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Chinese Electricity Investments in Turkey and Potential Investment Barriers

Turkey, as an emerging economy, is trying to increase the inflow of foreign direct investment in various sectors, including electricity and there is room for improving cooperation between Turkey and China in this area. This study aims to demonstrate the role of Chinese electricity investments in Turkey by examining projects between 2005 and 2020. The study also aims to reveal barriers in solar, nuclear and coal sub-sectors for Chinese investors. According to the results, China has invested 2.8 billion dollars in Turkey's electricity sector, there are many barriers for Chinese investors and removing them can enable the two countries to cooperate on a more solid ground.

Keywords: Chinese Electricity Investment, Investment Barriers, Solar Energy, Coal-Fired Power Plant, Nuclear Energy.

Çin'in Türkiye'deki Enerji Yatırımları ve Yatırımların Önündeki Potansiyel Engeller

Gelişmekte olan bir ekonomi olarak Türkiye, elektrik de dâhil olmak üzere çeşitli sektörlerde doğrudan yabancı yatırım akışını artırmaya çalışmakla birlikte Türkiye ile Çin arasında bu alanda işbirliğinin geliştirilmesi için potansiyel bulunmaktadır. Bu çalışma, 2005-2020 yılları arasındaki projeleri inceleyerek Çin'in Türkiye'deki elektrik yatırımlarının rolünü ortaya koymayı amaçlamaktadır. Sonuçlara göre Çin, Türkiye'nin elektrik sektöründe 2,8 milyar dolar yatırım yaptı, Çinli yatırımcıların önünde birçok engel var ve bunların kaldırılması iki ülkenin daha sağlam bir zeminde işbirliği yapmasını sağlayabilir.

Anahtar Kelimeler: Çin Elektrik Yatırımı, Yatırım Engelleri, Güneş Enerjisi, Kömür Santrali, Nükleer Enerji.

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1. Introduction

Foreign direct investment (FDI) provides many economic benefits for the recipient country, such as technology transfer, employment, and export opportunities (Egilmez, 2018). As a developing country, Turkey has been trying to increase the FDI inflows. In 2016, the country announced to give citizenship to investors under specific conditions. According to the Ministry of Interior, 9.011 foreign investors received Turkish citizenship by investing 3.3 billion USD since 2016 (Karadag, 2020). More recently, the Ministry of Industry and Technology announced that Turkey plans to launch Foreign Direct Investment Strategy in 2021 (Dunya Gazetesi, 2020).

Between 2002 - October 2020, Turkey's FDI stock amounted to 165 billion USD (Central Bank of the Republic of Turkey, 2021; Ministry of Industry and Technology, 2021). The energy sector accounted for 11% (18 billion USD) of the total investments (Central Bank of the Republic of Turkey, 2021; Ministry of Industry and Technology, 2021). Looking at the ranking of the countries that have invested in the same period, the Netherlands comes first with 15.9% (26.3 billion USD), followed by the USA with 7.8% (13 billion USD) and the United Kingdom with 7.1% (11.7 billion USD). China ranks 21st with 972 million dollars (Ministry of Industry and Technology, 2021).

Due to its large population and high economic growth, China accounted for 24.3% of the global primary energy supply in 2019 (BP, 2020: 8). Therefore, China's energy demand affects global energy demand significantly (BP, 2020, p. 3). Due to its geographic proximity to the EU, having less legislation on environmental protection and being open to new energy technologies such as nuclear energy, Turkey became an attractive investment country for China in the electricity sector. Besides, the two countries cooperate as part of China's Belt and Road Initiative (BRI), which presents new investment opportunities (Durdular, 2016: 77). As part of the initiative, the China has invested 47 billion USD in BRI countries in 2020 and the energy sector accounted for 42.3% of the total BRI investments (Green Belt and Road Initiative Center, 2021). Turkey launched Middle Corridor Initiative in order to enhance trade and investment opportunities brought by BRI and in 2015, a Memorandum of Understanding has been signed between Turkey and China to harmonize both initiatives (Akman, 2019: 15).

Chinese international investment has accelerated after 2001 because of the "go global" policy (Leung, 2018: 111).The country's membership to the World Trade Organization in 2001 is an important milestone for the country's transition to an open economy (The State Council Information Office of China, 2018). The tremendous increase in trade and capital accumulation and privatization policies of some countries provided Chinese investors new opportunities (Leung, 2018: 111-112). Now four out of the ten biggest banks in the world are Chinese (Investopedia, 2020). After the USA, China is the second largest economy worldwide and the country's share in the global economy was 16.34% in 2019 (Silver, 2020; World Bank, 2021).

During the early 2000s, Chinese foreign investment was concentrated on public companies that operate in mining and energy in emerging African and resource-rich countries (Sharma, 2019). However, in the last years, Chinese investment has turned to private sector investments in the tourism and entertainment sectors (Sharma, 2019). Although the sectoral distribution of Chinese investment differs from country to country, the energy sector is at the forefront in China's global investments. According to the China Global Investment Tracker statistics, between 2005 and 2020 the country that attracted the most investments from China was the USA, which was followed by Australia and the United Kingdom. China has made 5.1 billion dollars of

investment in Turkey in the same period. It is expected Chinese foreign investment to increase %10 every year (DEİK, 2016, p. 33)

According to TUSIAD (2019: 13), energy investments are at the top of China's investments in Turkey. The energy sector accounts for 55.6% of the total Chinese investment in Turkey, followed by logistics (18.1%), transport (15.9%), finance (8.5%), and technology (2%). In many studies about China's energy investment in Turkey, there has been no distinction between energy contracts completed by Chinese firms and Chinese energy investments. This study's first objective is to fill this gap by drawing an accurate picture of China's electricity investments in Turkey. Besides, China is a critical investor country for Turkey due to its high current account surplus, investment appetite and technological know-how. China holds the largest US dollar reserves globally (İkiz, 2019: 1692). The second aim of this study is to reveal the sectoral barriers of Chinese electricity investments in Turkey. By removing these barriers, the two countries can cooperate successfully in the energy sector. The study focuses on barriers in solar energy, nuclear energy and coal-fired power plant investments.

After reviewing the literature, the second section reveals the trend of China's electricity investments in Turkey over the years and the structure of investments. The third section presents sub-sector level barriers for Chinese electricity investors in Turkey.

2. Literature Review

In the literature, there are several studies on China's investment abroad. Dilek et al. (2019) researched Chinese energy investments in Turkey but the study considered construction contracts as investment additionally. Therefore, investment results are higher than real values and thereby wrong. Haung (2017) focused on opportunities and challenges for China's energy investment in Turkey and came to the conclusion that cultural differences, Turkey's economic and political problems are the main obstacles against investment. Pietrobelli et al. (2011) researched the motivation of Chinese companies' direct investments in Italy. They determined that accessing to the large Italian market and acquiring sophisticated technology, manufacturing and design are the main motivations of Chinese investors. Leung's (2018) research focuses on Chinese investments in the EU and suggests that Chinese energy investments in the EU has shifted from traditional (e.g., oil) to more diverse energy sources (e.g., natural gas, renewable energy, nuclear energy). There is no study in the literature showing the accurate Chinese electricity investments in Turkey and assessing sub-sector level potential barriers for Chinese electricity investments in Turkey.

In this study, The American Enterprise Institute (AEI) and the Heritage Foundation's China Global Investment Tracker data have been used for China's electricity investments between 2005 and 2020 in Turkey. The data presented are described as highly correct by Leung (2018: 106). There are five Chinese electricity investments presented in the data set for Turkey. However, the investment by the company Sinomach is categorized in the database under troubled transactions and the company decided to give up investment on July 2015 (China Machinery Engineering Company, 2015). That's why it is taken out of the study. In addition, the investment shown in the database as State Power Investment was made by the company's subsidiary Shanghai Electric Power Company and therefore the name of the subsidiary was used in this study. According to online research, an additional Chinese energy investment[1] has been added to the research. There is no information in the data set on public-private ownership of companies, which has been researched online. Information regarding the type of investment (greenfield investments / mergers & acquisitions) has been taken from the database.

[1] HT Solar Company has established a solar PV factory in Tuzla in 2016 and investment amount is 20 million dollars. For more information: http://pamsolarr.blogspot.com/2017/04/

FDI is a long-term and permanent investment abroad where investors own a minimum 10% of a company's share (Central Bank of the Republic of Turkey, 2020). Investors also aim to have a role in the company's management (Central Bank of the Republic of Turkey, 2020). It can occur in two different ways: greenfield investments and mergers & acquisitions (M&As) (Carril-Caccia and Pavlova, 2018). Greenfield investment takes place by making a new investment from scratch and M&A by purchasing an existing investment (Investopedia, 2021). M&A can occur in two different forms either by purchasing a part of a company or a significant share (Investopedia, 2021). Although these types of investment vary from country to country, in 2016, 80% of the FDIs in the advanced countries were made through M&As, while 80% of the FDIs in emerging economies were greenfield investments (Carril-Caccia and Pavlova, 2018). FDI is calculated as the sum of three components: capital investments, other capital and real estate (Ministry of Industry and Technology, 2021). Capital investments are equity investments. Other capital includes factors such loan and repayment transactions between parent and subsidiary company located in different countries (Central Bank of the Republic of Turkey, 2014). Central Bank of Turkey reports only capital investments at the country level. Therefore, in this study Turkey's FDI refers to capital investments. Besides, Capital investment is calculated by subtracting the liquidation from the investment. Therefore, capital investment differs from the cost of investment. The investment amount in the AEI database is based on the cost of investment for greenfield investments and purchase price for M&As, thereby it is different compared to FDI values.

Additionally, two online interviews on Chinese investment in Turkey have been conducted with Turkey's former Economy Counselor for Beijing İlker Senel, who has worked in China between 2011 and 2014.

3. Chinese Electricity Investment In Turkey

State-owned enterprises (SOEs) have a remarkable economic weight in China. For example, the largest construction companies are public (CR, 2020). However, these companies are competitive, compete fiercely against each other and do not have difficulties accessing finance (Gang and Hope, 2012: 2). SASAC (State-Owned Assets Supervision and Administration Commission) is the responsible institution for supervising and managing Chinese SOEs under the supervision of the central government (SASAC, 2020). For Chinese public companies to make a foreign investment, permission from the Ministry of Trade and SASAC is required. Afterward, NDRC's (National Development and Reform Commission) approval is needed, and this process takes at least one year (Senel, 2020).

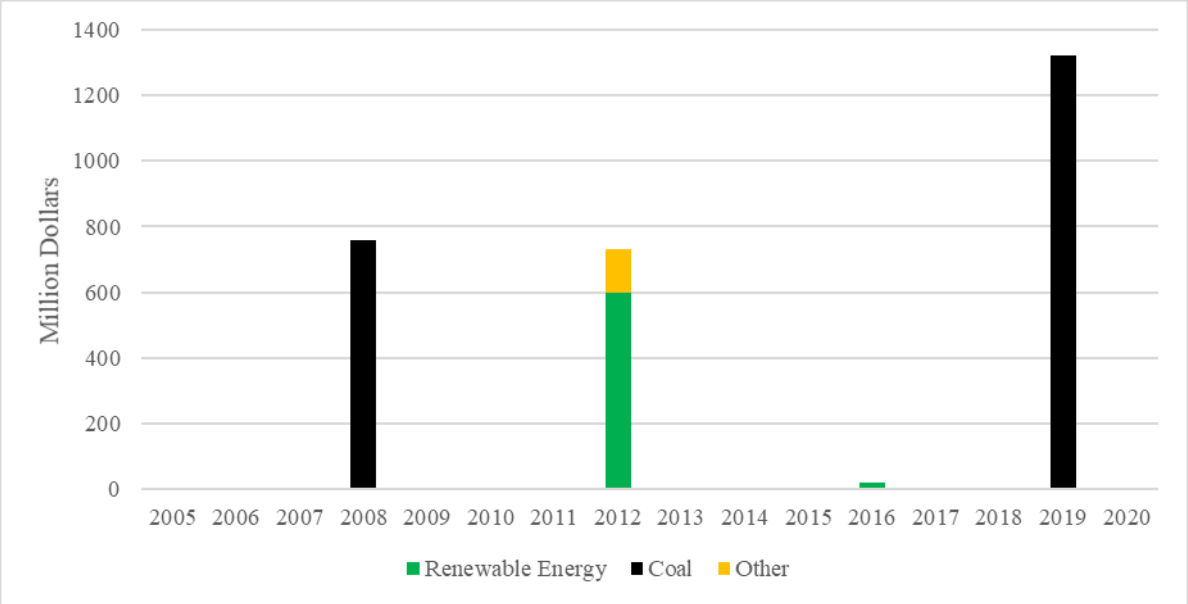
Table 1 shows the details of the electricity investments made by Chinese companies in Turkey and there in total five transactions from six Chinese investors between 2005 and 2020.

Table 1: List of Chinese Energy Investors in Turkey (2005-2020) (Source: AEI (2020), HT Solar (2021), PitchBook (2021), SWFI (2021), PR Newswire (2010), Fitch Ratings (2020), KTP Group (2021), Dunya Gazetesi (2012), Hattat Holding (2011), BankTrack (2021), Celikel and others (2015), Yesil Ekonomi (2013), Inal and others (2020))

Year	Quantity (Million Dollars)	Investor	Ownership	Subsector	Location
2008	760	Datong	State-owned	Coal	Amasra/ Bartin
2012	600	China Electric Equipment (CSUN)	Private	Renewable Energy (Solar)	Tuzla/ Istanbul
2012	130	Harbin Electric	State-owned	Other	Cerkezkoy/ Tekirdag
2016	20	HT Solar	State-owned	Renewable Energy (Solar)	Tuzla/ Istanbul
2019	1.320	Shanghai Electric Power Corporation, AVIC	State-owned	Coal	Yumurtalik/ Adana

Figure 1 demonstrates the sub-sectoral Chinese energy investments in Turkey. Total Chinese energy investments was 2.8 billion dollars between the years 2005 and 2020. Coal is the largest investment area, which accounts for 73.5% of the total Chinese electricity investments. Renewable energy's share in total electricity investment is 21.9% and all investments are solar panel production facilities. The investment in "other" category is a power plant unit production facility.

Figure 1: Amount of Chinese Electricity Investment in Sub-sectors in Turkey 2005-2020. (Source: Prepared by authors based on data from AEI (2020))



As shown in Figure 2, 79% of the Chinese electricity investments in Turkey are publicly and 21% are privately owned. All coal investors are state-owned enterprises. Coal mining company Datong and electricity – energy equipment producer Shanghai Electric Power

Company are among the prominent state-owned corporations in their sectors (Shangai Electric Power, 2021; Smith School of Enterprise and Environment, 2014: 1). The only private investment is in the renewable energy sector. Publicly owned renewable energy investor HT Solar is the only state-owned solar panel producer company in China (Electricity Turkey Magazine, 2020).

Figure 2: Ownership and Amount of Chinese Electricity Investments in Turkey. (Source: Prepared by authors based on data from AEI (2020), HT Solar (2021), PitchBook (2021), SWFI (2021), PR Newswire (2010), Fitch Ratings (2020), KTP Group (2021))

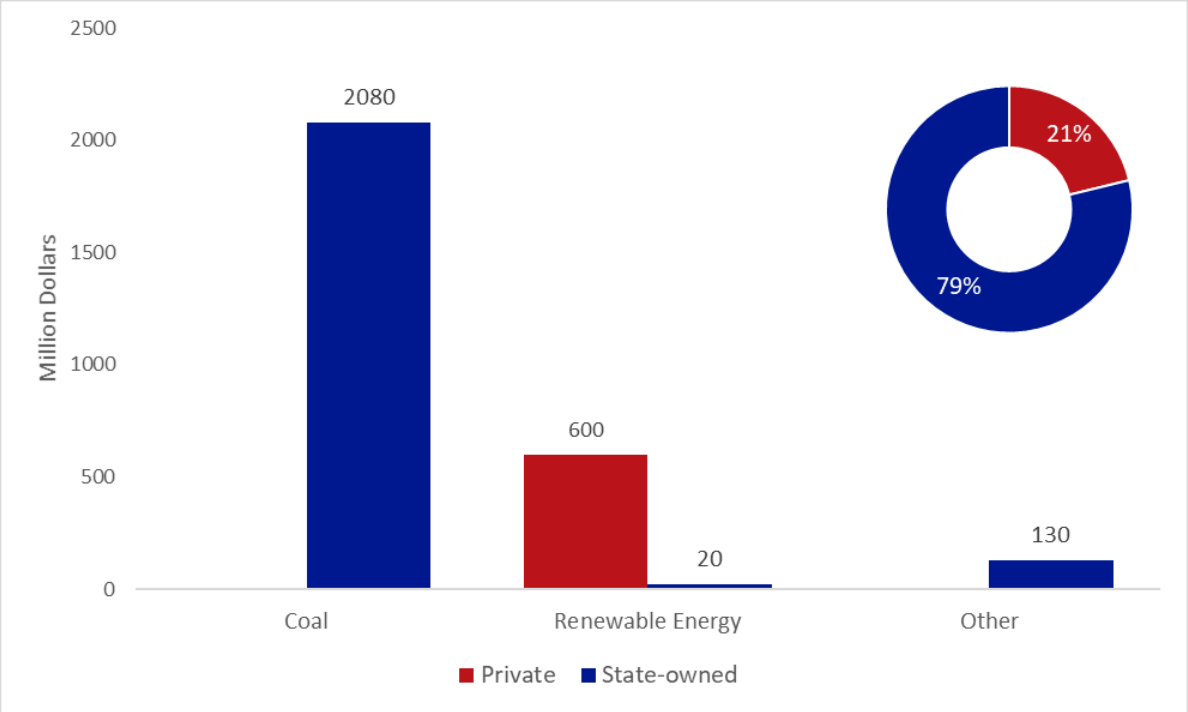
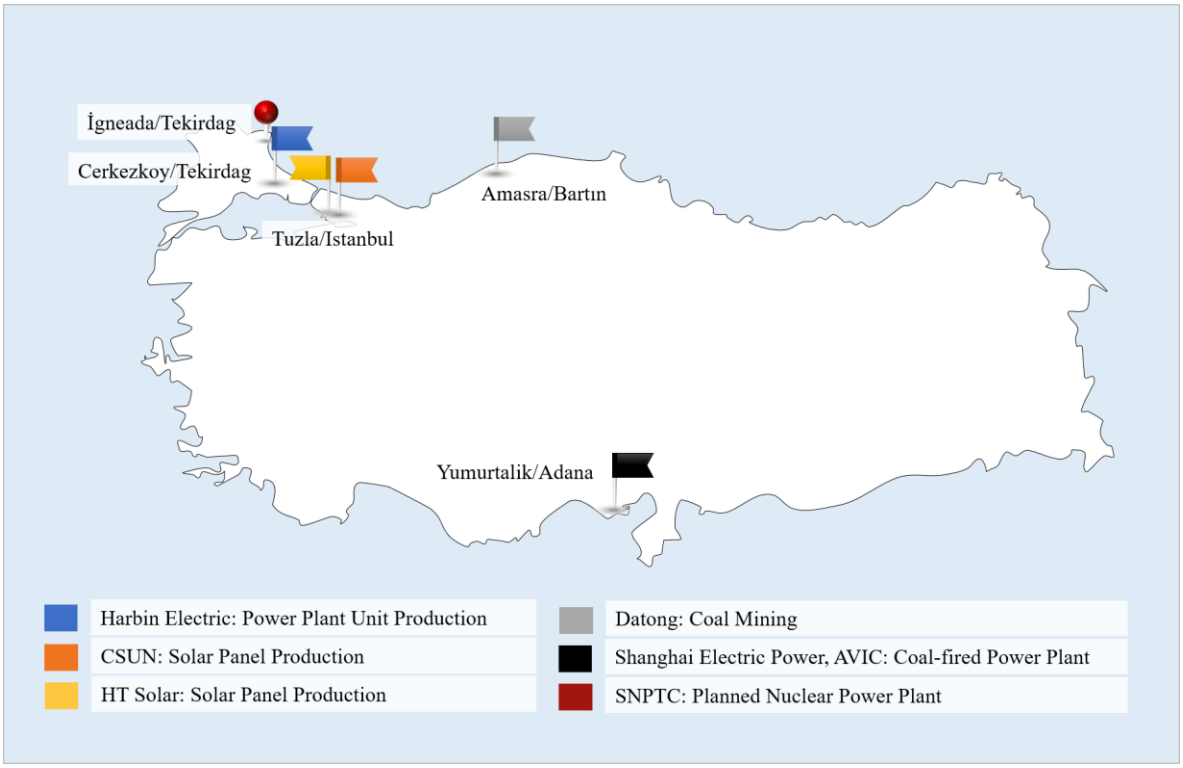


Figure 3 illustrates the location and ownership of Chinese electricity investment in Turkey. Solar panel production investments are concentrated in Istanbul and both of the investments are located in Tuzla Free Zone. Datong Coal Mine Group is one of the six coal mining companies in China, which can produce more than 100 million tons of coal per year (Xu and Mason, 2018). With its partner Hattat Holding, the company invested in Amasra/Bartin to produce 5 million tons of hard coal annually at first and 10 million tons per year in the following years (Hattat Holding, 2011: 14-15). In addition, Hattat Holding invested with another Chinese firm Harbin Electric in Cerkezkoy/Tekirdag to produce power plant units (Dunya Gazetesi, 2012). Hattat Holding planned the coal produced in Amasra to be used by new power plants in Bartin and Zonguldak and the company signed a contract agreement with Harbin Electric for the construction of Amasra Thermal Power Plant in 2013 (BankTrack, 2020c; Hattat Holding, 2011: 15). Chinese Shanghai Electric Power, Chinese Avic-International Project Engineering Company and two Turkish investors formed a joint venture for Emba Hunutlu Thermal Power Plant investment in Adana (Myllyvirta, 2020: 1). It is the largest Chinese energy investment in Turkey and the construction of the project began in 2019. The power plant is the 10th largest Chinese coal investment abroad globally. When the plant will be completed, it will provide 3% of Turkey's electricity need (Alemdaroglu and Tepe, 2020) The plant is going to operate by imported coal (Global Energy Monitor, 2020a). The third nuclear power plant project is planned to be built with the Chinese State Nuclear Power Technology Corporation (SNPTC) and the US

Westinghouse Electric Corporation in İgneada/Tekirdag (Celikel et al., 2015). However, there is no statement made by the parties regarding the final decision and investment model. In addition, all of the Chinese energy investment in Turkey consists of greenfield investments.

Figure 3: Location of the Chinese Electricity Investment in Turkey 2005-2020. (Source: Prepared by authors based on information from Dunya Gazetesi (2012), Hattat Holding (2011), BankTrack (2021), Celikel et al. (2015), Yesil Ekonomi (2013), Inal et al. (2020)



As a result, there are significant Chinese electricity investments in Turkey in coal and solar sub-sectors. However, there is no investment in areas such as oil, natural gas, hydropower, wind, bioenergy and geothermal. When a Chinese company wants to get a loan for a project to be carried out in Turkey, the China Export & Credit Insurance Corporation (Sino Sure) must insure the loan because Turkey is considered among the politically risky countries (Senel, 2020). On the other hand Sino Sure requests from companies curtain conditions (such as state guarantee, company guarantee or a certain balance sheet size) in order to insure the loan (Senel, 2020). Turkish government does not provide purchasing guarantee for electricity projects, except for renewable energy and this situation prevents the Chinese from investing in other fields of electricity in Turkey (Senel, 2020). However, it is essential to mention that Chinese companies give importance to construction contracts as well. For example, Power China, one of the leading state-owned construction companies, has set up its Eurasia Headquarter in Istanbul and has participated in projects in areas such as coal and hydropower in Turkey where the total contract volume reaches 300 million USD (China Radio International, 2017).

4. Potential Barriers for Chinese Electricity Investors in Turkey

Within the scope of this study, potential barriers in solar energy, nuclear energy and coal are examined.

4.1. Solar Energy

China is the leader in renewable energy investments domestically (IRENA, 2020). The country is also the largest solar PV producer worldwide (Chen, 2015: 1). There are two aspects of Chinese solar energy investments in Turkey. First, Turkey wants to increase its renewable energy installed capacity. The country plans to increase its solar energy capacity from 5 GW in 2018 to 10 GW in 2030 (IRENA, 2020; Turkey, 2015: 3). However, there is no Chinese investor in Turkey, which produces electricity from solar energy between 2005 and 2020. That's why it is important for Turkey to support Chinese electricity production investments. Large tenders accelerate the deployment of renewable energy technologies but this effects the participation of small companies negatively (Ari and Yikmaz, 2019: 245). Due to the fact that many Chinese companies are not familiar with the Turkish market, they are not willing to participate in large scale electricity investments (Senel, 2020). Small scale investments enable them to learn the market conditions and even increase their investment over time (Senel, 2020). On 3rd July 2020, Turkey announced to realize 74 small-scale Renewable Energy Resource Areas (YEKA) tenders in 36 cities with 10, 15 and 20 megawatt capacity (Ministry of Energy and Natural Resources, 2020b: 1). This is an encouraging policy for Chinese investors as well. In addition, Turkey wants to enhance its domestic renewable energy component production. Minimum %70 of the installment has to be provided by companies in Turkey and companies in free zones are excluded (Ministry of Energy and Natural Resources, 2020a). However, according to the critics that support domestic production, this amount is already produced in Turkey. The legislation does not incentivize solar cell producers, which causes the cell to be imported from China and components to be assembled in Turkey (Simsek, 2020). But international organizations are against local content requirements which is based on WTO rules (Meng, 2019: 73). For example, European Bank for Reconstruction and Development (EBRD) criticizes Turkey for supporting local content requirements. The Bank mentions that it's not going to provide finance for such projects (EBRD, 2019: 8; Kelly and Sokmen, 2019: 20). If Turkey continues to promote domestic solar panel production, international financial organizations such as multilateral development banks will not provide finance. This poses a potential barrier for Chinese solar power producers that plan to invest in Turkey.

Chinese solar panel producers face strict anti-dumping measures in the USA and the EU (Meng, 2019: 78; Roselund, 2018). European manufacturers are claiming that Chinese producers are exporting panels below the market value to destroy competition and as a result, the EU implemented anti-dumping measures worth $2 billion for imports from China (Meng, 2019: 78). CE sign is used for traded products in the European Economic Area to show that the products are examined and they meet safety, health and environmental requirements (European Comission, 2020). Some Chinese companies fear that they can't obtain this certificate (Senel, 2020). Many Chinese products put counterfeit versions of CE mark for their products and they claimed that the mark stands for "China Export" and this incident caused many discussions (European Parliament, 2017). One strategy Chinese solar producers used was to set their factory in Turkey and due to Turkey's membership in Customs Union, they could sell their products smoothly as "made in Turkey" to the EU. Additionally, Turkey has 20 Free Trade Agreements (TFA) (Ministry of Trade, 2020). Another advantage of Turkey is the geographic proximity to the EU. Both of the Chinese panel producers in Turkey (HT Solar, Csun) make export-oriented production. In the last five years, HT Solar has sold 15% of its products in the Turkish market, while exporting %85 (Inal et al., 2020: 19). The main export markets of the company are the USA and the EU (Inal et al., 2020: 19). Due to the fact that such PV producer companies earn high profit margins by producing in Turkey, the country became a "minor PV manufacturing destination" (Roselund, 2019). However, Turkey's bilateral relations with the EU and the USA are very important for Chinese panel producers. In 2019, USA has removed Turkey from the Generalized System of Preferences (GSP) list for particular crystalline silicon photovoltaic cells which enabled the country to export solar panels to the USA tariff-free (The White House, 2019). By benefitting from GSP system, Chinese solar PV producers in Turkey could by-pass USA's anti-

dumping measures which put into force in 2018 (Yesil Ekonomi, 2019). Potential economic sanctions and extra tariffs can become important risks for Chinese solar energy investors and they can even cause the investments to move abroad. Nevertheless, if Turkey can maintain good bilateral economic relations with the USA and the EU, this can contribute Turkey to become a global PV manufacturing hub.

4.2. Nuclear Energy

China has the largest nuclear power plant investment program (Sattich and Freeman, 2019: 21). On the other hand, Turkey plans to build its first nuclear power plant until 2030 (Turkey, 2015: 3). The country has three nuclear energy construction projects. For the third plan, Turkey continues negotiations with the Chinese State Nuclear Power Technology Corporation (SNPTC) (DEİK, 2016: 37). The agreement between China and Turkey for Cooperation in the Peaceful Uses of Nuclear Energy has been signed in 2012 and came into force in 2016 (Turkish Atomic Energy Authority, 2020). In 2014 Turkish state-owned electricity company EUAS (Electricity Generation Company) signed a memorandum of understanding (MoU) with Westinghouse Electric Corporation and SNPTC (KIT Komisyonu, 2016). In June 2016, Turkey and China signed a MoU regarding cooperation in nuclear power (Ministry of Energy and Natural Resources, 2016). At the same time, Turkey wants to develop its own nuclear energy human resources (Sazci Uzun and Kavak, 2018). As part of the cooperation, Turkish engineers can study master's degree on Nuclear Engineering and Management in Tsinghua University, which is financed by China (Kara, 2020). The cooperation might extend further.

China has planned to make its first nuclear energy investment in Europe in 2015 (Leung, 2018: 110). China General Nuclear Power Corporation (CGN) has signed a memorandum of understanding with the Romanian state-owned electricity producer Nuclearelectrica in 2015 (World Nuclear News, 2015). The USA accused CGN of nuclear espionage in 2016 (US Department of Justice, 2016). Additionally in May 2020, Romanian's economy minister has announced that the country will end negotiation talks with CGN (Reuters, 2020). It seems that Chinese nuclear energy investments abroad are seen as a threat by the USA due to the trade war between the two countries. In October 2020, the USA and Romania announced to cooperate on the construction of two nuclear reactors at Cernavoda Nuclear Power (United States Department of Energy, 2020).

Turkey is not expected to face a similar case as in Romania because the cooperation involves US-based Westinghouse Electric Corporation. However, the company faced financial troubles and declared bankruptcy in 2017 (BBC News, 2017). This lead to company restructuring and the company is sold to Brookfield Business Partners (World Nuclear News, 2018). This makes the participation of the company to the third nuclear power plant project difficult (Schneider and Froggatt, 2019: 68). It also raises concerns about the future of the project.

4.3. Coal

China and Turkey are willing to continue constructing coal fired power plants to increase their domestic production and security of supply. Turkey announced to enhance the use of domestic energy sources including renewable energy and domestic coal (lignite) as part of its National Energy and Mining Policy (Bayraktar, 2018: 21, 23). However, coal-fired power plants cause 30% of global carbon dioxide emissions which impacts climate change (International Energy Agency, 2019b). That's why it is one of the most criticized issues in international climate change negotiations.

China receives many critics for being the largest greenhouse gas emitting country globally (Guan, 2019: 121-122). The country is the largest producer, consumer and importer of coal

(International Energy Agency, 2019a: 11, 14, 16). China also faces critics for making coal-fired power plant investments abroad, particularly in Turkey (Gundogan, 2017). That's why the country faces a dilemma between being a responsible global power and enhance economic growth (Guan, 2019: 121). However, the country expressed recently to take more ambitious actions to fight against climate change. By 2030, the country has committed to reduce carbon dioxide emissions per unit of GDP by 65% compared to 2005, increase the share of non-fossil fuel energy sources in primary energy consumption to 25%, increase forest stock volume by 6 billion cubic meters compared to 2005 and raise the total installed solar and wind energy capacity to over 1.2 billion kilowatts (Jinping, 2020).

In 2019 Chinese investors began constructing 1,320 MW installed capacity Emba Hunutlu Thermal Power Plant in Adana and the project is going to be the largest Chinese investment in Turkey (Imtilak Real Estate, 2020). Many NGOs are campaigning heavily in order to stop the construction of the plant (Enerji Gunlugu, 2020). The location of the plant Yumurtalik is a reproduction area for marine turtles and the project creates risks for protected species (BankTrack, 2021). According to a recent study by CREA (Centre for Research on Energy and Clean Air), it is expected the plant to cause 2,000 cumulative human deaths which assumes an operating lifetime of 40 years (Myllyvirta, 2020: 2). Datong Coal Mining Group's partner in coal mining Hattat Holding planned to construct Amasra Thermal Power Plant which acquired electricity production license in 2006 (BankTrack, 2020a). Even though the Ministry of Environment and Urbanization gave positive remarks on the project's Environmental Impact Assessment Report, because of the lawsuits filed, the court decided stop the execution of the project in June 2020 (Danistay, 2020: 17; Enerji Gunlugu, 2019). Hattat Holding claimed that the project will reduce Turkey's energy dependency but the court declared that within the scope of the project a port is planned to be built and it is clear that the plant is going to use imported coal for electricity production and the project will cause detrimental environmental degradation (Danistay, 2020: 17). Turkey's support for imported coal projects contradicts with the country's National Energy and Mining Policy. In addition, lack of prioritization of environmental protection regarding coal-fired power plants causes reaction from local communities and NGOs, which increases the pressure on coal investors.

Besides, because of the opposition to the project, international financial firms and institutions are hesitant to provide finance. In the case of Amasra Thermal Power Plant, there are allegations that the project owners applied the Swiss bank Credit Suisse for a loan in 2017 and by hiring consultants, the bank carried out surveys with the local communities (BankTrack, 2020b; Global Energy Monitor, 2020b). For the Emba Hunutlu Thermal Power Project, 20% of the cost is covered by equity and 80% by debt (Emba Electricity Production Company, 2016). China Development Bank, Industrial and Commercial Bank of China (ICBC) and Bank of China have provided a 15-year $1.381 billion loan for the project (Shanghai Electric Power, 2019). However Turkish and international NGOs are campaigning heavily against the project and they demand from the Chinese banks to stop financing for the project due to its environmental impacts (Bloomberg, 2020). Such situations affect China's coal investments in Turkey negatively. Besides, all of the three banks have signed the Belt and Road Green Investment Principles (GIP) in 2019 (Bloomberg, 2020). There are seven principles of the GIP and according to the principle 3, investors promise to make detailed analyzes on the environmental impacts of their investment including greenhouse gas emissions, energy consumption, water use and deforestation and that they will implement the recommendations of the assessments (Green Finance Leadership Program, 2018: 2). Therefore, China's coal-fired power plant investments are noncompliant with GIP, which is set by China.

On the other hand, Turkey has not ratified the Paris Agreement. According to the United Nations Framework Convention on Climate Change (UNFCCC), Turkey is in the Annex 1 list of the UNFCCC, which mainly consists of developed countries and obligates countries to reduce their emissions. Turkey tries to be deleted from the list because it argues that Turkey is a

developing country and has no historical responsibility meaning that it did not emit emissions historically just like developed nations did. Being listed as a developed country prohibits Turkey to benefit from some financial mechanisms (e.g., Green Climate Fund) for developing countries. In order to be deleted from the list, the country can't get support from other countries and negotiations are at a dead end. Turkey also fears that mitigation obligation will prevent the country from constructing new coal-fired power plants.

The USA withdrew from the Paris Agreement in 2019 (United States Department of State, 2019). But, Joe Biden won the election in 2020 and the USA re-joined the Agreement in 2021 (Dennis & Grandoni, 2021). This makes Turkey very lonely in global climate change negotiations and the country became the only G-20 country which has not ratified the Paris Agreement (Sak, 2020). Therefore the pressure on Turkey rises.

Global climate change negotiations and Turkey's dilemma regarding climate change policy might pose potential barriers for Chinese coal-fired power plant investors to invest in Turkey. If Turkey ratifies the agreement, it has to limit emissions. In this scenario, Turkey has to restrict the construction of new coal-fired power plants, which will cause fewer Chinese coal investments. However, the country can cooperate with China in terms of carbon capture and storage (CCS) technologies, which is going to increase the cost of electricity production. China develops advanced CCS technologies for coal-fired power plants with GreenGen Project (Mann, 2014). However, suppose Turkey does not ratify the agreement and limit its emissions. In that case, the country will find itself under increased pressure and loneliness in global climate change negotiations, and it might even cause economic barriers such as the EU border tax adjustments (Gunduzyeli, 2020).

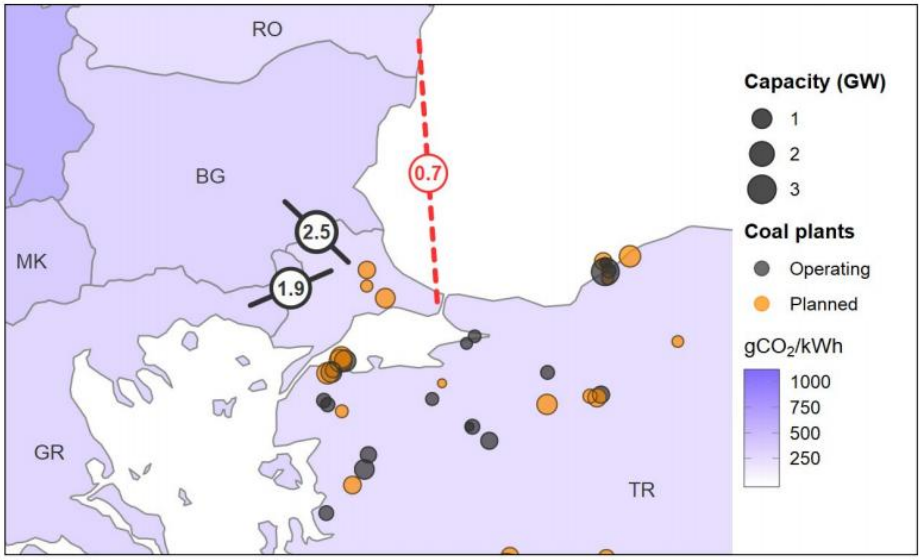
The European Commission adopted the European Green Deal on 11 December 2019, which is a comprehensive climate and environment roadmap. It includes many ambitious goals for the EU such as reducing greenhouse gases emissions by 50-55% from 1990 levels by 2030 (European Commission, 2019b). The plan does not only include actions on climate change but also on issues such as energy, circular economy, mobility, biodiversity, agriculture, environment etc. (European Commission, 2019a: 2-3). However, greening the whole system is very costly and the EU does not want the European companies to lose their competitiveness because of the environmental measures (European Commission, 2020: 2). When European companies have to implement green policies, this will increase their production cost. In this case, carbon-intensive imports will be cheaper and this will hurt their European companies' competition with the rest of the world. It might even cause some European companies to move their production out of the EU in order to bypass the regulations. This is called "carbon leakage". However, the level of carbon leakage changes from sector to sector. Some companies can move their production to different location easily and such easy shifts are described as "high carbon leakage". The EU claims that carbon leakage prohibits global emission reductions and damage its industries (European Commission, 2020: 1). Therefore, the EU is planning to impose a carbon border adjustment mechanism on imports from countries that do not reduce their emissions (European Commission, 2020: 1). Different options are considered such as carbon tax or inclusion of imports to the EU Emission Trading System (European Commission, 2020, p. 2). The measure is planned for sectors with high carbon leakage risk, which does not include electricity generation (Official Journal of the European Union, 2019).

However, it is also stated that the European Union promotes coal investments by importing tax-free electricity from neighbor countries, which generate electricity mostly from coal-fired power plants and should impose carbon-pricing measures for electricity imports (Ember, 2020: 1).

Figure 4 illustrates electricity power lines between Turkey and the EU and the red line is the planned undersea project between Turkey and Romania. According to the climate think tank

Ember, Turkey is the largest coal investor in Europe and exported 2.8 TWh of electricity to the EU via Greece and Bulgaria in 2019, which corresponds to 177 million euros (Ember, 2020: 18). Ember argues that because Turkey does not implement carbon-pricing measures, Greece is exposed to unfair competition, which affects the development of Greece's renewable energy capacity negatively and therefore the EU should implement carbon border adjustments for electricity imports from Turkey (Ember, 2020: 20).

Figure 4: Electricity Power Lines between Turkey and the EU. (Source: Ember (2020))



If this measure comes into force, it will eventually hurt Turkey's electricity exports to the EU and affect existing and potential Chinese coal-fired power plant investors negatively.

5. Conclusion

At the global level, the investment of China in the electricity sector is well-known, and its added value on high technology is significant. There is also considerable potential in Turkey for electricity investments including renewable energy technologies, nuclear energy, coal, etc. There are significant Chinese coal-fired power plant and solar panel production investments in Turkey. The total electricity investment value was 2.8 billion dollars between the years 2005 and 2020. However, there is no Chinese investment in some particular sub-sectors such as oil, natural gas, hydropower, wind, bioenergy and geothermal.

Chinese electricity investors might face several potential barriers. In terms of solar energy, Turkey wants to support solar panel production domestically. Suppose Turkey continues to support domestic solar panel production. In that case, international financial institutions will not provide finance due to WTO rules and this poses a potential barrier for Chinese solar power producers that plan to invest in Turkey. Additionally, the USA and the EU are the main export markets for Chinese solar panel producers in Turkey. This raises the importance of Turkey's bilateral political and economic relations with the USA and the EU. Economic implications of tensions might affect the Chinese panel producers in Turkey negatively.

Thirdly, Turkey wants to cooperate with China for the construction of the third nuclear power plant. As described in the case of Romania, the USA's attitude can influence the flow of a project. However, it is not expected Turkey to face a similar case due to USA-based partner

Westinghouse. However, the company faced financial troubles, which poses concerns about the future of the project. This situation may also put a strain on the Chinese investor.

China is criticized in international climate change negotiations for investing in coal and this situation has potential to affect China's coal investments abroad in the long term. Turkey wants to increase Chinese coal-fired power plants investments. However, not taking into account the negative effects of investment on the environment sufficiently causes reactions from local communities and NGOs, which increases the pressure on coal investors. This situation affects the financial opportunities of investors negatively. Besides, this attitude confronts with strong opposition in global climate change negotiations. Because the USA re-joined the Paris Agreement, Turkey became even lonelier. Turkey should consider the global climate change agenda when making coal agreements with China. If Turkey ratifies the Paris Agreement, it will have to revise its coal investment strategy to reduce potential Chinese coal-fired power plant investments. If the country continues to go, as usual, this will incentivize Chinese coal investments. However, it might lead to negative economic implications such as border tax adjustments by the EU. Elimination of these barriers will pave the way for new opportunities between Turkey and China.

Lastly, Turkey's support for coal-fired power plants contradicts with its own National Energy and Mining Policy and China's coal investments are noncompliant with Belt and Road Green Investment Principles and both of the approaches damage the environment and cause health problems for the society. Implementing green practices is critical for the sustainability of the environment at local, national and global scale.

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