

***Energiewende* in Context of the Open Door Policy: How the Wave of Syrian Refugees
Affects the Germany's Energy Requirements.**

Przemyslaw Macholak

Huntsman Program, University of Pennsylvania

pmach@wharton.upenn.edu

Faculty Advisor: Jose Miguel Abito PhD

Business Economics And Public Policy Department, University of Pennsylvania

abito@wharton.upenn.edu

Research disciplines: Business, Social and Behavioral Sciences, Economics, Political Economy

I would like to sincerely thank Prof. Abito PhD and the Wharton Undergraduate Division for their enthusiasm with which they share the passion for research projects, and all support and trust I owe them.

Abstract

The paper aims at analyzing the impact of immigration of Syrian asylum seekers on the German energy market. Germany has been a leader of the energy transition, and has been effectively shaping European Union's environmental policies. The unprecedented influx of the newcomers following the chancellor Merkel's political move to open the borders challenges feasibility of this project. This study evaluates the challenge from the supply and demand side of the energy market. It does so through the thorough examination of available data, government documents and literature to analyze historical developments and current implementation of the energy transition, together with Syrian impact on the energy market. The paper argues that although Syrian asylum seekers constitute only a small fraction of the whole group of incomers to Germany, the analysis of their impact suggests that usage of coal in the energy mix should not be expected to fall soon.

Keywords: Energiewende, German energy transition, Syrian Civil War, asylum seekers, inequality,

INTRODUCTION

Summer 2015 was a peak of a humanitarian emergency Europe has not seen in its post 1945 history, comparable only to the Yugoslavian war.¹ Due to the global insecurities and power struggles and political transformations in various African and Middle Eastern countries, unexpected number of people tried to move to Europe and as their end goal, particular countries in the European Union. The group of newcomers was very diversified, coming from plethora of countries and due to very different reasons.² Most importantly however, its scale met EU's policy makers unprepared. The crisis has challenged many of the European Union's mechanisms, and policies like the effectiveness of humanitarian aid and the allocation and provision of basic social services to the asylum seekers, as well as border control, integration mechanisms and accuracy of terrorism checks. Depending on the scale and persistence of the Syrian conflict, the current situation will have significant implications for European society, especially given the EU's aging population (but also other socio-demographic changes, such as Sweden's changing sex ratio).³

The crisis raises a question about the future of solidarity among European Union member states;

¹ According to the OECD analysis, this crisis could be called unprecedented due to the asylum seekers being very diverse in terms of country of origin, profile and motivation, and therefore with higher than ever pressure on asylum systems in destination countries (OECD 2015).

² It should be noted that, contrary to a popular belief represented by opinion-making medias and politicians it is often impossible to distinguish the nuanced difference between economic and non-economic migrants as the political situation in a country significantly shapes economic opportunities available.

³ Cf. Kaźmierczyk 2007, The Economist 2016.

numerous governments strongly oppose the idea of imposing quotas for the acceptance of refugees in EU countries. In such a political context Germany is breaking from the norm: despite widespread opposition, especially after the New Year's Eve sexual assaults in Cologne, the country's doors remain open for newcomers in the name of human responsibility. Around 1.1 million people were registered in 2015 in Germany as refugees, and political leaders reply to the critiques: "Wir schaffen das" ("We can do it").

Apart from the concerns that first come to mind while analyzing social impact of this policy of acceptance like ones mentioned in the previous paragraph, current situation may pressure the German government to redefine its policy responses to non-obvious public sphere issues as well. Germany has been a leader of implementation of renewable energy resources and green technology, and as the main actor of EU's political scene, has been effectively shaping the organization's environmental policies. If the demand for energy were to increase to a level exceeding current capacities, it could have intriguing implications.

Depending on the new aggregate preference for and economic feasibility of green energy, increased demand can either act as a boost for the local green energy producers, providing them with a bigger market advantage and more money spent on research and development, or it can mean a return to conventional energy resources. It would be a particularly interesting tradeoff, especially when considered in light of the recent COP summit in Paris, the Europe 2020 horizon, and the EU's commitment to lead the environmental battle. Moreover, a problematic relationship with Russia, the EU's main energy exporter, may lead to the reevaluation of the energy union and cross-border energy trade ideas.

The social role of Energiewende should not be undermined either. While this research area is yet not particularly gross, there are a few good studies that provide an interesting layer to the debate. Germany policies challenged the status quo in energy discussions and their ambitious project already acts as a source of inspiration to various social movements across the globe. In the time of heated debates about adequacy and effectiveness of policy responses to the global warming among politicians, the outcome of Germany's experiment carries a particularly important weight.⁴

This paper assesses these changes. In the second section, through the analysis of available government documents and research literature, it tracks the evolution of German energy policies to provide the readers with a bigger picture of constraints on energy provision depending on its source. In the third section the focus is put on the demand side of energy market. Based on the data from the World Bank, "the Economist" database and the theoretical approaches towards similar conflicts, the questions on the scale and time horizon of the Syrian immigration to Germany are addressed. Further, the implications of the following additional usage of energy is estimated. The research findings are relevant to the policy making world by showing the level of adaptation of demand and supply in German energy market in the current circumstances. Thanks to this paper, debates about energy transition feasibility, and consequences of the recent immigrant crisis will become more informed and planning of the future outlook of Germany energy market would be enriched by additional perspective.

⁴ Probably the most visible sign of the importance of the increased debate on ethics of environmental change is the Pope Francis' 2015 encyclical "Laudato Si" completely devoted to this topic.

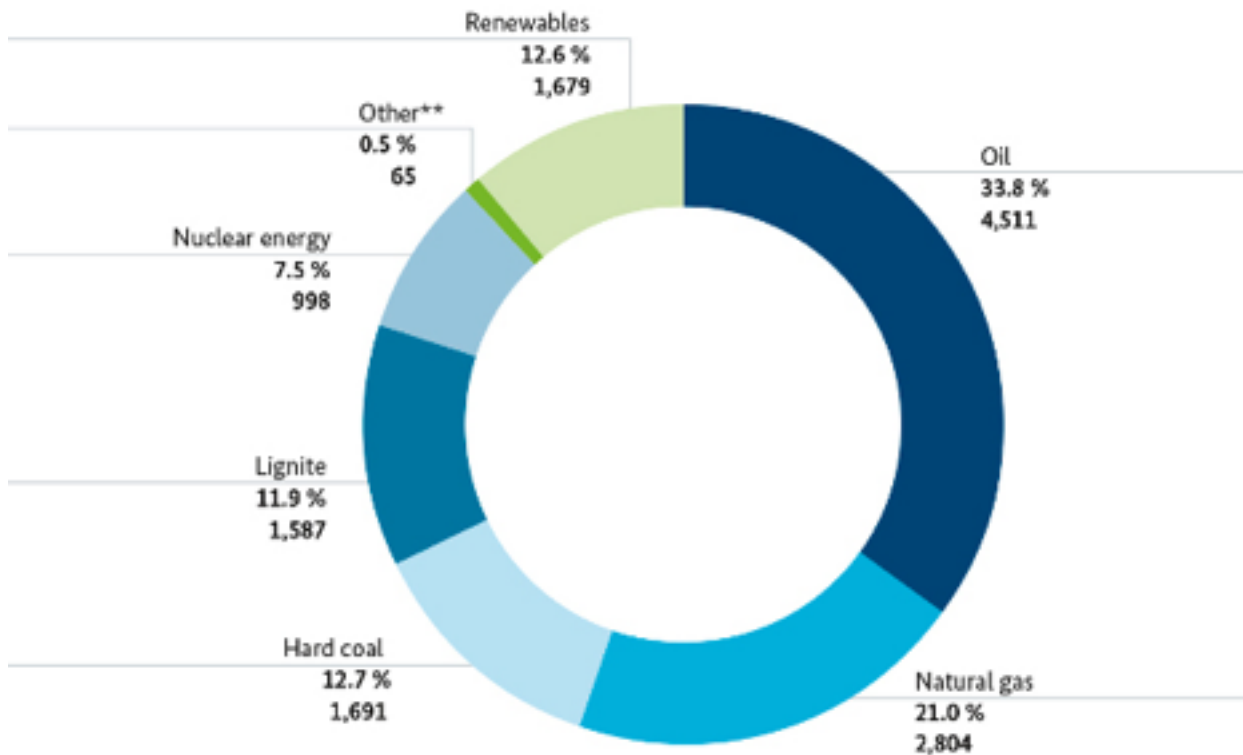
(R)EVOLUTION OF SUPPLY-SIDE POLICIES

Figure 1. Primary Energy Consumption in Germany 2015, Source: AGEb, December 2015 from: <http://www.bmwi.de/EN/Topics/Energy/conventional-energy-sources,did=679724.html> accessed on 7/12/2016

After a drop in supply in the years following the Reunification, Germany has been a true hegemony in terms of size of its energy market in the European Union (Renn and Marshall 2016). However, it is not end of the story, quite the opposite - it is also one of the most rapidly changing. The policy climate regarding this issue is shaped not only by technocrats and the researchers' findings, the market forces and investment-opportunity seeking, but also by the active and hearable voice of public opinion. The German Energy Transformation - Energiewende - is a concrete result of such a policy climate change. The most dramatic changes over the last

years happened to affect the nuclear and renewable pieces of the energy cake presented in the Figure 1. The issue of coal has also been heavily disputed, however until now, no significant change has occurred.

Nuclear

Nuclear energy, once considered a resource of the future, alternative for coal, gas and oil, still plays the most important role in terms of energy generation, including France, Germany's biggest neighbor. Globally, it avoids the emission of over two billion tons of carbon dioxide each year.⁵ In Germany, however, it is on its way back and the speed with which it traverses this way should rather be compared to the formula 1 bolide than to a gradual retreat.

The change in optics and as a result in policy making practice came in this case from a civic movement and has a long history. First signs of the anti-nuclear sentiment were observed already in the late 60's, somehow just "by the way" main protest of the 1968 generation and so-called extra-parliamentary opposition (APO) against, among others, dominance of national politics by CDU party. As Hake et al. point out, also the canonic volumes of green literature of the 1970's led to an increase in the level of ecological awareness.⁶ Such awareness soon reappeared in the form of both peaceful and disobedient protests against building of new plants, fueled by new accidents, such as Harrisburg and Three Mile Island ones. And while the policy

⁵ <http://www.world-nuclear.org/focus/climate-change-and-nuclear-energy/nuclear-energy-and-climate-change.aspx>

⁶ As examples they list "Limits to Growth" and "Small is beautiful". See Hake, Fischer, Venghaus, and Weckenbrock 2015, 535.

makers cordially were still seeing nuclear as “a quite dangerous, but absolutely necessary part of Germany energy supply”, the movement had wide socio-political consequences, with a major wing of the Germany Green Party (established in 1980) constituted of anti-nuclear activists.

Much has changed since 1986 after the Chernobyl nuclear disaster. In terms of public opinion, for the first time proponents of the phase-out of nuclear energy constituted a majority.⁷ As a result of this and of unfavorable economic circumstances, mainstream political consensus also broke up (SPD calling for phasing out), and no more new nuclear power plants were planned. After the integration of the West German energy system into the Neue Länder (former East Germany) all but one of the nuclear power plants in the latter were shut down.

The changes accelerated even more as the political scene changed in 1998. After the ruling parties lost the elections, a new coalition, the so-called “red-green”, comprising of the center-left SPD and the Green Party, came into power. One of the points of the coalition agreement was the introduction of a legal act regulating nuclear phase-out (Siefken 2007).

One of the most important government document of that time was “Act for the Orderly Termination of the Use of Nuclear Energy for the Commercial Generation of Electricity” - considered a success for the energy transition supporters. However, the ultimate end of nuclear energy was not set largely to the flexibility of the freshly developed solutions. Nonetheless, the diffusion of new ways of thinking was impossible to stop, especially as the 1968 generation played an even more important role in society.

⁷ Spiegel NN. Mehr SPD-Wähler durch Atom-Ausstieg? Der Spiegel, 1581986, no 351986, cited in Hake et al. 2015

As a result, the government formed in 2005 under Chancellor Merkel of the center-right CDU/CSU and the center-left SPD - grand coalition - from the very beginning aimed to fulfill very ambitious energy sustainability goals (compare with section II b of this paper). However, a nuclear consensus has not been reached.

After new elections a so-called “non-ideological, technology-open and market-oriented energy policy” approach was implemented, and a glimmer of hope shined for the supporters of nuclear. The new government, seeing it rather as a bridging energy resource, retained the 2000 nuclear phase-out conception, yet alternated it: it announced an extension of the previously defined lifetimes for NPPs to ensure security of energy supply (Energiekonzept 2010). Such policy, presented however as a “phase-out of nuclear phase-out” was implemented together with enabling a rise in the spent fuel tax that led to a great opposition, media and social discontent.⁸

Thus the public’s feverish reaction after 2011 Fukushima accident should not appear as too much of a surprise. In one of the German lands, Baden-Wuerttemberg, Mrs Merkel’s ruling party lost to the Green Party. Under such a pressure the decision had been made to close, almost immediately seven oldest reactors, to suspend the lifetime extension to an initial three months, and to conduct stress test on all the used nuclear units, so called nuclear memorandum (Dehmer 2013).

Moreover a new governmental unit was appointed, the ad-hoc Ethics Commission, that however was not composed of experts on the energy policy and nuclear risks (Renn et al. 2016). Its recommendation regarding the nuclear energy was following: the phase-out within ten years,

⁸ Opposition even charged the government “with compromising public safety in exchange for increased revenues.” See Renn et al. 2016.

was later passed in German Parliament.⁹ As The German Energiewende...nicely puts it, the “nuclear conflict” in Germany came to an end as all the mainstream parties and public opinion reached the consensus on this topic (Hake et al.2015).

Renewables

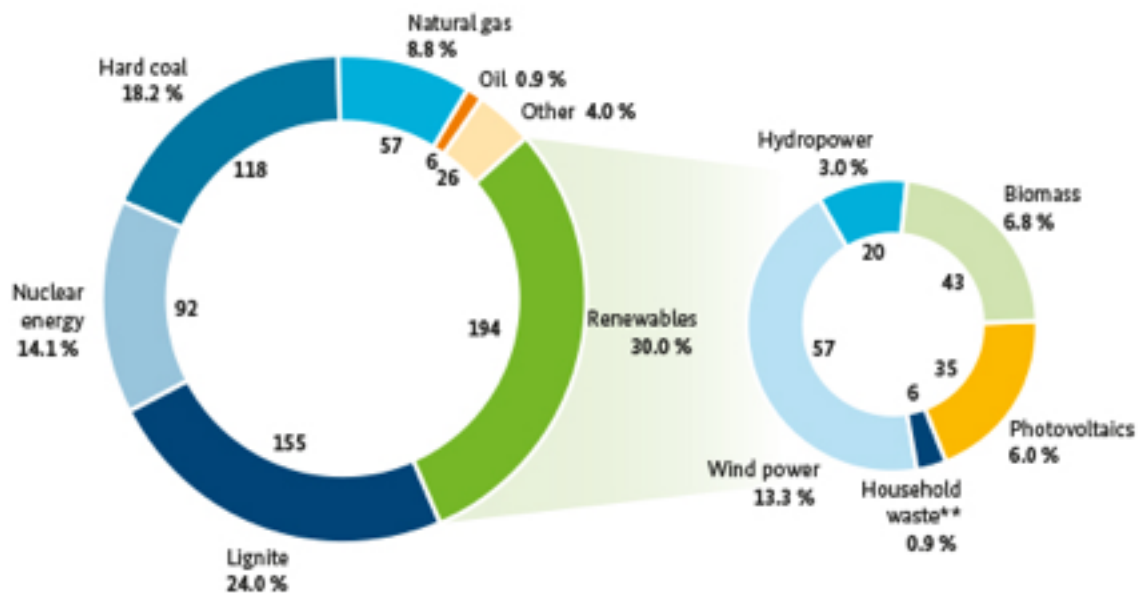


Figure 2. Gross electricity generation in Germany in 2015, Source: Working Group on Energy Balances, status: December 2015, for: <http://www.bmwi.de/EN/Topics/Energy/Renewable-Energy/renewable-energy-at-a-glance.html> accessed on 7/12/2016

First interest in the renewable technology as a supplement to the already established energy sources appeared as a result of global macroeconomic events, including oil shocks and other countries’ research programs, and post-1968 generation demands (von Hirschhausen 2014).

⁹ Despite the deadline of the decommissioning given in the amendment to the German Atomic Act is 2022 (Bundestag 2011).

In 1974, the German Ministry of Research and Technology launched its first program to support individual technologies, PV among others (Hake et al. 2015). Over time different subsidies and tax breaks were introduced; however, generally these decisions were mainly public opinion-driven, and estimates for potential use of renewable energies were expected to reach at most 5% of the general electric power consumption in the year 2000.

With the post-1968 generation playing a more and more important role in the public sphere, and opting for phasing out of the nuclear, together with an increased number of documents reporting the deteriorating condition of the global climate, the German government was forced to look for alternatives. By 1998, all parties stated that a faster development of renewables was desirable (Hake et al. 2015, 536). Among various policies that aimed at integrating the renewables with the grid, the Act on the Supply of Electricity from Renewable Energy Sources into the Grid, or StrEG (Stromeinspeisungsgesetz), passed in 1990 was of the biggest importance. It required energy companies to accept and pay a minimum price for the third-party-generated electricity. If there is a problem with grid stability, the manager can cut off wind or solar parks, but operators receive compensation for that. According to the analysis of Hake et al., although it was not able to trigger a boom in this sector due to the linking of compensation rates to average electricity prices, it still laid the groundwork for the market integration of renewables (2015, 536).

In 1998 the New Coalition in its roadmap to phase out the nuclear power confirmed and underlined the role of the alternative energy sources:

The new government will ensure a future-proof, environmentally friendly and cost-effective energy supply. Renewable energies and energy efficiency have priority [...]. The government believes that the entry into new energy structures will be characterized by growing economic dynamics, which will be further supported by redesigning the energy laws. This includes, in particular, non- discriminatory grid access and the creation and safeguarding of fair market opportunities for renewable domestic energies through a clear legal regime and a fair distribution of the costs of these sustainable energies (SPD, Grüne 1998).

A formal document that replaced StrEg in 2000 was the Act on Granting Priority to Renewable Energy (Renewable Energy Act, EEG). It brought fixed feed-in tariffs (Einspeisevergütung) decoupled from current electricity prices for the alternative energy producers. As a result of favorable conditions not experienced in any other country, German PV and wind energy markets became the largest in Europe (Barroso, Iniesta 2014). Critics worried about how much such a program would cost the average German tax payer, were responded by the Environmental Minister Jürgen Trittin from the Green Party “as much as a scoop of ice cream” (Würzburg, Labandeira and Linares 2013).

The next government - the grand coalition, during which rule the IPCC reports on global results of the climate change gained increased publicity, moved the debate on renewables to the international audience as well. In the pre-Lisbon treaty European Union, chancellor Merkel as the head of German delegation during the German half-year presidency managed to convince the EU-leaders to work out the consensus on this issue. As a result, the 20-20-20 target was set to be achieved by the year 2020. According to the agreement, the EU's greenhouse emissions

should be cut by 20 percent compared to 1990, energy efficiency should increase by 20 percent and the share of renewables in total energy consumption should rise to 20 percent (Rada UE 2007).

However its policy measure in Germany went far beyond the 20-20-20 principles. The introduced Integrated Energy and Climate Program, or IEKP, expected CO₂ emissions to fall to 40 percent, and the share of renewables in electricity generation to increase to 30 percent level (14 percent in case of heat generation). The new measurements put a lots of weight to the energy efficiency principle (IEKP 2007).

2010, when German Energy Strategy, or Energiekonzept was introduced, brought the reversal in harsh course on nuclear extending the lifespan of nuclear reactors, however it did not harm the development of renewables.¹⁰ The plan established new goals: “By 2020, the share of renewables in gross energy consumption should increase to 18 percent and to 60 percent in 2050. By 2020, the share of renewables in gross electricity consumption should rise to 35 percent, to 50 percent in 2030, to 65 percent in 2040 and to 80 percent in 2050” (Hake et al. 2015).

The third grand coalition (in power from 2013) had to reformulate its attitude towards the renewables as their share in the energy mix increased and challenged the assumptions behind the system. As argued by Hake at al., there were significant implications of the success of the policies that were not accounted in the planning phase but grew in importance during the process of implementing the EEG. First, it had to fave the problem of growing prices. Mr. Trittin’s

¹⁰ For an interesting discussion on this topic see for instance: <http://polet.network/blog//germany-realpolitik>

predictions underestimated the real cost of the feed-in-tariff program to the society. Moreover, due to the increased competition, some of the conventional power plants were not able to economically operate any longer. Additionally, civil movements in some places, mainly Eastern Germany were opposing the energy transition on the local level. Further, the power grids, necessary to the distribution of generated power, were not expanding at the pace planned. Also the issue of potential electricity supply shortages due to the uncertain weather was raised by the opponents (CDU, CSU, SPD 2013). As a result, the government decided to reduce the 2025 and 2035 targets (respectively to the 40-45% and 55-60% levels), lower the tariffs and slow down the explosion of renewable capacities (Haas, Lettner, Auer and Duic 2013)

The most recent adjustment to the strategy was voted by the Bundestag in 2014, setting so-called expansion paths for each energy source, introducing “sun tax”, and reforming subsidies for PV-sites and equalization schemes for the energy-intensive industries among others (Haas et al. 2013). The most recent renewables’ division in energy generation in Germany can be seen on the graph nr 2. Nonetheless, the policy instruments were seen as pioneering and exported to other countries wishing their share of renewables to increase.¹¹

¹¹ On the probe of implementation see for instance Lara-Fanego, J.A. Ruiz-Arias, D. Pozo-Vazquez, F.J. Santos-Alamillos, and J. Tovar-Pescador 2011, and on the very good tables summing up the developments of policies towards renewables see Hake et al. 2015.

Coal

Coal, understood as lignite and hard coal has historically played a very important role in the German energy mix. Today it remains the most important source in the electricity generation, and according to the German government public information: “in order to continue providing a reliable energy supply in future, Germany will require ultra-modern and flexible coal-fired power plants”.¹²

German government was one of the first on the world to try to set international standards also in coal’s usage reduction to limit the greenhouse gases (GHG) emissions. In the 1990 the government included obligations of the commission on “Preventive Measures to Protect the Earth's Atmosphere” as part of its official energy and environmental platform (see the Table 1.) and two years later it ratified the United Nations Framework Convention on Climate Change (so called Rio Convention) with a similar focus. These steps were later on followed with the ratification of the Kyoto Protocol as well.

¹² <http://bmwi.de/EN/Topics/Energy/Conventional-energy-sources/coal.html>

	2005	2050
Global emissions	5%	50%
EU emissions	20%	80%
Western industrialized countries with an exceptionally high output	30%	80%

Table 1. UNFCCC Emission reduction goals, Source: generated by P Macholak, based on Hake et al. 2015, 538

These efforts did not stop with new governments, and it was Angela Merkel's first government's greenhouse gas emissions and coal reduction push in 2007 that allowed her to be known as the "climate chancellor". During the 2007 G8 summit in Heiligendamm, she successfully convinced the member states to officially "seriously consider" the reduction of global CO₂-emissions by 50 percent by 2050 (Hake et al. 2015).

Hard coal mining in Germany has been undergoing an intense process of restructuring with steady decreases not only in the support provided for hard coal mining but also in the number of mines and people employed in this sector. In light of this trend, about 90 per cent of the German market's supply of hard coal and hard coal products was imported in 2013.¹³

¹³ <http://bmwi.de/EN/Topics/Energy/Conventional-energy-sources/coal.html>

Lignite with its significant reserves (the largest in the world) and relative low economic cost of exploration per a tonne, never needed government subsidies, and therefore the decision to shut the mains was more difficult to make from the economic standpoint. Because of the high environmental costs of lignite mining changing the landscape and habitats permanently, the big-scale recultivation was introduced.¹⁴ In terms of the official legislation, 2010 Energiekonzept further framed the goals for a low-carbon German economy of tomorrow.

	2020	2030	2040	2050
GHG emissions	40%	55%	70%	80%

Table 2. Planned reduction of the Greenhouse Gas emissions under 2010 Energiekonzept, Source: generated by P Macholak, based on https://www.bundesregierung.de/ContentArchiv/DE/Archiv17/_Anlagen/2012/02/energiekonzept-final.pdf?__blob=publicationFile&v=5

However, the Energiewende brought changes to the situation of coal. Paradoxically, with increased energy production coming from renewables, also the CO₂ emissions increased, and the share of lignite did not fall (DEBRIV 2015) With energy prices dropping the CO₂ intensive-lignite mines were the only ones to keep up with competition, on the contrary to gas or even hard-coal fired power plants. As Renn and Marshall notice, “the more that Germany invested in

¹⁴ Since the operations began, around 176.490 hectares of land in total have been used for lignite mining, approximately 69 per cent of which has already been recultivated. Around 19 per cent of the recultivated area has been reassigned as agricultural land, approximately 30 per cent as forest and woodland areas and around 13 per cent has been made into water areas (<http://bmwi.de/EN/Topics/Energy/Conventional-energy-sources/coal.html>)

the Energiewende (it poured in more than 27 billion Euros in energy subsidies, financed by energy consumers), the more the amount of CO₂ increased” (Renn et al. 2016).

According to the 2015 United Nations Climate Change Conference (referred to as COP) agreement, German government committed to phasing-out nuclear power by 2021, and to reducing the fossil fuel consumption to 20% of the 1990 level by 2050. It reawaken the existing debate of potential non-coal economy, with the promise made by the chancellor to examine the possibility of not using fossil fuel for electricity production after 2050. Gas, the potential intermediary of energy transition, proved to be too expensive when extracted with the current methods. Simultaneously because of the environmental costs there is a strong opposition from the German side not only to extract the shale gas in Germany, but also in other members of the European Union.¹⁵ A significant shift in rhetorics was observed by the proponents of the coal usage, switching the discussion point from the conflict between either coal or delegitimized green energy to the importance of using coal as a new intermediary in the energy transition, as noticed by Renn et al. “located in more distant future” (2016). It is therefore needed to provide enough both economic and political energy security to the German consumers.¹⁶ There is a whole set of interesting problems connected to this rhetorics, starting with the gap between the West and the East Germany, where most of the coal mines play a crucial role for the regional economy

¹⁵ For more on the debate around shale gas in Poland, Austria and Romania, see for example Weijermars 2013.

¹⁶ See for example the debate on Russian pipeline NordStream2 project.

and identity, possible technological alternatives like carbon-sequestration (CSS).¹⁷ However the most often raised is the issue of cost of the economic transition without coal, with current expenses to fill the gap between market price and the guaranteed price of renewable energy production are believed not to be affordable even for Germany in the long-run (Chrischilles and Bardt 2015). However, as proved by a great study by Hohmeyer and Bohm who did not include the heat transportation energy demand, a transition from the present electricity supply system to a 100% renewable energy based system can be achieved (2015). With these precautions in mind, let us now move to the analysis of the demand increase.

DEMAND CHANGE

Why only Syrians

The analysis of all different groups of newcomers, including ones coming from poor, but peaceful countries who recently started arriving to Germany, reveals problematic trends. The numbers coming from particular countries are hardly foreseeable and are very dependent on external variables, for instance current weather conditions enabling traveling to Europe, political will and border control enforcement. Each of the newcomer groups experiences different

¹⁷ For the East vs West split see for example: Morton and Müller 2016, for the CSS discussion, see Lechtenböhmer [and](#) Sascha Samadi 2012.

preferences that may make the modeling of their energy consumption behavior impossible. Thus, to provide a sound and meaningful analysis, the paper focuses on the group of Syrian refugees. They constitute the biggest group of both refugees and asylum-seekers in Germany and because of their shared cultural background, allow for modeling of preferences that avoids ecological fallacy – in other words, there is a smaller risk of them being just some type of an average of very variable individual preferences.

Scale

Civil War in Syria started in 2011 as the government reacted to social changes called the Arab Spring. As a result of this uniquely brutal and bloody conflict, and emergence of new actors like DAESH, the humanitarian situation deteriorated. Since the beginning of the conflict around 11 million Syrians have fled their homes—they moved either within Syria or went abroad. In August 2015, the German government under its chancellor, Mrs. Angela Merkel, took a bold decision to open its doors to newcomers fleeing from war. The government made this decision as a result of large numbers of victims trying to enter the promised land.¹⁸ This decision made by

¹⁸ She did so by stating the famous - wir schaffen das - we can do it, we can afford doing it., and she used this phrase many times after. As a result of the political (within her own party, her Bavarian coalition partner and new political players like a right-wing Alternative für Deutschland) and loss of the public support from public (<https://www.theguardian.com/world/2016/sep/04/mecklenburg-vorpommern-german-anti-immigrant-party-strong-regional-election-exit-polls-merkel>) after lost regional elections for her party in Mecklenburg-Vorpommern Land, and just before another lost ones, this time in regional vote in Berlin, she gave an interview to the financial magazine Wirtschaftswoche. In the article she decided not to use the phrase anymore, she said “this phrase was a little overstated, that too much store was set by it — to the extent that I’d prefer not to repeat it. It’s become a simple slogan, an almost meaningless formula.” more on that: <http://www.politico.eu/article/angela-merkel-drops-the-we-can-do-it-slogan-catchphrase-migration-refugees/>.

the German government effectively overrode the 1990 Dublin Convention that asylum seekers must seek asylum in the first European country they encounter.¹⁹ Such decision created a serious political debate in almost every circle, starting from Mrs. Merkel's very own party, and finishing with populations of other European Union countries.

Regardless of political disputes, more than 450 000 refugees from Syria applied for asylum in Germany up to 2016.²⁰ Up-to-date data on asylum applicants from Syria are shown in the Figure 3 below.

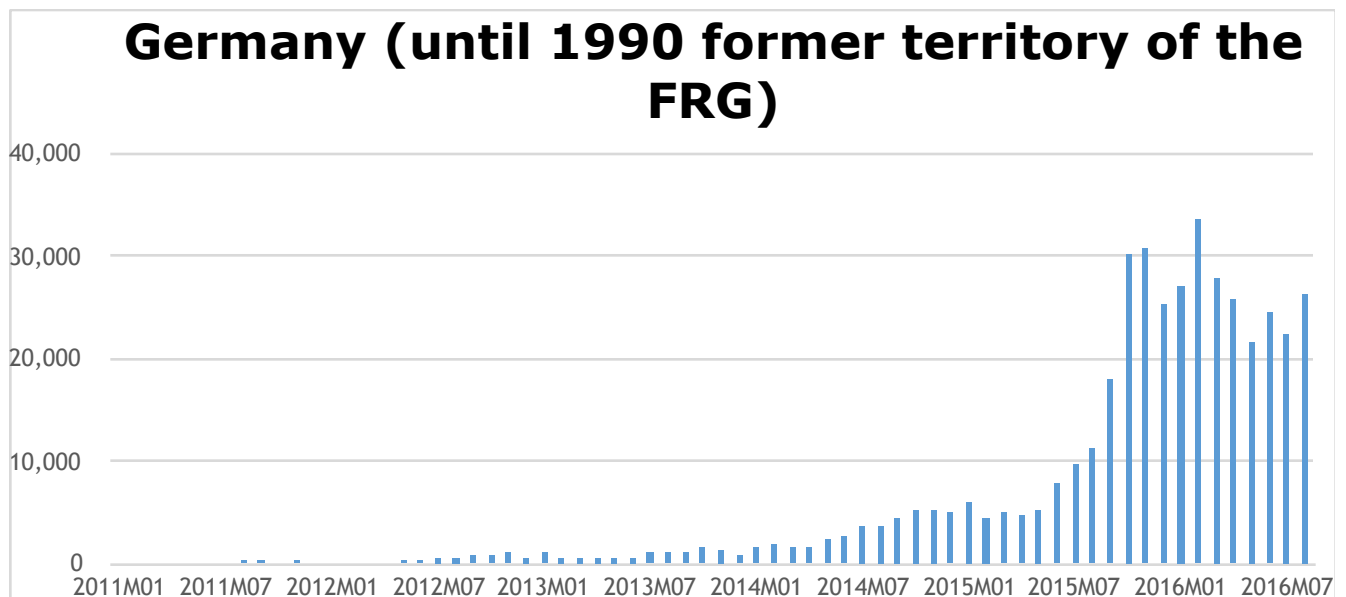


Figure 3. Number of first time asylum applicants by month, Source: generated by P Macholak, using the Eurostat data, <http://ec.europa.eu/eurostat/web/products-datasets/-/tps00189>, accessed on 11/25/2016

¹⁹ <http://syrianrefugees.eu/timeline/> - project of scientists from the Migration Policy Centre from the European University Institute in Florence.

²⁰ <http://syrianrefugees.eu/asylum/>

Based on the data we can clearly see variations in the number of refugees. Seasonal factors clearly impact numbers of refugees. One thing this chart does not show however, is the impact of political events. This leads us to another problem to consider - how are the most recent political highlights going to affect long-term persistence of this migration crisis?

Time Horizon

While many would argue that the unexpected refugee influx proved the European Union's inability to effectively handle crisis management mechanisms.²¹ Many efforts to mitigate this situation have not only been proposed, but also implemented. Another big question is that of the efficiency of these methods, however that is an issue for another paper. In March 2016 Balkan countries decided to close their borders and hence to shut the main refugee route to Northern Europe. In the same month a deal between European Union and Turkey to control border traffic and returning refugees trapped in Greece to Turkey is agreed upon. Results? In May, Frontex, the European Border Control Agency, reported that number of migrants arriving to Greece dropped by 90% from March to April of 2016. Moreover other policies, such as those coming out of Brussels, sought to mitigate the crisis. In July 2016 the European Commission proposed a scheme including a payment of 10,000 euros per a resettled refugee to each member state

²¹ For example Bassam Brandi at the panel hold by the Perry World House on September, 20th 2016, when he stated that "Syrian refugees crisis shows limits of the current EU system, and a new conflict will just prove that something has been rotten, probably even since Iraq."

voluntarily accepting newcomers. There is also an ongoing debate regarding the reform of Frontex.²²

All these policies, especially the Turkey deal have a potential to stabilize the trend observed in Germany of the influx of approximately 25,000 asylum applicants per month, *ceteris paribus*. The Turkish attitude towards refugees is one of the most positive, in spite of already absorbing more refugees than other European countries, approximately 2.7 million Syrian refugees. Additionally the Turkish government provides fewer economic restrictions on refugees when they are looking to be active members of the labor market.²³

How long will this influx remain stable for? Or how long is the Syrian conflict going to last? It is never an easy task to estimate such things especially because we are not fortune tellers, and the complexity of this particular conflict does not help. In fact, this one conflict is comprised of three major sub-conflicts being fought simultaneously between the Assad's regime and 13 major rebel groups: the civil war, the sectarian war and the proxy war.²⁴ A good analysis of available research on civil wars made by Barbara F. Walter does not prove optimistic for the Syrian conflict. On average, a civil war started after 1945 has lasted for about 10 years, and ones with a bigger number of factions tend to last longer.²⁵

²² Cf. <https://www.ft.com/content/7bd81ad4-a02b-11e5-beba-5e33e2b79e46> or <http://eulawanalysis.blogspot.com/2015/12/the-reform-of-frontex-saving-schengen.html>.

²³ Work permits application is available to big numbers of them since January 2016 - <http://syrianrefugees.eu/timeline/>.

²⁴ Depicted greatly by this the Atlantic' graphic: <https://cdn.theatlantic.com/assets/media/img/posts/2015/10/ISISWeb/572e69131.jpg>.

²⁵ Cf. <https://politicalviolenceataglance.org/2013/10/18/the-four-things-we-know-about-how-civil-wars-end-and-what-this-tells-us-about-syria/>.

Usage of energy

In the table below data from the World Bank database about electric power consumption per capita in Syria has been presented. The values for years before the civil war were chosen on purpose, because the war is too much of an external effect that can distort the picture. Using 2006 as a starting date enables us to observe values for the years before and after the recent economic crisis. In calculating the average consumption for the model, the values for the 2010 was not included because it was too much of an outlier, and values for the post-2010 period were not included because they were influenced by the external effects of the ongoing conflict. Therefore the average electric power consumption per capita in Syria between the years 2006-2009 equals to approximately 1577 kWh, which relative to the average German per capita consumption (both over the same period and over the whole presented time horizon: respectively 7112 kWh and 7143 kWh) is a lot less. As a point of reference, the graph of values of the same index for both Syria and Germany is presented below.

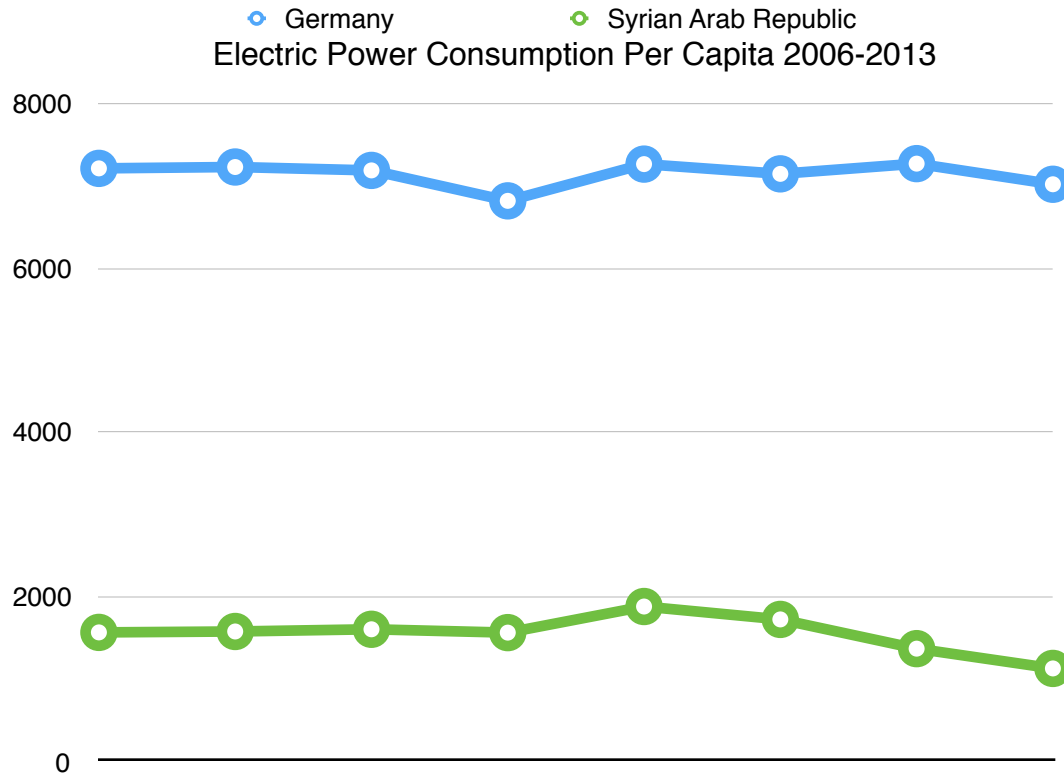


Figure 4. Electric Power Consumption Per Capita from 2006 to 2013, Source: generated by P Macholak, using the World Development Indicators updated on 12/21/2016

While making such comparisons one has to take into account differences in energy needs that shape consumption. According to the data from the World Bank, Germany experiences on average two times lower annual temperature level than Syria. The climate difference can also be seen while analyzing levels of Heating Degree Days in Germany (3,252) and in Syria (1,388).

And although in Syria there is intuitively more days when cooling is needed, they do not make up for the difference.²⁶

Other factors that influence the outlook of the potential energy demand of successful Syrian asylum applicants living in Germany are energy costs and habits. Could the additional demand act as a boost for the German local green energy producers? Electricity prices are compared in the table below, and especially given in what type of restrained economic conditions asylum applicants have to exist in, even with the support of German welfare state, one can question if they would be able to even maintain the energy consumption they had back in Syria, not to mention energy consumption level close to the average German one. The resulting inequality level between Syrians and other inhabitants of Germany may have serious consequences on the effectiveness of integration policies.

	Germany	Syrian Arab Republic
Price of electricity (US cents per kWh):	26.6	11.5

Table 3. Average price of electricity in US cents per kWh, Source: generated by P Macholak, using the Worldbank data: <http://www.doingbusiness.org/data/exploreeconomies/germany/getting-electricity/> and <http://www.doingbusiness.org/data/exploreeconomies/syria/getting-electricity/> accessed on 1/2/2017

²⁶ The comparison of the Cooling Degree Days available at wunderground.com database, accessed on 27/08/2016.

Another question that arises is an issue of potential convergence of energy-related behavior. How much of the type of energy consumption comes from the availability of energy types, and how much is the intrinsic attitude? Comparison of the Renewable energy consumption (% of total final energy consumption) between 2006 and 2012 shows significantly that German consumers rely on the renewable energy more heavily. Does it necessarily mean the Syrian nationals are less environmentally-minded?

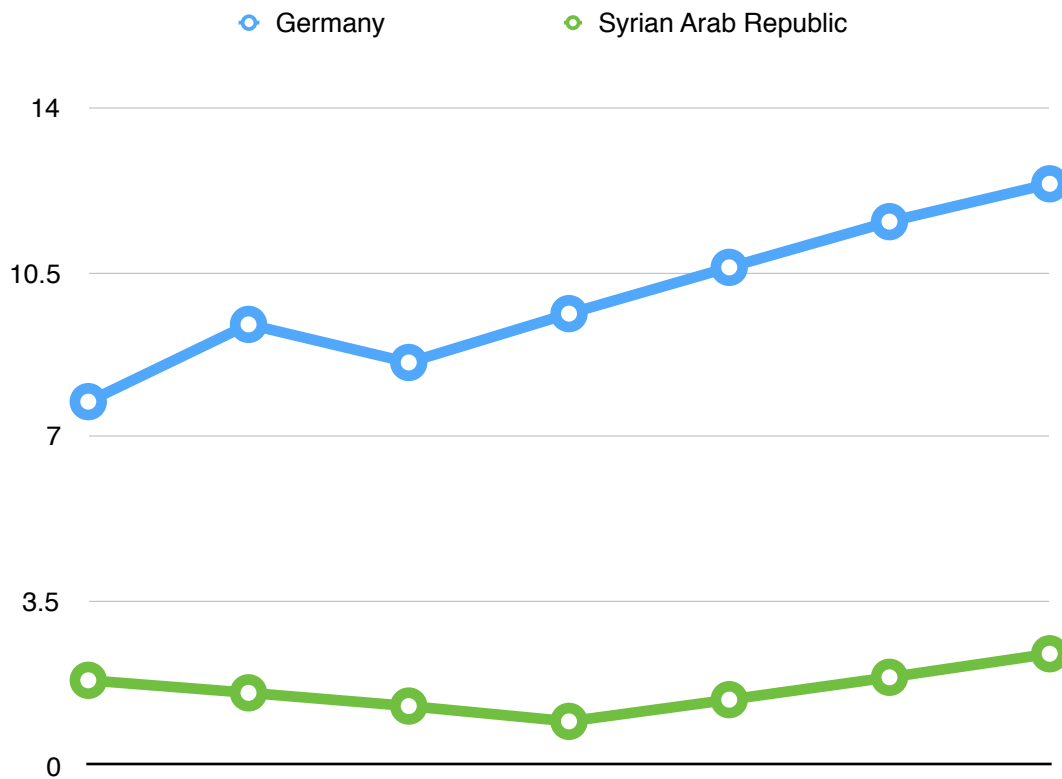


Figure 5. Renewable energy consumption (% of total final energy consumption) from 2006 to 2012, Source: generated by P Macholak, using the World Development Indicators updated on 12/21/2016

When we analyze the per capita CO₂ emissions (Figure 6.) we also find a big disparity between data for Syria and Germany, however in this aspect Syrian Arab Republic citizens represent more pro-environmental orientation, which could suggest a lot in this matter depends on the type of economy and energy sources available. The question of a potential convergence of Syrian with asylum living in Germany in respect to their energy consumption habits should be raised in the public debate as well.

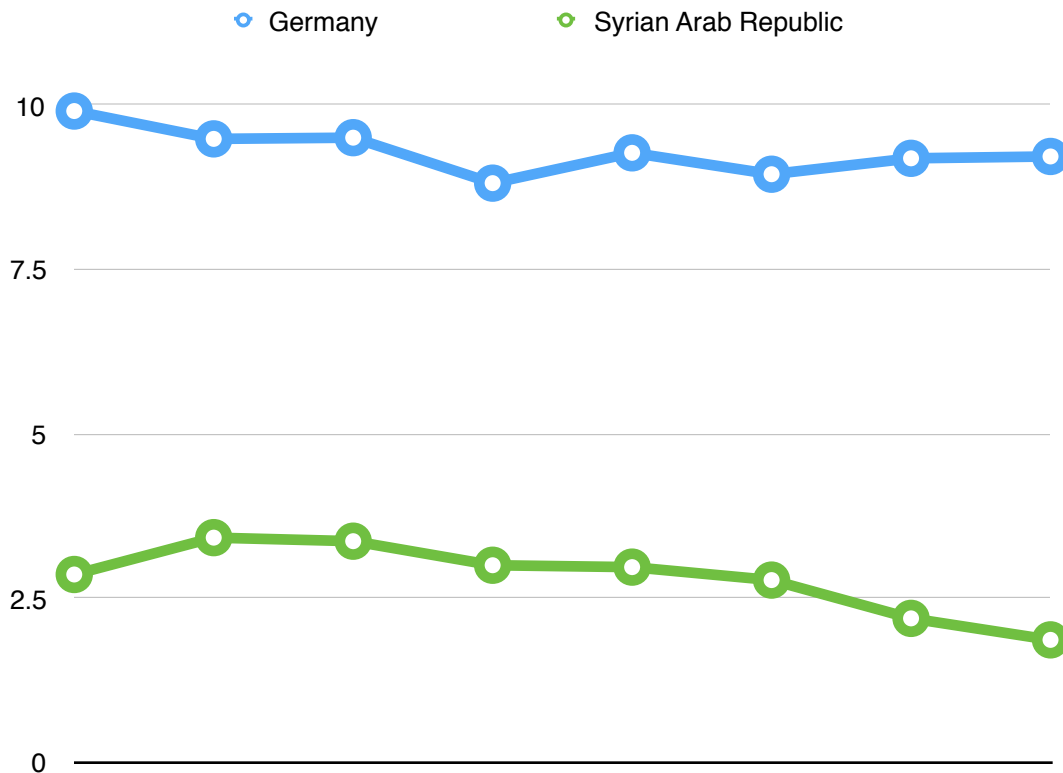


Figure 6. CO₂ emissions in metric tons per capita from 2006 to 2013, Source: generated by P Macholak, using the World Development Indicators updated on 12/21/2016

DISCUSSION

Energiewende, the project essential for many Germans and German politicians, is influenced by the whole lot of factors and external effects. The recent refugees crisis challenges it as well, providing an opportunity to evaluate current responses of the German political system and questions its future development. Up to now understanding what Energiewende means has been limited to establishing two big constraints on the energy supplies: phasing out nuclear and limiting the use of coal-based energy sources, while promoting expansion of the renewable energy. Some authors heavily criticize this way of delivering the energy transition project with the main arguments against it being too much of the inward-looking energy reforms without willingness to harmonize support schemes and energy systems working in other countries, also involving more coal and nuclear power, and the massive focus on just one “technology family” that excludes carbon capture and storage (CSS) method and fracking the shale gas, among others.²⁷

While the Syrian asylum applicants do not constitute as much of the energy demand as the publicity of the refugees issue would suggest, they still enable us to draw some valuable conclusions. The analysis of their impact shows that while Syrians have different energy consumption behavior types than the Germans do, these different energy consumption behaviors seem to be more strongly dependent on the type of the design of the existing energy market rather than on some intrinsic preferences. This would suggest that there exists a potential for the

²⁷ See for example Schmid, Knopf, and Anna Pechan 2015.

convergence of energy needs experienced by the Syrian refugees in Germany, however this convergence will be dependent on the access to the energy-efficient and renewable-based energy supply provided by the welfare state-like type of support.

Moreover, while its scale is still limited, a constant and significant flow of the Syrian refugees influencing the German energy needs should be expected. While the issue of inequality connected to German consumers has already been raised with the argument that the initially poorer households who cannot afford renewable infrastructure anyway, have to pay for the guaranteed prices for the producers of this energy type, this inequality has not been considered yet on the basis of the refugees/natives split.²⁸ Such inequality has also been recognized in spatial terms with the nostalgia for the “golden age” of coal and connected to it opportunities has been widely experienced in the former German Democratic Republic what could matter even more depending on the long-term plans of the successful asylum applicants settlement. As pointed out by Hake et al.:

“only radical incidents or developments may lead to deviations from a pursued political path. With respect to the Energiewende, two conceivable developments might initiate such a shift: (a) the energy transition fails technologically (e.g., a sustained major blackout occurs that must plausibly be ascribed to the immaturity of renewables), or (b) the energy transition fails socio-economically (e.g., a sustained, significant increase in energy or, especially, electricity prices leads to considerable social unrest or endangers the economic competitiveness of the Germany industry)” (2015).

²⁸ See for instance Renn et al. 2016.

Thus, to avoid such a shift, current Energiewende experiences showed limited implementation of the coal-based energy reduction. Because of the increase in the demand on energy per se as a result of the incoming refugees and a need to keep the prices affordable to constrain “socio-economical incident” hampering German energy transition, the coal usage in the German energy mix should not be expected to fall.

LIMITATIONS OF THE STUDY

This analysis naturally has its limitations. Out of over a million refugees entering Germany in 2015, Syrians made up almost 40 % of them. Despite being the biggest group, their energy needs are only a fraction of the over 80-million country in the Central Europe. Moreover focus on the asylum seekers, while useful from the methodological point of view, reveals problematic questions in the world facing the biggest displaced population ever. According to the the Federal Office for Migration and Refugees (BAMF) there are various types of delays with filling asylum application and therefore there is more people already residing in Germany than the asylum applicants, including undocumented migrants.²⁹ They also together with temporarily provided shelters add to the demand on German energy. Moreover every conflict has its specificity and seems impossible for even the best study to accurately estimate the duration of the future ones. Syrian conflict with its whole complexity may yet turn many times and it seems impossible not to make any *ceteris paribus* assumption regarding viable for now yet questionable

²⁹ <http://www.bmi.bund.de/SharedDocs/Kurzmeldungen/EN/2015/08/new-asylum-forecasting-submitted.html>

in the future maintaining current political deal with Turkey and Germany's attitude towards newcomers in the light of the 2017 elections. However, as said these conditions may change and it will alternate the scale of the refugees influx to Germany and therefore the increase in the demand on the energy.

References:

- Asylum And First Time Asylum Applicants - Monthly Data (Rounded) - Eurostat". 2016. *Ec.Europa.Eu*. Accessed November 25. <http://ec.europa.eu/eurostat/web/products-datasets/-/tps00189>.
- Barroso, Manuel Monjas and José Balibrea Iniesta. 2014. "A Valuation Of Wind Power Projects In Germany Using Real Regulatory Options". *Energy* 77: 422-433. doi:10.1016/j.energy.2014.09.027.
- Bundesgesetzblatt. 2011. Dreizehntes Gesetz Zur Änderung Des Atomgesetzes Vom 31. Juli 2011. Bonn.
- Bundesministerium für Wirtschaft und Technologie, Bundesministerium für Wirtschaft, Naturschutz und Reaktorsicherheit. 2007. Bericht Zur Umsetzung Der In Der Kabinettsklausur Am 23./24.08.2007 In Meseberg Beschlossenen Eckpunkte Für Ein Integriertes Energie- Und Klimaprogramm.
- Bundesregierung. 2010. Energiekonzept Für Eine Umweltschonende, Zuverlässige Und Bezahlbare Energieversorgung.
- Bundesverband Braunkohle. 2015. Braunkohle In Deutschland 2015. Profil Eines Industriezweiges.
- CDU, CSU und SPD. 2013. Deutschlands Zukunft Gestalten Koalitionsvertrag Zwischen CDU, CSU Und SPD 18. Legislaturperiode.
- Cherp, Aleh. 2016. "Realpolitik Is Not Always A Mess: More On Coal, Nuclear, And Renewables In Germany". *POLET.Network*. <http://polet.network/blog//germany-realpolitik>.
- Chrischilles, Esther and Hubertus Bardt. 2015. *Ein Strommarkt Für Die Energiewende – Leitlinien Für Die Zukunft?*. Ebook. 1st ed. <http://www.iwkoeln.de/studien/iw-reports/beitrag/hubertus-bardt-esther-chrischilles-ein-strommarkt-fuer-die-energiewende-240493>
- Dehmer, Dagmar. 2013. "The German Energiewende: The First Year". *The Electricity Journal* 26 (1): 71-78. doi:10.1016/j.tej.2012.12.001.
- Die Sozialdemokratische Partei Deutschlands und BÜNDNIS 90/DIE GRÜNEN. 1998. Aufbruch Und Erneuerung – Deutschlands Weg Ins 21. Jahrhundert. Koalitionsvereinbarung Zwischen Der Sozialdemokratischen Partei Deutschlands Und BÜNDNIS 90/DIE GRÜNEN. Bonn.
- Federal Ministry for Economic Affairs and Energy, Department 'Oeffentlichkeitsarbeit'. 2017. "Bmwi - Federal Ministry For Economic Affairs And Energy - Coal". *Bmwi.De*. <http://bmwi.de/EN/Topics/Energy/Conventional-energy-sources/coal.html>.
- Federal Ministry for Economic Affairs and Energy, Department 'Oeffentlichkeitsarbeit'. 2016. "Bmwi - Federal Ministry For Economic Affairs And Energy - Renewable Energy At A Glance". *Bmwi.De*. Accessed July 12. <http://www.bmwi.de/EN/Topics/Energy/Renewable-Energy/renewable-energy-at-a-glance.html>.
- Federal Ministry for Economic Affairs and Energy, Department 'Oeffentlichkeitsarbeit'. 2016. "Primary Energy Consumption In Germany 2015". *Bmwi.De*. Accessed July 12. <http://www.bmwi.de/EN/Topics/Energy/conventional-energy-sources,did=679724.html>.

- Foy, Henry and Duncan Robinson. 2015. "Frontex Chief Welcomes Plan For More Powerful EU Border Force". *Ft.Com*. <https://www.ft.com/content/7bd81ad4-a02b-11e5-beba-5e33e2b79e46>.
- Francis, Pope. 2015. *Laudato Si*. 1st ed. Our Sunday Visitor.
- "Getting Electricity In Germany - Doing Business - World Bank Group". 2016. *Doingbusiness.Org*. <http://www.doingbusiness.org/data/exploreeconomies/germany/getting-electricity/>.
- "Getting Electricity In Syrian Arab Republic - Doing Business - World Bank Group". 2016. *Doingbusiness.Org*. <http://www.doingbusiness.org/data/exploreeconomies/syria/getting-electricity/>.
- Gilsinan, Kathy. 2015. "The Confused Person's Guide To The Syrian Civil War". *The Atlantic*. <http://www.theatlantic.com/international/archive/2015/10/syrian-civil-war-guide-isis/410746/>.
- Haas, Reinhard, Georg Lettner, Hans Auer, and Neven Duic. 2013. "The Looming Revolution: How Photovoltaics Will Change Electricity Markets In Europe Fundamentally". *Energy* 57: 38-43. doi:10.1016/j.energy.2013.04.034.
- Hake, Jürgen-Friedrich, Wolfgang Fischer, Sandra Venghaus, and Christoph Weckenbrock. 2015. "The German Energiewende – History And Status Quo". *Energy* 92: 532-546. doi:10.1016/j.energy.2015.04.027.
- Hohmeyer, Olav H. and Sönke Bohm. 2014. "Trends Toward 100% Renewable Electricity Supply In Germany And Europe: A Paradigm Shift In Energy Policies". *Wiley Interdisciplinary Reviews: Energy And Environment* 4 (1): 74-97. doi:10.1002/wene.128.
- Kaźmierczyk, Jerzy. 2007. "Demograficzne aspekty podaźowej strony rynku pracy w Polsce w latach 1990-2004". *Debiuty Ekonomiczne* 5: 21-40.
- Lara-Fanego, V., J.A. Ruiz-Arias, D. Pozo-Vázquez, F.J. Santos-Alamillos, and J. Tovar-Pescador. 2012. "Evaluation Of The WRF Model Solar Irradiance Forecasts In Andalusia (Southern Spain)". *Solar Energy* 86 (8): 2200-2217. doi:10.1016/j.solener.2011.02.014.
- Lechtenböhmer, Stefan and Sascha Samadi. 2013. "Blown By The Wind. Replacing Nuclear Power In German Electricity Generation". *Environmental Science & Policy* 25: 234-241. doi:10.1016/j.envsci.2012.09.003.
- Livingstone, Emmet, Janosch Delcker, and Cynthia Kroet. 2016. "Angela Merkel Drops The 'We Can Do It' Slogan". *POLITICO*. <http://www.politico.eu/article/angela-merkel-drops-the-we-can-do-it-slogan-catchphrase-migration-refugees/>.
- Morton, Tom and Katja Müller. 2016. "Lusatia And The Coal Conundrum: The Lived Experience Of The German Energiewende". *Energy Policy* 99: 277-287. doi:10.1016/j.enpol.2016.05.024.
- "Number Of Asylum Applicants Expected To Exceed All-Time Record". 2015. *Bundesministerium Des Innern*. <http://www.bmi.bund.de/SharedDocs/Kurzmeldungen/EN/2015/08/new-asylum-forecasting-submitted.html>.
- "Oh, Boy". 2016. *The Economist*. <http://www.economist.com/news/europe/21688422-are-lopsided-migrant-sex-ratios-giving-europe-man-problem-oh-boy>.

Oltermann, Philip. 2016. "Angela Merkel's Party Beaten By Rightwing Populists In German Elections". *The Guardian*. <https://www.theguardian.com/world/2016/sep/04/mecklenburg-vorpommern-german-anti-immigrant-party-strong-regional-election-exit-polls-merkel>.

Organization for the European Cooperation and Development. 2015. "Is this humanitarian migration crisis different?" *Migration Policy Debates*. No 7.

Peers, Steve, Steve Peers, and View profile. 2015. "The Reform Of Frontex: Saving Schengen At Refugees' Expense?". *Eulawanalysis.Blogspot.Com*. <http://eulawanalysis.blogspot.com/2015/12/the-reform-of-frontex-saving-schengen.html>.

Rada Unii Europejskiej. 2007. *Konkluzje Prezydencji*. Brussels.

Renn, Ortwin and Jonathan Paul Marshall. 2016. "Coal, Nuclear And Renewable Energy Policies In Germany: From The 1950S To The "Energiewende"". *Energy Policy* 99: 224-232. doi:10.1016/j.enpol.2016.05.004.

Schmid, Eva, Brigitte Knopf, and Anna Pechan. 2016. "Putting An Energy System Transformation Into Practice: The Case Of The German Energiewende". *Energy Research & Social Science* 11: 263-275. doi:10.1016/j.erss.2015.11.002.

Siefken, Sven T. 2007. *Expertenkommissionen Im Politischen Prozess*. 1st ed. Wiesbaden: VS, Verl. für Sozialwissenschaften.

"The Four Things We Know About How Civil Wars End (And What This Tells Us About Syria)". 2013. *Political Violence At A Glance*. <https://politicalviolenceataglance.org/2013/10/18/the-four-things-we-know-about-how-civil-wars-end-and-what-this-tells-us-about-syria/>.

"Timeline | Syrian Refugees". 2017. *Syrianrefugees.Eu*. <http://syrianrefugees.eu/timeline/>.

von Hirschhausen, Christian. 2014. "The German EnergiewendeAn Introduction". *Economics Of Energy & Environmental Policy* 3 (2). doi:10.5547/2160-5890.3.2.chir.

Weijermars, Ruud. 2013. "Economic Appraisal Of Shale Gas Plays In Continental Europe". *Applied Energy* 106: 100-115. doi:10.1016/j.apenergy.2013.01.025.

"World Development Indicators | Data". 2016. *Data.Worldbank.Org*. Accessed December 21. <http://data.worldbank.org/data-catalog/world-development-indicators>.

"World Nuclear Association - World Nuclear Association". 2016. *World-Nuclear.Org*. <http://www.world-nuclear.org/focus/climate-change-and-nuclear-energy/nuclear-energy-and-climate-change.aspx>.

"Wundeground.Com". 2017. *Wundeground.Com*. <http://wundeground.com>.

Würzburg, Klaas, Xavier Labandeira, and Pedro Linares. 2013. "Renewable Generation And Electricity Prices: Taking Stock And New Evidence For Germany And Austria". *Energy Economics* 40: 159-171. doi:10.1016/j.eneco.2013.09.011.