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From Paris to Net Zero Emissions Target

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Energy Policy Research Center

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BRENT OIL	85.47 $/BL	GASOLINE	8.00 ₺/LT
USD/TRY	9.30	DIESEL	8.04 ₺/LT
EUR/TRY	10.80	FUEL OIL	7.06

From Paris to Net Zero Emissions Target

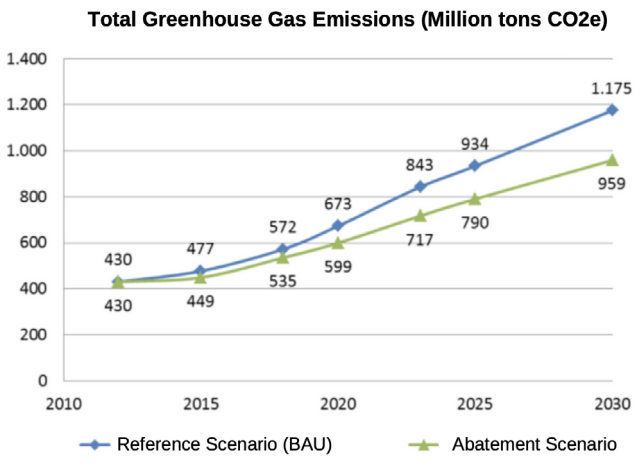
A. Erinç Yeldan

Turkey ratified the Paris Agreement on October 7, in the Grand National Assembly of Turkey and officially declared that it would participate in the common fight against climate change.

The so-called Paris Agreement was built on the Intended *Nationally Determined Contributions* presented at the 21st Conference of the Parties (COP-21) convened in Paris in 2015. (The irresistible appeal of economic jargon is that it is both "nationally determined" and "intentional" as well as "contribution"...). The *greenhouse gas emission reduction commitments* submitted to the Paris Conference of the Parties were put into effect on 4 November 2016 under the name of the *Paris Agreement*. Although Turkey signed this agreement, it did not give approval from the Parliament on the grounds that, as a result of a diplomatic error from 1992 before the United Nations, it was considered as a developed country and therefore "it was not possible to access climate funds".

The fact that this attitude, which has been delayed until now, has isolated and discredited Turkey in the field of international climate diplomacy has been repeatedly emphasized. Moreover, the technical study of the National Contribution Statement submitted by Turkey to the Paris Agreement did not put Turkey under any obligation anyway. To put it more concretely, in the official commitment document presented to the 2015 Paris COP21 Conference, Turkey predicted that greenhouse gas emissions would be *reduced by 21% from the increase* in 2030 compared to the reference scenario (Business-as-usual). Note that Turkey's *official commitment was not to reduce greenhouse gas emissions in absolute terms, but to reduce them from a predictable increase*.

Turkey's *21% reduction target from the predictable increase* mentioned in the official Intended National Contributions Statement has often been criticized for being based on unrealistic random assumptions and technically inadequate modeling. As a matter of fact, CO_2 equivalent emissions, which seem to have increased by 89% historically between 1990 and 2010, are predicted to jump by 126% between 2010 and 2030; Turkey was in a position to argue that it would be as if it had fulfilled its Paris obligations by seeming to reduce by 21% from this increase. The fact that these paths exhibited below lack credibility and that Turkey has not actually made a real commitment to the international climate struggle until today has undoubtedly been one of



the most important factors that discredited and distrusted Turkey's efforts.

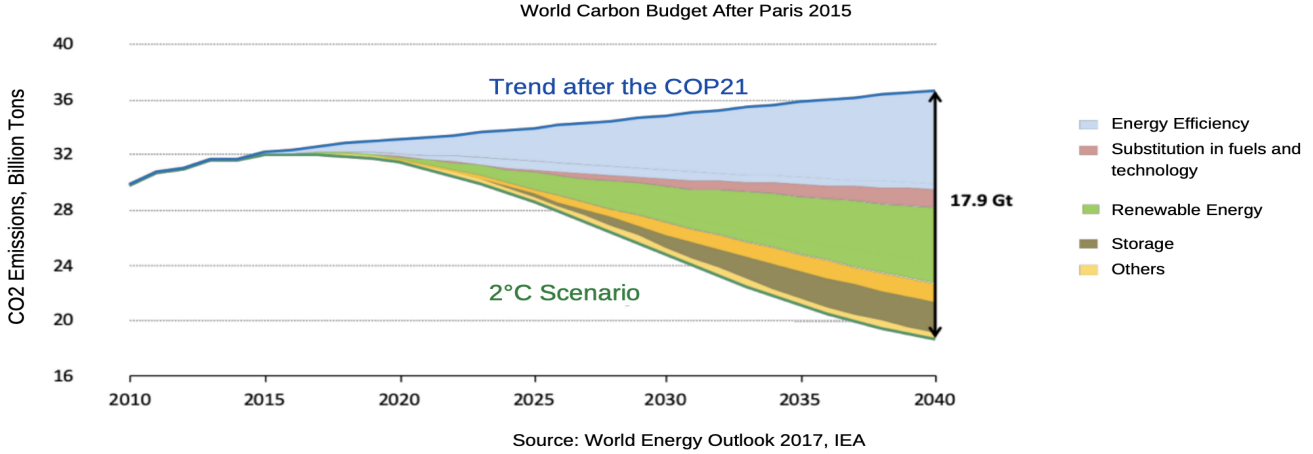
But let's go back to after Paris 2015. The scientists attending the Paris meeting emphasized that the increase in the surface temperature of our world due to the emission of greenhouse gases should be kept at 2°C (preferably 1.5°C, as will be emphasized more strongly) until the end of the century, otherwise our planet would be irreversibly destroyed.

Environmental scientists calculated that to achieve this goal, global emissions would have to be reduced to 18 billion tons. However, at the very beginning of the Paris meeting, it was seen that the commitments made by the countries were far from this target. However, at the very beginning of the Paris meeting, it was seen that the commitments made by the countries were far from this target. In the projections it presented, the World Energy Agency shared that the total emissions in the world would reach 36 billion tons by 2040, whereas the total emissions had to be reduced to 18 billion tons in order not to exceed the +2°C limit. Reducing the difference of 18 billion tons is the most important problem of the post-Paris climate struggle. These projections are summarized in the figure below.

Perhaps partly based on these findings and warnings, the fight against the international climate crisis is no longer limited to the commitments of the Paris Agreement, but has turned directly to calls for *net zero emission targets*. *The European Green Deal* announced by the European Commission in December 2019; In the USA, the *New Green Deal* calls proposed by Alexandria Cortez and endorsed by the US President Biden are the most important examples so far.

The United Nations Conference on Trade and Development (UNCTAD) also devoted its 2019 Report to this subject and envisioned the new green order designs as a development and industrialization strategy.

The most striking of these designs was the EU's European Green Deal (EGD) document. Within the framework of this design, it is seen that the EU is preparing to follow a new strategy altogether in order to combat climate change and environmental pollution problems in order to transform



Source: World Energy Outlook 2017, IEA

industry, agriculture, energy and consumer behavior. In line with the EGD strategy, it is aimed to transform EU member countries into an economic structure with "*net zero CO_2 emissions*" until 2050.

For this, the new economic growth strategy is based on re-manufacturing and circular economy, in which polluting sectors are rapidly transformed with renewable energy sources, the use of natural resources is given a more effective place, energy consumption based on fossil fuels is reduced gradually; A model that emphasizes energy efficiency and renewable energy sources is being designed. The application leg of the EGD system has not yet been clearly defined. In fact, for the *Carbon Border Adjustment Mechanism* (CBAM), one of the most important extensions of the system, to start with a 3-year transition period as of January 1, 2023, and then to be implemented from 2026, covering only five sectors is met with criticism *for being too late*. For example, the European Roundtable on Climate Change and Sustainable Transition organization describes delays in carbon regulation at the border with the words "*the mountain that labored and brought forth a mouse*". On the other hand, the EU's calls for a European Green Deal have quickly found supporters. In fact, Carbon Action Tracker, which closely recognizes the international carbon footprint, documents that some kind of *net zero emission target* has been announced in 120 of the 137 countries it monitors.

An important critical approach to EGD is that the EU's net zero target and the most important instrument it uses in general towards decarbonization are based on the Carbon Trading System (CTS), which is also the capitalist market system itself. Established in 2005, CTS currently encompasses approximately 11,000 companies and power plants producing electricity, oil refineries, chemicals, iron & steel, non-metallic products (cement), paper and air transport. These sectors account for 40% of the EU's total greenhouse gas emissions. It is expected that total emissions will be reduced over time and the net zero target will be achieved through the carbon market created with the concept of *Limit and Trade*.

Larry Lohman, in his statement, in La Nuova Ecologica magazine published in September, emphasizes that the carbon trading system actually ignores the essence of the problem and that the fossil fuel-based energy system and industrial companies throw the problem to future generations thanks to the offsets, marketization games and speculative designs created by this system. Lohman argues that the problem of the CTS climate crisis was intended to be presented as "a market stumbling block that will resolve itself when the right prices are applied," whereas at the core of the problem lies the irresistible profit rage of the capitalist unit system and the fueled consumption pattern.

The biggest obstacle to the realization of the carbon price under competitive conditions is the financial rating agencies, speculators and transnational monopolies that profit from the promotion of fossil fuels. In addition, the search for a speculation area that will take advantage of the extraordinary liquidity that the USA offers to the world money markets through quantitative easing on the one hand, and on the other hand, the annual clean development fund of 100 billion dollars, which is planned to be established within the United Nations, attracts financial speculators. After *the internet bubble and real estate and housing bubbles*, the international financial network and

transnational monopolies await speculative profits from the fluctuations of the market, turning the air we breathe into a commercial commodity under the guise of "fighting climate change". Short-term stray decisions in this direction, on the other hand, drag the environmental pollution problem, which essentially requires a long-term strategic industrialization and energy planning, to an inextricable imbalance.

Indeed, a number of studies conducted by GreenPeace and WWF highlight that the financial system is still responsible for diverting priority in speculation and loan allocation to polluting investment areas. For example, in a UK-based research by Greenpeace and WWF, it is documented that fifteen banks and ten financial investment companies organized in the financial sector in the UK are directly responsible for a total of 805 million tons of greenhouse gas emissions. According to the research, if these twenty-five companies were registered as a country, they would be referred to as the ninth largest polluter in the world.

Another study to confirm this determination can be obtained from the data of the International Energy Agency. As it is known, the CO_2 emission released to the atmosphere of our planet in a year reaches approximately 30 billion tons. When we evaluate this result not at the level of countries, but in terms of transnational companies, which are the main actors of the global production chain, we see that only twenty energy producer and distributor monopolies are responsible for 30 percent of this figure. The share of emissions caused by only the first four companies, *Chevron, Exxon, BP* and Russian *Gasprom*, in the total reaches 11.5 percent.
Therefore, we need to see that the main subject in the fight against global climate change is the "national economies", but perhaps more decisively, *the transnational companies and the international financial system*, which direct world trade with commodity chains and direct investments.

Let's conclude with Turkey. As you can see, very important designs, goals and discussions have taken place after the Paris Agreement, which Turkey has approved by the parliament. Until now, Turkey has avoided targeting reductions based on the data that it is responsible for only 1% of the total global emissions. However, the data documents that Turkey is among the leading countries in the world in the rate of increase in greenhouse gas emissions per capita, and with this rate, it has risen to the sixteenth rank in the world's total emissions. In 1990, greenhouse gas emission per capita in Turkey was at the level of 3.82 tons/person. In 2018, it increased to 6.10 tons/person. This means about a double increase.

It is widely believed that the fight against the climate crisis in Turkey will cause loss of income and conflict with the development goals. In fact, this misconception is unfortunately widely expressed at the level of the relevant ministries and bureaucracy. However, many of our studies covering the medium-long time horizon show that if Turkey's steps towards renewable energy sources and green transformation in agriculture and industry are combined with the real pricing of carbon, it can provide an increase of up to 7 percent in national income, and beyond that, geographically regional It predicts that a production pattern can be created in which inequalities are reduced and national security is ensured in energy.

Revisiting Electricity Prices

Barış Sanlı

As the world moves towards a cleaner energy system, electrification is at the heart of this transformation. Hydrogen is still a laggard, and carbon capture technologies may need higher prices or more innovation, which will take time. The easiest route to decarbonization looks like electrification.

The current electricity pricing mechanisms are archaic at their best. The capacity markets are forming a split between the baseload and the rest. Ever-increasing zero marginal cost resources are distorting the price signals. Electricity is a uniform product for some or a combination of different services for others. So what does that single kWh price means for the markets?

The main question for electricity prices is "If we had ten days of electricity storage capacity in our service, will the market design be the same?". I may simplify the question further and ask if one day of storage will be enough to radically change the market structure. The main problem with electricity is you can not store it in scale. Interseasonal storage is a bigger problem. We designed the current market systems to cover up the shortage problem.

In contrast, the oil market does not have the capacity or balancing markets. In a mature commodity, market storage makes redundant all these market mechanisms. But storage technology is in between hydrogen and renewable electricity in terms of progress.

Most of the consultancy companies can't run oil price or gas, price models. They are either pattern recognizing and repeating mathematical complexities which modelers hardly grasp how they work or simple trend-following forecasts. Electricity prices are determined by the fiction created by regulatory mechanisms. We do not really know what the real electricity prices will be if consumers and producers were to trade with each other freely.

Then there is the consumer price problem. Electricity infrastructure is more detailed and complex than natural gas or coal infrastructure. Therefore infrastructure costs, whether smart or digital, are clearly visible in the bills. But there are other levies on electricity costs. If electrification is the path forward, electricity bills should be simpler, and the natural gas bill should be more expensive. This is what some thinkers and policymakers around the world are discussing.

The consequences of lower electricity costs compared to natural gas will shift heating demand to electricity. EVs are not a big problem, but heating with electricity certainly requires firm electric power. If the discussions are leading us to electrification, practically a mini nuclear age is coming unless another nuclear accident happens.

The whole pricing structure of the electricity markets from wholesale to consumers is about to change. But it is too frightening to disturb the status quo for an essential commodity like electricity. Consumer expectations for electricity quality are very high. Our economy is centered around secure electricity. If electrification reaches 50% of total final consumption at some point, price stability will be the key. The stability requires new mechanisms from wholesale to final consumer prices. But price disparity between natural gas and electricity may reach its end of life.

Hidden Costs of Getting Operations Back Up

Alpcan Gencer

For quite some time, it's been on the news that nations worldwide are rushing to acquire gas supplies to stock up for the coming winter. While a certain number of different factors from demand to production have contributed to developing this situation, we'll be focusing on the production side and the shortcomings we're feeling in the markets right now.

Following the 2020 crash in the oil markets, numerous wells and production development activities had to be abandoned. In the U.S, the associated gas production from shale fields was ceased from oil wells that could not be run feasibly under the market conditions back then. This had a major effect on the available supply of gas, especially on the Henry Hub ticker, as the price of gas had suffered a relatively minor setback during the crash. 2 years later, as markets are getting back on track with the opening of economies, we're witnessing a relatively fast recovery in demand with a lacking production to counter it.

The abandoned wells and fields have to be brought back online to become operational again; however,, it goes beyond simply pressing a button to start the drilling again. Numerous wells and fields will have to be serviced as they were left underinvested throughout a large portion of the pandemic. The well efficiencies have probably dropped too, and on a different note, some of the equipment to service the fields have also been left unserviced for some time. Especially with offshore drilling, frequent maintenance and servicing of equipment are paramount for the health of operations. Any sort of major mishaps could result in downtime of drilling rigs, and they do not come in cheap to operate daily.

It is quite likely that companies globally, especially in the U.S, are racing to service their equipment and bring in oilfield service companies to help increase their production efficiency, which is where the bottleneck is starting. In a recent Bloomberg news piece, drillers recorded that the cost of drilling has hit a record high. Being a rather niche and fluctuating industry, there aren't too many original equipment manufacturers of oil&rig equipment. With customers lining up at their doors to get priority access to their services and equipment, it is quite likely that their offer prices have also skyrocketed, and the waiting lists are getting longer. The longer it takes for their goods to arrive at the hands of their customers, the longer it'll take for those wells

to start pumping again efficiently.

Just like how the oil crash of 2020 created horrendous market conditions for these equipment manufacturers, the boom we see right now won't last forever as well, so we can take the current market supply chain situation as a given in the oil&gas industry. Naturally, newcomers to the market are not as welcome as they could be for some other industries. Over the course of the past decade, numerous companies were either forced to merge or be bought out by their competitors to survive these conditions. There is little that could be done to change the status quo right now. Keeping this in mind, we should also focus on a second, relatively less implied problem in the chain – human capital.

Rather than keeping their high-paying jobs under wage and being obliged with multiple secondary expenses, oil and gas firms have lately gone the way of having those jobs lent out as contracting jobs. When the oil price went down and drilling stopped, these independent contractors* were under no obligation to stick with their previous employers and massive shuffles of personnel in between companies took place. Companies with access to larger resources that weathered the pandemic rather well took the opportunity to attract these experienced contractors, and on the oilfields, some companies are now facing experienced labor shortages. Mistakes made in these field jobs are not cheap and especially not right now, so the price/daily rates these contractors are charging right now have also probably gone up in addition to the equipment costs. It's a classical double whammy situation where the equipment and the person to fix the equipment are now in short supply, which is holding back the drillers from kicking up their operations in full force. Just like how the sudden drop in prices created numerous problems in the markets, the sudden increase in the prices will also create setbacks but won't be permanent. They also won't be cheap to fix as well for the small operators, and we will likely be hearing more and more about this topic as winter approaches until prices find a balance with the demand.

Supply Chain Crisis and Lessons for the Green Transition

Onurcan Mısır

As the global economy was happily preparing for the post-Covid recovery, the crisis began. Shortages of transport, energy cuts, ships waiting off the coasts to unload goods... Even though one should put a big portion of the blame on the trade war between the U.S. and China (the U.S. restrictions on SMIC, China's biggest chip manufacturer), it is the pandemic conditions that made things worse. Factories closing down or not producing at their full capacity led to less production, while the financial aid distributed to workers that had to stop their work increased demand. Interestingly, the whole situation can be said to be a trial of what expects the global economy when the green transition takes its long-awaited place.

The implementation of this transition will clearly mean a tremendous effort that must be undertaken for the future of our planet. However, it is also clear that green production will mean more costs and processes even after the first phase of transition. It will mean an increase in the demand for certain minerals that are difficult to obtain, high-capacity batteries, and semiconductors. According to the preliminary paper regarding the green transition in the context of supply chains published by the European Parliament Liaison Office in Washington DC, 'An electric vehicle requires six times more critical minerals than a conventional car, while an onshore wind power plant requires nine times more critical minerals than a comparable gas-fired plant'. While all these concerns about increased demand for certain types of resources will definitely put pressure on producers and their scarcity will mean an increase in the prices, temporary solutions to fix similar issues which happened due to the pandemic has failed. The attempt to rescue the public from the economic burden by distributing money led to more inflation, which was already high due to the lack of production. The Guardian has reported that in September, Germany has seen its highest inflation rate in 30 years, with a 14% rise in energy prices. Even without any kind of effort to completely alter the means of production, this latest crisis affected almost all sectors that were critical for the livelihood of the global society. Thus, it is clear that our familiar methods of governing the economy and production will be futile in the years to come.

An equally overriding emphasis must be put on the foreign policy that accompanies the economic policies. Many of the minerals and technological devices that will be critical in the

green transition process are extracted or produced in Asia, with the biggest producer being China. Considering that even the latest supply chain crisis that had nothing to do with the ecology intensified due to the chip shortage, a result of the U.S. restrictions on China, the climate issue clearly won't be solved until the West decides what to do with the Chinese economy. In order to solve further possible problems, one must either work to strengthen ties with China or find other producers to endorse the transition process. Also, ties with China can also help to solve the crisis that is already underway. Protection and endorsement of already present supply chains will clearly mean a safer world, however, one can also find other recipes if one wants to be prepared for the worst-case scenario.

Countries with a bridge-like geological location such as Turkey and Ukraine can play a huge role both in the solving of the supply chain crisis, and in minimizing the costs of the green transition. For they are the ones with the biggest potential but also the most conflictual environment, ensuring their security with the cooperation and commitment of all of their neighbors will add a lot to the safety of the supply chain. Furthermore, Turkish means of production, in particular, is in a very viable situation to ensure the green transition. Since it lacks a widespread heavy industry but is also not completely unindustrialized, it can both serve as a model for green transition and be prepared to produce the necessary commodities in a green future if the necessary moves to transform the industry are made.

In short, even though the global economy was totally unprepared for the post-Covid supply shock underway, and this shock presents an alarming prequel for the green transition, now we know what issues to tackle first. There are many ways to learn from our mistakes and transform accordingly. Chinese question and the quest for undertaking production for hard times can not be fully solved without reference to each other, just as environmental transformation can not be tackled without reference to both. Hopefully, the crisis will serve as a wake-up call to transform our economies, industries, and foreign policies with a broad perspective.

Europe's "Green vs. Blue Hydrogen" Debate and Implications for Turkey

Kristína Žaková

Hydrogen, an energy carrier potentially able to help us bridge our efforts to establish clean energy systems and economies, has been attracting broad attention for already quite some time. Around the world, various hydrogen-related projects are well underway, with several countries being close or already having adopted their national hydrogen strategies. The latter is the case of the EU as well, of which the Hydrogen strategy was released in mid-2020. Despite clearly emphasizing renewable or green hydrogen produced by the process of water electrolysis powered by renewable electricity, the document does not reflect a unanimous agreement on establishing the European hydrogen economy based solely on green hydrogen. Within the overall "European hydrogen eco-system," it considers the role of other low-carbon types of hydrogen, e.g. blue hydrogen, as well. This duality of approaches on developing the European hydrogen economy is mirrored by the opposing "camps" consisting of European states who point to the respective advantages and disadvantages or threats related to pursuing either way of hydrogen economy development. Considering this face-off, what are its implications for possible hydrogen exporters like Turkey?

Let us firstly zoom in on the respective arguments. On one side, Austria, Denmark, Ireland, Latvia, Luxembourg, Portugal, and Spain propose hydrogen to be produced solely by renewables-powered electrolysis. As we are witnessing falling costs of renewable energy technologies and electrolyzers, nearly zero-carbon green hydrogen is said to have a growing potential to help us decarbonize our economies effectively. By contributing to the decarbonization of sectors that are considered to be challenging to electrify effectively, such as steel production or aviation, green hydrogen is being perceived as the potential "missing link" enabling us to reach our clean economy goals. Regarding the blue hydrogen produced by the process of steam methane reforming coupled with carbon capture and storage (CCS), proponents of the solely green hydrogen pathway point to the problem of the unavailability of sufficiently effective and relatively affordable CCS solutions. Additionally, by allowing ourselves to pursue the technology-neutral road towards a hydrogen economy, we are said to run the risk of locking in our dependence on natural gas with "not-100%" CCS technologies.

The opposite camp, comprised of Czechia, Finland, France, Hungary, the Netherlands, Poland, and Romania, does not necessarily refute the possible benefits of or the emphasis on green hydrogen as the end game. However, as they support a broader, "low-carbon" definition of hydrogen, these countries stress the importance of blue hydrogen as a potentially necessary stepping-stone for the establishment of the European hydrogen eco-system. They highlight that the great decarbonization potential of green hydrogen is said to be viable if the price of the electricity is low enough. Further, it requires such "an end market for hydrogen that can sustain high electrolyzer utilization rates."

This debate is reflected at the state level as well. For instance, the importance of blue hydrogen has been articulated by the representatives of heavy industry in Germany, for in the medium-term-available quantities of green hydrogen might not be sufficient for them "to survive global competition in a low-carbon future." According to the analysis of Lambert (OIES) and Schulte (EWI), however, Germany sees "little if any role for blue hydrogen."

The European Commission doesn't seem to have made a clear decision regarding the two discussed positions yet. The limits defining the maximum amount of CO2 emitted by producing hydrogen in order for it to be considered "clean hydrogen" are yet to be decided upon, possibly by the end of 2021. As Cicculli et al. explain, "the higher the authorized level of emissions is, the more likely [it] is that blue hydrogen will become part of the [E]uropean strategy," thus receiving strategic support. Regarding the national plans, they will most likely represent a compromise between various domestic companies.

What does it mean for Turkey as a possible hydrogen exporter? The country currently uses hydrogen produced mainly from fossil fuels in fertilizer, petrochemical, and other industries. Yet it plans to increase the production and use of this energy carrier, as well as to become one of Europe's main hydrogen suppliers, particularly given its "strategic position on the Southern Gas Corridor."

The main emphasis seems to be on the blue hydrogen produced from the domestic coal coupled with CCS, as it might contribute to the decarbonization of the Turkish economy and help the country reduce its dependence on imported fossil fuels, thus reducing its trade deficit. In the light of the European "blue-vs-green-hydrogen debate," however, Turkey might not be able to further reduce its trade deficit by exporting its blue hydrogen to EU member states.

Yet Turkey is also said to have a good potential to produce green hydrogen, given the untapped renewable energy potential it has. As the EU support for green hydrogen compared to other low-carbon types of the discussed energy carrier seems to be clear, it is the export of green hydrogen that Turkey can possibly engage in. We shall see how the country will further define its hydrogen-related export ambitions in its upcoming national hydrogen strategy.

Securing China's Energy: Belt and Road Initiative

Erkin Sancarbaba

The Belt and Road Initiative is a massive infrastructure and reconstruction plan, which is mainly underpinned and financed by China. Since it was introduced in 2013, although its opposers argue that the program is the economic and political influence tool of China, 140 countries from various continents have joined this comprehensive program. The Initiative foresees 1.3 trillion dollars of investment that includes ports, railways, airports, roads, telecommunication facilities, and evidently, energy infrastructure. The efforts to establish economic development corridors in favor of the Chinese-led investments are closely linked with the aim of ensuring China's energy security.

As the world's largest energy consumer, China's dependency on external energy sources limits the country's political and economic maneuverability. Given this situation, under the auspices of the Xi Jinping administration, China makes an effort to diversify its resources and energy production methods. Today, China is taking a leading part in nuclear and renewable energy investments. On the other hand, China's adherence to crude oil and natural gas resources keeps the concerns about the country's energy import dependence on the agenda of the Chinese government.

Furthermore, despite its huge investments in nuclear and renewable energy, China still supplies nearly 75% of its energy requirements with fossil fuels. Nearly 70 percent of the crude oil consumptions and 45 percent of the natural gas consumptions of the country are supplied from foreign sources. When the instability risk in the regions having a vital part on the energy provision added to the aforementioned situation, the increasing concerns of the Chinese government about the persistence of the country's energy security becomes much more explicable. Additionally, the ratios stated above exhibits that China's large-scale energy investments, which have been constructed and financed within the scope of the Belt and Road Initiative, are not only the results of economic concerns. The approach of the Chinese government to energy investments aims to eliminate threats to national security by keeping energy transmission stable.

There are two key projects, which aim to transmit Russian gas to China. Both Power of Siberia Gas Pipeline and Altai Gas Pipeline projects are financed as part of the Belt and Road Initiative.

Power of Siberia Gas Pipeline is an existing project that has an export capacity of 38 billion cubic meters per year. The total cost of the project is between 55 and 70 billion US dollars. In May 2014, Gazprom and China National Petroleum Corporation (CNPC) signed the 30-year Sales and Purchase Agreement, which is worths nearly 400 billion dollars. The agreement estimates the transmission of Russian natural gas to China. By the natural gas pipeline that became active in 2019, China targets to diversify its natural gas sources and decrease its dependency on coal.

The Altai Gas Pipeline (also known as Power of Siberia-2) is a natural gas transmission line that is in the project phase. The pipeline project has the potential of enhancement of global competitiveness among major LNG exporters such

as Australia, Qatar, and the United States on access to the Chinese market. Moreover, Turkmenistan, Uzbekistan, and Kazakhstan go for in selling more gas to China. All these developments strengthen China's hand on reaching cheaper natural gas. Indeed, both Power of Siberia and Altai Gas Pipeline projects are quite strong tools of the Chinese government on the coal-to-gas transition policy.

Chinese-led energy transmission investments within the Belt and Road Inıtiative focus on the Central Asia region as well. The fourth phase (Line D) of the Central Asia – China Gas Pipeline, which will increase the annual capacity of the Central Asia – China Gas Pipeline to 85 billion cubic meters, is under construction. The fourth phase of the project, which will be operated by China National Petroleum Corporation (CNPC), will ensure the transmission of the Turkmen gas to China through Uzbekistan, Tajikistan, and Kyrgyzstan. In this current situation, with the existing gas supply infrastructure, China is almost the only buyer of Turkmen gas. After becoming operational, Line D will approximately double the capacity of Turkmenistan's gas exports to China. By means of this, China will gain the advantage of dominancy over Turkmen gas resources.

Also in 2009, China and Myanmar signed agreements to construct $1.04 billion cost natural gas and $1.5 billion cost oil pipelines. The natural gas pipeline, which has an annual capacity of transmitting 12 billion cubic meters of gas to China, is supplied from Shwe Gas Field. It became operational on July 28, 2013. The Myanmar – China Crude Oil Pipeline that has an annual capacity of 22 million tons, became active on April 10, 2017. The oil pipeline has a strategic target of lessening China's dependency on Malacca Strait at oil shipping activities. Through this step, in addition to cutting shipping times, China aims to transmit oil from much safer areas. Besides, the increasing cooperation between the two countries has the potential of reducing China's energy dependency on the Middle East region.

In conclusion, alongside the other infrastructure investments taking place within the scope of the program, energy transmission lines, which are built and still on construction in progress as part of the Belt and Road Initiative, have strategic values of diversifying China's energy sources and guarantee the country's energy security. In the world's current state, while other countries are looking for an effective energy governance strategy, the policy that China implements might be a demonstration of the necessity of approaching energy security within the context of national security interests. The policy of maximizing alternatives on energy supply, which is executed by China, may increase the policy options of other countries as well. Accordingly, China's cooperation with its neighbors on energy transmission ought to be monitored closely. Thus, this win-win policy can be claimed as an example of efforts to ensure energy security.

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