



C.E.S.D.

CENTER FOR
ENERGY AND SUSTAINABLE DEVELOPMENT

Graduate Student Conference on
ENERGY AND
SUSTAINABLE DEVELOPMENT



Date: 4 May 2018, Friday

Location: Kadir Has University Cibali Campus, Galata Hall

PROGRAM & ABSTRACTS

**GRADUATE STUDENT CONFERENCE ON
ENERGY AND SUSTAINABLE DEVELOPMENT**

4 May 2018

Kadir Has University Cibali Campus, Istanbul

PROGRAM & ABSTRACTS

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PROGRAM

- 09:00-10:15 Registration***
- 10:15-10:45 Opening Session**
Elif Güney, Conference Chairwoman
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Prof. Dr. Volkan Ş. Ediger, Director, CESD, Kadir Has University
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- Session I Green and Sustainable Energy**
Moderators and Discussants
Dr. Arif Künar, Venesco
Dr. Uygur Özesmi, Good4Trust.org
- 10:45-11:05 Inequality in Carbon Intensity in EU-28: An Analysis Based on Club Convergence
Fırat Emir, Eastern Mediterranean University
- 11:05-11:25 Conceptual Frameworks of Kyoto Protocol and Paris Agreement: Critical Theory and Neo-Liberalism
Melike Eken, Kadir Has University
- 11:25-11:45 Green Rentierism: A Comparative Study on Tunisia and Morocco
Mücahid Aykut, Kadir Has University
- 11:45-12:05 Transition Management in Turkey: A Policy Framework Analysis
Samed Şahin, Boğaziçi University
- 12:05-12:25 Solar Energy in Turkey
Mesut Can Yılmaz, Kadir Has University
- 12:25-12:45 Blue Energy Storage: Gravity Power Modules
Musa Enes Uslu, Kadir Has University
- 12:45-13:00 Discussions
- 13:00-14:00 Lunch**
- Session II Energy Markets and Regulations**
Moderators and Discussants
Assoc. Prof. Dr. Ahmet Yücekaya, Kadir Has University
Dr. Okan Yardımcı, Energy Market Regulatory Authority (EMRA)
- 14:00-14:20 Seeking for the Ideal Feed-in Tariff Design for Photovoltaic Investments in Turkey
Duygu Kural, Hacettepe University
- 14:20-14:40 Decentralization and Blockchain: Opportunities for Turkey
Burak Şuşoğlu, Kadir Has University

* Coffee, tea, and light breakfast will be served during registration.

**Lunch will be served

- 14:40-15:00 The Potential Effects of U.S. Shale Gas Revolution on Russia's Natural Gas Market
Gözde Karagöz, Kadir Has University
- 15:00-15:20 European Energy Union: A Further Step Ahead or Reorganization?
Büşra Zeynep Özdemir, Yıldırım Beyazıt University
- 15:20-15:40 Discussions
- 15:40-16:15 Coffee Break & Networking
- Session III Energy Policy, Security and Geopolitics**
Moderators and Discussants
Asst. Prof. Dr. H. Akın Ünver, Kadir Has University
Dr. Volkan Özdemir, Energy Markets and Policies Institute (EPPEN)
- 16:15-16:35 How Energy Aspect Shapes the Bilateral Relations Between Russia and the EU
Cansu Tokar, Middle East Technical University
- 16:35-16:55 Energy Security of BRIC Countries
Nehir Gündüz, Kadir Has University
- 16:55-17:15 Energy Security in East Asia: The Chinese, Japanese and South Korean Cases
Batuhan Kurtaran, Middle East Technical University
- 17:15-17:35 Importance of LNG in Turkish Natural Gas Supply Security
Mehmet Batuhan Alkan, Kadir Has University
- 17:35-17:55 Discussions
- 17:55-18:15 Closing Remarks**
Prof. Dr. Volkan Ş. Ediger, Director, CESD, Kadir Has University
Assoc.Prof.Dr. Gökhan Kirkil, Deputy Director, CESD, Kadir Has University

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Inequality in carbon intensity in EU-28: An analysis based on club convergence

Firat Emir^a

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ABSTRACT

The effect of anthropogenic greenhouse gasses on global warming and environmental degradation started to being considered over the last few decades. With this, the awareness on environmental degradation has considerably increasing importance compared to the past decades. Greenhouse gas emissions especially carbon dioxide emissions (CO₂) are considered as the main source of global environmental degradation as well as global warming. A solution for global warming and environmental degradation entails reducing anthropogenic greenhouse gasses, and increasing energy efficiency. As a result of this, environmental scientists, policy makers and scientific bodies try to design international common policies in order to mitigate environmental degradation and global warming. The importance of these common policies were emphasized by signing the Kyoto Protocol in 1997 and consecutively Copenhagen Agreement in 2010, Durban Agreement in 2011, Warsaw Agreement in 2013 and Paris Agreement in 2015. These common international agreements were signed towards accomplishing a reduction in the global greenhouse gasses and increasing the energy efficiency by reducing the energy intensity.

The European Union (EU) as a whole is one of the most greenhouse gas emitting countries and one of the biggest energy consumers in the world. Hence, EU policy makers account energy efficiency and climate change policies as the cornerstones for sustainable economic development and economic growth. Thereby, European Union set inclusionary targets for

reducing greenhouse gasses and environmental degradation associated with increasing energy efficiency and the use of renewable energy sources to be accomplished by the year 2020, 2030 and 2050. Although the European Union pressures each member countries to implement energy and carbon reducing policies through an umbrella of common policies, the reflection on each country is quite different. North – South division within member countries, income inequality and the difference in Gross Domestic Product (GDP), economic structure and the level of energy efficiency reveal a heterogeneous picture for member countries in case of the sources of environmental degradation and global warming. Therefore, understanding the concept of energy efficiency, greenhouse gas emissions and other characteristics with regards to the convergence or divergence pattern and their evaluation within European union member countries are fundamental for effective policy design. Furthermore, within the current situation of global integration and asymmetric reduction in greenhouse emissions among economies should be the main point of consideration. Concordantly, a various number of studies have analyzed the sources of GHG emissions, the effects of industrialization on several environmental indicators, as well as tried to forecast carbon dioxide emissions; attention has been given to the examination of cross-region or cross-country convergence or divergence in carbon dioxide emissions by using different methods. On the other hand, several studies have tried to investigate the inequality in carbon dioxide emissions across the countries.

In this study, 28 European Union member countries' carbon intensity convergence process has been analyzed from 1990 to 2016. This work tries to investigate whether the member countries of EU-28 region share common convergence path in case of carbon intensity. In this regard, Philips and Sul (2007) approach is used to test the existence of clusters within the region. Opposite to previous studies, the results suggest that the region as a whole, does not present a common convergence pattern regarding carbon intensity of EU-28. However, the outcomes suggest the formation of various

convergence clubs within the given time span. In detail, when the countries are divided as EU-15 and EU-new member countries and analyzed due to their performances, there seems to be different convergence clubs that converge to separate steady state points. It is very interesting that, neither in EU-28 as a whole nor in EU-15 countries, the evidence of transitioning among the convergence clubs is found between EU-new member countries. This transitioning pattern reveals either converging of two or more clubs in the long term or country switching from one club to another.

Conceptual framework of Kyoto Protocol and Paris Agreement: Critical theory and neo-liberalism

Melike Eken^a

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ABSTRACT

The world energy consumption which is mostly generated by fossil fuels causes to increase the carbon emission into the atmosphere. This growing number of the emissions lead to a new and an urgent problem of the world called as “climate change”. Such that the climate is warmer than the past decades and this change triggers many dangerous environmental impacts in the future. Many countries are applying necessary state-based climate change policies such as having regulations about energy-intensity matters and market-based instruments like carbon pricing. They also support innovations in low-carbon sustainable technologies. But greenhouse gas emissions to the atmosphere have increased rapidly and continue to extend its dangerous scope in the environment precisely.

Climate change policies can be managed effectively if all government authorities lead significant misalignments with low-carbon transition methods included in their private portfolios. Indeed, the climate change policies acquire new approaches beyond the national level. The main reason for that is this problem exceeds the borderlines within the context of its causal and effect relationship. The climate change as one of the environmental issues is needed to be negotiated with international cooperation substantially. Because better alignment of policies across countries may trigger the increase of effectiveness in practice rather than concerns about potential failures of competition. Global agreements on greenhouse gas reductions create a glimmer of hope for efforts in this direction. Initially, Kyoto Protocol (1997) has implied to a

beginning of new initiatives and partnerships about the climate change policy and led up all major carbon emitters to the negotiation, but the negotiators could not reach a successful conclusion at all. In the upcoming years, there were several bargaining and negotiations processes that had been taken place frequently. Hence the Paris Climate Agreement (PA) which was established in 2015 considered as a punchline in the climate change governance. In this paper, it will be evaluated that conceptual analysis framework of Kyoto Protocol with the concept of ‘hegemony’ of Gramsci and essentially with its further interpretation made by Robert Cox called as ‘critical theory’ which enables to understand the Kyoto Protocol and its conclusions. Furthermore, the new international community’s mitigation step called the Paris Agreement discussed with neo-liberalism which facilitates dynamics of bargaining process within the Paris Agreement respectively.

In the Kyoto Protocol and afterward, hegemonic powers showed their hesitations to apply their commitments, and the protocol practically failed. Internalizing state of “hegemony” in the failure of the Kyoto Protocol is essential to evaluate the hegemonic powers which acted conservatively to this issue because of economic concerns at that time, the other actors who were intended to commit the protocol had lost their motivation in conclusion. Realist concerns about the energy and financial security on market gains had been blocked off the mitigation route. So, the climate change policy could not have emancipated from

national interests to common supranational problem in world politics at that time.

In climate change policy, neoliberalism enables to understand dynamics of pathways from Kyoto Protocol to the PA precisely. Energy politics and energy resource management have become dominantly under the authority of governments, but the global energy market dynamics have been going through changes as well. As seen in Kyoto, even the climate change was an urgent problem in the century; the states had inclined to preserve its interests which referred to their hegemony in the world economy. But in process between the Kyoto and Paris, several dynamics in the world affairs and states' approach have been shaped with

implications of neo-liberalism. The Paris Agreement thus marks a turning point from common distributive bargaining strategies. Scientifically proven environmental damage of the climate change triggers the states to step forward to observe route of this phenomenon respectively. Currently, the states are inclined to found different international institutions to manage and observe market dynamics in energy and environmental issues. Indeed, these institutions which analyze greenhouse gas emissions reduction statistics which catalyze the observation of state's market regulations served as a favor of their 'mutual gain' intentions in the market.

Green rentierism: A comparative study on Tunisia and Morocco

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^a *Social Sciences Institute, International Relations Program, Kadir Has University, Istanbul, Turkey*

ABSTRACT

In recent years, we have been witnessing to essential steps to transition to renewable energy sources. With the increasing oil prices and increasing consciousness towards to renewable green energies, many countries have invested in this sector and tried to decrease their oil dependence. Although general idea is renewable energy and energy diversification led to well-functioning, healthy and accountable economy, I argue that some countries may face troubles due to their peculiarities. When considered from this point of view, one of the most interesting regions is the Middle East and North Africa (MENA). Just as the region has its conditions, each country also has her peculiarity.

The rentier state theory significantly contributes to the interpretation of complicated politics of the MENA. It refers to increasing oil wealth since 1970, reshaped the region and demonstrates new economic, political and social aspects of the oil-rich countries. The rentier state concept attributed negative meaning, explains domestic regime stability while emphasizing authoritarianism, at the same time dealing with

development problems. Although rentier state theory using for oil-rich countries and identified with oil, the concept also has broader explanatory in other types of rents.

The primary purpose of this study is to analyze rentier state theory in non-oil rich but the transition to renewable energy sources countries in the MENA, in other term green rentierism. For this purpose, I selected two similar profile countries, but one good example of the transition to renewable energy as Tunisia and one failed example as Morocco. Firstly, I will define rentier state theory and explain types of rents other than oil. Then, I will present its characteristics and implications. Later, I will compare and contrast Morocco and Tunisia to understand why both countries are in a transition to renewable energies, but Morocco is an example for green rentierism, on the other hand, Tunisia is not. In this regard, I also discuss the roles of the Washington Consensus and post-Washington Consensus in two countries and how they affect these countries economic liberalization process within the renewable energy context.

Transition management in Turkey: A policy framework analysis

Samed Şahin^a

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ABSTRACT

Energy is life. The fact that it is essential for all human activities makes it extremely necessary for the continuity and well-being of the society. Moreover, what makes it valuable is not only its essentiality but also its finiteness. Thus, human beings started to look for ways to use it more efficiently which resulted in the discovery of renewable energy resources. However, it was not the end of the debate, because how to utilize it remained as an unanswered question. Last two decades have witnessed the rapid growth of literature of sustainability transitions to generate answers to the questions of distribution, utilization and the governance of renewable energy. In this work, the question that I try to answer is: Why Turkey cannot make a successful energy transition management even though there are several investments in the renewable energy sector? I argue that the policy framework has a linear characteristic that lacks enough multi-dimensionality in the National Renewable Action Plan (NRAP) introduced by the Ministry of Energy and Natural Resources.

In this work, NRAP will be evaluated in the sense of transition management approach. Transition management, one of the four main approaches of sustainability studies, established as an approach that is based on the goal of understanding and improving the politics and come up with prescriptive policy frameworks to maintain better sustainability transformation in different levels of the society. In their prominent work, Jan Rotmans and his friends (2001) describe transition management as a process-oriented approach that “balances coherence with uncertainty and complexity.” According to them, transition management can be defined by four main elements which are; long-term thinking to

generate short-term policies; the multiplicity of domains, actors, and scale levels; “learning-by-doing and doing-by-learning”; and lastly, a wide variety of options. Given these characteristics, the state should have a leading role to encourage and inspire the other actors rather than behaving as a unitary and centralized body. Also, the authors emphasize social development aspect of transition management rather than a mere technological advancement which will be carried out through its multi-actor nature that necessitates cooperation between state and subnational actors.

Although extant attempts covered long distances in sustainable energy, Turkish market has significant obstacles to be eluded that are impeding transition in the energy sector. World Bank describes that the Turkish market suffers from four main barriers on energy efficiency services and investments: 1) bank and market actors have lack of knowledge; 2) transaction costs are high; 3) institutional capability is insufficient to generate, arrange, and carry out credible energy efficiency projects; and lastly 4) there is lack of experimented and locally applicable business models for energy efficiency services and economic financing. Considering above negativities, I argue that energy transition process is not purely successful in Turkey because of another problem: linear policy framework.

The concept of linearity stands for three characteristics that are problematized, or lacking, in NRAP. Firstly, the fundamental logic behind the policy framework lacks emphasis on environmental concerns which supposed to be one of the driving forces of sustainability policies

together with the energy economy. In this sense, NRAP strongly focuses on energy market sustainability rather than environmental sustainability. Secondly, NRAP is a weak document about the bottom-up transition. In other words, the social aspect of the document is in unsatisfactory levels that do not include all social stratum to conduct a fundamental change in the system. Lastly, NRAP covers a 10-year period which is notably short for a complete energy transition. Transition management approach requires 30-years long planning, at least, to realize a full-fledged innovation in energy production. In short, top-down and rapid

transition management for societal change would not be the most appropriate way to be applied because the transition is governed by diffusion of policy-learning among the societal actors.

One of the landmarks in sustainable energy policies, Fourth Dutch National Environmental Policy Plan (NMP4) introduced by the Dutch government in 2001, will be represented as an example of successful transition management to generate useful ideas for the future Turkish energy. At the end of the paper, a rigid policy framework will be proposed in the light of the feedbacks obtained from the analysis of NRAP.

Solar energy in Turkey

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ABSTRACT

Energy technologies have been changing over the years, yet the necessity of energy remains the same. The world is in a transition period, the transition from fossils to alternatives. Renewable energy has become an important topic of the energy policies. Governments have started to invest in renewable energy as an alternative to fossil fuels. Solar energy is one of the most important renewable energy sources. It offers new possibilities to generate electricity. International Energy Agency (IEA) points out that solar energy may become the fundamental energy resource by 2050. In this presentation, the study provides accurate information about the researches that characterize the solar technologies and investigates the situation of solar energy in Turkey. Also, it gives brief details on energy market development including photovoltaic efficiency, capacity, and electricity production from solar photovoltaic power, and concentrated solar power plants. The final part of the presentation covers the problems that related to the solar energy and give some suggestions to Turkey's roadmap of solar.

In this presentation, the data are mainly obtained from Energy Market Regulatory Authority (EMRA), Ministry of Energy and Natural Resources, International Energy Agency and related local organizations. The data is collected and interpreted to give information about the current situation and to make a comparison between countries. Also, some statistical forecasting methods were used to estimate the future status of Turkey.

Solar power is a vast and everlasting energy resource among the other renewables. With the technological improvements, the potential use of solar can be revolutionary in the near future. Most of the developed countries have already integrated solar energy systems into their grids. Turkey has a good potential of solar radiation due to its geographical position, but the potential is not used as it should be. This presentation examines the current energy status of Turkey, compares it with others and domestic potential. Finally, it points out the problems of solar energy and makes some suggestions to have a better, sustainable system.

Blue energy storage: Gravity power model

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ABSTRACT

Energy is undeniable necessity for human kind. Hundreds of years ago, energy consumption was only acquired from wood. Than coal, oil, natural gas, nuclear and renewable sources followed the energy trend. Now, fossil fuels are the biggest component of our daily lives. However, fossil fuel consumption and then carbon emission cause some crucial consequences. Climate change is the major problem among them. In that regard, to prevent the potential threats posed by the climate change, Paris Climate Agreement was signed. Many countries accepted to decrease their own carbon emission rate. To decrease carbon emissions, minimizing energy consumption is not realistic for developing countries. However, efficiency and renewable sources can be shown as a gateway to achieve low-carbon economy. In that regard, we confront another problem which is intermittent characteristics of renewable energy sources; they are not able to provide 7 days 24-hour energy. This is quite crucial issue especially for energy dependent countries, because if a country is importing complementary or base-load energy sources from abroad, it also refers to a political problem. That shows us the importance of energy storage systems.

Today, 5 different types of energy storage system are known, which are; batteries, flywheels, compressed air energy storage, super capacitors and pumped hydro systems. Among these systems, most widely used technology is pumped hydro storage. It has over 120.00MW capacity worldwide. However, this technology is mostly

dependent on the siting and it also requires high difference between its reservoirs. In this study, I will represent more efficient and useful system for energy storage which is Gravity Power Module(GPM). It is similar with pumped hydro storage. GPM stores electricity in the form of gravitational potential energy and it has better operation characteristic and economically advantaged form of energy storage. GPM can be constructed where energy storage is needed so that it provides more benefit than conventional pumped hydro storage.

Gravity Power Module has 2 working mechanism. First it stores the water, and then pumps the water to turbine to produce energy. This mechanism is able to provide 24-hours energy. One of the important point in that topic, when it is combined with intermittent renewable energy sources, system provides to reach sustainable and renewable and clean energy. As a business plan, storing energy at low-price time and selling at high-price time provides profit for investors.

For sustainable world, we need to provide clean energy and be able store it to not be dependent on fossil fuels again. Gravity Power Module is one of the preferable options to reach this goal. However, to undertake any project in the market energy market, it must be efficient, affordable, accessible and acceptable. GPM will be investigated via all these perspectives and provide applicable model to follow.

Seeking for the ideal feed-in tariff design for photovoltaic investments in Turkey

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ABSTRACT

Various incentive mechanisms are used to stimulate investments for renewable energy sources (RESs), one of them is feed-in tariff (FIT). FIT is the long term agreement between governments and firms that produce electricity using RESs. Turkish government presents FIT program for 10 years and payment amount per kWh 13.3 US Dollar-cent on photovoltaic (PV) investments (Resmî Gazete, 2005; Resmi Gazete, 2011). However, solar energy firms do not find 10 years as a sufficient period to increase PV investment. This research aims to reveal preferences of enterprises on feed-in tariff design to enhance PV investments in Turkey using a choice experiment approach. In this research, a survey was designed on the basis of choice experiment (CE) to find out preferences and marginal willingness to pay (MWTP) of investors, and the questionnaire was conducted on 44 employees working at solar energy firms from various cities in April-June 2017 in Turkey.

According to statistical results, average age of all participants is 34. 7 of the 44 participants were female, 37 of them were male. The rate of total female worker in office is 27%. 25 of the 44 participants have bachelor degree, 15 participants have postgraduate education level. Average years of working in the sector of all participants are 4.9 years. Desired policy changes: 41 out of 44 people wanted to reduce tax for imported panel and 41 respondents think that

roof-type panel installation requirement will increase investments.

The MWTP for one-unit increment of the attribute x is calculated by:

$$MWTP_x = dp/dx = -(\partial V/\partial x)/(\partial V/\partial p) = -\beta_x/\beta_p$$

According to the result of mixed logit model by using Stata12, the respondents showed the lowest preference for 0.0891 per kWh payment amount, the highest preference for 15 years. Longer contract period brings about risk reduction; yet lower payment amount causes the PV investments to compensate itself for longer. It is clearly shown that the solar energy market agents have expectation that investments will be towards licensed type or rooftop PV systems. Lowering license fees will increase competition in the solar energy market, and moreover, medium-sized firms will be protected.

References

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Decentralization and blockchain: Opportunities for Turkey

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ABSTRACT

Turkey is highly dependent on foreign energy. Energy imports are the most significant contributors to country's total imports. Although this is the case, Turkey has many inefficiencies in its electricity generation which causes Turkey to lose even more money and also the country has not made much of a progress of utilizing its abundant renewable energy potential to get away from dependency. To contend with the energy dependency problem, which is a significant course of action in the country's agenda, the renewable energies are vital. Decentralization and blockchain technologies, like brand new concepts as they are, offer the promotion of renewable energies. Even though these technologies are relatively new and there are few examples of their usage around the world, existing projects have proven their success of reduced cost and increased efficiency. Many countries around the world depend on electricity from centralized power plants, which are; very expensive to build, dependent on fossil fuels consequently cause higher CO₂ emissions and very inefficient in transmission. Decentralized systems could offset these problems associated with centralized generation. Blockchain on the

other hand, within this decentralized system, provides the direct electricity transactions between electricity producers, which in this context called the "prosumers." With its secure information database, it narrows down the electricity trade process. Hence the third parties like banks and electricity companies are no longer needed. Money stays within a community. Therefore, people are incentivized to participate in this system. Decentralization and blockchain technologies, together could be tools to overcome Turkey's energy problem. However, there are some technical and legal barriers for these technologies to be implemented. This paper gives an insight of how the current energy situation in Turkey is, how dependent Turkey is to other countries regarding energy and how feasible are renewable energies in Turkey. By looking at the data of energy and electricity, this paper will evaluate how decentralization and blockchain technologies could help Turkey to overcome the energy problem in Turkey, while also giving to downsides of these technologies that could make these technologies not feasible at all. Lastly, this paper will provide potential sites for these technologies to be implemented.

The Potential Effects of U.S. Shale Gas Revolution on Russia's Natural Gas Market

Gözde Nur Karagöz^a

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ABSTRACT

After the new discoveries and development of new technologies, producing shale gas has become more profitable. Improvements created a new era for the U.S. as a natural gas producer. With the recent improvements, the U.S. has become an exporter country instead of a natural gas importer. The U.S. is now a leverage for the countries which imports Russian natural gas and it's an option for creating energy diversification especially for European countries.

In this study, the main question is; How Russia can be effected by the interference of U.S. on its natural gas market? This question will be

examined through Russia's current situation in the market and sales that are already done by the U.S.

This study uses both integrative and methodological literature review methods. The study examines the current situation in the natural gas market through the articles and reports has been published (Bernstein et al., 2016; Elliot et al., 2017) and possible developments on the market. Under the light of provided information, possible effects of U.S shale gas revolution will be discussed.

European Energy Union: A further step ahead or reorganization?

Büşra Zeynep Özdemir^a

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ABSTRACT

European Coal and Steel Community, which laid the foundation of today's European Union in 1957, assembled the six founding states around energy issue. The Union, however, enlarged by increasing the number of members, receded from the energy issue and focused on economic integration. Soon, changed perception and limited indigenous resources resulted in rapid increase in external energy dependency. During the Barroso's term, the Commission paid much attention to the issue to tackle with, and a Union level energy policy was

prepared including environmental issues with Lisbon Treaty in 2007. The works on common energy policy continued in Juncker's term, and Energy Union Package was published in February 2015. The primary aim of this study is to determine whether Energy Union is a new thing or an old effort on standard energy policy. Consequently, the study provided that the Energy Union Package made no significant difference to previous common energy policy drafts; the Package is meticulously prepared and more organized, comprehensive and structured.

How energy aspect shapes the bilateral relations between russia and the EU

Cansu Tokar^a

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ABSTRACT

Today energy is seen as a treasure, which creates competitive advantages as well as it constructs the frameworks of foreign policies of energy power in terms of national interests. Many experts view energy relations as a zero-sum gain, where one party loses and the other gains. However, there are also different narratives regarding the role of energy on the international stage.

Taking into consideration that energy is no doubt a highly complex and multidimensional concept; the backgrounds, reasons and results should be assessed while examining the course of events, which occur out of bilateral and multilateral interactions. Both political perspectives and economic perspectives should be analyzed in order to reflect a comprehensive study and to explain how the relationship has been structured

regarding the strengths and weaknesses of this global relationship.

All in all, the complex interdependence between Russia and the European Union comes out as a necessary element regarding one being energy-rich with a need of further economic improvements and the other being energy-poor with intense industrial conditions. Therefore, both actors depend on each other. Even though there have been political and economic disputes – mostly affecting the security aspect –, it is seen that they both try to avoid any further deterioration in terms of energy diplomacy. Without ignoring the current status of relationship stemming out of the Ukraine Crisis of 2014 and renewable energy policies of the EU, it could be stated that energy takes up a great amount of space in the bilateral relations.

Energy security of BRIC Countries

Nehir Gündüz^a

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ABSTRACT

My presentation topic is about energy security of BRIC countries. BRIC refers to four countries; Brazil, Russia, India, and China. All of these countries are rapidly growing countries, and their energy consumption is enormous. According to PwC and Goldman Sachs forecast reports, BRIC countries will be the most influential economies in 2050. Also, BRIC countries make up roughly 3 billion people, or 40 percent of the world population and cover more than a quarter of the world's land area over three continents. Each country has differences and similarities with each other. The main similarities are each one of all these countries has rapidly growing GDP. Also, these countries have an increasing share of world production. BRIC countries have been playing the very active role in world trade. Due to lower costs of labor in these countries, the production plays the significant role of the countries' economies. On the other hand, lower costs of labor and population harden the quality of life. Also, the main differences are China and India are large suppliers of manufactured goods and services; Russia and Brazil are suppliers of raw materials.

Also, China and India are consuming coal as an energy resource. However, the coal is dangerous for the environment, and the governments of China and India increase consumption of coal day by day. In recent years, topics related to the energy security of BRIC countries, have been covered intensely in the media and academic journals. Also, Russia, China, and Brazil have hydroelectric power stations, and these three countries have the highest potential for hydroelectricity. Hydroelectric power plants produce almost 80 percent of the electrical energy consumed in Brazil, whereas the world average is around 16 percent.

I will collect the data from World Bank and International Energy Agency for their production and consumption statistics. Also, the issues about the energy security are current in BRIC countries. Several books, articles, and news written about the topic will contribute to my presentation. The purpose of my presentation will be the explaining the energy systems and policies of different countries, especially these rapidly developing countries.

Energy security in East Asia: The Chinese, Japanese and South Korean cases

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ABSTRACT

The impressive economic ascents of three East Asian countries in the last decades surprised the world. Japan and the Republic of Korea have always been strategically important partners for the United States in East Asia after the World War II; therefore, their economic rise is both related to their special relationship with the US and their industrialization process lasting for years. On the other hand, the rise of the People's Republic of China is completely different case. The fact that China as a country ruled by a Communist Party has demonstrated a spectacular economic ascent led to academic debates on whether it can be a new hegemon surpassing the US in the future.

According to the World Bank Group's 2016 data, China is the second-largest economy in the world with its Gross Domestic Product (GDP) worth \$11,199,145 million. Japanese economy ranks number three in the world market with its GDP \$4,940,159 million, and South Korea is the eleventh largest economy whose GDP is \$1,411,246 million. As May (1998, p. 1) suggests, the magnificent rise of these three economies has required a great increase in energy consumption. In this context, energy security has become a crucial issue for these countries in order to sustain their economic 'miracle'.

This presentation focuses on energy security strategies of China, Japan, and South Korea respectively. These countries' energy security perceptions and responsive policies to the international and domestic developments after

the World War II will be at the core of this presentation. While trying to comprehend their energy security strategies, I will make an analysis within the framework of foreign policy and international relations. In other words, this presentation concentrates on energy insecurities of these three countries with paying specific attention to their geopolitical positions.

In order to conduct this research, I have utilized various types of sources. Among the sources are secondary literature, International Energy Agency reports, the statistics of U.S. Energy Information Administration, and reports published by different energy companies of China, Japan and South Korea.

This research concludes that as the largest energy consumer country in the world, China could not rely on the resource-rich countries in the MENA because of the geopolitical reasons and has successfully turned its face towards Central Asia and Russia in the last decades. On the other hand, thanks to its strategic partnership with the US, Japan has secured the SLOCs through which its oil and LNG imports from the Persian Gulf pass. Finally, although South Korea has improved relations with Central Asian and MENA countries to secure its energy import and supported its national energy companies to enter into competition with the biggest energy firms operating at the global level, Seoul still suffers from the energy insecurities.

Importance of LNG in Turkish natural gas supply security

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ABSTRACT

Liquefied Natural Gas (LNG) is an increasing trend in the World natural gas market. It is the cleanest form of the fossil fuels and it is an environmental friendly product. Also Transportation of LNG by vessels and liquefaction and regasification units can float. For this reason, it provides flexible and faster operation than pipeline operation. After the shale gas revolution in the US, their production level increased and the US plans to sell that gas in the LNG form. Besides that, Fukushima nuclear leakage increased the trading volume in the World. Turkey is following these trends and it is increasing storage and regasification potential. Spot market potential is

increasing and LNG is an emergency and seasonal sources for Turkey. In 2006 Ukraine - Russia conflict and in 2015 Turkey - Russia war plane crisis pushed Turkey to diversify its natural gas sources. Turkey is signing new pipeline contracts and making investment for LNG facilities. This study is about natural gas transportation trend in the world and investigating the importance of LNG in the world market and the importance of unconventional gas for the world LNG sources. Turkey is a net energy importer country and we have to find cheapest sources for our economy and we analysed advantages and disadvantages of LNG for Turkish natural gas market.



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