agencies do. Hence, each statutory department (State, Defense, Energy) or agency (CIA, DIA) in the NSC informs the Congress separately on security and foreign issues from their perspectives. The advisor is not a subject of confirmation by the Senate, although the rest of statutory members need its approval (Sarkesian, Williams and Cimbala 2008). Over the years there have been many hearings in the Congress relating the NSC, but they were more about former issues of the NSC²⁴ than the report of current situation and organization procedure. Moreover, the Congress is not even able to manage this coordination by its institutional nature,²⁵ which restricts this body to be dominant on the security policy.

2.4. Energy Security as a Part of the National Security

Energy security is not a new term within security studies. The word energy security is a part of national security at least officially since 1973,²⁶ when OPEC cartel increased the price of oil in already tight market, which spiked the prices to that time unknown heights (Shaffer 2009). Therefore, since 1970s the United States officially realized that

²⁴ They dealt with political issues and scandals that were connected with the NSC members, like wiretaps against NSC staff members probably ordered by Henry Kissinger, the unauthorized transfer of NSC documents to officials in the Joint Chiefs of Staff, and information on Al Qaeda prior to 9/11 attacks (Best 2011, 26).

²⁵ As the Congress is made out of two bodies, Congressmen and Senators have to travel every week to their districts and deal mainly with their home issues and, moreover, these issues are rarely coherent with home issues of the members of the Congress (see case of energy further). Hence, this workload requires full concentration on these issues, which can restrict cooperation on security and foreign issues (K. King 2010). Furthermore, as the foreign and security issues are not directly connected to their districts, the lawmakers can obtain “cheap” points for the elections on the expense of these issues.

²⁶ The energy security and oil independence in President’s speech was used for the first time by Richard M. Nixon proclaiming that the national goal should be to meet the energy need without depending on any foreign sources (Nixon 1974).

access to energy at affordable prices is fundamental requirement for the stability and success of the economy.²⁷

More detailed explanation of what is exactly the energy security means, will help us to understand current position of this issue in the national security policy. The explanation, that defines it, focuses on four dimensions: availability, reliability, affordability, and sustainability (Elkind 2010, 120; Shaffer 2009, 93; Luft 2009, 143-144). First dimension means availability of energy goods and services that can secure consumer's need. It differentiates the energy to one, which is abundant, but not available due to technology gaps, and other, which is available using current technology, but for some other reasons is not possible for extraction.²⁸ One needs large investments in R&D and other needs political will that would cancel restrictions forbidding any new development (Kenderdine and Moniz 2005). Reliability, the second dimension, is, basically, an insurance that will protect energy services from interruption. Energy provides the power for any economic activity and any interruption can affect every-day life of the whole population.²⁹ It is also important to point out that energy security does not mean energy self-sufficiency. The reliability does not mean a need to be reliant on solely home sources that even in that case would not mean the energy

²⁷ However, the energy security was seen until 1990s only through national security approach (see above), where military and states are dominant actors. During late 1990s and 2000s the energy security started to be perceived in sectorial approach, which led to current presence in the NSC. For further information see chapter 1.3. and Barry Buzan and Ole Weaver's (2003) definition.

²⁸ That is, for example, case of Arctic National Wildlife (ANWR) and environmental policies that protect it. See in chapter 2.

²⁹ There are several ways how to enhance the reliability: diversifying sources of supply, diversifying the supply chain used for processing, transporting, and distributed energy, increasing the reserve capacity of energy networks such as pipelines and power generation and transmission system, reducing energy demand, which can ease the burden on overstretched distribution infrastructure, creating emergency stocks, developing a redundant infrastructure, or disseminating timely market information (Elkind 2010).

security (Goldwyn and Billig 2005).³⁰ Also, strategic petroleum reserves can be financially intensive and cannot ensure the autarky as another form for sustaining the reliability.

Affordability, as a third dimension, does not only mean that the prices are low or high, but how often the prices change. The volatility can suddenly cause a hardship, which may be difficult to cover because of its contingency and markets then only with difficulties can cope with these shocks (Nivola and Carter 2010, 105). The affordability is also the main dimension, which can be affected by national energy policies in short time through the taxes and other incentives.³¹ Finally, the sustainability is quite new term as it was not a part of energy security definition before, but today it is a part for its inevitable impact on the security policy. This is an obvious direct impact of home environmental policies on security energy structure and is closely connected with first dimension (availability); however, it differs in their time application. The sustainability dimension is oriented on long-term practice that calculates the full cost of investment whereas the availability is more concerned with short-term practice.

Considering these dimensions, energy security is a broad issue that covers both home and foreign policy, if we want to apply all dimensions and measure amount of security according to them. However, the U.S. political system and policy-making process rather divide these two aspects, so there is hard to find common ground (Rosner 2010). This was supposed to change the Energy Independence and Security Act of 2007 (HR 6), whose aim was to make energy policy fully coordinated with home and foreign issues, among other news.

³⁰ This is a case of Hurricane Katrina and Rita, when energy reliability was restricted due to home accident (Farrell and Bozon 2008).

³¹ Such as public transportation services, state funding, or tax credits. But even then the question of affordability is not answered, since this money comes from the taxpayers.

The energy security had its part in each NSS of each presidential administration since 1986 when it was passed, but to become fully a part of the NSC did not happen until 2007, when the Energy Independence and Security Act was passed in the Congress (Weisman and Mufson 2007). Besides other issues, the Act brought new changes in the NSC, as the Secretary of Energy became a statutory member of the NSC as a third statutory Secretary after Defense and State. The Secretary of State has to ensure that energy security is integrated into the core mission of the Department of State and establish within the Department a Coordinator for International Energy Affairs as well as to make sure to have energy experts at key embassies (HR 6).³²

This marks first proposal for official beginning of integration of the energy security in the NSC structures (Sissine 2007, 17) as well as it tries to change previous view on this issue³³ and coordinate it with home energy issues. ³⁴ The security of energy was to become not an issue of imported resources only, as it was before, but also focused on home energy policy development, which is promoted to be since this act of 2007 in accordance with it. The reason is clear: *“There is no way to design an efficient foreign policy strategy to enhance U.S. national security as it relates to energy, in the absence of effective, complementary initiatives in domestic policy”* (Fuerth 2005, 421). This might be a formidable turn in energy security strategy in last four decades. Chapter 5 will show if this

³² The HR 6 was introduced to the House of Representative by Nick Rahall (Democrat), Both Houses in the 110th Congress had Democratic majority (Sissine 2007). See the major congressional actions during policy-making process in the Annex 1 of the thesis.

³³ Previous politics regarding the energy security was based on the Carter doctrine that ensured the free flow of oil from Persian Gulf to the USA. This policy is, indeed, used also today, as since 2003, the military presence in the Persian Gulf largely increased and George W. Bush several times supported its presence there (Luft 2009, 147-148).

³⁴ The Act also states that the President has to provide every two years a special report on the energy security policy to the Congress (Sissine 2007, 18). This was due to interest of each member of the Congress, especially from energy production areas.

Act actually changed the patterns in home and foreign energy policy coordination.

3. Energy in the United States: Analysis of Consumption

This chapter is focused on energy consumption in the United States and the purpose is to analyze how the United States became the biggest energy consumer in the world as well as define the energy consumption sectors. Based on this chapter, we will be able to see, which sectors are most vulnerable in case of energy insecurity, which will be key for further understanding of security policy development and decisions.

3.1. Energy Consumption throughout U.S. History

The use of Energy is one of the most important variables, which marked a direction of development of humankind and environment as a whole. Energy has, and will always exist, but it has value to humans only if it is connected with work, and a specific, usually economic outcome.

Interpreting consumption patterns of energy can give a telling profile of human production capacities. As we can divide energy according to its forms (i.e. kinetic, potential, thermal, chemical, mechanical), we can also determine, through these forms, which energy was mostly in use during human history. Mechanical is the largest sector of anthropogenic use, represented by muscles (either animals or humans) together with thermal, where the main work did biomass fuels (Smil 2005, 1-3).

Over the last 200 years, however, this trend switched to dominate thermal energy, which uses fossil fuels (petroleum is most important among them) for possible work outcome. According to David Goodstein, we can date this “kick off” to 1764, when James Watt improved already known steam engine to a reasonable level for mass use in economic development (Goodstein 2004). It is important to note that the end

result of this revolutionary change is based on a non-scientific understanding of energy and work. Since this time, we can watch different patterns in energy consumption, simply described by growth. The 20th century saw a record increase of growth. The last century also brought a deeper analysis as well as theories concerning energy consumption and direction of this consumption in terms of wastage, development, dependency and pollution.

The United States is the world's largest energy consumer, but if we want to ask how it evolved that way, we have to look further into the past than the most recent decades. The history of the USA as a high-energy regime goes back to the 19th century, when its free-market economy was driven by increased resource exploitation. Combining cheap costs of resource acquisitions and a traditional approach to using these energies, engineers and investors made possible a technological triumph: cheap production of energy. This was followed by an academic argument postulating that there is an equivalence of rising energy and it has a direct effect on cultural advances (Nye 2001, 1-5). However, this does not clearly explain why USA became by far the biggest consumer, since other first world nations consume comparably less energy.

Common theory will suggest that the equivalence was accompanied with energy transition during the 20th century. Seemingly when all western nations, and in the second half of the century other developing countries as well, used overwhelmingly nonrenewable fuels. For example, between 1990 and 2000, consumption of fossil fuels rose almost fifteen fold (Smil 2005, 6). However, unlike other countries at that time, the government supported private sectors to control resources rather than the government. The USA federal government even established a system of rights, which insured and encouraged investments and even invested in large-scale transportation projects (Shaffer 2009).

The concept of investors and corporations as a new type of private venture was until then something unseen in such amounts anywhere in the world. The rise of corporations brought new approaches: e.g. how to view the economy and social interaction. The investors could buy shares in a company, which they had never seen, whose employees they had never met, and whose customers they have never spoken to (Nye 2001, 131). Therefore, it was desirable to not produce just machines but rather whole systems, such as rail companies, which promoted not individual locomotives, but the whole rail system.

There is an understanding that these policies and economical developments, which differ from mirroring countries, led to the massive energy consumption and enabled the United States to take the biggest share in world total energy consumption (Zinn 2005). David E. Nye goes even further to support this theory, by offering the concept of *technical momentum*, which can be useful for understanding large-scale systems, such as the electricity grid, railway and basically any energy system that exists. Thus, the history of U.S. energy consumption is often based on the decisions, which, once made, are difficult to change or undo. Put it another way, they achieved their technical momentum, so they become more rigid and less responsive to social pressures (Nye 2001, 3). This would mean that technology is not a driving force, but rather people are. Technology is merely a tool for us to manipulate, humans ultimately decide how it will be used. An investigation into a population's culture can explain energy consumption patterns. Cultural and political decisions were the driving force behind current U.S. energy consumption levels.

Despite that the 19th century meant for Europe and North America heavy industrialization, most of those countries remained more dependent on wood than on coal. Running up until its closing decades, namely the U.S. consumption of fossil fuels surpassed traditional wood consumption in early 1880s. During the second half of the 19th century,

the average per capita supply of all energy increased by only about 25 percent as coal consumption rose tenfold but previously extensive wood burning was cut by four fifths (Smil 2005, 13). The development of sources of energy goes well along with the technological momentum concept, which tries to show that neither of these sources completely disappeared; they were rather cloaked by one another. Conventionally, muscle and water power were dominant until the 1880s. Followed by steam power dominating until 1920s, and then finally electricity along with the internal-combustion engine have been dominant since the 1920s. Yet, none of these systems appeared all at once, and none has totally disappeared (Nye 2001, 4-12).

At the beginning of the 20th century, industrializing countries of Europe and North America consumed about 98 percent of the world's energy. It is important to note that the latter half of the 20th century it was more than 93 percent and towards the end of the century, consumption decreased down to less than 70 percent. The United States per capita consumption of fossil fuels and hydro-electricity was already during the 1900s around 100 GJ/year, which was a number that European countries could not achieve even until a few generations later. Today, the USA with 5 percent of the world population consumes about 27 percent of the world's *Total Primary Energy Supply* (TPES)³⁵ and together with G7 countries the claim is about 45 percent of the global TPES (Smil 2005, 57-59).

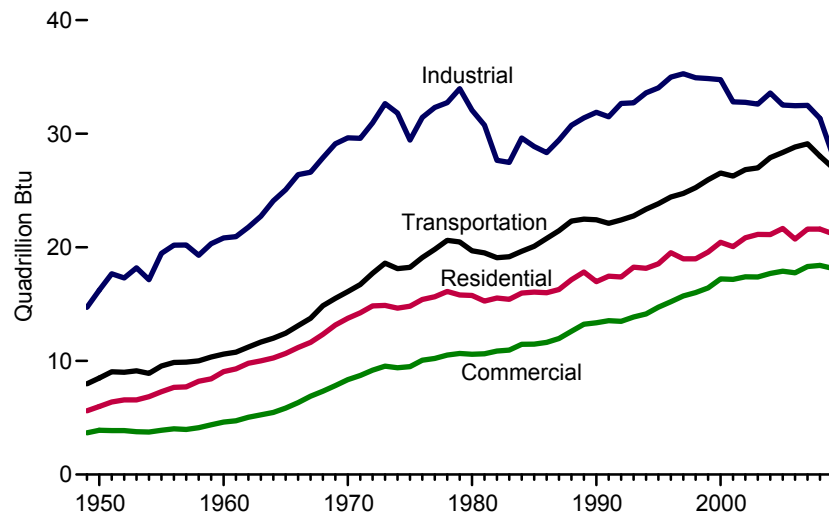
³⁵ Total Primary Energy Supply (TPES) is “energy embodied in natural resources (e.g. coal, crude oil, sunlight, uranium) that has not undergone any anthropogenic conversion or transformation” (EEA n.d.).

3.2. Energy Consumption by Sectors

In order to understand energy consumption in the United States, we have to look on changes that happened with final energy uses in the sectorial demand for commercial energy.

“The most prominent features are the initial rise, and later decline, of the energy share used in industrial production; gradual rise of energy demand by the service sector; steady growth of energy used directly by households, first for essential needs, later for a widening array of discretionary uses; and, a trend closely connected to rising affluence and higher disposable income, an increasing share of energy use claimed by transportation” (Smil 2005, 53).

Graph 1: Total Consumption by End-Use Sector, 1949-2009

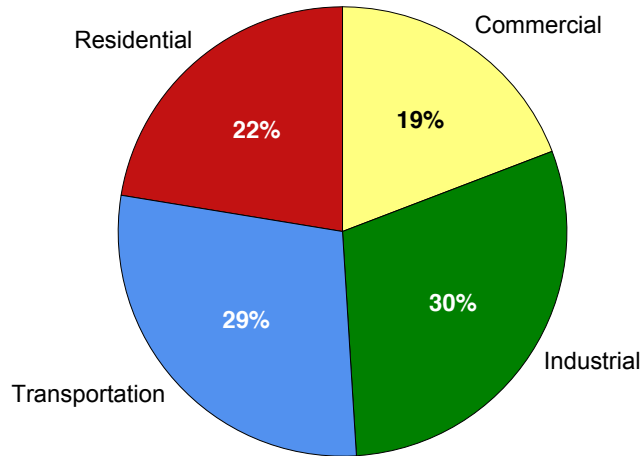


Source: http://www.eia.doe.gov/aer/pdf/pages/sec2_4.pdf

The data shown in Graphs 1 and 2 depict an obvious increase for transportation, residential and the commercial sector. The industrial sector share, as the only one, decreased from the 47 percent in 1950s to 30 percent in 2000s, which still makes it the biggest shareholder of TPES (EIA 2010). For example in Japan, we can observe a similar trajectory

with 70 percent share peaking in 1970s, but today averaging less than 50 percent.³⁶ As will be explained further, in Graph 1 the industry line is the one with most changes during this time. The reason is that before 1973 it was dependent on oil, but after the oil shock caused by OPEC countries, the whole sector transformed to other sources, but never became fully independent on oil. On the other hand, it proved to be quickly adaptable, however, as for other sectors, such adaptability is a holy grail-esque quest for more than 40 years (Elkind 2010, 119-120).

Graph 2: End-Use Shares of Total Energy Consumption, 2009



Source: http://www.eia.doe.gov/aer/pdf/pages/sec2_4.pdf

The overall change in domestic energy shares of residential and commercial sectors show a trend attributed to remarkable declines of energy prices as well as a growing affluence of U.S. households. Comparatively, a typical Chinese household share is just over 10 percent, which is very similar to past United States trend-lines. In short period it steadily increased since the 1980s (Smil 2005, 71). This marked increase

³⁶ On the other hand, in China's industrial sector the energy consumption average since 1980s at around 65-69 percent (Smil 2005).

in demand is connected with a necessity for one-family houses with self-heating units.³⁷

People moved from inner parts of the cities to federally planned suburban districts, which also brought a higher demand for private transportation (e.g. high car independence), a decrease of centralized public transportation systems, and a high demand for electricity. Living in these places also fostered a certain degree of individualization (Wilson 2009). Now, the service usually offered in the cities was not available and every household was left to its own independent means. On the other hand, industry quickly caught up with this development and introduced smaller home appliances. This introduction of appliances into the average American household quickly transitioned from luxury to necessity within homes, feeding an insatiable demand for electricity, their source of energy (Nye 2001, 134-135).

A similar pattern applies to the transportation sector, which could be applied to any other developed country. In the United States this would mean that half of the consumption in this sector is monopolized by private cars. In the early 1900s, the USA had only 8,000 registered vehicles and 20 years later the total was around 10 million. This previous number represents 90 percent of timely global rates of consumption, and by the beginning of 2000s it reached 215 million registered cars, or 30 percent of the world total (Smil 2005, 58). Passengers generally account for more than 20 percent of country's TPES in many affluent countries (i.e. in low-income countries it is around 5 percent of TPES).

Yet, the main problem of the United States is not the number of cars (roughly, 2.1 persons per vehicle in 2000), because it is not much higher than in sister countries. For example, in Japan, and Italy the figures are nearly matching, 2.4 in same year. In Germany the figure drops to

³⁷ Post-WWII federal policy supported this increase, and it is important to note that they appeared already in the late 19th century (Zinn 2005).

2.0/vehicle during the same year (Smil 2005). However, the problem in within total driven distances, which are annually about 19,000 km/vehicle, as well as in higher annual gasoline consumption, which is about 2.4 liters in 2000 (BP 2010). This might be explained by massive federal investments in projects like the Interstate Highway System (IHS) in 1957, when the U.S. government passed the plan to build highways connecting big cities and shortening time for travel between home in suburban areas and the city.

The whole idea started already in 1939, when General Motors introduced their vision of future transportation system dominated by private cars (Mark 2008). The vision was seen as a freedom for individuals to travel anywhere with the minimum amount of time needed. More insidiously, this vision helped to shape current U.S. foreign energy policy, manifesting itself within the hidden costs of an increased dependence on foreign oil. Also, socially, a problem also was in racial segregation. This was a time when African Americans were not allowed to move to suburban areas until 1960s, limiting them to city areas that shortly evolved into ghettos, because of lack of public transportation to the downtowns of the cities (Wilson 2009).

Gasoline-powered vehicles did not always dominate in the beginning of the 20th century. During that time most of them were steam-driven and even electric cars had its share in the vehicle consumer market. However, the triumph of gasoline cars was later obvious due to technological advances on particular models. For example, the batteries for electric cars were heavy and took a long time to recharge, and the steam cars were the heaviest and took time to heat up. Neither model could compete with the gasoline or internal-combustion cars, which delivered more power for its weight and a fuel that was high in energy density (Nye 2001, 196-200). Moreover that, the gas-powered car industry was among those examples, the only one which pushed through

low price and mass production, mainly because of entrepreneurs like Henry Ford. Soon it became a whole system with subsidiary services like companies selling tires, batteries and building of gas stations. Here, finally, Technical momentum of gas-powered cars had come and oil was slowly becoming the most precious resource.

From this perspective can be seen that dominance of petroleum in the transportation sector is hardly a coincidence. The development during 20th century with government assistance showed the direction, which, once taken, is difficult to change.

4. Energy in the United States: Analysis of the Primary Energy Mix

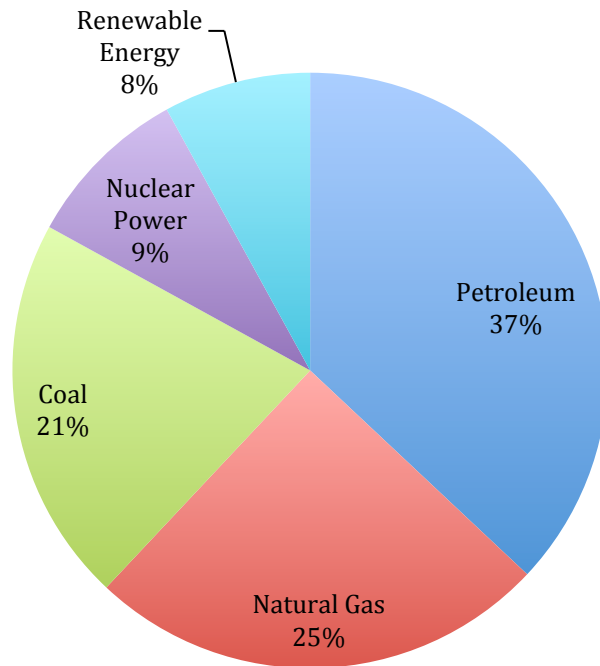
This chapter deals with primary energy sources and analyzes their production as well as their consumption by each sector. The point is to define, which sources are substantial goal for energy security policy, which will be based on four dimensions of energy security defined in Chapter 2.4. The results of this chapter will be used on energy security policy direction, which will further show how the lack of coordination restricts the proper formulation of comprehensive energy security goals.³⁸ In this chapter are also mentioned environmental impacts of each source, which, indeed, has its effect during policy-making process, however, this work does not include it in its primary research.

The energy mix of the USA is partly shaped by its natural resource capita and partly by consumption patterns. These are, consequently, decisions made in the past as I was trying to outline in the previous chapter. This chapter will focus on each source individually and will try to show its importance in the total energy mix through its supplies and the flow to each demand sector (transportation, industrial, residential and commercial, electric power).

Below in Graph 3, we can see that petroleum is the most important source of energy, followed by natural gas, coal, nuclear power and then renewable energy. In total, fossil fuels with non-renewable resources make together 92 percent of the total energy mix. Only 8 percent of the mix is composed of various renewable resources. Out of this mix, more than 70 percent is produced in the United States and almost 30 percent is imported. However, the main share has petroleum, which makes around 83 percent (EIA 2010) of the total consumption.

³⁸ This chapter excludes renewable energy, which will be part of the next chapter.

Graph 3: The U.S. Primary Energy Mix



Source: http://www.eia.doe.gov/aer/pecss_diagram.html

4.1. Petroleum

“If the price of every fuel were to determined purely by market forces, the low prices of oil, due to its low production cost from major oilfields, would provide an effective barrier against investments in, coal, gas, and nuclear industries and that oil would dominate the world’s energy supply leaving only limited room for other energies” (Smil 2005, 213).

Oil is the most important source of energy not just in the United States, but with 34 percent also globally. According to the International Energy Organization (IEA) it will remain the chief source of energy at least for a half of this century and it will even grow from today’s 80 million barrels per day (mb/d) to 103 mb/d in 2015 (IEA 2009).

The United States is by far the biggest consumer (one quarter of the world consumption) of oil with a current rate of 21 mb/d, which is around 2 percent less than the European Union (EU) plus former Soviet Union's satellites altogether (BP 2010). Estimations attest to about a 25 mb/d increase by 2030 (EIA 2010a). The country itself possesses around 2 percent of the world's oil reserves, which is the eleventh biggest supply. At the same time it is the world's third largest producer. However, it is still not enough to cover its domestic consumption, so around 60 percent must be imported and 40 percent is home produced. From the domestic production, 80 percent is coming from reserves in Texas, Louisiana, Alaska and California (Shaffer 2009). The USA has proven untouched reserves. One such area is in the Mexican Gulf, which needs large investments in industrial framework in order to access offshore drilling, and even then is high-risk in terms of affordability.³⁹

Yet, in 2000, new drilling rigs in federal waters of the Gulf increased U.S. production by 7 percent (EIA 2010b). Proved reserves are also in the Arctic National Wildlife Refuge (ANWR) in Alaska that is protected by federal laws. Recently, a new piece of legislation within the House of Representative entitled bill H.R. 909 "All of the Above" Energy Solution addresses the conflict of drilling in naturally protected areas. This bill follows the trend of most legislation supporting ANWR in that it incorporates the issue within a broader national domestic energy plan including promotion of oil from the Outer Continental Shelf (OCS), oil shale, coal to liquid, and nuclear power. So far the bill has attracted 55 co-sponsors (ANWR 2011).

The rest of the consumption is dependent on imported oil from foreign countries. The top five countries, which consist of Canada, Mexico,

³⁹ The uncertainty is even higher since the Deepwater Horizon oil spill and consequent damages that took place there in April 2010 and their consequences can have far-reaching effects (Crooks and McNulty 2011).

Saudi Arabia, Nigeria and Venezuela, account for 72 percent of United States oil imports. In total, most of the imported oil is coming from the western hemisphere (around 51 percent), then Africa (22 percent), the Persian Gulf (17 percent) and others (10 percent). Out of the top 15 countries exporting to the United States, eight are members of OPEC (EIA 2011).

This proved to be the biggest problem for U.S. energy policy. To be dependent on countries that were not coherent with American foreign policy made these countries the petro-superpowers and oil was not anymore just a tradable commodity in the world market.⁴⁰ Harrowingly, since 1970s, it became a weapon that could be used by otherwise globally less important⁴¹ countries. That can be seen in the case of Venezuela, when Hugo Chávez became a president. His constant remarks and verbal attacks on Bush administration and connections with the leaders of “pariah” states like Cuba, Iran or Syria did not affect economical relationships between them (as it did with the “pariah” states) and Venezuela still supplies about 10 percent of oil imported to the United States (Klare 2009, 26-27).

The first crisis connected with oil as a weapon, however, happened almost 40 years ago, when OPEC countries attempted to impose an embargo on the United States and Netherlands, which caused an unprecedented rising of world oil prices in a short period. The embargo itself was a reaction to the support of Israel in the Yom Kippur War and was already preceded by other embargos already in 1950s (Luft 2009). This one is more important because it happened under tight oil market conditions, and therefore only small assumption of removal of even small amount of oil could affect world oil prices. Despite the application of

⁴⁰ In Chapter 2.4. I describe the reliability as an of the aspects of energy security.

⁴¹ Less important comparably to similar countries (size, population etc.) without oil reserves.

threats by the OPEC countries, from today's point of view, it was rather a victory for the oil-importing countries. The embargo sparked new transformations in some oil-dependent sectors; that is, a country uses half of the amount of oil per dollar of GDP produced that they did in 1970s. Moreover, OPEC countries faced a higher debt than ever before and real price of oil had decreased compared to the situation prior to 1970s (Shaffer 2009, 33). On the other hand, this does not mitigate the problem of oil imports; it is rather one explanation for finding the solution. In order to fully understand, we have to analyze domestic production and consumption patterns of oil.

Oil production in the United States started around the first half of the 19th century,⁴² but until its end it grew slowly. Globally speaking, in the 1900s the annual production was about 150 million barrels, which is today approximately two days production (Smil 2005, 184). Nevertheless, the U.S. production was the highest and kept it that way also for the first half of the 20th century. The country could stay self-reliant until the WWII, when, because of military expenditures, oil demand grew sharply. After that, American oil production could no longer keep the pace with growing demand, because prices had been so low and heavily funded by the government. This is a remnant from 1920s, when, due to the protectionism, the U.S. government tried to push for home investments in oil production and restricted all oil companies from investments in the Middle East (Nye 2001, 123). The protectionism of 1920s is also partly problem of American political missteps with future foreign investments, which were delayed compared to other countries.

Since 1940s, oil companies and some governments started to publish annual reports with oil reserve forecasts. The main reason was that the global demand for oil grew steadily after the end of the war. One

⁴² The first field was opened in Pennsylvania in 1859 (PRI n.d.).

of the most famous predictors, Marion King Hubbert, in 1956 developed a forecasting tool that predicted that in early 1970s the U.S. oil production would peak and since then it will decline. His prediction was based on assumptions that exploratory drilling has already discovered about 90 percent of oil and any “new” discoveries are only re-discoveries from before. Also, since 1955 the amount of production steadily declined the number of drilling rigs to its lowest levels in 1970-1971 (Clarke 2008, 266-267). Since the 1970s, oil producers have been extracting more oil than they discovered and Hubbert’s peak curve⁴³ proved to be true at least for the forecast in the US (Deffeyes 2001).

However, as Hubbert’s critics say, the amount of oil is not just dependent on reserves, but also, projected demand plays a crucial part. And these projections have been many times wrong. For instance, the demand sectors’ oil consumption has changed over time. Today, the biggest oil consumer is the transportation sector, which has 72 percent of total U.S. oil demand and for the sector itself it makes roughly 95 percent of its consumption. Ideally, a closed circuit system. Nearly 85 percent of the energy consumed in this sector is for vehicles, then air (9 percent) and the rest is rail and water (Luft 2009, 143). After the transportation sector is the industrial one, which consumes 22 percent of the petroleum supply, which makes 41 percent of its needs. The rest of the supply goes to residential and commercial with 5 percent that covers 17 percent of consumption and to electricity production, which is around 1 percent of both supplies and needs (EIA 2010).

In the years since aforementioned oil embargo in 1973/74, transportation has become a more important component of oil demand,

⁴³ Although Hubbert was right with his prediction, his forecast still faces criticism, because what he predicted in 1970s for the USA, later predicted for the world’s peak of oil production, which should be in 2010s. This assumption is based on a fact that four-fifths of global oil production come from the fields found before 1973 and most of them have steeply declining rates of extraction (Deffeyes 2001, Smil 2005).

as government policy, largely due to high prices, encouraged the substitution when possible of other fuels for oil. In non-transportation sectors switched burning oil for space heating in buildings, such as homes, apartment buildings, stores, and schools, and burning oil for power to run factory equipment, or to generate electricity (EIA n.d.). Therefore since the 1970s we can observe a large decline of oil demand in residential, commercial and electrical sectors. Substitution of other energy sources for oil was possible, some of it immediately and some with the turnover of equipment. Transportation uses, in contrast, there is little fuel substitution possible in the short term and only limited potential in the longer term (Elkind 2010). This is at current technology specifications, however, there has never been strong political incentive that would encourage transformation from oil-based vehicles to other sources, as well as there was lack of policy that would change the patterns of consumption.⁴⁴

4.2. Natural Gas

Natural gas now provides almost a quarter of the world's primary energy. Despite the tripling of natural gas extraction from 1975 to 2005, the worldwide reserve/production ratio of the fuel is more than sixty years, compared to just over forty for petroleum. Russia has roughly a third of all gas reserves, followed by Iran, Qatar, and Saudi Arabia, the Middle East reserves. Interestingly the Middle Eastern sector jointly adds up only to Russia's total (Smil 2006, 108). Natural gas (NG) is sometimes perceived as a solution for the future energy policy problems. It is the cleanest fossil fuel and comparably there are almost same amounts of NG's world supplies as oil's.

⁴⁴ See Chapter 5.2.

The United States has the sixth largest natural gas reserves in the world and is the biggest producer in the world with more than 20 percent of the world share⁴⁵ (BP 2010). The United States uses NG as a main source of energy for residential & commercial sectors, which has switched from oil largely in the 1970s. The same pattern applies for the industrial sector, but there is coal more important. Natural gas has lower energy density than oil, so its use in the transportation sector is limited and today it makes only around 3 percent of total consumption, but it has almost an equal share in industrial (32 percent and 40 percent of total consumption), residential & commercial (35 percent, which is almost 76 percent of its consumption) and electricity power sectors (30 percent makes 18 percent of electricity production) (EIA 2010).

Compared with other resources, NG by its nature is difficult to extract, store and transport. For that reason, there is not a developed global market like with easily storable oil, but rather a regional one or even a trade based on bilateral agreements between exporting and importing countries. The United States since 1986 are not self-sufficient with their own supplies, which are mainly coming from Texas, California, Louisiana. Instead, today it needs to supply about 10 percent from abroad, although significant amounts of domestic reserves are now unavailable to the market for various reasons, either for lack of the infrastructure (Alaska), adequate take away capacity (Rocky Mountains) or other access issues (such as permitting) so industry needs either a warranty from government that such a 20 year-long investment would pay off or passing new laws allowing drilling in these areas (Hefner III 2008).⁴⁶

⁴⁵ Russia has by far the largest reserves of the NG in the world, but it falls behind with production right after the USA (BP 2010).

⁴⁶ This issue is connected with initial phase of policy-making process and the setting in the Congress, as I argue in Chapter 1.2.2.

On the other hand, most of the imported NG (around 90 percent) comes from Canada through the secure pipelines; the rest (10 percent) is imported as the Liquefied Natural Gas (LNG) by tankers to specially build terminals (EIA 2010c). The LNG industry is one of the fastest growing sectors in the market, commercially used since 1960s, but importantly it is not a new source of energy, but rather a method for delivering an already existing form of energy, which increase its availability dimension. In economic meaning it brought change to its commoditization, as NG is through this system was marketed. The LNG system is still developing, but by 2030 it is expected a 12 percent increase in market shares (Hurst 2009, 272).

The Unites States now does not need to largely invest in the LNG technology for several reasons: most of the foreign NG comes from Canada, so there is not a “middleman” (like the case of Ukraine as a transit state in Europe) that would intervene between those two, pipelines are still more efficient than the LNG, maintained pipelines have average leakage less than 1 percent compared with average 10 percent loss during current LNG transportation (Smil 2005, 215). Besides that, tankers carrying LNG or terminals could be easy targets to terrorist attacks, but it is not clear how much this is a real threat or false alert as LNG itself is neither flammable nor explosive.⁴⁷

The NG is the cleanest fossil fuel and its use will be increasing as it consistently has since 1970s as the fastest growing source. Moreover, NG is much better geographically distributed and can provide better diversification than oil (Hefner III 2008). Diversification could be crucial for the United States as the LNG market grows. The forecast predicts higher importance of the NG and counting with full tradability on world

⁴⁷ If the spill occurs, it immediately vaporizes, so it would rather create a “flaming cloud” than a huge explosion. On the other hand, we have to count with other factors (Hurst 2009)

markets as it has petroleum today, would make NG one of the most important commodities. Today's investments in new LNG terminals would increase the actual presence of the United States in the world market, although the project goes rather slowly. As a previous chapter says, late enter to the global oil scene prevented the country from shaping the world oil market (Nye 2001). The same case but with another source can repeat again.

The coming decades will see a rising share of natural gas in global primary energy supply and, inevitably, many more major pipelines and gas export projects (Hefner III 2008). As it may not be so clear today, natural gas producing countries are already in communication. The fifteen-nation Gas Exporting Countries Forum (GECF) is developing a permanent executive bureau and headquarters. A clear incentive exists for natural gas exporting nations to form an alliance as similar leverage helped the creation of the OPEC. Natural gas market information is sparse due the regional markets and the pace and style of natural gas market development uncertain (Juckett and Foss 2005, 545). The GECF presents collaboration between member countries and a means of communication for major natural-gas-producing and exporting countries and tries to reduce information asymmetries with natural gas consulting and importing countries (GECF 2005).⁴⁸ However, a full operation can come only with the increase of shares of LNG in the market and still needs major suppliers to join it and that will be challenge for the United States in coming years.

⁴⁸ However, any coordination with the GECF is not likely as the home gas market is oriented by different prices. That would be case in the Congress, as interest groups would most likely push against it, as I it is shown in Chapter 1.2.

4.3. Coal

The United States possesses the world's largest coal reserves, almost 30 percent of the world share, which with the current pace of consumption can last for another 200 years (Farrell and Bozon 2008). Coal itself accounts for almost 27 percent of the world primary energy demand (EIA 2010). However, the United States is not the biggest producer as China has the lead. 93 percent of production goes directly to the electrical power sector, where it makes almost 50 percent of its needs, in the industrial Midwest it goes even to 80 percent. Despite the fact the coal's share is decreasing in this sector, it is still half of its demand. The rest of the 7 percent goes to the industrial sector, where it is difficult to substitute it, because of its high energy density, mostly used in the steel industry (Smil 2006, 100).

Coal is mined in 26 states, where Wyoming mines the most of the production; the other important states are West Virginia, Kentucky, Pennsylvania, and Montana (EIA 2010). Despite the large amount of United States reserves, not the whole amount is recoverable and opinions about recoverability vary. For example,

“in Wyoming, 47% of the in-place coal is technically recoverable, but the available, economically recoverable coal is only about 6% of the in-place coal. (...) [T]hese proportions may vary between 5 percent and 20 percent, depending upon the specific conditions for each coal-mining area” (Whitney, Behrens and Glover 2009, 13).

Therefore, even though the United States has still the largest reserves, it is difficult to predict, how much coal can actually be realistically recovered.

Compared to previous years, production of coal declined in 2009 by almost 10 percent as a consequence of the financial crisis. However, at least for next two decades it is expected to increase in demand (IEA 2009). This perspective, however, was not same in 1970s, when, because of

“cheap crude oil and rise of nuclear electricity generation, coal was widely regarded as the has-been fuel” (Smil 2005, 229). The return came in the 1980s for two main reasons: First, after two major problems in nuclear power plants (Chernobyl and Three Mile Island), which slowed down the investments in new projects and led for several years to a political taboo. Second, the political changes in China in 1980s that transformed the Chinese economy to a country with the highest growing annual GDP. It was conditioned by fast energy consumption growth and coal was (and still is) a cheap option. The infrastructure, though, was old and not prepared for such a leap in demand, so coal had to be imported from the United States in addition to domestic production .

The biggest problem of coal in a long-term challenge is its high level of emission of carbon dioxide, the principal greenhouse gas (Victor 2008). There are certain investments in research in an organization called Clean Coal Technology (CCT). The sequestration, a term for the carbon dioxide storage, is not unified and there will never be a single solution in existence. There are technologies that are concerned with currently built plants and they focus on storage after it is burned. All these methods are connected with pulverization, which is a process when coal is pulverized to a powder. The problem of most of today’s coal plants is that pulverization is not efficient, it usually converts 35 percent of the coal energy into electricity. The most developed plants can get a little bit more than 40 percent (Krupp and Horn 2009, 171). If all coal plants were transformed to the most efficient level, it would reduce the emission by 20 percent. Similar results would have use of ammonia after combustion, which works on principle of sequestering the carbon dioxide through ammonia, however it does not ensure the efficiency (Smil 2006, 101).

The other way is to get rid of the carbon dioxide before the combustion process is through a technology that would turn coal into gas or liquid before it is burned, to make pollutant removal easier. One of

these ideas is gasifying the coal underground right in the extraction area where it is found, which basically means using coal without mining it (Krupp and Horn 2009, 186-196). However, as we see all the various options, it is still important to note, that current or near future technology knows only conversion from coal to electricity with up to 50 percent efficiency. Therefore, a huge risk remains, by some it is seen as a certainty (Hefner III 2008), that any investments might not be profitable anymore, which together with carbon cap and trade systems or carbon tax system (or even both) will be even harder. All these technologies are made for a transition period (up to next 40 years) only, which is another con for the profitability of these innovations.

For the future, the biggest implication should be a change in the electricity sector supply sources. The natural gas is being slowly applied as a substitution for coal in the electric power sector, but other political issues than just pollution condition its use. One of them is high employment in coal industry sector in some states, which repels the positions of the states or federal representatives (Nivola and Carter 2010). All these states are officially against any changes that would mean unemployment for the people in the sector.⁴⁹

There is not a “hotter” political topic regarding the energy in the United States than that of removal or minimizing of the coal industry in electricity. Coal played a major part almost since the beginning of the fossil fuel use and in rapid economic development of the United States in the 19th century and the industry itself is deeply rooted in today’s economy as well as politics. Like an economic plan built solely around the T-model Ford, citizens built their livelihoods around the job

⁴⁹ One of these cases is Pennsylvania, where part of the election campaign to the U.S. Congress (or state level too) was regarding the energy situation. Pennsylvania is a major producer and consumer of the coal energy and it is the state with high employment in the coal sector as well, which, not surprisingly, has effect on officials’ pro-coal statements and positions. Last general elections, Charles W. Dent from the 15th district re-confirmed his seat with this program (Dent n.d.).

infrastructure that coal supplies (Krupp and Horn 2009, 166-167). However environmental policy is most likely to strengthen during the upcoming years and even today it is much more difficult to build new coal power plants than it was ten years ago.

4.4. Nuclear Power

Nuclear energy is quite a new source of energy, developed during WWII. Besides its already known destructive effects, it also realizes huge amounts of power, which are being used for civilian purposes. The first nuclear power plant in the United States was built in Shippingport, Pennsylvania, opened in 1957 (a year after British Calder Hall nuclear power station) (Holt 2009). Today, the USA is the number one nuclear energy producer in the world (with 104 currently operating power plants and 28 being shut down) with France behind nearly twice as low in terms of production. The whole nuclear power production goes to the electricity sector, which covers its 20 percent demand, but the peak of the production was in 1990 and since then it decreased (EIA 2010).

Nuclear power is not dependent on fossil fuels, but on uranium, which can be found, unlike oil, in non-Middle Eastern countries. Many of the major uranium exporters have a good relationship with the United States (Canada, Australia), and world reserves of uranium are much more plentiful than oil. Compared with fossil fuels, one nuclear fuel pellet has an equivalent energy of three barrels of oil and one ton of coal (Ferguson 2009). Some critics of nuclear energy, however, still do not see it as an efficient energy solution as its main resource needs to be imported and is finite as well as fossil fuels.

Nuclear power reduced dependence on oil during last 30 years almost three times (and increased its share from 9 to 20 percent today), when in 1975 petroleum powered 15 percent of the U.S. electricity

system. However, no utility has ordered a new power plant in more than 30 years (and more than 100 nuclear reactor proposals have been canceled) and last ordered power plant was in 1978 (finished in 1990s). Reasons for the 30-year halt in U.S. nuclear plant orders include high capital costs, public concern about nuclear safety and waste disposal, and regulatory compliance costs. Despite the shutdowns, annual U.S. nuclear electrical output increased by more than one-third from 1990 to 2006 (Holt 2009, 1-2).

The problem of the cost is connected with large support from government, when during 1943 and 1999 it received \$145 billion worth of federal subsidies including both direct benefits, such as research and development funding, and indirect benefits such as liability limits that reduce plant owners' insurance premiums (Weeks 2006, 219). Even today a plant with one reactor (1000 MW which as amount to power city with size of Washington, D.C.) would cost around 4 billion dollars, which is 10 percent more than comparable utility' value, so the potential investors face financial default risk, which discourages them from the actual investments (Ferguson 2009).

Besides the cost, the nuclear energy posses health and safety issues that are the biggest concern for the public. Currently, the world saw two major breakdowns, one in Chernobyl, USSR (today's Ukraine), and second in Three Mile Island, USA.⁵⁰ Even though the Chernobyl accident happened because of human failure and would not have happened in western countries because of its more durable protective layers, its radiation cloud as a consequence was and still is a bogey for any further development. Even though any radiation of operating power plant is same or even lower than the other natural sources, a practiced

⁵⁰ Recent accidents in Japanese nuclear power plant Fukushima, which was hit by both earthquake and tsunami will most likely have political impact on further development, which might prolong the process of research of new generation of nuclear power plants (Pfeifer 2011).

policy of “not in my backyard” restricts many future agreements on new locations (Smil 2005, 311).

And mainly, there is an unsolved issue with nuclear waste, which is the biggest problem in any discussion about nuclear power. Currently, there are now permanent nuclear waste disposal sites and all waste is stored in the nuclear power plants. The Congress passed a proposal for such storage in Yucca Mountains, Nevada, however, since the bill was passed in 1988 there is still not decided, whether it is actually going to be there (Holt 2009a, 23-24). This is because of two reasons. Firstly, there is a firm opposition by officials and public from Nevada, who criticize it since it was passed in the end of 1980s. Secondly, this problem also contains opposition of the larger public, which is against any transportation or replacement of the waste. Over the period of 40 years more than 100,000 shipments moved through about 43 states. Critics say that this causes exposure of 50 million Americans to high-level nuclear waste (Cooper 1999, 193). So until today, the waste is stored within the operating power plants, where is also brought waste from decommissioned ones.

The nuclear industry lobbies that nuclear power is the best option for meeting rising energy demand without exacerbating climate problems, as the environmental legislation will be gradually more strict than today (Weeks 2006). According to current trend, demand will have risen so sharply by coming 30 years that nuclear power with current legislation will end up providing only about 16 percent of total U.S. power generation, 4 percent less than today.

The leading position of the United States in the nuclear energy industry is obvious, but today it faces problems that can undermine its future (Holt 2009a). Home as well as in the rest of the world, has a rather

smaller interest in the nuclear power as some countries in Europe⁵¹ even signed a gradual ban of nuclear energy. In this respect, nuclear energy will be probably decreasing its share in future decades, as there are only nuclear plants that are being finished (mostly in Asia or South Africa). That will affect home legislation, because the industry is dependent on federal funds. Which will threaten any investment and development of the new technologies, such as already being developed so-called *Generation IV* reactor that, according to the scientists, should solve many safety and waste issues (Holt 2009). However, as it should be finished in 2020s, the program itself needs further investments, which are based on today's legislation.

As it can be seen, the position to nuclear energy by officials or public is difficult in order to meet some successful consensus. Robert Dahl wrote this telling statement 60 years ago, which can best describe the situation even today:

"[A]tomic energy appears to be one of a growing class of situations for which the traditional democratic processes are rather unsuitable and for which traditional theories of democracy provide no rational answer" (Dahl 1953, 6).

This chapter shows how each primary source affects decision-making process in energy policy as well as how the policy-makers affect through their choices preferences on each source. Following chapter is particularly concerned with renewable energy, its sources and consumption, and how particularly policy-making process affects them.

⁵¹ Sweden is of those countries. It was considered a pioneer in 1970 with the world biggest share of nuclear power per capita, but in 1980 the parliament passed the law of phasing out the nuclear power plants based on the referendum results (Smil 2005).

5. Renewable Energy as a Part of the U.S. National Security Policy

While the first two chapters were concerned the national and energy security, policy-making and the actors during this process, the second chapter with energy consumption and primary sources analysis, this chapter is concerned on particular energy security policy formulation regarding the renewable energy. The renewable energy is a source, compared with other mentioned sources, that is not by its nature exhaustible and some of these sources could be used virtually anywhere and help decrease dependency in certain consumption sector. The purpose of this chapter is to show that coordination of national security policy and home energy policy is still on two tracks, despite the Energy Security Act of 2007, which gave certain incentives for the coordination of those two.

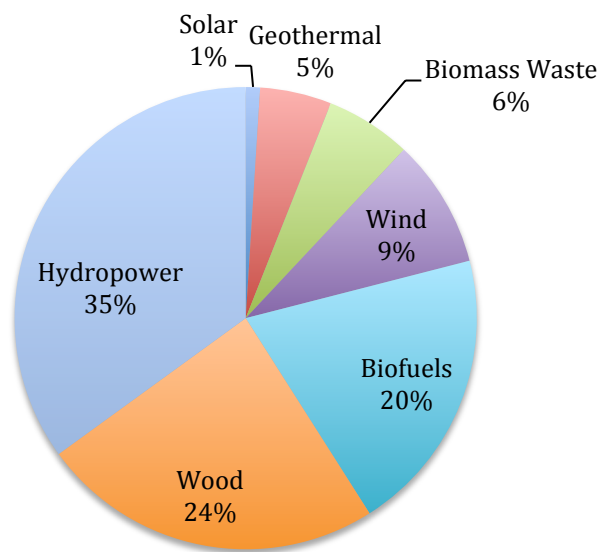
As the renewable energy by its nature cannot be directly source of conflict, as the other primary sources can, and has the smallest share of the consumption, which was shown in the previous chapter, analysis of renewables' policy development can show, if the legislation is coordinated with security issues. First part of this chapter is dedicated to deeper analysis of the sources and their possible future feasibility, since the preferences for particular source play significant political role, as will be shown. The second part will analyze, whether passed legislation regarding renewable energy had any impact on energy security issues and what is the trend in President's Obama energy policy direction.

5.1. Renewable Energy: Sources and Consumption

The last part of the U.S. primary energy mix is more a composition of various sources. Although in total, renewable energy makes around 8

percent of whole consumption demand, its importance, in different aspects though, is stressed by every president administration. More than half of this energy in total goes to the electric power sector (53 percent with its total share hitting 11 percent), 26 percent has industrial sector, 12 percent the transportation sector and the rest 9 percent residential & commercial. The biggest share of this sector has biomass with 50 percent. Biomass is composed by wood (24 percent), biofuels (20 percent) and biomass waste (6 percent). Then follows hydropower energy (35 percent), wind (9 percent), geothermal (5 percent) and only 1 percent has solar energy (EIA 2010).

Graph 4: Renewable Energy in the United States by Source



Source: http://www.eia.doe.gov/aer/pecss_diagram.html

Together all these sources share a common value: from the U.S. primary energy mix they are the only non-fossils based sources and are they virtually inexhaustible. Since 1978, renewable energy producers have enjoyed federal support. The Public Utility Regulatory Policies Act

(PURPA) passed in 1978 requires electric utilities to buy renewable resources when they are available. Annual appropriations for the Energy Department include money for research and development of renewables. A federal partnership with the auto industry is pursuing alternatives, including renewable energy, to the gasoline-driven engine (Cooper 1997). Different source, however, has a different political advocate.

5.1.1. Biomass

The term biomass is a broad category for fuels extracted from living or recently living organism (wood, crop, waste, alcohol based fuels). Biomass facilities often are cogeneration plants, which produce heat and electricity at the same time. Wood and wood wastes are the most common fuels (Cooper 1997). It is the most important source of heat in developing countries, but in the United States is also used a fuel ethanol as a large part for transportation sector. Consumption in the United States in 2008 was about 9 billion gallons, mainly blended into E10 gasohol (a blend of 10 percent ethanol and 90 percent gasoline) (Behrens and Glover 2009, 27).

However the concept of biomass brings criticism as the main crop for biofuel production is corn that can be hardly replacement for oil. Actually, if the United States wanted to run all vehicles only on ethanol, the country would need 20 percent larger area than it cultivates today (Smil 2005, 264). The use of corn for biomass requires political tolerance as its consumption for biofuels affects the food price. The effects of which do not cause turmoil in first world nations but is felt dramatically in third world countries. Moreover, if used as a strategy for cutting carbon, corn is useless, as almost same amount of carbon dioxide is emitted during the production.

Therefore, corn is rather not a solution, but a political tool of interested groups. On the other hand, sugar is much more efficient for the production, but it is not competitive in terms of price as the U.S. tariffs discourage competitors from importation (Victor 2008).

“Biomass energies could only become an important component of future energy supply after the development of large-scale, intensive production of selected crop and tree species convertible, by advanced techniques, into liquid or gaseous fuels or electricity” (Smil 2006, 164).

However, in smaller amounts it can support main energy sources in transportation, but the agricultural sector in the United States is effectively represented by interest groups and import of most agricultural products is complicated because of high tariffs, so unless there is a political will to lift the tariffs, the whole concept of biomass in transportation use is rather contra-productive.

5.1.2. Hydro Energy

The hydro energy supplies almost 20 percent of the world’s electricity, the importance is especially high in tropical countries, where it is dominant means of electrical production. The advantage is lower operating costs and longer expected plant life, however, it is difficult to achieve its fuel potential capacity as the United States achieves a little bit less than 45 percent (Smil 2005, 247), which almost the highest in the world. The biggest boom of the dams building was in 1970s, however today it is rather decreasing in Europe and the United States, because it has significant environmental and social side effects that even question their outcome. As today the number of dams reaches 8100 in production, in many states in western part of the U.S. can be observed taking down of the dams, as they often outlived their usefulness. In 2000, the World

Commission on Dams published a report, which stressed that besides traditionally dominant economic benefits and electricity generation, all future projects should consider social and environmental effects⁵² (WCD 2000).

So far, there is not a new project for a major dam in the United States. The reason is same as the aforementioned report points out. Moreover, there is also increasing share of newer sources (wind and solar) that restricts any investments (usually much larger) in dams as well as decrease security issues connected with large dams around major cities. Therefore, in 30 years forecast, there is no plan for large projects, however, there can be smaller projects feasible (also less financially intensive and more secure) such as the pumped hydro⁵³ that is bale to store energy and goes well along with intermittent modes of generation such as wind turbines and photovoltaics (ESA 2009).

5.1.3. Wind Energy

Wind energy was known already for centuries, but, harnessed by large because of more efficient turbines, has reemerged in the 1990s (less than a decade after a failed mini-boom during the 1980s) as the leading renewable energy choice. Wind power pushed for price deregulation of energy production more than any other segment, because comparably it is the cheapest way to produce renewable energy. In 2009, wind power increased by almost 34 percent over 2008, bringing the share of total

⁵² That is, for example, case of India and China, where during construction of large dams had to be relocated 16 million people. The world's large dams have wiped out species, flooded huge areas of wetlands, forests and farmlands. The "one-size-fits-all" approach to meeting the world's water and energy needs proved to be outdated (WCD 2000).

⁵³ Conventional pumped hydro was already used in 1890s in Switzerland and Italy. It uses two water reservoirs, separated vertically. During off peak hours water is pumped from the lower reservoir to the upper reservoir. When required, the water flow is reversed to generate electricity (ESA 2009).

generation to 1.9 percent (EIA 2011a), which is the largest leap in the U.S. wind energy production history.

Despite this fact, its growth in the United States is lower than in Europe, mainly because countries like Germany, Denmark or Spain offered fixed prices for wind-generated electricity (Smil 2005, 272-273). On the other hand, the wind energy capacity grew from 2500 MW in 1999 to more than 34 000 MW in 2009 (EIA 2011a). Which shows, if it stays in this pattern, that wind power will remain the fastest growing segment of renewable electricity generation for years to come. However, its ultimate extent is uncertain. Although it is an immense resource almost wholly used for electricity generation, the storage capacity is not developed enough to cover high demand as wind speed fluctuates dramatically (Kenderdine and Moniz 2005). Therefore, further development is more reliant on electricity storage and grid development than on developments in wind energy itself as certain shortcoming solves offshore wind energy production, where is less wind fluctuation, as ocean winds are more stable.

5.1.4. Solar Energy

Compared to wind-powered electricity generation solar energy is still a minor source. It shares only 1 percent among other renewable energy sources. There are two different technologies, how to capture energy from sun: solar thermal and solar photovoltaics (PV). From the names, the first one is generating heat (usually used in residential & commercial sector), which can be also used to produce electricity through steam, but the second technology, the PV, are developed solely to produce electricity and they are behind steady growth of solar energy (Cooper 1997). Both technologies need, obviously, lot of sun in order to produce adequate

energy and cover its cost, so most of them are placed in southeast part of the United States in desert areas.

If we want to measure the power ratings of PV units comparably with other modes of electricity generation, it is one of the problems that critics point out: power is expressed in peak watts rather than as an average performance (Smil 2006, 171). The second problem is that it hides much higher power density than wind power, but its conversion technique, which decreases final output, and relatively high cost compared with wind turbines, makes it more difficult to develop or invest in (Kenderdine and Moniz 2005).

Therefore, the whole system is dependent on large subsidies to R&D, mainly from the government in order to support more investments. Because of this funding, the efficiencies have risen from less than five per cent during the early 1960s, when the first PV cells were deployed on satellites, but the best field efficiencies are still below fifteen per cent, which eventually deteriorate to less than ten per cent. Although these advances have lowered the unit cost of PV cells, the modules are still too expensive to compete, price-wise, with fossil-fueled generation (Smil 2006). Therefore, as there are some predictions that see energy from the sun fully supplying all energy demand sectors in the world by 2050 (Krupp and Horn 2009, 15), further investments and funding by government is crucial. The same goes for wind energy; more electricity storage capacity innovations are crucial, if PV should be used on large scale.

5.1.5. Geothermal Energy

The geothermal energy, which produces 5 percent of all renewable energies, is based on use of underground reservoirs of steam and hot water. Installed steam turbines drive generators to produce electricity

(EIA 2010d). However, as it is obvious, the geothermal energy is based on location, where are such geological conditions, which is quite difficult condition. That, of course applies not just for the United States. Therefore, share of geothermal energy among renewable energy supply will in near future rather decrease. The reason is the growth of other segments, which is already trend for almost two decades. On the other hand, the National Security Energy Act of 2007 (HR 6), gave large support to its further development in efficiency, therefore it will have in short-time period rather stable position among other renewables.

5.2. Renewable Energy and the Energy Security Act of 2007

The U.S. energy security has been an issue since the 1970s and since Carter's Administration we could see a legal framework for supporting renewable energies. However, they never played directly role as a part of security making process, because of dual perspective on energy security, as this thesis shows. But there was an attempt that might have changed it. It is the Energy Independence and Security Act of 2007 (HR 6) that brought changes in order to improve those two perspectives and better coordinate them.

The HR 6 is an omnibus energy policy law that consists of provisions designed to increase energy efficiency and the availability of renewable energy, besides the already mentioned items regarding the energy security and the NSC.⁵⁴ Hence, now as the renewably energy played large part of the Act, we can analyze, whether this mainly home politics issue got its way into national security policy and both parts of the energy aspects follow the same strategy.

In his State of the Union Address in the beginning of 2007 President urged for reduction of the oil consumption, when he said: *“Let*

⁵⁴ See Chapter 2.4. for further information regarding the Act's provisions.

us build on the work we've done and reduce gasoline usage in the United States by 20 percent in the next 10 years" (Bush 2007). The transportation sector⁵⁵ is the most dependent sector on foreign oil and this provision is planning, or at least it wants, to reduce this dependency. However, as this proposal in this address could contain various options to achieve this goal, the HR 6 is concerned primarily on only one option.

The main focus is on the Renewable Fuel Standard (RFS), which is a standard for levels of renewable fuel in the transportation. Compare to previous energy bills, it increases this requested amount from 9 billion gallons in 2008 and raises it to 36 billion gallons in 2022 (HR 6, 72). The Act also promotes R&D of cellulosic biofuels or makes statutory that the Secretary of Energy must provide research to the Congress if algae are feasible as feedstock for the biofuels as well as the Department of Energy has to provide a study of the impact of the biofuel refineries on the environment (HR 6, 87). The Act, however, does not specifically support solar or wind energy power, only provide further funding in R&D and requires studies of their impact (HR 6, 475). On the other hand it does largely support the geothermal energy.⁵⁶

From this set of provisions can be seen clear decisions to subsidize agricultural sector and research directions in biofuels over the others. Moreover, it is very likely that the direction is driven by domestic interest groups connected with the Congress officials. The Bush Administration chose to promote the production and consumption of ethanol as part of their solution to the energy security. Since the leading biofuel is corn-based ethanol, the perspective, that it will decrease the oil consumption by 20 percent, is not likely to happen, also because of intensive use of petroleum products in agriculture as well as for the fuel delivery or the

⁵⁵ As it is argued in Chapter 3.2.

⁵⁶ In Chapter 5.1.5. is argued that there might be only improved efficiency but it is not likely to find new geothermal locations.

price of production, which will be hardly less than price of the petroleum itself (Kenderdine and Moniz 2005, 432-433). Moreover, the tariff of 54 cents per gallon on ethanol imported from foreign countries restricts any import as well as subsidies of 51 cents per gallon restrict any bargaining of the corn producing states (Shaffer 2009, 141). Corn is grown in electorally important areas, such as Iowa, which may explain the unparalleled government incentives and subsidies. This shows rather concern more focused on various domestic non-security aspects rather than national energy security reasons, as also argue other critics, who say that such support of only corn-based ethanol restricts development of other sources for the ethanol production and propose strategy that would evenly subsidy all possible sources of biofuel production (Leonard 2009, 15; Krupp and Horn 2009, 82-83).

It is important to say that this Act is a supplement to major energy bill passed in 2005 and both of those bills were created on conception of the Secretary of Energy of Bush Administration – Samuel Bodman⁵⁷, who is behind this Act as he mentioned these ideas already in 2005, when said that “*we must develop renewable energy sources like ethanol and biodiesel*” (Bodman 2005). The Act passed in the end of Bush second presidential period, therefore, had smaller impact on the Bush Administration itself, even though it can testify, the priorities of the Administration. Therefore, in order to observe the impact of this Act, we must analyze the new Administration’s directions regarding the energy security.

⁵⁷ Samuel M. Bodman (Republican) chaired the Department of Energy (DOE) from 2005 until 2009. He was regarded in energy policy-making (ABC News 2005).

5.3. Renewable Energy and the Energy Security Act of 2007 under Obama's Administration

President Barrack Obama sworn in on January 20, 2009, but already during the campaign he as well as his opponent, John McCain, was heavily concerned about energy security and renewable energy. President's Obama stands made during the campaign also continue during his term in the office, when already in his first State of the Union Address he puts energy as one of the main goals in his presidency and complains:

We know the country that harnesses the power of clean, renewable energy will lead the 21st century. And yet, it is China that has launched the largest effort in history to make their economy energy efficient. We invented solar technology, but we've fallen behind countries like Germany and Japan in producing it. New plug-in hybrids roll off our assembly lines, but they will run on batteries made in Korea (Obama 2009).

The importance of energy is also more obvious in Obama's choice of the Secretary of Energy,⁵⁸ which is Steven Chu.⁵⁹ Also his choice for the NSA was driven by energy security importance as he picked General James Jones⁶⁰ whose primary security issue is energy as he stated before (K. Johnson 2008). However, if we look on Obama's first major bill, the American Recovery and Reinvestment Act of 2009 (HR 1), which is economic stimulus bill not primarily focused on energy issues, we can observe same patterns as were in the Energy Security Act 2009. The main provision from this recovery package is again the biofuels, although other

⁵⁸ Secretary of Energy is now a statutory member of the NSC as it is mentioned in Chapter 2.4.

⁵⁹ Steven Chu (Independent) is physicist and co-winner of the Nobel Prize for Physics (1997). He has devoted his recent scientific career to the search for new solutions to our energy challenges and stopping global climate change. He is also the first non-partisan Secretary of Energy (Department of Energy 2009).

⁶⁰ Gen. Jones resigned as the NSA in October 2010 as an alleged reaction on his disagreement with Obama's security policy (Woodward 2010, 55-56).

sources get federal support and tax incentives too (HR 1, 30). More than half of the whole financial support for the renewable energy goes again to biofuels and geothermal and only one fifth to the rest of renewable energy sources (Eber 2009). The bill, however, was passed only few weeks after Obama took his office, therefore he and his Administration can be hardly responsible for the proposal.

However, the most information about his energy security policy so far we can get from the National Security Strategy of 2010 and recently issued the Blueprint for Secure Energy Future, that are not legally binding but it can give us Obama's energy security strategy outlook. The National Security Strategy, which was submitted in spring 2010, sees its energy security in renewables through the already mentioned Recovery Act from previous year, which was

(...) the largest investment in clean energy in history, but [the United States] (...) must continue to transform our energy economy, leveraging private capital to accelerate deployment of clean energy technologies that will cut greenhouse gas emissions, improve energy efficiency, increase use of renewable and nuclear power, reduce the dependence of vehicles on oil, and diversify energy sources and suppliers" (NSS 2010, 30).

Even though the Reinvestment Act was a substantial incentive for certain renewable energy sources, the energy security strategy did not change since the National Security Strategy of 2002, where the goal was to

(...) strengthen our own energy security and the shared prosperity of the global economy by working with our allies, trading partners, and energy producers to expand the sources and types of global energy supplied, especially in the Western Hemisphere, Africa, Central Asia, and the Caspian region. We will also continue to work with our partners to develop cleaner and more energy efficient technologies" (NSS 2002, 19-20).

It is important to point out that during last decade the international trade partners and allies have not significantly changed, only in differences in amounts of share of their export between each other. For example, the significant changes in oil imports, the most important energy source are that the OPEC countries gradually decreased their amount of imports and non-OPEC countries became since 1990s larger importers, especially in case of Canada (EIA 2010).

The Blueprint for a Secure Energy Future is President's Obama Administration last contribution regarding the energy security. Published March 30, 2011, is a relatively short period to evaluate his plans, but we can at least get a possible forecast for future development. As it says, the goal will be that *"[b]y 2035, we will generate 80 percent of our electricity from a diverse set of clean energy sources – including renewable energy sources like wind, solar, biomass, and hydropower; nuclear power; efficient natural gas; and clean coal"* (Blueprint for a Secure Energy Future 2011, 3). It is a question whether the biomass is a clean energy, as it is stated here, but even here (and in any other proposals) is nothing about lifting the tariffs for foreign imports of ethanol, but rather are mentioned further investments into home producers.⁶¹ Regarding the rest of renewables, the Blueprint counts with its further growth, mostly wind and solar energy. However, wind energy grows with this rate since 2000 and without any incentives from the Reinvestment Act, which is not mentioned here. On the other hand, solar energy should in this projection more than triple its production of electricity.

These proposals, however, face criticism by some analytics (Green 2011; Taylor and Van Doren 2011), as they call them "green fallacy". Their criticism has similar roots, as the criticism of Bush's proposals. By supporting only one segment of the industry, biofuels in President's Bush

⁶¹ As it is argued in Chapter 5.1.1., the solution based on corn-based ethanol cannot sufficiently fulfill requested today's needs.

case or green jobs (which include most of the renewables), will affect the rest of it, which will regarding the national security cause same issues as it faces now. These critics point out on same politics, but different preferences (Green 2011, 1-2).

In total, there would be certain changes, since the Blueprint is focused on investments in all parts of renewable energy. However, there is not even a bill proposal and considering current setting of the Congress (majority of Republican in the House of Representatives), it is not likely to be passed in this version. Moreover, considering Obama's Recovery Act of 2009, it followed the path initiated by the Energy Bill of 2005 and Energy Security Act of 2007. Therefore, even though his proposals are including both aspects of energy security strategy,⁶² it is not likely to be passed in such form. Hence, as we can see, both Obama's proposals are combination of home and foreign energy security policy, as both documents contain all four dimensions of energy security,⁶³ and do not concentrate on only one source of renewable energy (biofuels), which would not end almost hundred percent dependence solely on oil in transportation sector. But Recovery Act that he passed was a reaction on home politics only. Considering this fact, it is likely again that the duality of energy policy formulation will prevail.

⁶² Compare the NSS (2010) and Blueprint for a Secure Energy Future (2011).

⁶³ Availability, reliability, affordability, sustainability. These dimension are described in Chapter 2.4.

Conclusions

The thesis sought to analyze energy security in the United States. As was shown in the beginning, the energy issues surrounding mainly oil, brought a new security dimension to the United States policy agenda since 1970s. But as each President since Richard Nixon was concerned with this explosive issue, last two Presidents even took them as their foremost priority. However, the results fail to respond, as they so far in energy policy in the USA, are not in accordance with the energy security strategy. For this reason I set a hypothesis, which would explain the reasons behind this problem:

Interests of particular players in the energo-field cause difficulties in achieving goals formulated by the official national security concepts formulated primarily by the presidents of the United States.

This analysis dealt with energy and security development in the United States and investigated answers from different perspectives. Initially, it was necessary to define the actors during the policy-making process. From the evaluation of role of each actor, it made it possible to see the influences of Congress as the legislative branch and the President as the head of the Executive branch. Having studied both of them, we can say that through various reasons mentioned in the text, the setting of the political system divides it on two tracks. Within congress, who is concerned mainly with the home issues and the President, who is in charge of foreign policy, which was an objective to define. Despite the fact that the Constitution does not intend this setting, its broad definitions and structure of the system nevertheless led to current form. However, besides these two actors, there is significant pressure from the actors outside of the policy-making system, mainly the voters, whose opinions

are, however, shaped by the media or interest groups that provide their role as a mediator between those two.

As was defined that the President and his staff is the main body in charge of the security policy, it led me to assumption that energy policy itself must have developed on duality of these powers too. As it was shown, the President can quite well coordinate his policies abroad, which, however, does not go hand in hand at home. This was a problem that already realized Jimmy Carter during his presidency. However, the energy security during the 1980s and 1990s was less urgent than it looked in 1970s, as the prices dropped. And when again in 2000s the prices spiked on international market, because of emerging powers and their growing energy consumption (in second half also because of the war in Iraq), the issue was again in the foreground. For that reason energy security became an important dimension of national security and new proposals tried to achieve it.

However, as the issue of energy and its security appears in certain periods, when the threat of high prices is on the scene, the home development of energy policy has different patterns of development. That shows the theory of “technical momentum” by David E. Nye (2001), who defines entirely the energy consumption history of the United States from this perspective. First of all, it means that if certain means of energy source use were taken, whole systems would develop in complying way with it and consequently it is difficult to change these patterns. This theory was important when applied on main energy consumption sectors. The results were that three (residential, commercial and industrial) of those sectors could quickly adapt on new reality of high prices, mainly because they are mainly dependent on electricity. And even though they used partly oil for its production, the most sensitive source on price changes, other sources could substitute it. That, however, did not apply to transportation sector that is by more than 95 percent dependent on oil.

Based on the explanation of the “technical momentum” theory, this shows the pure example of the closed system. Therefore, for the energy security strategy, this sector is the most crucial.

Oil, however, is not the only source that needs to be in focus. The energy security theory developed four dimensions that can be applied on every primary source of energy (availability, reliability, affordability, sustainability) and measure its security attributes. Having applied these dimensions on each primary energy source, it is clear that none of them can fully become the “one” that solves the problem of energy security. As oil fields can be developed in already discovered sites within the USA, the political obstacles are high and the final decrease on foreign sources would be rather marginal. The natural gas can play bigger role than today, but it is not a direct solution to the problem of the transportation sector as well as it needs to build expensive infrastructure as its transportation by its nature is difficult.

Coal is for the United States might be partly solution, as they possess the largest amounts in the world. However, as it is the dirtiest fuel, its promotion has similar political obstacles as oil has and again, it does not solve the problem in transportation directly too. Same obstacle might be applied on nuclear energy. As this source, among all of them, is the most dependent on government support, it is very sensitive issue to forecast its future. Moreover, there is not any new nuclear plant being built since 1978 and there is no plan for any other in 20 years. As can be seen, neither of these sources can bring the solution by itself and but should be used proportionally in manners that would comply with the four dimensions. Again, it can be seen that the development of energy policy at home does not comply with the national energy security.

This problem was trying to solve the Bush Administration, during which was passed the Energy Independence and Security Act of 2007. Its provisions can be, from the first look, seen as sign of victory for the

coordination of policies, as, for instance, Secretary of Energy is since then a statutory member of the NSC, which is the main body for security policy formulation, as I show in first chapters. This department, which mostly deals with the home issues regarding the energy, was for the first time acknowledged as important part for national security strategy formulation. However its real influence can be describe over time.

Among other provisions, the bill was concerned with the renewable energy. As the renewable energy sources provide the smallest share compared to the rest of the primary energy sources, but also is not reliant on foreign countries, it is interesting example, how better energy security can be achieved. It is actually the only example of pure home energy source, therefore does not need to be issue of the President in security sense, as other source for various reason can. However, if used rationally with other sources that are dependent on foreign supplies, it can bring certain changes to the energy security development. For that reason, there were compared provisions of the Act for renewables with the national security policy.

The results, however, are rather negative. Even though the Act itself is regarding the renewable energy concerned mostly with biofuels, which is seen as a direct solution for the transportation sector, its use is affected by home policy pressure of certain agricultural states. Therefore the support of corn-based ethanol production is heavily supported from government and at the same time put high tariffs on ethanol imported from abroad. Moreover, the corn-based ethanol posses certain threat in terms of sustainability, because their production is producing almost same amount of greenhouse gases as oil.

Moreover, it does not solve the problem of transportation sector dependence, as the oil imports, even with this change, will steadily grow, as projected by the EIA. Also, the production of corn-based ethanol takes soil, which could be used for other crops, and that might cause other

security issues regarding food supply and energy density of corn-based ethanol is compared with sugarcane-based ethanol much lower. Therefore, transportation sector can use this partly as a solution with other alternatives, which will be fueled by electricity, for instance, as electricity production in the United States is more secure and reliable.

The other sources, however, are basically only mentioned in the Act for further R&D. As the energy security may be achieved by diversification, or in other words, if four dimensions of the energy security are fulfilled, this bill does not include any provision that would support this manner. Therefore, regarding the national security and energy more or less it keeps current setting, as heavily supported homegrown corn-based ethanol, serves to the corn producers than to national energy security and the chapters show, same subsidies to each primary energy source would develop better policy than these political preferences, which was criticized in Bush Administrative as well as now is in Obama's, but with different choices.

As this Act was passed almost in the end of the Bush presidential period, we have to be concerned with changes brought by his successor. However, as Barack's Obama presidential period is in its half, we can evaluate his energy security approach only with difficulties. He can get credit for his choice for the Secretary of energy, who is, for the first time, independent physicist. As the Secretary of Energy is also member of the NSC, it can bring new outcomes. However, so far the Administration issued two major documents (National Security Strategy 2010 and Blueprint for Secure Energy Future) regarding the energy security, where the statements more or less follow the pattern for different national security concerns and home energy development.

Based on these facts, the hypothesis was not even proved, but it is still likely that this pattern will prevail on future. The whole work showed how there are two separated policies on energy issues, which is given by

various reasons. First is the political system structure stressing the separation of powers, but not describing exact powers given to legislative and executive branch.

Another reason is the energy consumption development, which was initiated with assumption of inexhaustible amounts of primary sources of energy. Road taken by domestic policy, could not be caught up with foreign energy security strategies that appeared imminent only in 1970s. Its role also plays policy-making process, which is affected by various actors besides those defined by Constitution. All these aspects lead to uncoordinated system, which does not produce coherent policies that would reflect energy security. As case study rather explains than would give answer for broad theory. This thesis, however, wants to add its piece to general understanding on how the U.S. policy system works, specifically how it coordinates policies dominated by different branches.

This topic has plenty of sources and literature that can provide good support for this analysis regarding the past development. However, it is a problem to evaluate the current direction of the new Administration due to lack of the sources, obviously, caused by short period of time. Even though, it can be observed certain changes regarding the coordination between energy policy and security, which brought the Act of 2007, the whole process will be rather same as was before. This should be also incentive for further analysis of this problem, which can disprove this hypothesis. That, however, needs time to see results regarding the effects of policy changes on energy security within the current Obama Administration.

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Annexes

Annex 1: Major Congressional Actions

<i>12.1.07</i>	Introduced in the House
<i>18.1.07</i>	Passed/agreed to in House: On passage Passed by the Yeas and Nays: 264 - 163
<i>21.6.07</i>	Passed/agreed to in Senate: Passed Senate with an amendment by Yea-Nay Vote. 65 - 27
<i>6.12.07</i>	Resolving differences -- House actions: On motion that the House agree with amendments to the Senate amendments Agreed to by the Yeas and Nays: 235 - 181
<i>13.12.07</i>	Resolving differences -- Senate actions: Senate concurred in the House amendment to the Senate amendment to the text of H.R. 6, with an amendment (SA 3850) by Yea-Nay Vote. 86 - 8.
<i>18.12.07</i>	Resolving differences -- House actions: On motion that the House agree to the Senate amendment to the House amendments to the Senate amendments Agreed to by the Yeas and Nays: 314 - 100
<i>18.12.07</i>	Cleared for White House

<i>18.12.07</i>	Presented to President
<i>19.12.07</i>	Signed by President
<i>19.12.07</i>	Became Public Law No: 110-140

Anotace

Autor	Jiří Hudec
Instituce	Katedra politologie a evropských studií Filozofická fakulta Univerzita Palackého v Olomouci
Název práce	Energy Policy-Making in the United States
Vedoucí práce	Mgr. Markéta Žídková, Ph.D., M.A.
Jazyk práce	Anglický
Počet slov	26 285
Počet znaků	168 349
Počet použitých zdrojů	113
Klíčová slova	energetická bezpečnost, proces vytváření politik, koordinace aktérů, energetická spotřeba, primární energetické zdroje, obnovitelné energetické zdroje, Zákon o energetické nezávislosti a bezpečnosti z roku 2007
Krátký popis	Práce analyzuje procesy vytváření politiky, status hlavních aktérů, národní bezpečnostní politiku a energetickou spotřebu, které ovlivňují formulaci energetické bezpečnostní strategie.