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Bachelorarbeit bei
Dr. EZklę<hel\a^g
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# ABBREVIATIONS

| | |
|---|---|
| **ACER** | Agency for the Cooperation of European Regulators |
| **CCS** | Carbon Capture and Storage |
| **CEP** | Common Energy Policy |
| **CFSP** | Common Foreign and Security Policy |
| **EEP** | EU Energy Policy |
| **EEPR** | European Energy Program for Recovery |
| **EESP** | EU Energy Security Policy |
| **ENP** | European Neighbourhood Policy |
| **EMP** | Euro-Mediterranean Partnership |
| **EPE** | Energy Policy for Europe |
| **ESP** | Energy Security Policy |
| **EU** | European Union |
| **IEA** | International Energy Agency |
| **IR** | International Relations |
| **MNC** | Multinational Corporation |
| **NEEAP** | National Energy Efficiency Action Plans |
| **OPEC** | Organization of Oil Exporting Countries |
| **PCA** | Partnership and Cooperation Agreement |
| **PES** | Primary Energy Source |
| **RDS** | Royal Dutch Shell |
| **RES** | Renewable Energy Source |
| **TEN** | Trans-European-Network |
| **ToL** | Treaty of Lisbon |

# 1. INTRODUCTION

## 1.1. ENERGY SECURITY

"Energy is the life blood of our society" (European Commission 2010b, p.2), with this dramatic metaphor the European Commission opened its "Energy 2020: A strategy for competitive, sustainable and secure energy" Communication to the other European Union (EU) institutions. The paper continues by underlining that the current state of the EU energy policy (EEP) is insufficient and that certain goals need to be achieved until 2020 to keep the European society alive, if one chooses to stick to the metaphor. Although the concrete strategy proposals of this paper will be examined in more detail later, the opening is enough to demonstrate that at least the European Commission acknowledges the great challenges energy policy will pose for the Union and its member states in the next decade.

Certainly the most intriguing questions from an International Relations (IR) point of view all circle around the here lastly mentioned "secure energy" part (Youngs 2009, p.1). While "competitive energy" always comes down to price and "sustainable energy" to less harm for the environment, (energy) security has no such singular agenda. Hence, the definitions of energy security vary enormously (Sovacool 2011). Therefore an identification of this work`s underlying understanding of energy security has to be the starting point. At first, one has to establish that the set of energy security definitions used by developing countries, which deal with energy security as an aspect of human security, although also highly relevant for the future of global security, won`t play any role in the further discussion (Dannreuther 2010).[1]

In the developed and industrialized world, a broad and often adopted definition of energy security is for example provided by the International Energy Agency, which defines it as: "the uninterrupted physical availability (of energy) at a price which is affordable, while respecting environment concerns" (IEA 2011). Curiously, this definition basically is composed of the same elements as the EU paper`s title, except that "secure" is replaced by "uninterrupted physical availability". These confusing similarities stress the need for a definition which will be able to filter the changes in perspective if one wants to deal with security primarily, instead of all facets of energy policy more or less equally.

[1] For those definitions, further definitions and the concept of human security see also: Dannreuther (2010), Sovacool (2011), Owen (2010)

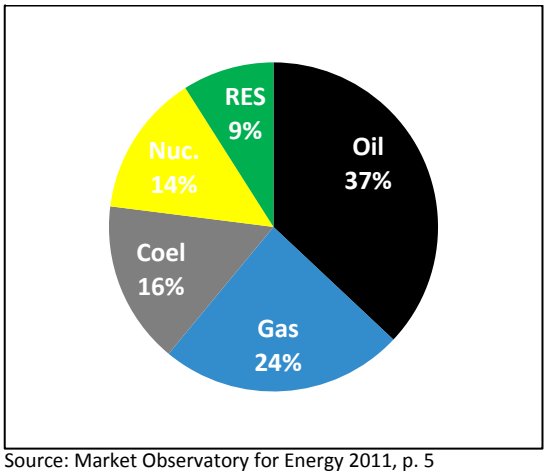
When the Commission for example specified energy security as “energy supply security”, the strategy for security of supply was still accompanied by competiveness and sustainability (European Commission 2001, p. 2). Here again the explicit implication of the two other elements of energy policy leaves the sphere too wide open to reflect a truly special character of energy security, while reducing energy security to the supply side is in contrast too restrictive. Hence, one has to consider security studies approaches to find the required emphasis. A concept that suits this work`s intention the most defines the state of energy security as following: “Energy security exists when there are energy sources large enough to meet the needs of the political community (the energy demands), which include all military, economic and societal activity. Those sources must be able to deliver such quantities of energy in a reliable and stable manner and for the foreseeable future. As soon as these conditions are not met, there exists a problem of energy (in)security (Raphael & Stokes 2010, p. 378).” In short, energy security policy (ESP) can from now on be understood as policy that serves the purpose of guaranteeing that the energy supply meets the optimal energy demand of the entity (here the EU). This concept finally has the advantage of looking at energy security emancipated from the other elements of energy policy and freed from the fundamental debate over the dominant pattern in energy security studies as both markets and geopolitics can achieve such energy security (Youngs 2009, pp. 6–10). Especially in the European context where the market approach has dominated energy security debates (Meidan 2008), the openness to geopolitics is crucial for the construction of this work`s envisioned scenarios.

## 1.2. THE YEAR 2011

Following the previously established understanding of energy security, a quick look upon the impact of decisive global events of 2011 shall not only validate the current interest in and importance of this topic, but simultaneously help to capture the Zeitgeist of energy security to introduce the underlying idea of this work. Here it is vital to consider the EU`s energy mix and the EU´s biggest supplying countries as two key statistics for energy security policies to be able to fully assess the impact of these events. In 2009 the gross inland energy consumption of the EU was basically based on three groups of resources (See Fig. 1): 77% represent the fossil fuels, 14% nuclear energy and only 9% the renewable energy sources

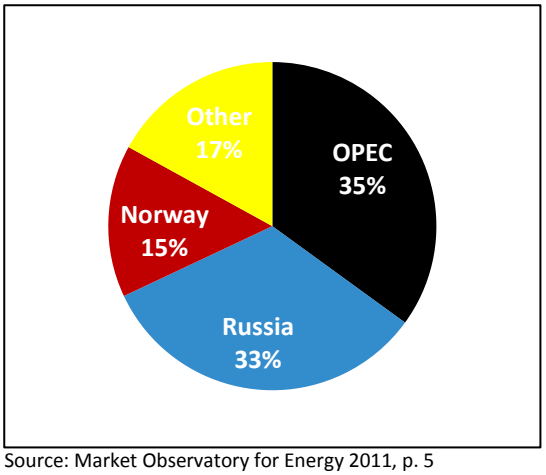
(RES).[2] Moreover 52% of this consumption was covered by imports (Market Observatory for Energy 2011, p. 5). Of course, the highest import rates were on oil with 83% and gas with 64% (Directorate General for Energy 2011a, p. 3). For its crude oil imports the EU basically relied on three sources (See Fig. 2): The OPEC with 35%, Russia with 33% and Norway with 15%. In the gas sector (See Fig. 3) 34 % were imported from Russia, 31% from Norway and 14% from Algeria. Additionally, Libya should be mentioned as it in 2007 provided ca. 10 % of oil imports and ca. 3 % of gas imports (European Commission 2010, p. 31).[3]

**Figure 1: EU gross inland energy consumption by fuel**



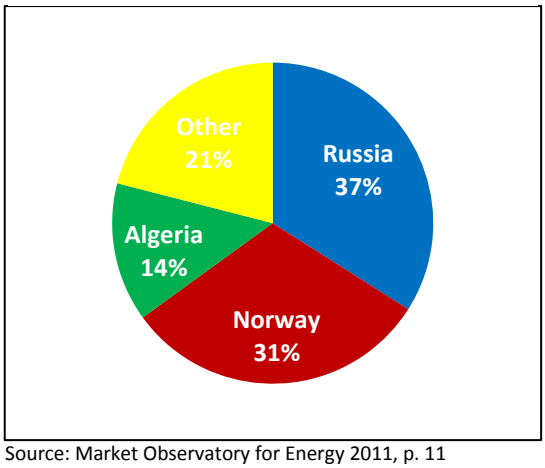

Source: Market Observatory for Energy 2011, p. 5

**Figure 2: EU oil import by country (organization)**




Source: Market Observatory for Energy 2011, p. 5

**Figure 3: EU gas import by country**




Source: Market Observatory for Energy 2011, p. 11

In 2011 several events may have changed all the figures above forever and thus created new challenges for the EU`s energy security policy. Starting with the so called “Arab Spring”, a term now popular to describe the series of uprisings and revolutions in the Middle-East (Gause 2011), the global economy was focusing on its effects on the oil price.[4]

[2]Most recent official EU data
[3]Most recent official EU data
[4]For a good overview of the events see for example: The Washington Post with Foreign Policy (2011)

In March oil prices were reaching almost three year highs and of course European politicians had to be concerned (Bloomberg 2011), because of their dependency on the OPEC. Although this time no new oil crisis struck, Europe has now to deal with new leaders stepping into power, which can always be a threat to the reliability of resources in the foreseeable future and thus Europeans were inevitably reminded of the fragile external dimension of ESP. The war in Libya, which saw the end of dictator Muhammad Gaddafi - a previously highly courted key supplier of oil (Time 2007) - just emphasized the urgency to act on the external dimension.

The political consequences of the nuclear catastrophe in Fukushima[5] are in contrast a case where rather the internal (within the EU) dimension of ESP is challenged. With Germany's quick decision to return to its nuclear energy exit strategy,[6] the second largest European nuclear energy producer and former exporter of it will in the next decade become more reliant on other resources to meet its energy demands. This constraint on a previously (to a large extent) independent energy source signals new challenges for internal European energy security policy (EESP) (Directorate General for Energy 2011a, p. 16). Especially regarding the different national positions on nuclear energy and renewable energy sources a new internal debate is inevitable. A last point that should be brought up is the European dept crisis, which is currently dominating EU policies in general and is vital to ESP as large economies like Italy and Spain are affected on the one hand as well as states like Greece, who are key geographic access points for external energy supplies.

Summing it up 2011 was a particularly formative year for the future of the internal and external sphere of EESP. It moreover proved that Thatcher`s law: "The unexpected happens" (Yergin 2005, p. 63) continues to be the first law of this policy area. Above all, the events mentioned above were the inspiration for the scenario approach used in this thesis, instead of a predictive futurologist approach which is doomed to fail as 2011 demonstrated viciously.

## 1.3. THE APPROACH

After outlining understanding of energy security applied in this work and the main motive for this research, it is necessary to define the contours of the central research question and how it will be answered: "How can EU energy security policy look like in 2020?"

[5]For a good overview of the events see for example: BBC (2011)

[6]For a complete coverage of the new energy concept legislation see: Bundeskabinett (2011)

The chosen limit of 2020 has multiple reasons. First the EU has channeled its entire strategy towards 2020 and has set specific energy policy targets for 2020 (European Commission 2010a; Commission of the European Communities 2007). Second, 2020 will be the year where the new binding UN climate targets will come into force with the potential to change ESP on a global scale (The Observer 2011). Third, a longer time span would complicate the scenario approach even further as e.g. technological progress would need to be considered (Schröder & Tull 2008, pp. 7–8).

Some further clarifications putting the question in perspective need to be introduced. Due to the definition outlined above environmental and competition policy will not play an explicit role in this analysis. Relevant policies of those areas will be rearranged under the new definition of energy security as they are still integral parts of EESP (Geden & Fischer 2008, p. 10). The intention behind such an approach is to distill the "first-order" effects on energy security, while leavening the flood gates of "second-order" effects closed (Luft, Korin & Gupta 2011, p. 46).[7] The second constraint is the focus on EU institutions and national governments as actors in the field of EESP. Hereby still meaning that in a review of EESP just the policy carried out by the institutions, primarily the EU Commission, and its treaty foundation is observed. The member states position towards institution driven policy needs to be included as they decisively control the policy process via intergovernmental bargaining (Nugent 2011, pp. 279-281). Consequently, national energy security policies is merely included to explain why EESP is heading a certain way, but not as an additional element to EU policy. Other actors like interest groups and companies will not be considered actors as for example the claim that the big Multinational Energy Corporations (MNCs) are equal players on this stage can be dismissed to a large extent, which supports the taken "black box" approach (Youngs 2009, pp. 156–158).[8] Moreover, the concrete legal process behind EESP is reduced to the overriding principles as its elaboration is not in line with the narrative nature of the scenario approach.[9] The instrument to deal with the research question will – as briefly mentioned – be a scenario approach, that will dictate the proceedings and findings of this work.

[7] For approaches focusing as well on competition policy and environmental policy in the context of EU energy security see Dratwa et al. (2010) and respectively Buchan (2009).

[8] Nationalized companies like Russia`s Gazprom and Algeria`s Sonatrach are explicitly mentioned as they are strictly acting on behalf of the government.

[9] For an extensive analysis of the legal framework behind the EU energy policy see: Schneider (2010), Schulenberg (2009).

# 2. SCENARIO THEORY

## 2.1. ORIGINS OF THE MODERN SCENARIO METHOD AND ITS IMPLICATIONS

Thinking about the future and sharing ones` thoughts about the future has been a part of human existence since the old biblical and ancient Greek days (Minois & Moldenhauer 1998). In the first half of the 20th century science slowly began to engage in this process, first leaving the field to visionary creators of "Science *fiction*" like H.G. Wells, but then accelerating "to the lure of the millennial number of the year 2000" (Kahn, Wiener & Bell 1967, p. xxv). With the work of the RAND cooperation in 1965, led by Herman Kahn, a new systematic scientific approach to look into the future by building upon real policy challenges, while still sustaining novelist elements without "falling between the stools of rigor and relevance" emerged (Kahn, Wiener & Bell 1967, pp. 4–5).[10]

Although the *futures* are developed multidisciplinary, long-term, group based and describe the state of the world, principles of Kahn`s study and the reasoning behind it serve well as the underlying theory for the here developed EU policy scenarios. First of all the whole study rests on the infinitely true acknowledgment that it is impossible to linearly predict the future (Kahn, Wiener & Bell 1967, p. xxviii). Therefore following Kahn multiple futures need to be constructed, which by no means will or can realize or aspire to be complete, but help to understand the complex issue at hand and moreover can lead to better policy decisions (Kahn, Wiener & Bell 1967, pp. 1–5). The devices to transport the multiple futures to the reader are scenarios, which are defined as following: "Scenarios are hypothetical sequences of events constructed for the purpose of focusing attention on causal processes and decision points" (Kahn, Wiener & Bell 1967, p. 6). Later on in the chapter "The Use of Scenarios" the strength of scenarios, is described as following: "The scenario is particularly suited to dealing with events taken together – integrating several aspects of a situation more or less simultaneously" (Kahn, Wiener & Bell 1967, pp. 262–264). The most important criterion for the validity of a scenario is its inner plausibility. Despite such elaborations, no single method to construct scenarios is presented. They are rather viewed as a supportive device following the methodological trend construction and the derived from future prognosis.

[10] For this thesis only the classic "Intuitive Logics" (Huss & Honton 1987, p.21) or "Genius Method" (Bishop, Hines & Collins 2007, pp. 11-12) for scenarios is considered, but of course other fairly useful methods exist. For a complete overview of scenario methods and when to use them see: Bishop, Hines & Collins (2007), Chermack, Lynham & Ruona (2001) and Huss & Honton (1987)

Nevertheless, a few things can still be taken away. A standard projection, following a linear development of the trends is accompanied by several projections following identified diverging directions (Kahn, Wiener & Bell 1967, pp. 6–13). Noteworthy is the importance of history for providing a sense for the rate of change and the manifested Weltanschauung which together set a limit to utopist tendencies. However it is emphasized that this is a heuristic approach towards history, actively trying to withstand the persuasive nature of theories, which are hence obstacles and hurdles for the development of scenarios. In the end the omission of theories still cannot protect from a bias steaming from a human overvaluation of the moment and "crypto-historicism" meaning an unintended, but persistent bias (Kahn, Wiener & Bell 1967, pp. 26–34). Further it is clear that the communication of the future posses great challenges. A distance from expert opinions and clear quantification is useful, yet at times sophisticated quantifications should not be left out. In each *alternative future* quantifications are only bets and do not allow probabilistic conclusions (Kahn, Wiener & Bell 1967, pp. 34–39). The last important guideline is the emphasis on the clear presentation and interpretation of the interconnected elements, which here construct the basic trend (Kahn, Wiener & Bell 1967). In the end this multiple futures approach, although in detail different from the envisioned EESP scenarios, suits reasoning about the future of EESP in form of scenarios even in the short term very well, because of the complexity of this policy area, the pressing need for improved policy and at the same time the interdependence of all the elements. The scenarios will present *plausible* chains of events departing from the current constellation of concrete EESP elements, not implicitly defining trends, into several directions of a given interest. The focus will be on the dynamics of the envisioned future constellation. History plays a role in limiting too utopist scenarios, but does not create ultimate path dependencies. Hence, theories deriving from the past explaining the futures – like in this case European integration theories – need to be ignored. The support with concrete data prognosis is sometimes suitable to improve the communication, but rather constitutes a background and not a key finding. The intrinsic logic of such narratives on alternative futures is the number one priority (Bernstein et al. 2000, p. 54).

From a strictly logical perspective, the idea of scenarios is thus applicable on EESP, but still far bigger questions lure in the background regarding the legitimacy of the whole approach: *Are scenarios a scientific method at all? Even in social sciences and in the field of*

*International Relations (IR)?* The answers have to be *yes*. Scenarios are scientific if one thinks past the mantra of "*la science pour la science*" common in the social sciences. Such an understanding builds on the answer to the following question: "Can and may science remain silent where serious potential dangers connected with future developments are concerned (Polak 1971, p. 255)?" It cannot. Kahn, himself a social scientist, would certainly answer with *yes* regarding the second question. Yet it is obvious that some methodic openness is needed when social sciences want to contribute to the decision making process, something scenarios are supposed to do. "When applied to practical problems of decision-making the social sciences cannot ordinarily remain within conventional boundaries (Young 1968)." Regarding the use of scenarios in IR there are scholars like Hekki Patomäki, who recognize the need to deal with the future in form of scenarios to master future challenges (Patomäki 2008, pp. 24–31), but stick to social science theories in analyzing patterns of history and current trends, thus presenting a different understanding of scenarios and already eliminating the true explorative nature of the envisioned scenarios (Leander 2008, pp. 448–451). Support for *Kahnesque* scenarios in IR presents a unique contribution called "International Relations and Policy Planning: The Method of Perspectivist Scenario Building" in which two scholars from the Norwegian Institute for International Affairs make a case for scenarios as *the* instrument for IR scholars to scientifically contribute to the policy planning process (Neumann & Overland 2004, p. 276). Proceeding from the fact that scenarios are actually developed in "traditional haunts of IR scholars" such as international organizations, they aimed to develop a scientifically accountable method for scenarios (Neumann & Overland 2004, p. 265). Never mind that the method, although also clearly rooted in the school of thought by Kahn is incompatible with this thesis (Neumann & Overland 2004, pp. 262–264), their work opens the door for this thesis in attempting to create explanatory scenarios, which can contribute to the policy planning process. In this way an adjacent second research question is: "Can the findings of scenarios contribute to the policy planning process?" To answer both question it still seems that an own practicable method needs to be derived from the business studies, which dominate the scenario methodology.

## 2.2. SCENARIO METHOD

Since the work of the Commission on the "Year 2000" scenarios have become more popular in business, because of the continuing failure of traditional forecasting methods. The first true elaborations on a method using the construction of scenarios were made by coryphée Pierre Wack of Royal Dutch Shell (RDS) in the 1970s and have since then manifested scenarios as a method for business planning (Huss & Honton 1987, p. 21). Scenarios in their conceptions remain "organic" and by far not mechanic, leaving the idea of a clear cut method behind early on (Wack 1985a, p. 74). The first generation scenarios started by identifying two uncertainties, assigning to both two possible developments and then combining the four developments of uncertainties into contrasting models of the future (scenarios). Those scenarios where called "explanatory" scenarios as they helped to understand the current situation, yet from Wack`s perspective did not contribute enough to the decision making process (Wack 1985a, pp. 75–77). The crucial step to improve scenarios was a thorough analysis of the current problem to make the uncertainties more precise, by transforming previously uncertain elements into predetermined ones, making scenarios more feasible for the decision makers (Wack 1985a, pp. 80–84). Shell started creating building blocks for scenarios that combined predetermined factors and the uncertainties arising from them, which left only a certain variety to the building blocks depending on the explicitly chosen alternative future (Wack 1985a, pp. 87–89). Pierre Wack himself in "Shooting for rapids" sums up his results following such a method: "Scenarios structure the future into predetermined and uncertain elements. The foundation of decision scenarios lies in exploration and expansion of the predetermined elements: events already in the pipeline whose consequences have yet to unfold, interdependencies within the system (surprises often arise from interconnectedness), breaks in trends, or the impossible" (Wack 1985b, p. 140). The identification of the events "already in the pipeline", the "rapids", is actually accurate forecasting and comprehensibly very important for a multibillion decision process in a global company, but is impossible and unnecessary for the designated adjusted explanatory scenarios. In the case of EESP the need for predetermined elements is in such sense only necessary, as to formulate logic premises to eliminate over bounding uncertainty. The real lesson from the RDS approach is that the detailed identification of the policy area (its building blocks), as EESP is not defined by the EU, must have the upmost priority to even lay down uncertainties, relations between key factors, premises and the futures of interest.

Even though many elements and principles of scenarios should be clear by now, it is still vital to consider a scenario method with a "recognizable process" (Schwartz 1991, p. 26), which although being rooted in business studies, will - with a few adjustments - be the road to travel for the EESP scenarios. Peter Schwartz, who worked closely with Pierre Wack and is the President of the Global Business Network - a world leading futurist's think tank- has formulated eight steps to follow when developing scenarios (See Fig. 4).

**Figure 4: Steps to Developing Scenarios** according to P. Schwartz

| |
|---|
| ***1. Identify Focal Issue or Decision*** |
| ***2. Key Forces in the local Environment*** |
| ***3. Driving Forces*** |
| ***4. Rank by Importance and Uncertainty*** |
| ***5. Selecting Scenario Logics*** |
| ***6. Fleshing Out the Scenarios*** |
| ***7. Implications*** |
| **8. *Selecting of Leading Indicators and Signposts*** |

Sources: Schwartz 1991, pp. 241–248

The first step is the identification of the central question behind the scenario project. In business this often means a decision on a certain project, but can also go as far as "How the world may look like in Year xxyy?" This step can be directly rephrased into "Identify Research Question".

The second step in Schwartz`s logic of scenario development is basically the identification of the factors influencing the decision. Step three takes up the key factors to ask what forces are "behind" them and at the same time establishes what about the factors is uncertain or predetermined (Schwartz 1991, p. 242). Those two steps need to be reconsidered for the adjusted method. As the research question asks how the policy can look like, it is necessary to identify the components of the policy, becoming *building blocks*, meaning a key factor that is driven by forces. Thus pursuing the research question the key interest is how the building blocks can look like in the future, meaning that the uncertainties of the overall development of building blocks are relevant and not the underlying fundamental uncertainties of the drivers. This is the fundamental simplification for this new scenario approach, because the uncertainty of the building blocks normally derives from the

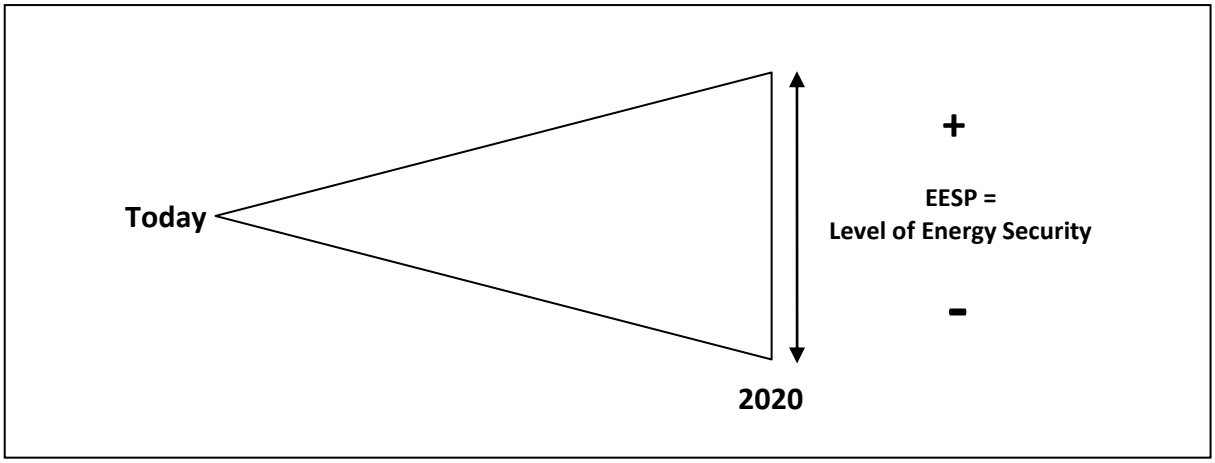
uncertain driving forces. Now the former supersedes the latter, with the latter simply expected to fall in line. The necessity for such a rethinking derives from the primary interest in the absolute potential of the policy to create energy security as opposed to the interest in the global uncertainties of the future. The driving forces become a background, which is no matter important to complete the scenarios. In addition, a clear separation of all the terminology would have been almost impossible (Schwartz 1991, pp. 108–109) and the predetermination in Schwartz`s sense was already excluded. As a result Step 2 in the new approach is to identify the sub policies of this area as different building blocks. In Step 3 the dynamics are analyzed and here from concisely the spectrum of uncertainty is depicted.

The fourth step, the rankings, can be immediately left out as such a ranking is purely relevant for decision makers to whom a number of decision scenarios are presented. The next step, the selection of scenario logics, can be considered the heart and soul of each scenario process and is the same in the new method, yet the execution is different. Schwartz considers this the quest for the "fundamental axes of crucial uncertainties", wherefore the ranking would have been a precluding step (Schwartz 1991, p. 244). Normally a set of "scenario drivers" is allocated in a matrix, and the logic depends on the field in the matrix. In standard cases four scenarios evolve as a result of two scenario drivers with two variations, however sometimes far more drivers are included and very complex cross-impact-matrixes are unavoidable (Wilkinson 1995, p. 3; Schröder & Tull 2008, p. 42). In the adopted scenario method, being compromised to an individual`s work, such extensive methods are on the one hand hard to realize due to limited resources and on the other hand dangerous because of a high subjectivism regarding the selection of single drivers or the selection of single scenarios to present. Therefore, a one axis approach is a viable solution. The one axis can thus be only on an *omniinclusive* driver. Regarding such a driver for the building blocks, one should refer back to the "Year 2000" and establish an axis representing the quality of the state of affairs of the object. In the "Year 2000" it's the state of the world, which in a base scenario is projected to be "surprise free", whereas the other scenarios orientate themselves along the lines of a more positive or negative development, peace or war (Kahn, Wiener & Bell 1967, pp. 7–9). Hence without forestalling too much the axis in the EESP scenarios has to be the success of EESP, which is directly represented by more or less energy security.[11]

[11]Energy security as a complete construct is at no point quantified, it is strictly only qualitatively assessed, meaning if the definition is met better or worse following logical assessments. The reasons are manifold. The

Applying this logic means that the building blocks including their implied drivers will move synchronic along the lines of contributing the same, more or less to energy security. Figure 5 visualizes this logic using a popular motive for the general understanding of scenarios, the funnel (Schröder & Tull 2008, p. 9; Simonini 2009, p. 30). Starting from the status quo, a funnel representing the increasing uncertainty develops over time. At the end of the period a spectrum of possible situations emerges. This spectrum is the one axis, ranging from the best possible to the worst possible future state (here from the highest energy security to the lowest energy security).

**Figure 5: The Scenario Funnel**




Source: Schröder & Tull 2008, p. 9; Antin 2011

Step 6 is the actual writing of the scenario, the weaving together of the pieces into one narrative and can be directly integrated in the specific approach. Events and even persons need to be included to make the end point of the scenarios more plausible (Schwartz 1991, p. 245). If additional reliable prognoses corresponding to the background of scenario logic exist, they might be as well integrated to fill the gap created by the omission of driver projections. The last step that needs to be considered is the formulation of implications, which is synonymous for a conclusion and thus is a necessity in the new approach as well. Step 8 of Schwartz`s approach can be completely ignored as it is only relevant in a professional environment.

Finally, a concrete and complete method for EESP scenarios (and similar policy areas) is established, but its explicit step by step presentation served merely the purpose of clarifying the thinking process. The execution in the framework of this thesis is more compromised.

main reasons are the unquantifiable nature of policy impact and the antithetic nature of such a metric approach compared to the "Intuitive Logics" scenario method. For quantized assessments and methods on energy security see: Sovacool & Brown (2011), Cherp & Jewell (2011),Kruyt et al. (2011)

After the historical review, which does demonstrate the applied understanding of EESP (a link from Step 1 to Step 2), the state of affairs of EESP is presented in a building block by building block manner, with the dynamics and uncertain developments integrated (Steps 2 & 3). However, before writing the scenarios outright, the scenario logic and an additional background - combining Kahn`s idea of useful quantifications and a little bit Wack`s idea of predetermines - is presented to add more *flesh* (Steps 4 & 5). The conclusion of the thesis, making a case for the potential contribution of EESP scenarios (and scenarios in general) to a successful policy planning process, is based on the implications arising from the scenarios (Step 6).

**Figure 6: Developing EESP Scenarios**

1. ***Identify Research Question***
2. ***Identify Building Blocks***
3. ***Dynamics & Uncertainties of Building Blocks***
4. ***Selecting a one axis scenario logic***
5. ***Fleshing Out the Scenarios***
6. ***Implications***

Source: Antin 2011

# 3. EU ENERGY SECURITY POLICY

## 3.1. THE PAST (1952-2000)

Looking back on energy security policy in the EU is obstructed by the lack of such concrete policy. By "concrete" meaning, that the EU has had only limited official authority in this field (Buchan 2010, p. 368), and simultaneously by far not meaning that "policy" is merely understood as applied legislation, because it is here explicitly important to include the course of action regarding present (e.g. proposals) and future decisions (e.g. goal setting) to fully understand the dynamics (Schulenberg 2009, p. 23). Accordingly, one has to study the broad field of energy policy and consistently identify the policy, which was directed at creating energy security in the here applied definition, even if it is not actively considered energy security policy by the actors. Here for policy that affects energy security as a byproduct, by virtue of a string of inherited causalities in the field of energy policy like the prominent Emission Trading Scheme (Buchan 2011), will be ignored as much as possible.

Under this juxtaposition it is truly paradox that ESP can be seen as one starting point of European integration. Jean Monnet identified the European need for reliable German coal supplies as the most logical incentive for European integration, by which he of coursed aimed at creating lasting European peace (Matlary 1997, p. 14). Although later the policy of the ECSC`s High Authority and of those member states participating in the ECSC by no means can be viewed as ESP, its founding has been the birth of the idea of EESP. In 1957 the French-driven creation of the in its authority limited European Atomic Energy Community (EURATOM) can at least be seen as an attempt to deal with one single aspect of European energy security (Matlary 1997, p. 19). In 1972 the Commission, indicating its aspirations for the leading role in ESP, pointed out: "The main problem for the Community in the field of energy lies in maintaining a regular, stable supply which will meet the demand in terms of both quality and quantity" (Commission of the European Communities 1972, p. 8). The oil crisis still hit the Community unprepared and caused an outsourcing of the whole problematic to the American-led IEA (Kurze 2009, p. 17), which became responsible for the establishment and managing of oil stocks (Martin & Harrje 2005).[12] Under the impression of the embargo by the Arab states the commission for the first time issued two documents, which included precise strategic proposals and timelines for energy security policy.

[12]For a thorough history of oil in global politics see: Yergin (2009)

Being congruent with the applied definition of energy security, the Commission set out goals for both the supply and demand side, in which it basically defined the future energy mix and the efficient use of it (Commission of the European Communities 1974). The second communication renewed those goals up to the year 1990 (Commission of the European Communities 1979), but those goals have never been fulfilled (Schneider 2010, p. 29).

Proclaimed as the "turning point" for energy policy (Matlary 1997, p. 19), the signing of the Single European Act in 1986 had of course consequences for energy security policy as it introduced the quality majority voting (QMV) to the Council, environmental policy to the European law practice and the idea of the internal energy market (IEM) (European Communities 1987). This has marked the birth of the original *EU method* of ESP: addressing and (tying it) through environmental and market policy. Empowered by the Treaty of the European Union in 1992, the Commission pursued a Common Energy Policy (CEP), which would have included security of supply as one of three pillars (Commission of the European Communities 1994, p. 21). But the CEP has never been approved due to the resistance of some member states. At least the Maastricht Treaty introduced the admittedly weak "Trans-European Network (TEN)" program in which energy infrastructure, a critical area for energy security, was included from the get go (Fischer 2011, p. 48). Hitherto the CEP failure has been the most obvious signal that energy policy and even more so energy security is one of the policy sectors mostly resistant against integration. The Treaty of Amsterdam in 1999 finally did not include any form of CEP, instead it further enhanced the EU`s responsibility on environmental policy (Geden & Fischer 2008, p. 29) as a reaction to the Kyoto protocol of 1997. In the end of this period it become clear the member states were clinging onto energy security policy as a "national imperative" (Fischer 2011, p. 48), despite extending the more favorable European framework. The Commission certainly had more ambitious plans, but as result was left with environmental policy and market policy as means to address energy security. Thus until 2000, an EU energy security policy remained an illusion or rudimental at best as outlined here.

## 3.2. THE LAST DECADE (2000-2010)[13]

A new chapter in EESP was opened with the Green Paper "Towards a European strategy for the security of supply". The Green paper calls the EU a "Gulliver in Chains" (European Commission 2001, p. 22), referring to its limited room to maneuver compared to its power and calls for a "legislative framework for the priorities of future policies on energy efficiency and renewable energy sources (demand-side management)" (European Commission 2001, p. 57). However the Commission remains very straight forward referring to renewable energy: "Let us be realistic: promoting such forms of energy cannot be the only response to the complex problems raised by security of supply (European Commission 2001, p. 63)." The EU should remain open minded about all sources of energy as especially nuclear energy provides security of supply and a positive contribution to the ambitions environmental goals of the EU. Besides that the external dimension is not lost out of sight: "The development of a long term energy partnership with key suppliers such as Russia is therefore essential (European Commission 2001, p. 41)." All in all this paper is so hugely important, because it for the first times captures the EU`s need for a more complex policy besides the common market facing an increasingly difficult future.

Following this paper the Commission sent out a communication with the title "The internal market in energy: Coordinated measures on the security of energy supply" (Commission of the European Communities 2002), which addressed fundamental issues like the need for a common infrastructure policy and proposed directives for minimum oil and gas stocks all to be realized in a common market. Nevertheless, the Treaty of Nice, which came into force in 2003, did not include any new legislation relevant for ESP (Geden & Fischer 2008, p. 29). Furthermore, a chance to manifest energy security in the Common Foreign and Security Policy (CFSP) was missed, as the 2003 European Security Strategy only mentioned the high European energy dependence as a challenge (European Union 2003, p. 5), but did not further elaborate on it as a key threat thus giving evidence to the halfhearted energy security policy of the EU.

[13] Because the purpose of this section is to solely introduce the components, which have defined EESP in the last decade a certain level of abstraction is appropriate. Therefore concrete directives and regulations, covering singular issues will be excluded at this stage. Relevant directives and regulations will be presented in the next chapter. This is especially advantages as during the decade many earlier directives and regulations were already superseded. For an overview over the old legislation see: Mükusch (2011). Moreover all (few) initiatives on the external agenda will be discussed in the next chapter as well, because an extra introductive part is inevitable.

With the 2004 enlargement of the EU to 25 states the dualism of the at best weak EU market orientated energy security policy and reserved national energy security policy superiority, began to change. For the new Eastern member states energy security was an already far more pressing concern and posed specific challenges (Inotai 2008, pp. 21–22). The post-enlargement stalemates in the whole integration process led to the March 2005 EU summit at Hampton Court (UK) during which European energy policy curiously emerged as a possible engine to restart the integration process (Fischer 2011, p. 89). The Summit concluded that the President of the Commission, José Manuel Barroso, should draft a new EU energy policy concept (Geden, Marcelis & Maurer 2006, pp. 10–11). Soon after, energy security rapidly took center stage and accelerated European energy policy. The much discussed Russian-Ukrainian gas conflict "catapulted energy security to the forefront of the EU agenda" (Baran 2007, p. 132). Obviously, under this impression the Commission in March 2006 presented its Green Paper with the title "A European Strategy for Sustainable, Competitive and Secure Energy" (Commission of the European Communities 2006a), building on the 2000 Green Paper.

Of the six key areas of common energy policy four are addressing energy security issues at the forefront (Commission of the European Communities 2006a, pp. 18–19). Once again the creation of a strong common market played the key role, but after that the diversification of PES, a stronger technology policy and a significant external policy followed. The European Council approved the general idea and surprisingly even the external dimension of energy security policy remained included (Youngs 2009, p. 24). It is also worth mentioning that Poland issued a treaty draft solely focusing on energy security policy, labeled the "energy NATO", which was not further discussed (Wycieszkiewicz 2009, p. 19).

The long anticipated review unambiguously named "An Energy Policy for Europe" took further steps by bringing in new details and proposing binding overall goals (Commission of the European Communities 2007). The three 20% targets for 2020 became the most marquee points for the future of ESP. The first target was the "in any event" reduction of greenhouse emissions by 20 % (compared to 1990) until 2020 (Commission of the European Communities 2007, p. 5). The second target emerged from the previously issued Energy Efficiency Action Plan and carried the provision to reduce the primary energy use by 20% (Commission of the European Communities 2007, p. 11). Lastly, the "truly ambitious" goal to increase the share of renewable energy up to 20% of the EU`s overall energy mix was

introduced (Commission of the European Communities 2007, p. 13). The emission reduction influences above all the overall energy security strategy by making it accountable to this new qualitative standard (representing climate change) in addition to the quantitative availability of any resource. Potentially, the reduction of primary energy consumption is the most favorable instrument to EU energy security as it would simply decrease the demand for energy, making efficiency a priority for energy security policy. Increasing the indigenous share of renewable energy favors the general EU preference for reducing the external dimension of energy security policy. On behalf of the German presidency of the European Council in 2007, which selected energy security and climate policy as two of the top priorities on its agenda (Umbach 2008, p. 4), the Commission´s efforts were immediately taken up by the European Council. Although integrated with climate policy, the Council`s Action Plan with the title "Energy Policy for Europe (EPE)" was the hitherto biggest contribution to a common energy policy (Fischer 2011, p. 94). The Council confirmed a handful of infrastructural priority programs, which should be led by European coordinators (Council of the European Union 2007). It modified the 20% efficiency goal to a 20% reduction compared to the projection, but beyond called for a "thorough and rapid implementation" of further efficiency goals (Council of the European Union 2007, p. 20). Furthermore, the last of the 20/20/20 goals, the increase of renewable energy up to 20%, was declared a "binding" target (Council of the European Union 2007, p. 21). Building on the Action Plan the Commission initiated the "Third package of internal market reform" to finally solve the problem of natural monopolies (Buchan 2009, p. 21). The "cardinal improvement" (Baumann 2010, p. 82) of the "Second Strategic Energy Review" has been the demonstrated understanding of the various facets of energy security as it lists infrastructural needs, the diversification of energy supplies, external energy relations, oil and gas stocks as crisis response mechanisms, energy efficiency and making the best use of the EU's indigenous energy resources as necessities (Commission of the European Communities 2008b).

The climax for energy policy came when the Treaty of Lisbon (ToL) finally stepped into force and an own article on energy policy was included. Now, energy policy had a primary law foundation in the EU and above all security of supply officially became a competence of the EU (Fischer 2009, p. 50), emancipating itself from the previously described camouflaging of ESP in environmental and competition policy. In fact the new Energy Article (European Union 2010, Title XXI, Art. 194) names nearly all elements of good energy security policy, although

they are listed as objectives of energy policy: ensuring the functioning of the energy market, ensuring security of supply in the Union, promoting energy efficiency and energy saving and the development of new and renewable forms of energy and promote the interconnection of energy networks (European Union 2010). By including the security of supply complex and the generic promotion of EU foreign policy, the ToL also supports the notion of an EU foreign policy on energy security issues. The treaty also foresees the QMV between Council and EP to introduce the necessary measures to achieve these objectives. Another article worth mentioning in the context of energy security is Article 122, which falls under economic policy, but is indispensible regarding the new groundwork of EESP. Based on the principle of solidarity the Council may take economic measures to help member states,"…in particular if severe difficulties arise in the supply of certain products, notably in the area of energy" (European Union 2010, Title VIII, Chap. 1, Art. 122(1)). This article is not only a result of the immense energy security concerns of the Eastern European states, but it also includes a sense of increased energy insecurity in the treaty. However, the "change of direction" (Fischer 2009, p. 54) in ESP is by far not an unconditional transfer of this policy area to the supranational level. The member states installed two fundamental opt outs rendering future EESP unpredictable. In the Energy Article itself it is formally expressed that all the measures taken should by no means affect the member states individual decision regarding their respective energy mix (European Union 2010, Title XXI, Art. 194 (2)). Even worse for the outlook of EESP, declaration no. 35 in the annex to the treaty states that in case of a very broadly defined internal or external difficulties member states can return to their own ESPs (European Union 2010). Both of these additions pose serious questions regarding the real EESP as the backdoor remains wide open for the member states to fall back for instance on bilateral agreements with supplying third party nations. Exactly such a discrepancy between the here outlined policies by the EU and the current ESP of the member states is something the next part will discuss in the critical *building blocks of EESP*, which taken from the past are finally possible to identify. The building blocks basically present the historically developed main components of EESP in a structured way according to the scenario method. The first building block presents the fundamental alignment towards the PES, then three blocks deal with the internal dimension (market, infrastructure, renewable energy & efficiency) and last following a brief introduction the divided external dimension (policy towards Russia and policy towards China) will be analyzed.

# 4. THE "STATE OF AFFAIRS" OF EESP[14]

## 4.1. THE SOURCES OF ENERGY

Obviously there is no independent policy on PESs, but there are principles involved regarding the use of those, which need to be considered as a building block of EESP. Four different PESs (renewable energy is discussed separately) are highly critical for the energy security of the EU. As presented in the introduction these sources are: Oil, gas, nuclear energy and coal. Oil is the most important primary energy source for the EU and at the same time the EU meets its oil demand almost exclusively with imports (see introduction). The importance of oil stems from its leading role in the transport sector and the industry. Substitutes for oil in the transportation sector are still decades away from being perfect substitutes and the same case can be made for substitutes in industry (International Energy Agency 2011, pp. 13–15). The oil crisis of the 1970s has been practically the birth of energy security policy. Securing the physical availability is however not the priority, because oil is imported through a more flexible infrastructure than gas and is (almost) always available on the global market (Goldthau & Geden 2007, p. 61).[15] Yet availability does not equal affordability, which is the key restrain for EESP. From a certain oil price on it is simply unsustainable for the economies to purchase oil (Pascual & Zambetakis 2010, pp. 9–17). The EU has absolutely no instrument to control the oil price directly, thus EU energy security policy consists of increasing the efficiency of oil use, promoting bio fuels, strengthening the EU relationship towards oil producing nations to decrease price volatility and, to a lesser extent, the diversification of transit routes to marginalize price increasing risks such as the Russian-Belarus oil dispute (Comolli 2010, pp. 180–189).[16] Nonetheless, the only developed energy security instrument is the creation and management of strategic stocks to bridge oil price hicks. Actually the EC already in 1968 had passed legislation to establish such stocks, but they were neglectable as the IEA became the de facto highest authority on this matter and further EU legislation was highly disputed throughout the years (Fischer 2011, pp. 109–114). In the end a new directive was passed in 2009, which included minimal stock guidelines, emergency mechanisms and a

[14] Energy technology policy is not considered explicitly, as its short- to midterm effect on energy security is impossible to assess. For an overview on EU energy technology policy see: International Energy Agency ( 2008, pp. 183–198)

[15] The peak oil theory can be ignored as the focus is on the next 10 years as for instance the German Federal Institute for Geosciences predicts effects of peak oil from 2025 on Müller-Kraenner (2008, p. 4).

[16] Those policy elements are discussed in the specific sections.

strict reporting mechanism (Council of the European Union 2009). All in all good energy security policy on oil is very difficult, because the need is so big and the alternatives are limited. Oil will remain a fixture of energy insecurity around which the rest of EU energy security policy will have to try to create overall security (International Energy Agency 2008, pp. 179–180), yet the degree of insecurity is dictated by the global oil price. The last notice to be made is that there is no inherent conflict line between the member states and/or the EU institutions regarding the use of oil.

Gas differs from oil as it is mostly used to produce heat and increasingly to generate electricity (International Energy Agency 2008, pp. 177–178). Moreover gas can indeed be physically unavailable as witnessed during the most recent gas conflict between Russia and the Ukraine in 2009 (The Guardian 2011), because the huge majority of all gas imports are transported through single pipelines connecting the few gas producers with the many consumers (Pollak, Slominski & Schubert 2010, p. 50). If a producer decides to stop its gas supply, then there is often no alternative route to take for the consumers. Liquid Natural Gas (LNG) is the one flexible option for gas supplies, but currently the infrastructure is very expensive and the availability is limited (Mükusch 2011, p. 72). Price volatility is in comparison to oil a marginal factor for gas energy security, because prices are set in regional markets, the spot market is small and normally long-term contracts between companies dominate the market (Mükusch 2011, pp. 58–68), which in total makes the diversification of sources in the near future the number one priority.[17] Here diversification does not only cover the access to other gas exporting nations, but also the diversification of transit routes through different nations is vital (Geden, Marcelis & Maurer 2006, p. 19). Though under the impression of the aforementioned gas crisis the focus of the in 2010 passed massive regulation was on emergency mechanisms and prevention in case of similar crisis. In 17 articles the regulation covers everything from the internal gas market and preventive actions, to emergency mechanisms in the spirit of solidarity and regulations for gas undertakings with third party nations (European Parliament & Council of the European Union 2010b). This regulation is a true milestone in the energy security policy of the EU stressing the leading part gas will have in the future of all facets of EU energy security policy until 2020 and beyond (European Commission 2010b, pp. 10-11).

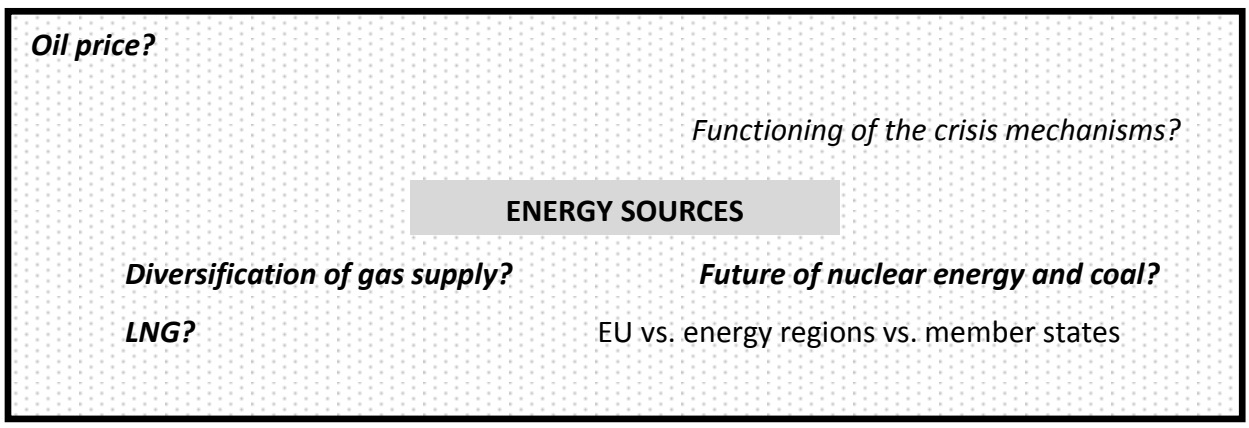
[17] In general gas prices are however oil-indexed, thus if the EU liberalizes the market successfully it is possible that prices will be a factor of insecurity similar to oil, but it is also possible that with the market liberalization the oil-indexation is lifted creating harmless price level International Energy Agency (2001, pp. 16–17).

The main difference to oil is that the great insecurities associated with the supply of gas are relatively solvable by policy, owning to the huge global reserves (e.g. shale gas) and more regional character of the market (BP 2011, pp. 20–28). In addition, gas is absolutely in line with the environmental policy of the EU (Böhme 2011, pp. 50–52). The reason why EU energy security policy on gas is still hard to project is that despite the clear EU preference for such policy there is an evident discrepancy between the EU agenda and the policy preference of several member states based on the role gas plays in the respective energy mix, the indigenous gas reserves, location of the member state and historical development. According to Baumann & Simmerl there are different "energy regions" in the European Union (Baumann & Simmerl 2011, p. 15). In case of gas supply the Northern/Central and Western European regions have the preference for national policy on gas relying on different trusted suppliers, whereas the Central/Eastern and Adriatic/South Eastern European regions have a preference for a strong EU policy, which all together explains the ambiguity of the ToL on the topic. Considering the nature of gas and the policy on it one has to definitely tie future overall energy security policy tightly to the development of gas policy.

The last two sources of primary energy to discuss are nuclear energy and coal (hard and brown coal). Although those two resources are totally different from each other in their physical nature, they play almost the same role in the context of the EU and EESP. Both sources make up almost the same proportion of the gross consumption (see introduction) and both sources are primarily used for electricity generation with nuclear energy making up 27.8% and coal 25.7% (Directorate General for Energy 2011a, p. 3). Coal as well as nuclear energy does not pose problems of availability, although coal has an import rate of over 40% and uranium is strictly imported. The reason is the reliability of the supplying nations. Uranium is imported from mainly Canada and Australia coal from Australia, the USA, the RSA and only one quarter from Russia (Pollak, Slominski & Schubert 2010, pp. 44, 156). For what is more, for both sources price volatility is limited and infrastructure does not play the central role regarding the physical availability. In relative terms (to oil and gas) the EU also has all large coal reserves and uranium is needed in only small quantities, which at the first glance from a strict energy security point of view makes the two resources preferable for the future energy mix (International Energy Agency 2008, pp. 65–66). Yet, despite all those convincing arguments those two sources remain currently on the edge of EESP for specific reasons.

The first reason is that the two resources lack the imminent external energy insecurity of gas and oil as described above, to a large extent because demand is diminishing. Coal is a very *dirty* energy source substantially infringing the overall EU environmental agenda and in particular the 20% greenhouse gas emission reduction goal set by the EU, seemingly making it a resource of the past for the EU (International Energy Agency 2008, pp. 178–179). Nevertheless, most notably Poland covers over 50% of its primary energy consumption with domestic coal and even exports coal (Fischer 2011, pp. 76–82). Nuclear energy on its part is met with fundamental resentments in member states like Germany. This "German Angst" in 2011 (Umbach 2011, p. 174) led to the decision to step by step phase out all nuclear power plants. Here France takes an opposing approach with a traditionally strong stance on nuclear energy (Geden, Marcelis & Maurer 2006, p. 7). Thus the second reason for the diminished role of these sources in EESP is that the member states have such strong opposing national preferences for the two sources that the decision on the use of the resources is made on a national basis. It is clear that the prolonged use of both could ease EESP, in particular if one considers that nuclear energy is highly compatible with the environmental policy of the EU (Commission of the European Communities 2008b, p. 15). Directly tackling the issues regarding the future of both resources the Commission has therefore constantly pushed for openness to nuclear energy (having the managing EURATOM in place) and the development of Carbone Capture & Storage (CCS) technology, which is always included in the major technology programs (European Commission 2010b, p. 15). Finally, nuclear energy and coal should be watched closely regarding the future of the EESP on account of their potential renaissance on the EU level, strengthening the EU approach, or the continuing reign of national policies signaling the dominance of national energy security policy.

**Figure 7: Building Block - The Sources of Energy**




Source: Antin 2011

## 4.2. THE INTERNAL DIMENSION

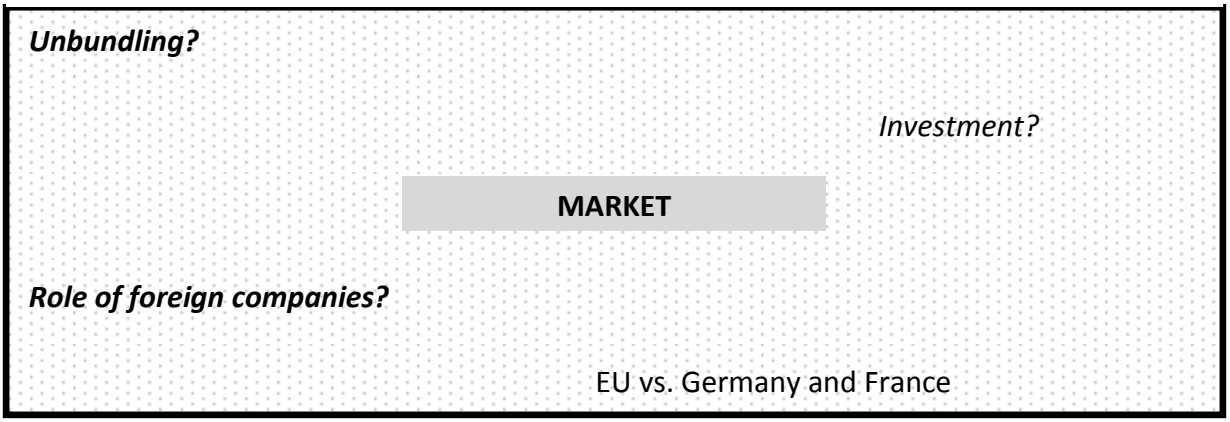
### *4.2.1. MARKET*

Since the Single European Act the liberalization of the internal market has taken center stage in EEP. Certainly the main reason lies in the congruency of a common energy market with the principles of European integration and the rich competences the Commission carries in this aspect (Buchan 2010, pp. 361–364). Curiously, it has also always been argued that market liberalization is a decisive form of ESP (Commission of the European Communities 2007, p. 6). This connection is not trivial and should thus be examined carefully. First of all, when the EU discusses the internal energy market (IEM) it focuses strictly on the gas and electricity market (Truscott 2009, p. 54). The electricity market is somewhat difficult to assess from an energy security point of view, because electricity is a secondary energy source, thus being dependent on the supply of different PES. Consequently, energy insecurity issues associated with the product electricity are solely infrastructural (Checchi, Behrens & Egenhofer 2009, pp. 35–36) and in principal helped the same way by market liberalization as similar issues with gas, which are far more important (International Energy Agency 2002, pp. 11–12). A liberalized internal market has several benefits to energy security. The EU formulates those benefits for security of supply as follows: "An effectively functioning and competitive Internal Energy Market can provide major advantages in terms of security of supply and high standards of public service. The effective separation of networks from the competitive parts of the electricity and gas business results in real incentives for companies to invest in new infrastructure, inter-connection capacity and new generation capacity, thereby avoiding black-outs and unnecessary price surges. A true single market promotes diversity (Commission of the European Communities 2007, p. 6)." Investments in infrastructure are badly needed to sustain the reliability of supply (European Commission 2011c, pp. 10–14), but the interconnection capacity goes beyond that. The idea is that in a liberalized market transnational companies invest in such interconnectors and as a result the market directs supply to member states for example affected by another gas dispute (Goldthau & Geden 2007, pp. 70–71). The market can work as an automatic crisis mechanism partially eliminating insecurity. This kind of diversification of sources is regardless of the level of infrastructure only possible if enough gas is traded on the spot market, which today is not the case. The limited amount of gas traded on the open market stems from the normally long term restrictive bilateral deals between European MNCs and

national energy giants like Gazprom (Böhme 2011, pp. 76–80). Here from the importance of the liberalized market arises as external EESP as the EU tries to "export" the created market mechanisms to producing states to break up the bilateral and often political nature of gas supplies, leaving security of supply to the market alone (Pollak, Slominski & Schubert 2010, pp. 143–146). Although the development of the market throughout the decades was the area where most of the legislation was passed, the EU was not pleased at all with the progress (European Commission 2010b, p. 3). The third legislation package on the internal market should have eliminated the deficit. The package, including three regulations and two directives, reinforced measures to create an internal market. The central objective on the gas market was the unbundling of the vertically integrated energy giants to generate more competition and the supervision of the internal market in general (European Parliament & Council of the European Union 2009d; European Parliament & Council of the European Union 2009c). Especially the founding of the Agency for the Cooperation of Energy Regulators (ACER) points to the high pressure applied by the EU regarding the internal market. In sum the internal market is on a good way to fully develop until 2020, however skepticism is still appropriate regarding the future of the market itself and the role it will play for energy security. Of course the most obvious hurdle is the question whether the policy is executed in the member states, but the liberalization is so progressed that a simple non compliance is impossible, as even the German energy giants engaged in unbundling (Fischer 2011, p. 179). Skepticism rests on the fact on how to deal with third country companies like again Gazprom in an open market (Handelsblatt 2007). Directive 2009/73/EC included an article popularly termed the "Gazprom clause" (Euractiv 2007), demanding a strict supervision process of third-country investments in infrastructure at the end of which the national regulatory agency "shall take utmost account of the Commission`s opinion", energy security infringing investments remain possible (European Parliament & Council of the European Union 2009c, p. 108). It is in particular interesting that bilateral deals could eventually burry all benefits the market could generate, by allowing third-nation players to aspire dominant market positions, which would only decrease energy security. Considering Germany`s decision to gradually shut down its nuclear energy production, the need for investment and e.g. the interest of Gazprom may be high enough to allow such investment (sueddeutsche.de 2011). In the end the liberalized market has the potential to be a two-edged sword, which could in a best case scenario contribute extensively to energy security

under certain circumstances or at worst increase massively insecurity by liberalizing just enough so that third-country companies aspire dominant position and the incentives for investments in infrastructure are reduced, because of the unbundling.

**Figure 8: Building Block - Market**




Source: Antin 2011

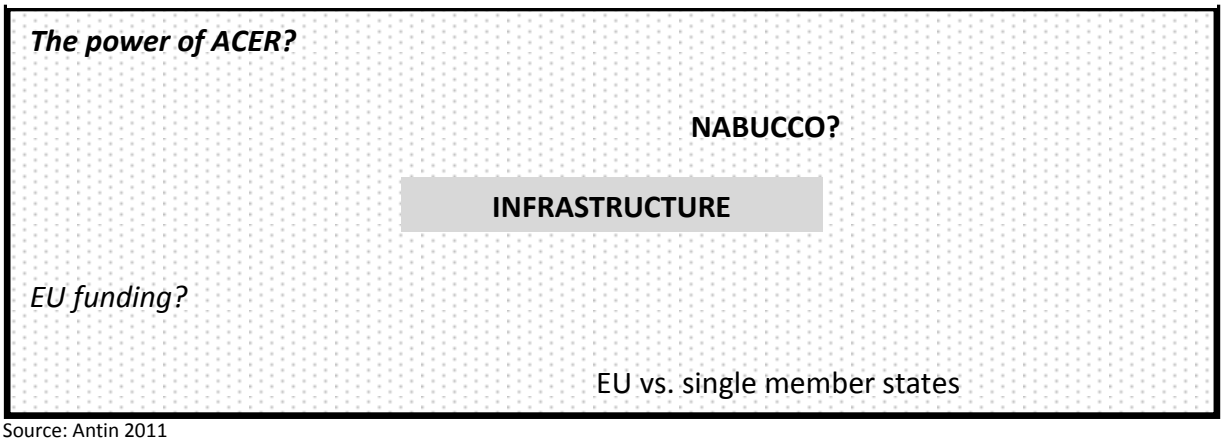
### *4.2.2. INFRASTRUCTURE*

Very closely related to the market policy is the infrastructure policy as infrastructure is the backbone of a market. Hence all the above mentioned market policy depends on infrastructure policy or starts with it like the proposed unbundling to stimulate transnational competition (European Commission 2011c, p. 2). Yet, the impact of infrastructure policy certainly goes beyond the groundwork for market liberalization and its potential benefits for energy security. By virtue of infrastructure policy the EU can in its own right increase energy security. Infrastructure policy on electricity networks, gas networks, LNG terminals, oil supply and CCS capacities promotes diversification of sources, increases reliability, solves short time supply shortages, empowers the supply with renewable energy and increases energy efficiency (European Commission 2010c, pp. 6–7). Two forms of infrastructure policy exist in the EU: the standard passing of legislation to promote infrastructure development and the direct support of projects. The former has been on the radar since the Green Paper of 2000 and culminated in the previously elaborated legislative package. Besides, the ACER regulation No. 714 included the creation of the ENTSO-Gas and ENTSO-Electricity, which together with the ACER became responsible for the supervision of infrastructure developments, took the role as adviser on infrastructure and got the duty to carry out plans on the future infrastructure (Pollak, Slominski & Schubert 2010, pp. 125–127). Those institutions can obviously be seen as a preemptive step for a true EU regulation agency

(Fischer 2011, p. 180). The field of direct measures regarding projects is highly controversial. Beginning with the small TEN-E program over the singling out of certain projects in the EAP to the "European Energy Program for Recovery (EEPR)" the EU has proceeded to give priority to projects critical for the energy security (International Energy Agency 2008, pp. 81–83). The EU thereby takes a clear stance by politically advocating the projects and contributing financially. The in total almost 4 billion Euros heavy EEPR with the majority of the amount going to the gas sector addressed projects, which have the potential to increase energy security in the several outlined ways (European Parliament & Council of the European Union 2009b), but it also revealed the reality of EU infrastructure policy. During the bargaining process some member states like Germany and the Netherlands were very skeptical of the involvement of EU funding in infrastructure projects, because they argued that such projects remain a strict responsibility of energy companies (Fischer 2011, p. 151). It is fair to argue that those member states normally support their national energy giants as witnessed in case of the Nord Stream pipeline (Umbach 2008, p. 7), reflecting the double standard used to minimize EU involvement in this sensitive aspect of energy security strategy. The true weakness of EU infrastructure policy is probably reflected in the Nabucco project about which the former EU Commissioner Andris Piebalgs said: "Nabucco is more than just a pipeline; it is the embodiment of the existence of a common European energy policy (Youngs 2009, p. 109)." Since day one Nabucco was supported by the EU and was for instance awarded the highest single funding in the EEPR, but has until today failed to gain real support from some member states (Erdogdu 2010, p. 17). Though the external dimension is certainly strongly involved here, it is clear that today the impact of EU infrastructure policy on the big projects enhancing energy security is limited. Looking ahead, the EU - following its "Blue Print" - aims to limit itself to few projects, which it then pursues with emphasis (European Commission 2010c). A concrete proposal for a regulation to realize the "Blue Print" via inter alia large financial commitment plus strong involvement of the ACER and the ENTSOs has been presented as recently as October 2011 (European Commission 2011c). Thus with the legislation in place there is a chance that EU infrastructure policy can contribute vastly to long term energy security if the different key projects are carried out, but it is also very plausible that EU infrastructure policy remains unbinding and efficient only on a small scale, while member states realize projects in their respective interest.

It can be expected that a failing EU infrastructure policy is closely connected to a failing market and nonexistent common foreign policy.

**Figure 9: Building Block - Infrastructure**



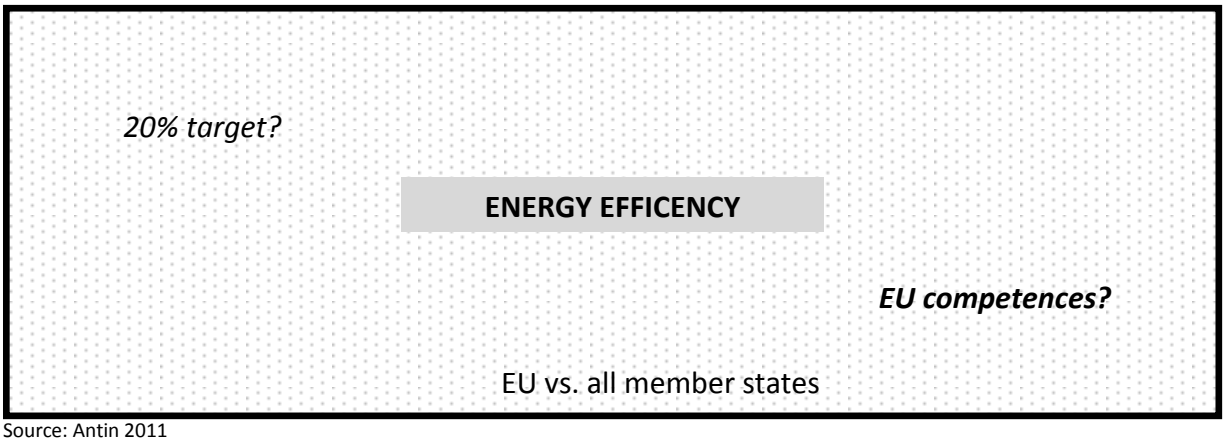

Source: Antin 2011

### *4.2.3. EFFICIENCY*

Energy efficiency policy is a powerful tool in theory to increase energy security, by decreasing the demand for PES and in particular the import rates of PES (Checchi, Behrens & Egenhofer 2009, pp. 38–39). As energy security includes enough supply for the proper functioning of the society, energy efficiency policy, which leads to the decoupling of economic growth from energy use set out by the EU, is considered (European Commission 2010b, p. 5). Only such absolute energy savings, sans a "rebound" (World Energy Council & Oliver Wyman 2007, p. 10), benefit energy security. First and foremost energy efficiency policy is attractive for energy security on account of the highest saving potential in buildings and transport (European Commission 2010b, p. 8), meaning that precious oil could be saved. In difference to infrastructure policy and market policy the EU formulated the already introduced unbinding 20% reduction of energy consumption for 2020, compared to the EU base prognosis for 2020, goal. In relative terms this would result in a decrease of energy consumption of about 13% (Commission of the European Communities 2008a, p. 3). Like in the other aspects there is a discrepancy between the legal ambition of the EU and the practice of EU energy policy, but the decisive difference is that the EU openly calls out the member states to act on this on a regular basis. The strongest instrument has been a directive on energy end-use efficiency, which set out the goal of saving 9% of energy end-use in 2016, compared to 2006, and obligated member states to present National Energy Efficiency Action Plans (NEEAP) to achieve this (European Parliament & Council of the

European Union 2006). Since the introduction of the directive, the Commission has not be tired to stress that the NEEAP do not come close to the set out targets and the new 20% target in several communications, because the implementation proceeds to slow (Nötzold 2011, pp. 37–41). The Commission even sent out a Reasoned Opinion to 20 member states (European Union 2009). On the more specific level of energy performance of buildings, the EU in 2010 has passed a directive amending a previous one suffering from the same issues as the end-use directive. The effectiveness of it is once again in doubt due to the very detail oriented long term character of the articles and the unbinding nature of such a directive (European Parliament & Council of the European Union 2010a). At least energy efficiency policy found its way into the member states via the ecodesign directions (European Parliament & Council of the European Union 2009e), though they are almost irrelevant from an energy security point of view. Looking ahead there is a strong consensus that energy efficiency in the identified areas is an instrument for energy security (Fischer 2011, p. 209). At the same time the compliance of the member states is questionable and the EU is legally limited to change that in the near future (Geden & Fischer 2008, pp. 102–103). In a best possible future then the member states as a block follow the EU leadership and start consequently implementing the directives, because energy efficiency policy benefits the environmental goals of the EU even more (Hennicke 2010). The drawback would be a total implementation resistance combined with a lack of initiatives on a national level contributing to a high level of energy insecurity.

**Figure 10: Building Block – Energy Efficiency**



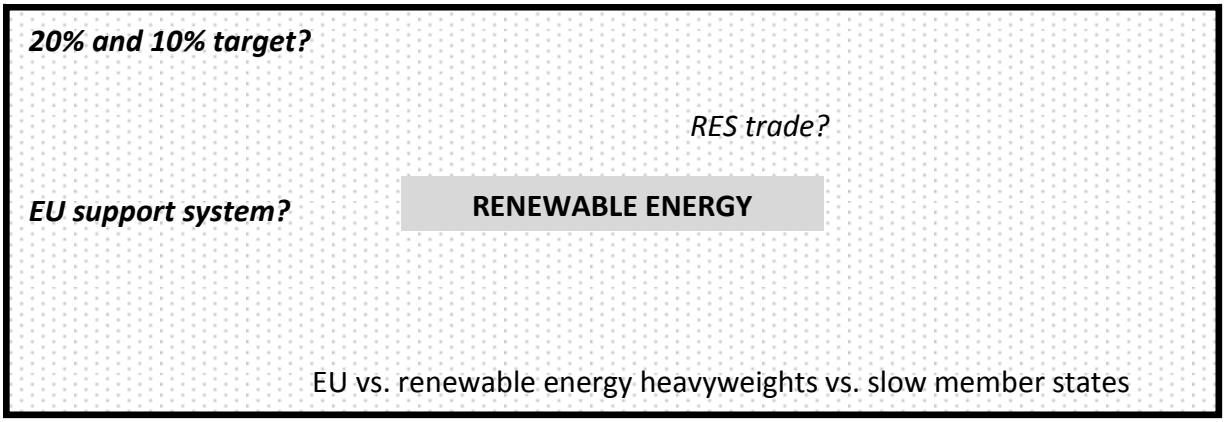

Source: Antin 2011

### *4.2.4. RENEWABLE ENERGY*

Renewable energy in the long term will be the future for the EU and its member states on their way to a post-carbon society. It does not matter what kind of renewable energy, the common perception is that renewable energy sources (RES) reduce greenhouse gas emissions and help to diversify the energy mix (International Energy Agency 2010, p. 276). The later is the circumstance, which makes renewable energy policy a key contributor to energy security. By increasing the amount of produced renewable energy the EU increases its self-sufficiency, reducing the demand for all the other imported PES and therefore in total increasing energy security (Olz 2007, p. 9). The difference for EU policy on RES compared to the other policy areas is that the whole sector developed rapidly from a niche existence to its current relevance on the national levels within years on account of thorough government involvement, presenting the EU with 27 fundamentally heterogeneous and evolving systems (Klessmann et al. 2011, pp. 7638–7642). The EU had to recognize barriers, mainly the different national support systems, thus resulting in a policy concentrated on target setting to commit the member states to a promotion of renewable energy and not on the creation of a market as with other energy sources, despite such attempts made by the EU (Buchan 2009, pp. 149–151). Building on the first set of directives introduced in 2001 and 2003 establishing goals for the share of RES in the electricity and transport sector for 2010, which were as of today only slightly missed thanks to very high rates in some member states compensating very low rates in others, the EU formulated a new overarching target in the EPE (Klessmann et al. 2011, pp. 7637–7638). Besides the "binding target of a 20% share of renewable energies in overall energy consumption by 2020", a 10 % binding minimum target for the share of biofuels in EU petrol and diesel consumption by 2020 was introduced (Council of the European Union 2007, p. 21). To guide the member states to achieve the target, a directive on the use of renewable sources was adopted in 2009. The central elements of the directive are the concrete national targets member states have to meet to fulfill the overall target of 20%, funding and some bureaucratic easing. The targets for the share of RES in gross final energy consumption by 2020 range from 11 % for Luxembourg up to 49% for Sweden (European Parliament & Council of the European Union 2009a, p. 46). All in all, a loose EU framework for renewable energy policy exists in which member states are the dominating actors and face totally different challenges, which bears conflict potential. However if the success in national RES policy continues it is plausible that a Europeanization

of this policy area with its integration in market and infrastructure policy takes place and even surpasses the goal set by the EU as even in the current situation the targets are projected to be met (European Commission 2010b, p. 3). Hence in the shadow of environmental benefits energy security would be increased substantially (Fischer 2011, p. 183). Nonetheless the current situation also leaves the door wide open for new risks for energy security. With the manifold preferences for national solutions projects could be carried out at very high costs and in regions with vary variable natural availability all depending on the political urgency in the member states (Olz 2007, p. 64). In the end the targets would not be reached and the inefficient overinvestment in RES would further intensify energy security issues.

**Figure 11: Building Block – Renewable Energy**




Source: Antin 2011

## 4.3. EXTERNAL DIMENSION

### *4.3.1. IN GENERAL*

Energy security policy is multidimensional (Baumann 2008, pp. 4–10). The previously presented internal aspects are altogether not enough to secure energy on their own without engaging in foreign policy. This fact obviously rests on the importance of energy commodities for every single economy, which were politicized since Churchill`s days and the externalities of energy use in general (Yergin 2009, pp. 151–167). For the EU, the big difference in comparison to the internal policy dimension is that on the internal dimension the Commission has developed comparably great power (Buchan 2009, p. 11), whereas on the external dimension the member states still have clear superiority (Nugent 2011, pp. 376–378). Keeping this in mind, the EU institutions have made advances on external energy security policy in the last decade and felt even more empowered to do so on the basis of the Common Foreign and Security Policy (CFSP).

Tangible advances have been the various regional energy dialogues as part of e.g. the Euro-Mediterranean Partnership (EMP) and the European Neighbourhood Policy (ENP), in particular towards Algeria (Youngs 2009, pp. 20–23). The creation of an energy community with the Balkan states was certainly another step to increase the profile of EESP (Council of the European Union 2006). Most strikingly, a recent document by the Commission on energy policy was called "The EU Energy Policy: Engaging with Partners beyond our borders". Here, the Commission defines four priorities: Building up the external dimension of the EU`s internal energy market, strengthening partnerships for secure, safe, sustainable and competitive energy, improving access to sustainable energy for developing countries and better promoting EU policies beyond its borders (European Commission 2011b, pp. 3–4). The most important findings are that the EU aims at exporting its internal strategy led by the credo of a liberalized market to the forefront of its external policy, only calling for the coordination of bilateral agreements and formulating principles for the external policy towards the various groups of countries. However, such general findings are not enough to capture the (positive and negative) potential and nature of external EESP. Therefore the EU policy towards its biggest supplier nation Russia on the one side, clearly the most important factor in EESP as outlined in a communication on external energy relations (Commission of the European Communities 2006b), and on the other side the policy towards the EU`s biggest competitor for resources China, the world`s biggest challenge for energy policy (International Energy Agency 2000), should be briefly examined, as those reflect the cornerstones of the EU`s external dimension of energy security and its complex role in future energy security policy.[18]

### *4.3.2. POLICY TOWARDS RUSSIA*

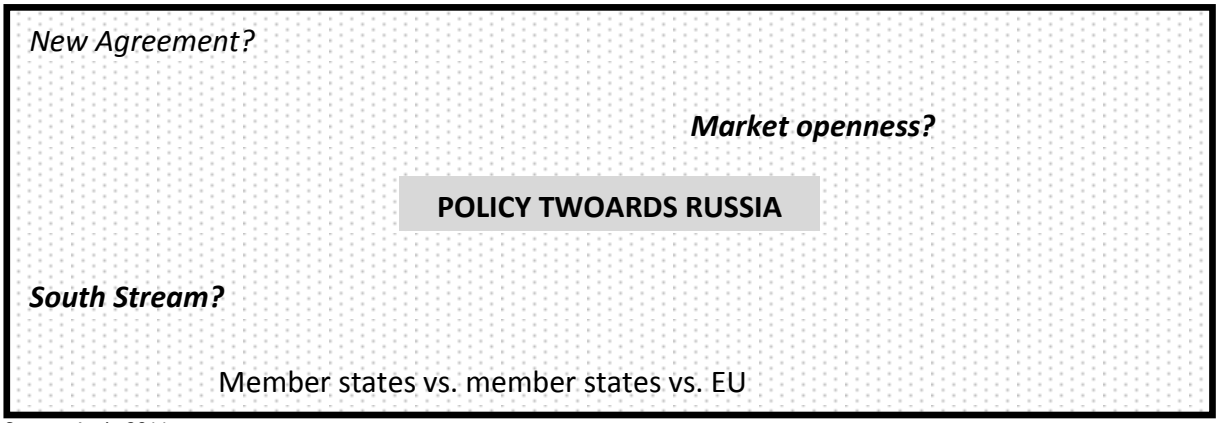
At first glance one may question this selection, due to the exclusion of the OPEC, but referring to the findings on oil, it is clear that the policy potential is very limited for the EU (Müller 2009, pp. 231–235). Russia, there is no doubt, has been and will remain the number one priority on the agenda of external EESP, because of its geographic proximity and its vast resources (Bahgat 2006, p. 968). Being the number one single nation exporter of gas, oil,

[18] Transit countries are normally a third group of countries discussed, but the energy insecurities associated with them are namely terroristic acts Comolli (2010, pp. 181–182), which are to no extant covered by EESP. Other issues are tied to the supply nation as for instance relevant policy towards the Ukraine is dominated by EU-Russia relations. Hence transit countries will not be discussed.

coal and even uranium to the EU, Russia`s seemingly new “Energy Great Power” (Morales 2008) approach has been the main motive for an formulation of an EU energy security policy in the last decade (Eurostat 2009, p. 23). To achieve long term physical availability of in particular gas the EU has engaged in different policies, factoring in Russian hurdles. The European Charter Treaty in 1991 (ECT) was only the first unsuccessful attempt by the EU to transfer Russian energy relations on a market-based and multilateral basis, which Russia like Algeria rejected (Buchan 2010, p. 371; Youngs 2009, pp. 80–81). From here on the EU has taken a vis-à-vis approach towards Russia formalized by the EU-Russia Energy Dialogue, which aimed to foster the market opening on a more technocratic basis (Böhme 2011, pp. 158–159). The biggest achievement has been the signing of an agreement on an early warning mechanism for gas supply to eliminate irritating gas conflicts involving transit nations through thorough communication (Directorate General for Energy 2011b, p. 66). Since 2006 the great debate in Russia-EU relations is the renewal of the Partnership and Cooperation Agreement (PCA), where energy security issues would be a core component, but until today it remains fruitless (European Union - EEAS (European External Action Service) 2011). The take away from such policy is that the EU focuses on market convergence policy in line with CFSP principles in hope to extinguish monopolistic supply shortages and enable much needed investment in Russian oil and gas production, the underperformance of which is often considered the real threat to EU energy security (European Commission 2011b, p. 8; Truscott 2009, pp. 28–30). The lack of a tangible policy is a result of the bilateral policy from influential member states. Instead of market opening those member states hand in hand with their energy champions signed several contracts with Gazprom on huge infrastructure projects, revealing a very geopolitical approach towards energy security (Youngs 2009, p. 82). The logic behind such policy is that due to the huge market potential and the removal of transit nations from the supply chain, Gazprom will always be a reliable supplier guaranteeing energy security. What are often called “divide et impera” (Cohen 2011, p. 12) tactics by Russia were highlighted by two projects: Nord Stream and South Stream. Both pipelines were obviously breaching the EU imperative of diversification. Nord Stream connecting Russian gas fields directly with Germany recently opened and will remain a fixture for Europe`s energy security with a future capacity of 10% of the EU`s gas demand (Zeit Online 2011), although in 2006 Polish officials compared the project to the Hitler-Stalin-Pact (Pollak, Slominski & Schubert 2010, p. 183).

South Stream has an even deeper implication for EU energy security policy, because the project is in direct competition to the EU-supported Nabucco pipeline (International Energy Agency 2008, p. 71). The development of Nabucco vice versa South Stream, which is supposed to run below the Black Sea connecting Russian gas fields with Bulgaria and then to Austria and or Italy, is of decisive meaning for future energy security policy, because Nabucco would reflect a successful EU policy and the taping of the Caspian basin as a new alternative source, whereas South Stream would serve as a proof for the inefficiency of EU policy and the almighty role Russia will continue to play for EU energy security (Umbach 2009). After all, the EU policy towards Russia is an undeniably strong variable for the future EESP on behalf of the extent of current interdependence and the general symbioses between internal aspects like market, infrastructure or efficiency policy and the external agenda. Thus, if the EU is capable to liberalize the energy market between the EU and Russia, including the realization of Nabucco, the EU would diversify its sources, depoliticize Russian supplies and increase the infrastructural reliability. Additionally, along the lines the same success in its policy towards the Russia-like positioned Algeria, symbolized by joined initiatives as the infamous Gas Exporting Countries Forum (GECF) and the cooperation between Sonatrach and Gazprom (Checchi, Behrens & Egenhofer 2009, p. 19), with its rich LNG reserves could materialize, further maximizing energy security (Youngs 2009, pp. 61–62). On the downside of developments the geopolitical approach could manifest itself, rendering EU policy irrelevant and making the EU extremely dependable on one source, which poses a real threat of politically motivated physical unavailability for the small member states of the eastern and southern regions of the Union and at least insufficient supplies for the Western/Central region due to Russian incapability to fulfill its obligations (Baumann & Simmerl 2011, pp. 7–16).

**Figure 12: Building Block – Policy towards Russia**



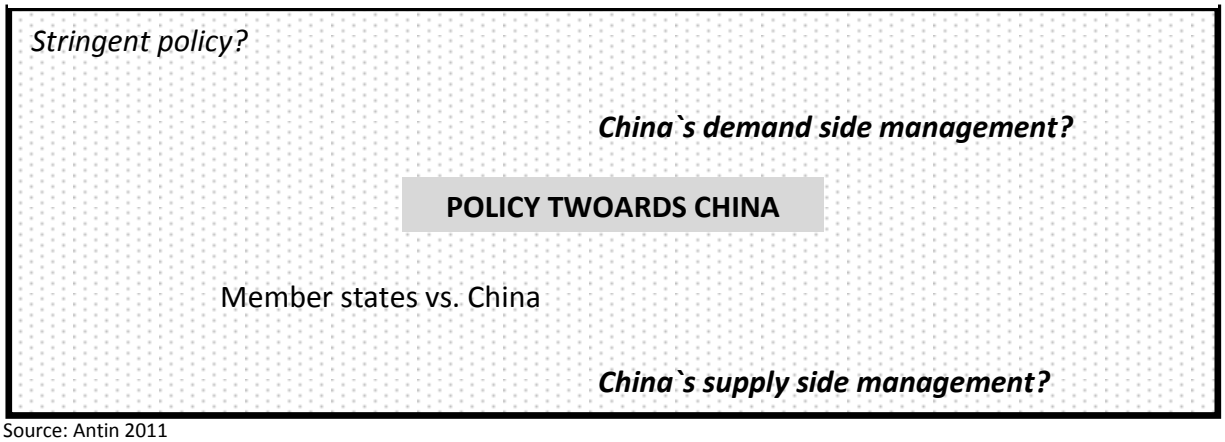

Source: Antin 2011

### *4.3.3. POLICY TOWARDS CHINA*

With only a handful of nations being able to meet their domestic demand with indigenous resources, huge demand shifts of one nation have an impact on the supply of another nation. In case of the EU the biggest competitor for future energy sources and thus a variable to consider in EESP is China due to two factors besides its rising energy demand as the world`s soon-to-be number one economy: China´s divergence from EESP combined with its geographic proximity (International Energy Agency 2010, pp. 97–100). On the one hand China`s energy hunger for explicitly oil increases the overall pressure on good EESP to meet the future demand, e.g. because of China`s willingness to sacrifice environmental goals or political principles for energy security. This gives China an advantage on the global markets (Meidan 2008, pp. 42–43). On the other hand China`s "Energy Diplomacy" (Jakobson 2008, p. 122), meaning a geopolitical approach, contradicts the market orientated EESP, which can render EESP fruitless in regions where the interests collide such as Africa or Central Asia (Umbach 2011, p. 76). To account for China as a major influence on the EU`s energy security, the EU has indeed formulated only abstract policy goals towards China in its energy policy. Beginning with the very broad "strengthening partnership and cooperation" (Council of the European Union 2007, p. 19) objective in the EPE and concluding with the recent Communication by the Commission in which at least China`s impact on the global market and the need for an EU response is stated, no further concrete actions are mentioned (European Commission 2011b). However the policy is institutionalized since 2006 by the annual bilateral EU-China Dialogue, which claims as its biggest success a workshop, signaling its weakness (European Commission 2009). The most concrete policies have all been results of the annual EU-China Summits, in which a slew of programs were decided. The different projects with the focus on CCS technology, nuclear energy, energy efficiency and renewable energy, represent the old pattern of EU rule export with the attempt to influence China`s demand side energy security policy advantage of the EU`s energy security (Nötzold 2011, pp. 323–327). EESP towards China is by far not as developed as towards Russia, which is symbolized by the lack of member states` policy on this issue with the exception of environmental policy that has fairly stalled since the failure of the COP15 summit in Copenhagen in 2009 (The Guardian 2009). If the EESP is successful in promoting its approach, China at best would only slightly rattle the global markets and will not be interested in drawing away Central Asian and Russian supplies from the EU, due to a tamed

geopolitical approach. At the other end of the spectrum China would focus on supply security completing one bilateral deal after the other and thereby eliminating the EU`s chances for diversification and moreover pushing fossil PES prices to a premium, threatening the EU`s supplies forever.

**Figure 13: Building Block – Policy towards China**




Source: Antin 2011

# 5. SCENARIOS

## 5.1. SCENARIO LOGICS

Before strictly formulating the respective scenario logic, it is important to remember the premises already introduced. Technological progress and revolutionary global environmental policy are left out of the scenario process, simply because the time frame is too narrow to consider changes in both areas as drivers. Moreover, certain fundamental changes like the sudden global unavailability of one resource should as well be excluded (Schröder & Tull 2008, p. 11). One premise following the same logic is the assumption that the EU will persist in its current form until 2020.[19]

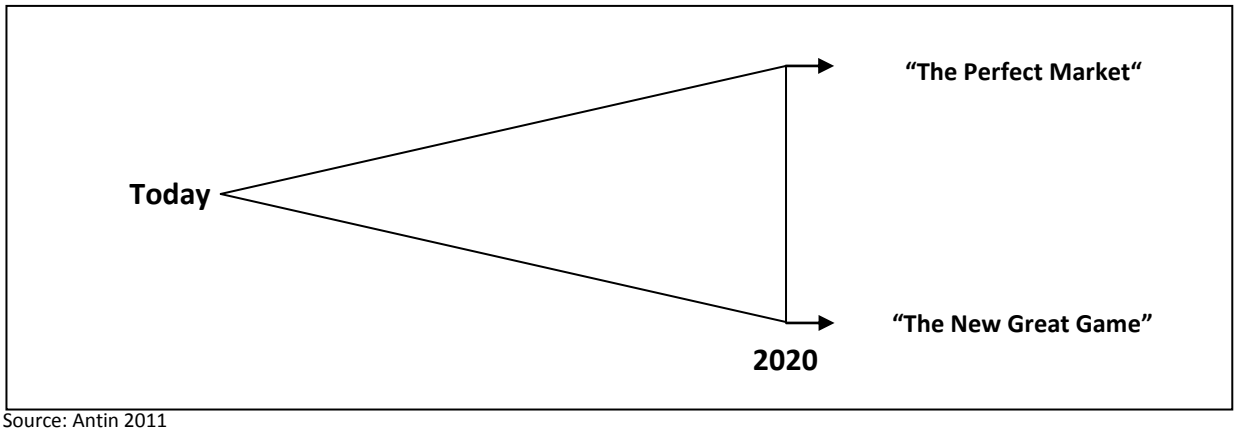
The scenario logic as earlier established follows the level of energy security the EESP delivers. Looking from the EU perspective that the thesis has taken, energy security is created by the prefect execution of EESP whereas a non-compliance with the policy results in energy insecurity. Thus For the sake of exploration, one scenario should be drawn where

[19]Of course the accession of Croatia and probably Iceland will take place, but it will not affect EESP as both nations are too small to influence the process, but the entrance of Turkey into the EU would change everything. Thus a fixing of this variable is a necessary simplification. The reverse logic that member states exit the EU shall be excluded due to the high degree of integration, which would make a disintegration in less than 10 years very difficult. The current document on the EU accession process indicates the slowed process: European Commission (2011d)

the EU succeeds with its policy under the most favorable circumstances and one where the EU fails to do so under the most hostile circumstances.

Such a best-case scenario shall be called “The Perfect Market” as the high level of energy security would primarily be attained by market mechanisms (Comolli 2010, p. 177). The opposing pole shall be a scenario called “The New Great Game” reflecting the power politics involved and already alluded to above (Nygren 2009, p. 94). A third scenario, resembling a baseline scenario following a standard projection is left out, as the reader automatically tends to “split the difference” to create such a scenario on his own (Wack 1985b).

**Figure 14: Scenario Logics of EESP**




Source: Antin 2011

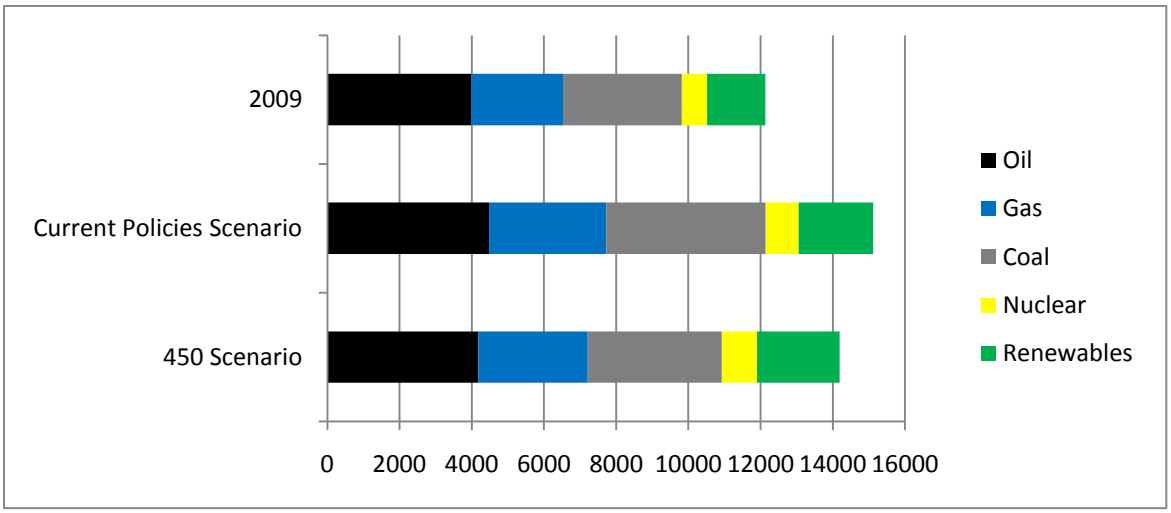
## 5.2. PRESENTING THE BACKGROUND

This background has the purpose to frame the pictures the building blocks will draw. It is composed of the most important projections of global energy statistics which constitute the context for future EESP. On the one hand EESP has to cope with global developments and on the other hand EU, energy statistics, which indicate EESP, follow the global trend although it can be reasonably expected - based on the current performance - to an always much lower or higher degree (World Energy Council & Oliver Wyman 2007, pp. 15–24).[20] The three most relevant statistics for each scenario are the oil price, the global energy consumption and the global energy mix (International Energy Agency 2011, pp. 64, 70-72). Moreover the changes in the global statistics basically reflect the changes in China`s energy patterns (International

[20] To a lower degree in the increase of overall energy demand, fossil fuels (with the exception of gas) and nuclear energy. To a higher degree in the increase of demand of renewable energy. A good example are the scenarios of the World Energy Council, which support such reasoning World Energy Council (2007, pp. 41–48).

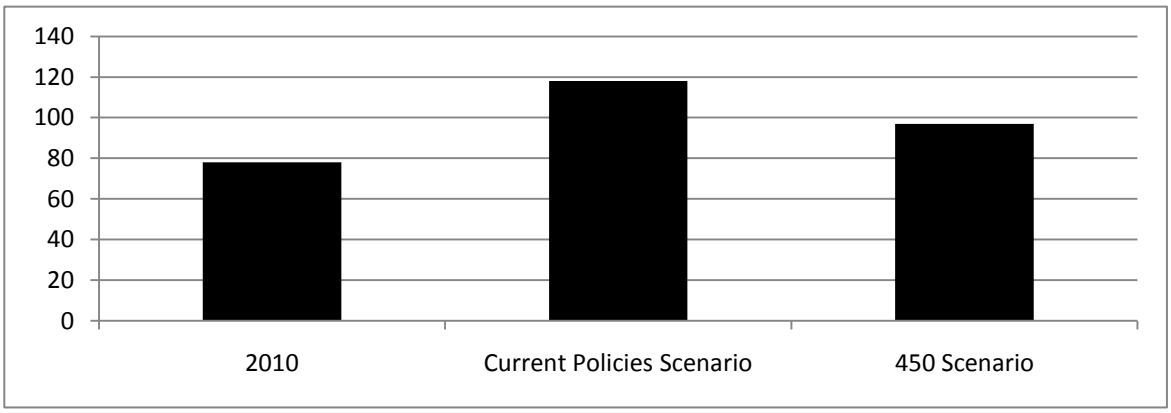
Energy Agency 2010, pp. 97–100). Thankfully, the IEA presents a pair of statistical scenarios alas accounting for policy change. The "450 Scenario" is the best-case scenario, which lets the identified statistics become part of "The Perfect Market" scenario. Meanwhile, the "Current Policies Scenario" will be considered for the "New Great Game". The IEA scenarios in their conception are very different from the EESP scenario, but they share the same logic regarding their results.

**Figure 15: World Primary Energy Demand by Scenario and Fuel (Mtoe)**




Source: International Energy Agency 2011, p. 71, Antin 2011

**Figure 16: IEA Crude Oil Import Price Assumption by Scenario (Dollar per barrel in 2010 real terms)**




Source: International Energy Agency 2011, p. 64, Antin 2011

**Figure 17 Changes Compared to the Current Situation by Scenario (in %)**

| *"The New Great Game"* | *"The Perfect Market"* |
|---|---|
| • Oil price increase by 51%<br>• World energy demand increases by 25%:<br>  ○ Oil by 15%<br>  ○ Gas by 28%<br>  ○ Coal by 34%<br>  ○ Nuclear by 29%<br>  ○ Renewables by 27% | • Oil price increase by 24%<br>• World energy demand increases by 21%:<br>  ○ Oil by 5%<br>  ○ Gas by 19%<br>  ○ Coal by 13%<br>  ○ Nuclear by 38 %<br>  ○ Renewables by 42% |

Source: International Energy Agency 2011, p. 71, Antin 2011

## 5.3. SCENARIO I: "THE PERFECT MARKET"

In the year 2020 the EU has inched closer together than ever before and enjoys a level of energy security, which only was matched in the period prior to the first oil crisis. The success story of a finally formalized EESP began on the heels of the European dept crises that even saw the realm of fiscal policy becoming more *European (*Gros & CNN 2011*)*. Strengthened by such developments, the liberalization has finally succeeded, because Germany and France have given up their resistance in the wake of demonstrating that the EU has a future and appeasing the pro IEM majority. The unbundling was accelerated through the financial deficits of European energy giants and the willingness of large companies to invest in "secure havens" like long term revenue infrastructure. To minimize any backlashes of market liberalization EESP has focused on supervising the new gas and electricity network operators and setting incentives for connectors in particular in the critical energy corridors. The key role to regulate the common gas and electricity market has since 2014 been handed to the newly-created "European Energy Regulation Agency (EERA)" developed from the ACER and the two ENTSOs. The EERA was part of a new legislation package following the "A Strategy for European Energy Security Policy" Commission proposal, which was pushed through by the Greece and Italian Council presidencies of 2014 as both countries tried to reestablish themselves on the EU stage (European Commission 2011). The liberal market has also led to the feared engagement of Gazprom and Algeria`s Sonatrach in the EU market with both even participating in the downstream business, but fears did not materialize as the global prizes remained stable leaving both companies with absolutely no room to manipulate the well regulated common market.

Sonatrach`s market access was welcomed as it was accompanied by huge investment in LNG facilities, as Algeria was desperately seeking reliable customers in the wake of low LNG prices, on account of the US`s large shale gas reserves. In the case of Gazprom the competition by LNG and the relatively low oil price led to a political rethinking by newly elected president Vladimir Putin, who - after a last muscle flexing towards the Ukraine in the aftermath of his election (winter 2013) that only demonstrated the well functioning of the crisis mechanisms and eliminated further doubts on EESP - started courting the EU directly. The new PCA included a proposal for a new ECT, which Russia (and Algeria) finally ratified in order to lift the already highly developed interdependence on a legal basis. The completion of the South Stream and the Nabucco Pipeline in 2015 and 2017 respectively secured diverse EU gas supplies for the long run (South Stream 2011; Nabucco Gas Pipeline 2011). In particular, the EU-Russia cooperation in Central Asia to secure gas for Nabucco demonstrated the new commitment to market policies. Russia`s willingness to sign the ECT and allow European MNC`s to invest in the sector steamed also from the strong global commitment to efficiency policy, which became a global trend towards the year 2020. The EU with credibility took the role of a trailblazer. Reassured by the third generation of NEEAPs in 2014 that the EU is able to even surpass all targets, it was agreed upon to further present NEEAPs on the way to the new binding targets. Additionally China, the world`s biggest energy consumer played a crucial role by making energy efficiency a priority in its 13$^{th}$ Five-Year-Plan (2016-2020) (International Energy Agency 2011, p. 78). China`s commitment followed the EU-China energy summit at which the new EU Secretary of Foreign Affairs recapped the success of the EU`s single voice policy towards China, a huge part of EESP, as build on a unique cooperation in the technology sector. First and foremost he referred to the shared pioneering in renewable energy, where the EU was already able to meet the 20% and 10% targets in 2018. Second, he referred to the nuclear energy cooperation (including Russia). In fact nuclear energy celebrated a renaissance in the EU when despite the well functioning market the rising import rate combined with emission goals led to an EU-wide commitment to nuclear energy up until 2030. Germany remained withdrawn, but contributed over proportionally, because of the lack of own capacities, to the update of all EU nuclear power stations via a special “Program for Nuclear Energy”, which was executed by EURATOM and EERA. Last, he mentioned the joint deployment of CCS technology. The EU in 2020 has developed into the world leader in CCS, thus creating the option to rely on

indigenous coal reserves or Russian coal to in fact balance global gas price increases or renewable energy deficits without sacrificing the emission goals. All these positive developments were facilitated by the large EU Multiannual Financial Framework for 2014-2020 (European Commission 2011a), especially guaranteeing funding for exactly such infrastructure projects like CCS facilities, the completion of the large pipeline projects and the integration of renewable energy. Renewables remain at the heart of EESP as demonstrated in the 2018 "Second Strategic Review: EESP Policy 2030". The goal is to finally create a common market to meet the new reasonable 30% binding target for 2030, although trade in renewables definitely increased and favorable cross border projects developed, the subvention systems remain an issue similar to the problems witnessed in CAP. In sum, EESP 2020 is coordinated by the Commission and the EERA has become a prime example of successful integration. The high level of energy security is a result of a very successful demand side management and flexible supply management, built on a common market, a strong partnership with Russia and common interests with China. Such a high level of energy security even increasingly let`s voices rise that EESP doesn`t need to be consistently and explicitly addressed anymore, as was the case in the decades prior to 2014 and that the next Multiannual Financial Framework should thus not address it anymore, but with the post carbon society in mind, the challenges of a rising India ahead and most importantly the economic benefits it created, EESP should remain a priority.

## 5.4. SCENARIO II: "THE NEW GREAT GAME"

In the year 2020 there is no such thing as EESP, though energy in*security* has become the mother of all issues for the EU`s member states, who find themselves fighting a constant uphill battle against energy super powers and super consumers. The hope for genuine EESP began to vanish soon after the debt crisis. The crisis on the surface left a *destiny bound* EU, but the distrusts between the member states and particularly towards Germany swelled steadily underneath. The integration process stalled forever when member states collectively failed to fulfill the new fiscal obligations. The IEM began its total collapse when the combination of high pressure to unbundle and the burden of the nuclear exit left Germany`s energy giants on the one hand with the need to sell their infrastructure to the highest bidder and on the other hand with the need to engage in the most profitable alliances. In both cases Gazprom became the partner of choice, despite protests from the

Commission, indicating the true weakness of the never formalized EESP. The fear of an almighty German-Russian energy power led to protectionist endeavors, particularly in the Eastern European member states. Unbundling generated even more sensible problems, as the European companies which took over the networks were unable to meet the challenges of modernizing the networks. After a series of blackouts in the summer of 2012 most member states pushed for the reversal of the liberal market approach. A contributing factor in this development has been the de facto retreat of one of the most important market liberalization advocate, the UK, from EU policies, which came in the wake of the great economic boom of 2013-2015 when global energy prices sky-rocked, giving the UK an incentive to extract higher quotas of its fossil fuels and constructing its own ESP around those indigenous resources (Checchi, Behrens & Egenhofer 2009, p. 15). Other member states let national preferences prevail as well. France directed all its investments twoards its nuclear sector, but in the short term renationalized its energy giants to be on par in negotiations with Sonatrache, whereas Germany, where the Green party has been part of the government since the elections of 2013 (Handelsblatt 2011), even accelerated its green movement by further limiting its national coal mining, despite rising global prices. Germany therefore aimed at a higher rate of renewables and trusted Russia to supply more gas. Poland however intensified its coal production disregarding CCS to profit from the fast rising coal prices. Under such circumstances EESP concurred as the Commission's new proposals were always shipwrecked by the Council`s member states increasingly drifting apart. Already established institutions like ACER, which was left without its supposed objective, the regulation of the IEM, were soon dissolved. Especially the failure of Nabucco was a nail in the coffin for EESP, after Nabucco had received the highest political and financial support. The consequence has been that since its final failure in 2014 all EU energy infrastructure programs were cancelled, due to inefficiency. In 2015 the Commission following the expected underwhelming NEEAP results tried a last push under the presidency of Latvia, a small eastern European country deeply in favor of EESP, to at least steer the member states towards the 2020 goals. The Communication called "European Energy Security: Meeting the 2020 goals and beyond" included a legislative package of measures binding the member states to reach certain signposts and a financial program to help individual member states, but the required Council majority never materialized. Neither the efficiency goal nor the binding renewable energy target has been met in 2020. The efficiency goal was not met as

demand simply increased, eliminating all savings. In case of renewable energy some countries outperformed the targets due to national subvention systems and benefiting from the high fossil fuel prices, but the national scale developments left instable systems like the recent south German power outage demonstrated. Yet, those power outages are only a small energy security concern compared to the insecurity rising from the new rules in global energy politics the EU has to deal with. EESP policy towards Russia remained superficial on account of the lack of a new PCA let alone a new ECT. With its dominant market position, the high resource prizes, Nord Stream and South Stream in place since 2015, Russia has held all cards in hand. Russia`s *putinism* completely undermined the external dimension of EESP, which therefore never extended to China. Moreover, China`s immense growth eliminated every diversification strategy the EESP had envisioned. China`s unlimited energy hunger draw global LNG reserves and even more worrying led to an extension of its dominance to the Caspian region, a decisive constellation for the Nabucco flop. The alliance with Russia, manifested in the new Sino Stream pipeline, also limited the always evoked interdependence between Russia and the EU. The supply stop through South Stream in the winter of 2019, as a result of the EU countries` reluctance to accept another price increase, was just a warning signal for even more severe supply stoppages via North Stream. The take away from the caused gas shortage is that the installed EU crisis mechanisms worked as far as the reserves held up to bridge the supply gap. Maybe this reflects most clearly the extent to which the ambitious plans for EESP have degenerated in the reality of 2020. The optimist would notice in the - shared with the IEA - supervision of emergency reserves a last straw for EESP, yet the policy is more a relic of the past and will be probably rendered useless in a prolonged period of power politics.

# 6. CONCLUSION

## 6.1. IMPLICATIONS

This thesis set out on the quest to answer the question how EESP may look like in 2020. Besides simply thinking about the future in a non linear and non predictive way out of scientific curiosity the journey into the future was supposed to make EESP better understandable, which in the end could foster better policy planning and decision making (Shell International BV 2008, p. 12). Using scenarios the path became more interesting than the destination itself. A dualism between actually identifying EESP and using scenarios to explore the future of this policy field emerged. Obviously the scenario method guided the process of defining EESP and vice versa. It became clear that much uncertainty surrounds the future of EESP and thus for the purpose of maximum exploration one scenario accounted for the most positive outlook and the other for the most negative outlook on EESP. In between those scenarios the actual EESP of 2020 is supposed to take shape. "The Super Market" scenario demonstrated that EESP is in principal able to deliver a high degree of energy security in the future. In the completely integrated policy area the functional IEM is accompanied by progressive demand side management, enabled by a strong single voice external policy drawing Russia not only into a common market, but as well closer to "Europe`s normative empire" (Bressand 2011, p. 80) and shared interests with China. Moreover the maximum diversity of resources is a policy objective, which eases any single PES issue, should one arise. The "New Great Game" revealed the flaws of current EESP that might lead to unprecedented energy insecurity following the evaporation of EESP. The member states deal on their own with energy security issues depending on their specific needs. The single member states still pursue aspects of EESP but due to the lack of bargaining power and effectiveness are on a very weak stand towards Russia and the other producers, which established controlling market position in a world seamlessly adhering to Friedman`s "First Law of Petropolitics"(Thomas L. Friedman 2006).

Looking at the pictures the scenarios have drawn the understanding of EESP and much more useful what good EESP has to look like was indeed refined. First of all, the already in the definition eliminated, though in the scenario titles purposely reintroduced separation between a market perspective and a geopolitical perspective on European energy security finally needs to be dismissed forever.

The best case scenario illustrates that the market realizes its potential with a geopolitical flanking. The worst case scenario confirms that geopolitics cannot be ignored. Or in Javier Solana`s words: “It is a euphemism to say that geo-politics affects investment and prices – and vice versa.”(Solana 2006, p. 2) Therefore the scenarios give evidence to the preferable understanding of both aspects as “two sides of the same coin”(Checchi, Behrens & Egenhofer 2009), withstanding most prominently the solely economic perspective of Cambridge`s Peter Noël(Noel 2008).

The second finding is that the EU is an institution, which cannot be ignored regarding future energy security policy for the benefit of the Union`s member states. A powerful EESP, led by a Commission, who throughout decades demonstrated a deep understanding of energy security policy, offers the brightest perspective to create a stable level of energy security, based on the large scale of the problems, the limitations of the member states and the interdependence of the member states. The best-case scenario gives a sense of energy security that no single state could create on its own and the worst-case scenario underlines the risks of non compliance. Speaking in his role as the President of the Council of the European Union to the EP, Tony Blair presented the clearest words on the EU`s potential in energy policy in general, which to the same extent are valid for EESP: “For far too long we have been in a situation where, in a haphazard and random way, energy needs and energy priorities are simply determined in each country according to its needs, but without any sense of the collective power we could have in Europe if we were prepared to pool our energy and our resources (Buchan 2009, p. 12).”

The last implication concerns the strategy for good EESP. The core obligation has to be a policy preeminently persuading a diversified energy mix, which can only be taken “from principles to action” (Commission of the European Communities 2006) by a policy following the *same coin* thinking. The state of affairs lined out that there are clear member states preferences, historical circumstances and natural limitations, which limit diversification, but the EU has the potential to bridge those by a *pooling of resources*. Taking the scenarios out of their background, it becomes clear that the main difference between the scenarios is that in the worst-case scenario monolithic decisions on resources lead to impotency, whereas in the best case scenario there is always an alternative based on a more flexible approach, which directly devitalizes e.g. a high import rate of one supplier as it only covers a limited amount of the energy demand.

Thus the main lesson from the scenarios has to be that EESP in 2020 has to build on the EU`s capability to leave ideological policy aside and combine all resources (Umbach 2011, p. 186). Summing it up in one sentence, one can transform Winston Churchill`s "Safety and certainty in oil lie in variety and variety alone" (Hayward 2010) into a new credo for EESP: “Safety and certainty in *energy* lie in variety and variety alone.”

## 6.2. PROSPECTIVE USE

All those findings may sound trivial at first or, even worse, simply obvious, though if one considers the aforementioned limitations of the scenarios and for what they can actually be used, the results are utterly astonishing. Surely, before coming to any results one has to imagine that in the end of such an individual scenario process, several individuals with different scenarios following the same method come together to eliminate the “blind spots” (Shell International BV 2008, p. 16) each one shares to create a final set of scenarios, similar to the process RDS has installed to validate the scenarios (Shell International BV 2008, pp. 40–51). Definitely, policy planners cannot use such abstract scenarios outright to draw plans, yet they can go back to the explorative scenarios to focus the more sophisticated data driven scenarios on the questions raised by the explorative scenarios, use them as access points to a thematic or point to those findings to identify critical predetermines for good strategies. The last point is especially interesting as this to a certain extent means creating certainty for decision makers, which international relations scholars are normally unable to do with theories. Taking from “God Gave Physics the Easy Problems: Adapting Social Science to an Unpredictable World”, an article presenting a method derived from evolutionary biology theory for international relations scholars to create scenarios with the goal to stimulate a rethinking on the nature, goals and criteria for judging on social science theory, if theory is supposed to be more helpful in understanding the real world (Bernstein et al. 2000, p. 44), one can actually find brilliant evidence for this deficit: “A deep irony is embedded in the history of the scientific study of international relations. Recent generations of scholars separated policy from theory to gain intellectual distance from decision-making, in the belief that this would enhance the scientific quality of their work. But five decades of well-funded efforts to develop theories of international relations have produced precious little in the way of useful, high confidence results (Bernstein et al. 2000, p. 44).” Notwithstanding that their method has a different objective – the reason why it was left out in the deriving of a scenario

method – it still shares the idea that international relations have to think outside the traditional theories to close the maligned gap between science and decision makers.

To round off the thesis the second research question should be answered by an example, after the first research question was already answered by the scenarios themselves. Coincidently, a concrete example for a fictive use of the EESP scenarios in the policy planning process can be made by discussing their use in light of the “Energy Roadmap 2050”, which was presented during the course of this writing in December 2011 by the Commission ( European Commission 2011e). The Energy Roadmap 2050 is set out to guide the EU`s policy to the goals of 2050 and will certainly influence the policy planning process (European Commission 2011e, pp. 18–20). In the Road Map the Commission “explores the challenges posed by delivering the EU's decarbonisation objective while at the same time ensuring security of energy supply and competitiveness” (European Commission 2011e, p. 1) by strictly using the statistical PRIMES model (E3Mlab 2011), which generates six different quantitative scenarios according to a specifically decided upon dataset (European Commission 2011e, p. 4). Here the parallel developed EESP scenarios come into play. Based on their findings additional PRIMES scenarios putting energy security on the forefront could be added to the Road Map to create a more complete picture. If there are parallels between the results (and there are, see European Commission 2011e, pp. 19–20) the EESP scenarios could be added as a supportive instrument presenting another perspective, because due to their narrative nature it can be assumed that policy planners draw additional benefit by taking the interconnections and not only singular numbers into account. Or, if one focuses on the discrepancies, the EESP scenarios could indicate a tradeoff between security goals and climate goals that raise awareness in the next steps of policy planning.

Finally, the Energy Roadmap 2050 signals that data driven scenarios are already a part of EU policy planning, but there is still room for explorative scenarios to contribute their fair share. The EESP scenarios and its method need to be viewed as a modest attempt to take some of these shares for IR scholars, almost as a bonus to learning more about a complex policy area, establishing what the future might hold and generating some certainty. Adding all this together at the end of the equation there can be no doubt that explorative scenarios are an instrument for international IR scholars worth of further consideration.

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_____ München, den 7. Januar 2012

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