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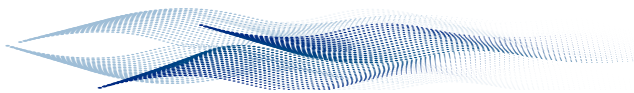
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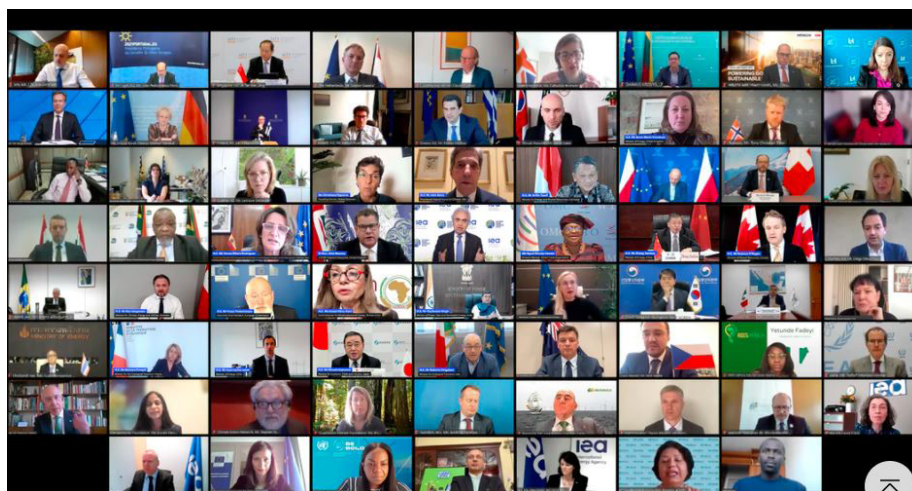
Leaders Pledge Clean Energy Action at IEA-COP26 Net Zero Summit Ahead of COP26

The Net Zero Summit, co-hosted by IEA Executive Director Dr. Fatih Birol and COP26 President Alok Sharma on 31 March 2021, marked a critical milestone on the road to COP26 in Glasgow this November. Bringing together representatives from 40 countries that produce more than 80% of global GDP, population, and emissions, the summit afforded decision-makers the opportunity to share their perspectives and to emphasize the necessity of international collaboration and policy implementation to accelerate clean energy transitions.

Speakers included high-level officials of energy and climate ministries from Australia, Brazil, China, Colombia, the European Union, France, Germany, India, Indonesia, Italy, Japan, South Africa, the United Kingdom, and many others, while representatives of civil society, private companies, and financial institutions also took part in the discussions. Key participants included Zhang Jianhua, China's Minister of Energy; Frans Timmermans, Executive Vice-President of the European Commission; Raj Kumar Singh, India's Minister of Power, New and Renewable Energy; John Kerry, U.S. Presidential Special Envoy for Climate; Amani Abou-Zeid, African Union Commissioner for Infrastructure and Energy; and Ngozi Okonjo-Iweala, Director-General of the World Trade Organization.

Dr. Fatih Birol: "The magic word is innovation."

"If we consider all the countries that have announced commitments, they represent nearly 70% of global emissions, a big number. This is promising news for the world and signals that we may well be on track to meet the 1.5 °C target. No country can reach this target alone. What is needed is international collaboration. We have to make the most out of

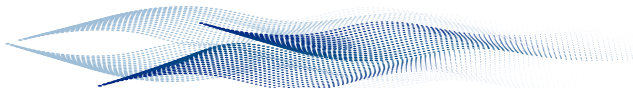


existing technologies and bring new, advanced clean-energy technologies to market. The magic word is innovation. We need carbon capture, batteries, and hydrogen in all sectors. This is a huge challenge and can only be achieved with global collaboration and cooperation. May 18 will be an important day for the climate agenda this year, as we will release the World's Roadmap to Net Zero by 2050," said IEA Executive Director, Dr. Fatih Birol in his opening remarks.

Dr. Birol went on to enunciate a key outcome of the summit : "As part of today's summit, we at the International Energy Agency developed seven key principles that provide a framework for countries to work together and

translate their ambitious targets into real emission reductions by advancing credible energy policies. Numerous governments around the world support these principles, and I expect more countries to adopt them in the future."

"It is time for the world to move on from a decade of climate change deliberation to a decade of delivery. The UK strongly encourages countries to endorse the IEA's seven principles for achieving net-zero. Today's summit clearly showed willingness from governments, civil society, and businesses to work together in each emitting sector to make this happen and keep the 1.5 °C target within reach," said Alok Sharma, the COP26 President.



Focus on creating jobs, faster innovation and adequate finance

Alok Sharma (COP26 President):

"This should not be viewed as a shouldering of a burden, but more a sharing of an opportunity. By working together, we can accelerate progress, create jobs and prosperity, and protect our planet for future generations."

"It is by working together that we can innovate faster, create economies of scale, and drive economic incentives. Without adequate finance, the task ahead is nearly impossible. Rapid structural change is needed across borders at all levels. Enhancing international collaboration is a key goal of the COP Presidency."



Dr. Fatih Birol: "If we want the transition to clean energy to happen quickly, the world's major economies have to work much more effectively and closely together."

"Our Net Zero Summit made clear that the vast majority of the world agrees on the gravity of the climate crisis and the urgency for immediate action to put global emissions on track towards net-zero. But it also underscored the need for greater international collaboration to drive rapid global deployment of clean energy technologies across all key sectors of the economy."

"No country can do this alone. If we want the transition to clean energy to happen quickly, the world's major economies have to work much more effectively and closely together. The Summit's Key Principles show what

needs to happen, and I offer the IEA's full support for the UK COP26 Presidency's efforts to strengthen the

international cooperation mechanisms that will accelerate our transition to net-zero."

The Seven Key Principles are:

- Sustainable recoveries can provide a once-in-a-generation down-payment toward net-zero;
- Clear, ambitious, and implementable net-zero-aligned roadmaps to 2030 and beyond are critical;
- Transitions will go faster when learning is shared;
- Net-zero sectors and innovation are essential to achieve global net-zero;
- Mobilizing, tracking, and benchmarking public and private investment can be the fuel to achieve net-zero;
- People-centered transitions are morally required and politically necessary; and,
- Net-zero energy systems also need to be sustainable, secure, affordable, and resilient.

These principles cover areas including:

- the need for sustainable recoveries from the Covid-19 crisis,
- the critical importance of implementable emissions-reduction roadmaps for the current decade,
- and the development of stronger mechanisms for international coordination to accelerate innovation and deployment in each major emitting sector of the global economy,
- technology collaboration,
- best-practices sharing,
- investment tracking,
- ensuring people-centered transitions,
- and integrating energy security and affordability into net-zero plans.

The IEA also noted that countries at all stages of development, while united in the high levels of their ambitions, would need to determine their own

unique path to implementing net-zero, according to the diversity of their national circumstances and wide range of available technologies.

The IEA will publish the first comprehensive roadmap for the global energy sector to reach net-zero emissions by 2050 on 18 May 2021. The roadmap will set out a pathway for what is needed from stakeholders, including governments, companies,

investors, and citizens, to put global emissions in-line with a temperature rise of 1.5°C. The roadmap will help decision-makers "prioritize urgent action" in the lead-up to November's climate talks. This report was among the key stories in previous IICEC Newsletters (Issue 18¹ and 19²).

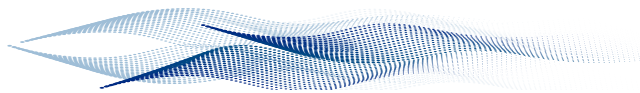
The summit provided the opportunity to take stock of the growing list of commitments from countries and companies to reach the Paris Agreement's goals and to focus on taking action today to start turning the growing

number of net-zero goals into reality. You can watch the video of the Summit here:

<https://www.youtube.com/watch?v=t19lph0j4jQ>

¹ https://iicec.sabanciuniv.edu/sites/iicec.sabanciuniv.edu/files/2021-01/IICEC%20Energy%20Market%20Newsletter%20Issue%2018_1.pdf

² https://iicec.sabanciuniv.edu/sites/iicec.sabanciuniv.edu/files/2021-03/IICEC_Energy_Market_Newsletter_Issue_19_0.pdf



IEA released "Turkey 2021: Energy Policy Review"

As part of its regular, in-depth peer reviews of the energy policies of its member countries, the International Energy Agency (IEA) released the Turkey 2021: Energy Policy Review report on 11 March 2021 with an online event that featured Dr. Fatih Birol,

Executive Director of the IEA, and Dr. Alparslan Bayraktar, Deputy Minister of Energy and Natural Resources of Turkey.

The report assessed the three pillars of Turkey's energy policy—security of

energy supply, expanding domestic energy production, and energy market liberalization—and discussed important developments across the Turkish energy sector, highlighting the challenges and opportunities that lie ahead.

The IEA's Executive Director Dr. Fatih Birol:

"I strongly believe that policy and regulatory measures can help Turkey further bolster its energy security and navigate its future energy challenges and opportunities in the most cost-efficient and sustainable way. The IEA is committed to supporting Turkey in these efforts."



such as efficiency improvements and fuel switching in the transport sector, which is still 98% reliant on oil. Moreover, there is still considerable

scope for Turkey to target even more ambitious growth in renewables, not just in electricity, but also in other sectors such as heating."

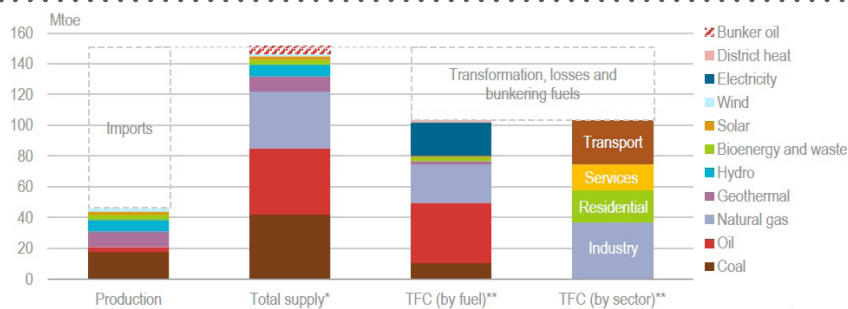


Figure 1: Overview of Turkey's Energy System by Fuel and Sector, 2018/19

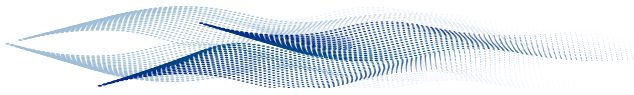
Source: Turkey 2021, Energy Policy Review, IEA

*Mtoe: million tons of oil equivalent

"Fossil fuels continue to drive Turkey's economy," according to the report, "with a heavy dependency on imports, especially oil and gas (93% and 99%, respectively). Turkey has prioritized expanding its domestic exploration and production of these fuels to help reduce its import dependency. However, given limits on upstream resources and with consideration for emissions reduction, Turkey should also place a high priority on cost-optimal, demand-side measures,

Renewable energy production has more than doubled since 2009. Turkey's energy mix, however, remains dominated by fossil fuels, which accounted for 83% of the country's total primary energy supply (TPES) in 2019, despite the recent growth in renewables. While the majority of the oil and gas consumed in Turkey is still imported, approximately half of the coal and all types of

renewable energy are produced domestically. The industrial sector accounted for over a third of total final consumption in 2018, closely followed by the transport (27%), residential (20%) and services (17%) sectors (Figure 1). It is important to note that recent gas discovery in the Black Sea will improve the trade balances in this decade while contributing to a more sustainable energy future for Turkey.



Dr. Fatih Birol:

“Turkey has pursued a restructuring of its energy system with the aim of rationalizing energy-demand growth, lowering energy prices for consumers, and slowing the pace of import growth.”

“In light of its heavy dependence on oil and gas imports, Turkey has prioritized energy-supply security as one of the central pillars of its energy strategy. The policy includes efforts to boost domestic oil and gas exploration and production, diversify oil and gas supply sources and associated infrastructure, and reduce energy consumption through increased energy efficiency.”

“Turkey could achieve much more growth in renewables given its tremendous resource endowment, not just in electricity but also in the heating sector.”

“I am pleased to observe that Turkey has seen considerable diversification of its energy mix in the past decade. In particular, renewable energy has staged impressive growth, with renewable electricity generation tripling over the period, led by hydro, solar, and wind. Still, Turkey could achieve much more growth in renewables given its tremendous resource endowment, not just in electricity but also in the heating sector. The planned commissioning of Turkey’s first nuclear power facility in 2023 will further diversify the country’s fuel mix.”



Dr.Fatih Birol



Dr. Alparslan Bayraktar
Deputy Minister of Energy & Natural Resources, Turkey

Dr. Alparslan Bayraktar:
“Turkey will be able to achieve more flexible and competitive gas supplies.”

Deputy Minister of Energy and Natural Resources of Turkey Dr. Alparslan Bayraktar delivered a keynote address during the event, making important statements regarding Turkey’s key energy policies.

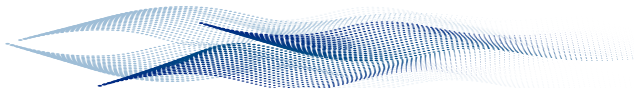
Dr. Bayraktar emphasized that the government will implement a “Gas Market Reform” that evinces a firm determination for a more liberalized natural gas market. “We have made significant structural changes in the electricity market and changed the market structure completely over the last 15-20 years. Thus, we have been able to attract domestic and foreign

investors to the market. Unfortunately, market reforms in the natural gas market fell behind schedule because we were hindered by old-fashioned gas contracts with limited flexibility. Such a supply mechanism and dependence on imported resources delayed the liberalization process in the gas market. But now, with infrastructure investments and more diversified gas-supply sources, we are poised to introduce these market reforms,” underlined Deputy Minister Bayraktar.

Noting the beginning of the expiration in 2021 of Turkey’s long-term gas import contracts, Dr. Bayraktar emphasized that Turkey is now ready to receive natural gas from many directions and countries and in diverse forms. Therefore, in the next phase of gas supply, Turkey will be able to achieve more flexible and competitive supplies. Bayraktar also said that BOTAŞ would be unbundled within the scope of the coming gas market reforms, but that privatization of the state entity is not on their agenda at the moment.

The report notes that Turkey has made huge progress in expanding its gas-supply options through new gas discoveries, pipelines, LNG terminals, and increased storage and recommends that it continue to increase competition in the Turkish natural gas market.

Regarding renewables being one of the central pillars of Turkey’s energy sector growth strategy, Bayraktar underscored the efforts and investments made to increase the use of renewable energy sources. Bayraktar noted that Turkey installed almost 9 GW of wind and 7 GW of solar power capacity and now ranks 6th in Europe and 13th globally in terms of the total installed-power capacity in renewables. Bayraktar also underlined that almost all of the 5 GW of net-capacity additions into the system in 2020 came from renewable energy sources, an indication that renewables will continue to grow as a share of the country’s energy mix. He further added that Turkey aims to install 1 GW of wind and 1 GW of solar power on an annual basis over the next years.



Dr. Fatih Birol: “Policies to promote innovation in areas such as electric vehicles, energy storage, and digital technologies will be critical.”

In the report, Executive Director of the IEA Fatih Birol emphasizes that Turkey needs to pay close attention to the sustainability of its energy sector and its longer-term carbon footprint if it is to achieve a modern and competitive economy: “It is equally important to direct industrial policy toward the next phase of a clean energy transition. To this end, policies to promote innovation in areas such as

electric vehicles, energy storage, and digital technologies will be critical.”

Dr. Birol’s foreword in the report also states that Turkey has made significant progress in its energy market liberalization process and emphasizes that further reforms for a more competitive structure in natural gas and electricity markets could mobilize needed investments.

The Key Recommendations of the “Turkey 2021: Energy Policy Review” are:

- Gradually phasing down of the power market-support mechanisms, such as subsidization and the obligated procurement by EÜA of a significant share of electricity generation, to keep system costs down.
- Significantly strengthening incentives, market mechanisms, and access to finance for energy-efficiency projects, especially in the industrial and buildings sectors.
- Developing a cross-governmental road map to reduce oil consumption by strengthening demand-reduction and

fuel-switching policies in the transport sector, including the promotion of electric vehicles.

- Reducing the dominant position of BOTAŞ and fostering increased competition in the Turkish gas market.
- Defining long-term targets for the development of renewable energies that take into account the maximum potential per technology.
- Defining mid-and-long-term emissions reduction and local air pollution targets to help guide sustainable energy policy-making, including a plan for peaking of emissions.

To read the full report, please click [here](#).

To watch the launch of Energy Policy Review: Turkey 2021, please click [here](#)

Dr. Fatih Birol: “Renewables are overtaking coal’s leading position in the global power sector.”

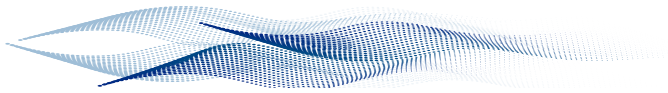
Dr. Birol also provided his perspectives on the global energy scene during the launch event. The IEA Executive Director emphasized the challenges triggered by the Covid-19 pandemic since the first quarter of 2020: “The Covid-19 pandemic was a major shock to the global energy market. Global energy demand declined about 4% last year, the largest drop ever.”

- **Investments:** “We have seen an unprecedented drop—close to 20% in 2020—in global energy investments.”
- **Emissions:** “As a result of declining energy demand and the economic slowdown, global CO2 emissions dropped sharply last year. However, in December 2020, we perceived that emissions would rise again as a result of the economic recovery and the lifting of lockdowns.” (For further details, including recent trends regarding these issues, please see the previous issue of the IICEC Newsletter, Issue 19.³)
- **Gas:** “Global gas demand declined 3% last year, mainly

as a result of reduced electricity generation and global impacts that caused economic slowdown.”

- **Oil:** “The oil market experienced the most significant impact from the Covid-19 pandemic.”
- **Coal:** “Coal saw a major decline, similar to oil, particularly in Asia and Europe, as well as in the United States.”
- **Renewables:** “Renewables were the only resources that grew last year despite the pandemic. However, their growth remained lower compared with the previous year. Nevertheless, renewables were clearly more immune to the negative effects from Covid-19 than other energy sources.”
- **Electricity:** “In 2020, the share of renewables in electricity generation was slightly higher than the share of gas. Coal was the leader for many years, and remained so last year. But when we look at the future, we see that renewables will overtake coal’s leading position. Coal’s leadership in global electricity generation will be a thing of the past. As I have said before, solar will be the king of the electricity market in the future.”

³ https://iicec.sabanciuniv.edu/sites/iicec.sabanciuniv.edu/files/2021-03/IICEC_Energy_Market_Newsletter_Issue_19_0.pdf



“Turkey Energy Outlook: Energy Markets, Investment and Technologies” Webinar was held

On March 17, the Sabancı University Istanbul International Center for Energy and Climate (IICEC) and Swiss Chamber of Commerce in Turkey, in cooperation with the Embassy of Switzerland in Turkey, hosted a webinar entitled "Turkey Energy Outlook: Energy Markets, Investments, and Technologies" as part of the Switzerland-Austria-Germany Embassies' 3-Country Business Meeting Series. The webinar attracted a distinguished group of



participants from around the globe, composed of representatives from governments, embassies, consulates, research centers, academia, and a wide range of industries and business community with a vested interest in the energy sector.

Welcoming speeches were delivered by Ariane Tinner, Head of Economic and Cultural Affairs & Counsellor, Embassy of Switzerland in Turkey, and Dr. Mehmet Doğan Üçok, IICEC Coordinator. IICEC Director Bora Şekip Güray presented the major findings of “Turkey Energy Outlook” with a special emphasis on energy markets, investments, and technologies.

Güray: “Turkey has strong potential in clean energy.”

Güray emphasized the importance of renewable energy, energy efficiency, and clean energy technologies such as electric-vehicles for building a more secure and clean energy future for Turkey. Güray also welcomed the interest that the Turkey Energy Outlook (TEO) study has received since its launch in November 2020. “The Turkey Energy Outlook is an independent academic study. But at the same time, it reflects energy policies, markets, and business in investments and transiting to more competitive energy markets as among the many solid policy recommendations in the TEO, all of which could steer Turkey towards a more secure, efficient, competitive, technology-driven, and sustainable energy future.”

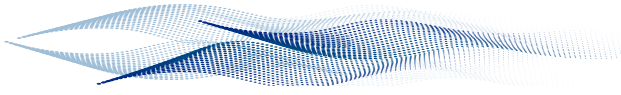


TURKEY ENERGY OUTLOOK 2020

10 TEO Recommendations for a more secure, efficient, competitive, technology-oriented and sustainable energy future

- 01 An attractive investment framework to mobilize investments for meeting increasing demand for modern energy services while achieving a more secure, efficient and sustainable energy future.
- 02 Faster progress towards competitive power and natural gas markets and wider private sector participation with cost-reflective energy prices while addressing the social dimension.
- 03 Increased renewable and nuclear power with more flexibility in the power grid including demand side services.
- 04 Increased energy and fuel efficiency across all sectors supported by fuel shifts towards further electrification and larger use of renewable energy.
- 05 Strong policy initiatives, market based and innovative financing and business models to exploit the energy efficiency potential in buildings and industries.
- 06 Faster uptake of electric vehicles and Turkey's recharging infrastructure and faster retirement of older, inefficient and polluting transportation vehicles.
- 07 Increased modal shifts from energy and oil intensive road to rail and marine as well as a data-driven urban transportation planning structure to ensure effective public transit capital investments and measures to discourage private automobile travel.
- 08 Sustained exploration and production (E&P) efforts and investments to discover and produce more domestic oil and gas.
- 09 Increased uptake of digitalization and advanced data analytics along the energy supply and demand chain.
- 10 Increased innovation, R&D and manufacturing of advanced energy technologies.

Sabancı Üniversitesi IICEC SABANCI UNIVERSITY ISTANBUL INTERNATIONAL CENTER FOR ENERGY AND CLIMATE



Dr. Mehmet Doğan Üçok:
“IICEC is expanding its activities and sphere of influence within the ‘Success Triangle’ together with policy-makers, industry, and academia.”

In his welcoming speech, IICEC Coordinator Dr. Mehmet Doğan Üçok said: "Eleven years ago, we established IICEC as a high-level exchange platform with a common purpose towards a better and more sustainable energy future. As a globally recognized center, IICEC conducts objective, high-quality economic and policy research on the future of energy and climate issues. The center is expanding its activities and sphere of influence within the



‘Success Triangle’ together of policy-makers, industry, and academia.”

Expressing the Embassy of Switzerland in Turkey’s pleasure in co-hosting this event, the Head of Economic and Cultural Affairs & Counsellor, Ariane Tinner, said in her

concluding remarks: "We learned a lot about Turkey’s energy sector and how to develop the energy portfolio in a sustainable and environmentally friendly manner. I find it very useful that this study and its presentation include concrete recommendations to reach important future goals."

New Economic Reform Package Includes Important Energy Actions

Turkish President Recep Tayyip Erdoğan unveiled the new Economic Reform Package at a press conference held on March 12 at the Haliç Congress Center in Istanbul. “The package aims to grow the Turkish economy on the basis of investment, production, jobs, and exports. Turkey will definitely create sustainable, strong, and quality growth that will conform to its post-pandemic economic structure,” said President Erdoğan.

While the reform package’s major goal is to set a stronger public finance structure with fiscal discipline, energy constitutes one of the backbones of the action plan. The President underlined that the effective implementation of policies that reduce foreign dependency on energy should continue, as this is the main driver of the country’s current account deficit.

Minister Fatih Dönmez Outlines Scope of Actions in Energy

The Ministry of Treasury and Finance announced the schedule of the Economic Reform Action Plan on 23

March 2021. Fatih Dönmez, Minister of Energy and Natural Resources, stated that the reform package includes five key items related to the energy sector and that these reforms will be implemented as soon as possible:

- **Mining and E&P**

"We will take concrete steps to enhance the investment environment and investment security in mining, as well as in natural gas and oil exploration-and-production (E&P) activities. We have almost completed our studies to amend the Mining Law for certain improvements and incentives. The exploration phase, which is the first stage in the production of underground resources, should be carried out as quickly and with as much support as possible. The mining industry is far stronger when compared to the previous period, but when we look at developed countries, we have a long way to go," stated Minister Dönmez.

- **Support for Energy Efficiency**

Stating that they want to increase the support apportioned to energy-

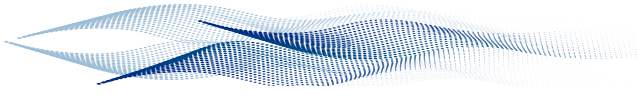
efficiency applications by amending the Energy Efficiency Law, Dönmez said: "Currently, energy-efficiency support is only available for industrial projects. However, we started receiving inquiries from commercial enterprises and even from residential consumers. We also consider the financing angle of efficiency improvements in our exchanges with the sector. We are about to finalize our approach in these areas."

- **Electricity Storage**

Noting that the storage of electricity is another emerging area, Minister Dönmez emphasized that the Ministry is taking steps towards launching pilot programs for electricity storage in some local districts and neighborhoods through electricity-distribution companies.

- **E-charging**

Dönmez also underlined the importance of enhancing Turkey’s e-charging infrastructure, noting the importance of the TOGG project .



● Competitive Market Conditions in Natural Gas

Dönmez elaborated on the government's aims to create a competitive environment in accordance with liberalized market

conditions by restructuring the natural gas market: "Today, the electricity-generation sector is nearly 80% liberalized. The electricity-distribution sector is completely in the hands of the private sector. On the gas side, the private sector operates distribution.

Unfortunately, share of domestic production in natural gas is very low at the moment. We will start to liberalize the wholesale market first and aim to take steps this year, including the restructuring of BOTAŞ."

Some of the key actions outlined within the scope of the reforms include:

- With the amendment to the Energy Efficiency Law, the buildings, agriculture, and service sectors will be included in the scope of support for energy efficiency. (December 31, 2021)
- Legal infrastructure for the establishment of electricity-storage facilities will be completed. (June 30, 2021)
- Electric vehicle-charging infrastructure related actions will be implemented. (December 31, 2021)

- A competitive and free market will be developed by restructuring the natural gas market. (December 31, 2021)

The actions also address R&D studies for developing and disseminating technologies for green energy production, green energy finance-related instruments, and sustainable transportation approaches in a broader perspective, including the use of electric vehicles in public transport fleets and service vehicles, including at the municipal level.

Minister Dönmez: "We will form the National Hydrogen Strategy."

Minister of Energy and Natural Resources Fatih Dönmez announced that the Ministry will form the **National Hydrogen Strategy** of Turkey, in communication and collaboration with the sector and citizens. The announcement came during the opening ceremony of the Gazbir-Gazmer Clean Energy Technology Center for blending natural gas and hydrogen for domestic use. The Minister referred to the five "Search Meetings" conducted in 2020, during which one of the five topics discussed was hydrogen.

Minister Dönmez pointed out that: "Experts describe hydrogen as 'the energy carrier of the future'; however, it can be said that the research in this area is still in its infancy. We will hear more about hydrogen in the future and will continue to work on this subject. We want Turkey to be involved in hydrogen as part of its future energy strategies. As the Ministry, we aim to benefit from

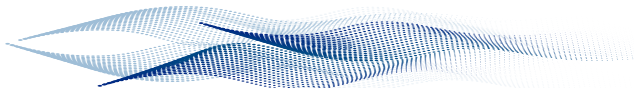


hydrogen in four ways: introducing more renewable energy into the system, decarbonizing heating in the energy sector, producing hydrogen from coal, and developing boron-based hydrogen storage."

Minister also said that blending hydrogen into the existing natural gas pipeline network forms a basis for the hydrogen strategy, and the trials launched in 2021 for this purpose are underway. "Gazbir-Gazmer was given 'homework' for this purpose. This was why the Gazbir-Gazmer Clean Energy Technology Center was launched with an investment of

6 million TL," added Mr. Dönmez.

Dönmez also noted that they received great foreign interest in Turkey's hydrogen-export potential and that Turkey is working to explore its green hydrogen-export potential. He also described the utilization of hydrogen in mobility as a key area of future development: "We have seen how LNG- and CNG-powered trucks are being used in Turkey. We think we can benefit from hydrogen in the heavy vehicles segments and convert diesel trains to hydrogen-powered trains. These initiatives will also be on our agenda."



IICEC hosted the “Turkish Hydrogen Economy” webinar on 24 September 2020, examining the potential for hydrogen in Turkey’s energy future across different

sectors. During the discussion, experts from industry, business, and academia shared their views on Turkey’s hydrogen-production and export potential.

Sabancı University IICEC Webinar: “Turkish Hydrogen Economy”

Sabancı Üniversitesi IICEC SABANCI UNIVERSITY ISTANBUL INTERNATIONAL CENTER FOR ENERGY AND CLIMATE

Thursday, September 24, 2020 15:30 - 17:00 (Turkey Time)

Bora Şekip Güray
Research Director,
IICEC (Opening Speech)

Barış Sanlı
Researcher,
Bilkent Energy Policy
Research Center (Moderator)

Dr. Emre Gençer
Research Scientist,
MIT Energy Initiative

Prof. Dr. İskender Gökalp
Professor, METU Mechanical
Engineering Department, Ankara and
ICARE-CNRS, Orléans, France

Yaşar Arslan
Chairman, GAZBİR

You can watch the record of the webinar here:

<https://iicec.sabanciuniv.edu/event/iicec-webinar-turkish-hydrogen-economy>

IICEC also published a research paper in 2019, “Hydrogen Fuel Cell Vehicles”, within the scope of the IICEC Energy and Climate Research Paper Series. The paper can be accessed here:

<https://iicec.sabanciuniv.edu/hydrogen-fuel-cell-vehicles>

LNG Represents Nearly One-Third of Turkey’s Natural Gas Imports

Turkey consumed 48.0 billion cubic meters (bcm) of natural gas in 2020, with an annual increase of 6.9%, despite the negative economic impacts of the Covid-19 pandemic. Turkey imported 48.1 bcm of natural gas last year, according to data compiled from the Energy Market Regulatory Authority’s (EMRA) monthly reports. Imports increased by 6.5% compared to 2019, but production and export figures experienced no major change (Figure 2).

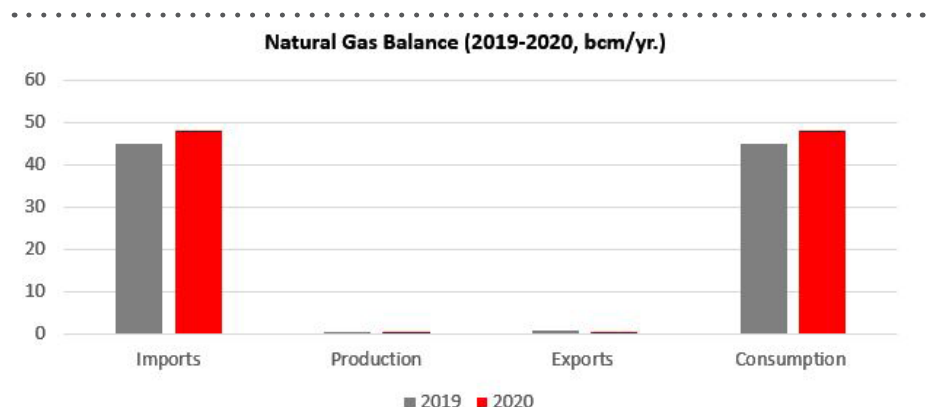
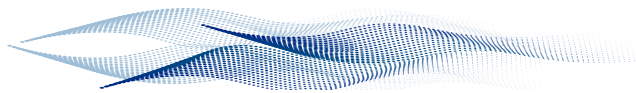


Figure 2: Natural Gas Balance (2019-2020, bcm/yr)

Source: EMRA



LNG imports increased by 18.8% in 2020

Turkey's LNG imports hit a record in 2020, with an 18.8% increase from 12.7 bcm/yr. in 2019 to 15.1 bcm/yr. LNG now meets close to one-third of Turkey's gas demand, up from less than 20% in 2017 (Table 1).

Table 1: Annual LNG Imports and Their Share in Total Natural Gas Imports

(2017-2019, bcm/yr. and %)

| Year | Total LNG Imports (bcm/yr.) | Share in Total Natural Gas Imports (%) |
|------|-----------------------------|--|
| 2017 | 10.8 | 19.5 |
| 2018 | 11.2 | 22.4 |
| 2019 | 12.7 | 28.1 |
| 2020 | 15.1 | 31.3 |

In 2020, Turkey imported LNG from 15 different countries. Algeria was the top exporter with a 37% share (5.6 bcm/yr) of total LNG imports. Qatar was second at 22% (or 3.3 bcm/yr), and the United States was Turkey's third-largest LNG exporter, with a 20% share (or 3.0 bcm/yr) (Table 2).

Among the countries from which natural gas is imported to Turkey by pipeline, Russia ranked first with 16.1 bcm/yr, corresponding to a 49% share in total pipeline imports (or about 1/3 of total natural gas imports), and Azerbaijan ranked second, with a share of 35% (11.5 bcm/yr). Iran supplied 5.3 bcm/yr of gas to Turkey, which compromised 16% of the overall annual pipeline gas imports. Gas flows from Iran were halted last year between April and June due to an explosion in the Turkish section of the main pipeline. Increasing gas flows from Azerbaijan enhanced the

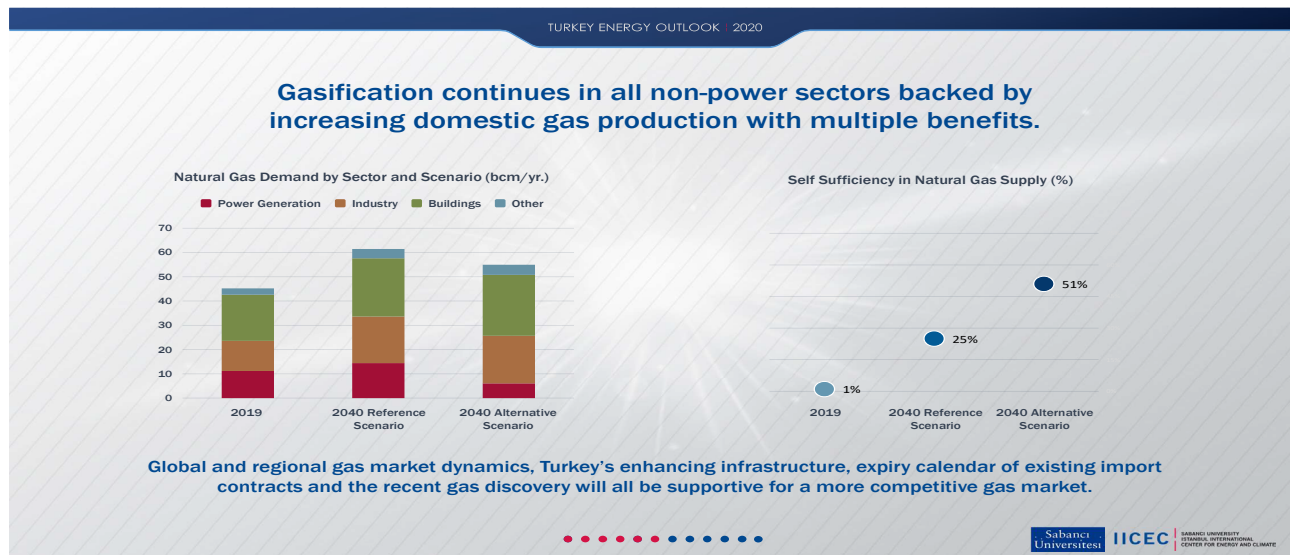
diversity of import-supply patterns over the past few years.

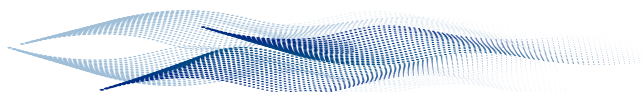
Table 2: LNG Imports by Country in 2020 (bcm/yr)

| Country | Volume (bcm/yr) |
|-----------------|-----------------|
| Algeria | 5.6 |
| Qatar | 3.3 |
| United States | 2.9 |
| Nigeria | 1.9 |
| Trinidad Tobago | 0.6 |
| E. Guinea | 0.2 |
| France | 0.1 |
| Cameroon | 0.1 |
| Angola | 0.1 |
| Egypt | 0.1 |
| Norway | 0.1 |
| Spain | 0.1 |
| Total | 15.1 |

The security and flexibility of Turkey's gas supplies have significantly improved in recent years thanks to enhanced infrastructure and growth in the number of entry points, as discussed in detail in the Turkey Energy Outlook. These positive structural changes go hand-in-hand with the current dynamics of the global gas market and regional outlook: rising supplies of LNG, increased emphasis on short-term and spot market supplies, and contract pricing based on gas-to-gas competition.

The Turkey Energy Outlook showed that rising supplies of LNG helped catalyze these developments and emphasized an increased role for LNG in creating a more competitive and flexible gas-supply structure that is helping to fuel further gasification of the Turkish energy economy, in particular in buildings, some industries, and transportation, with multiple benefits for the country, including improved air quality and lower carbon footprint.





Gas and Condensate Found at the Shafag-Asiman Field

According to the announcement dated March 24th on SOCAR website, first gas-condensate reserves were found at a depth of 7189 meters in an exploration well drilled on the Shafag-Asiman block in the Azerbaijani sector of the Caspian Sea. Herewith the logging and drilling of the Fasila stratum of the field was successfully completed. To define the exact volume of hydrocarbon reserves, the parties of the project are going to work out a technical plan for drilling of an additional lateral well in the direction of the structure's arch. Exploration work on the Shafag-Asiman block is a joint project of SOCAR and BP. According to the Production Sharing Agreement, BP is the operator of exploration drilling. On January 11, 2020 SOCAR's subsidiary Caspian Drilling Company's started drilling the exploratory well on the 623-meter deep seabed by Heydar Aliyev Semi-Submersible Drilling Rig.

The President of the Republic of Azerbaijan Ilham Aliyev said: "The history of cooperation between BP

and SOCAR comprises a period of about 30 years. During this period, many projects of global importance have been carried out. These include such joint projects as the development of Azeri-Chirag-Gunashli (ACG) block, the Baku-Tbilisi-Ceyhan (BTC) pipeline, the Shah Deniz, the Southern Gas Corridor (SGC) and its elements - the SCP, TANAP and TAP pipelines. Currently, the cooperation between SOCAR and BP has strategic importance. BP is the biggest foreign investor in Azerbaijan's oil and gas industry."

Today, we are working on several new projects together with our traditional partner, BP. One of these projects is the development of the Shafag-Asiman prospect, where the drilling of the first well has already been completed with good results. The gas and condensate reserves, found at a new deep-water field in the Azerbaijani sector of the Caspian Sea, will contribute to the growth of our proven hydrocarbon reserves and, consequently, to the energy security of our country and

many other countries. Our proven natural gas reserves can contribute to the Southern Gas Corridor, the last link of which - TAP pipeline was completed last year. I congratulate the people of Azerbaijan, our oil workers, BP and SOCAR on this success."

The Shafag-Asiman block lies 125 kilometers to the South East of Baku. It covers an area of 1100 square kilometers. It is located in water depths of 650-800 meters. The Shafag-Asiman structure was discovered in 1961 during a seismic exploration. On October 7, 2010, SOCAR and BP signed a production sharing agreement (PSA) on joint exploration and development of the Shafag-Asiman offshore block for a period of 30 years. SOCAR and BP have equal shares in the project. In 2012, 3D seismic exploration was conducted at Shafag-Asiman. Interpretation of the seismic data was completed in 2015. Subsequently, the partners agreed on the location for the drilling of the first exploration well.

1 GW Solar PV YEKA Tender Received 9.4 GW of Bids

The Turkish Ministry of Energy and Natural Resources received applications for 1 GW of solar in the Mini-YEKA (Renewable Energy Resources Zones) tender held from March 8-12, 2021. Tendering companies numbered 131 for a total capacity of 9.4 GW. The Ministry received submissions for 709 projects for the allocated connection capacities of 36 cities (in 10-MW, 15-MW, and 20-MW portions).

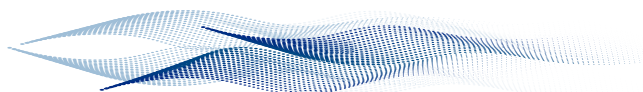
Energy and Natural Resources Minister Dönmez said that the Ministry aimed to attract small- and medium-sized market players with the Mini-

YEKA model: "We reached this goal with a record level of applications. Aksaray received the highest number of applications with 65, followed by Burdur (33), and Nevşehir (31). Thanks to this record level of applications, we took an important step towards achieving our goal of wider competition and lower cost."

Underlining that Turkey added almost all of its new power capacity last year with renewables, Minister Dönmez noted that the Mini-YEKA project could meet the electricity needs of 1.2 million households. "We will continue our efforts to further diversify the

energy mix with more renewables," said Minister Dönmez.

The first YEKA tender organized with TL-based tariffs will be for 1-GW solar PV YEKA auctions. The ceiling price for the tender was increased to 35 TL/MWh from 30 TL/MWh in January 2021. The 15-year purchase agreement will be subject to escalated prices quarterly with a formula similar to the recently announced new Renewable Energy Support Mechanism (YEKDEM), which is indexed to the Consumer Price Index (CPI), the Producers Price Index (PPI), and USD-EUR FX rates.



| Application Date | Allocated Capacity (MW) | Capacity of Applications (MW) | Number of Applications |
|------------------|-------------------------|-------------------------------|------------------------|
| 8 March | 225 | 2290 | 160 |
| 9 March | 185 | 1580 | 124 |
| 10 March | 250 | 2250 | 145 |
| 11 March | 180 | 1715 | 144 |
| 12 March | 130 | 1605 | 136 |
| Total | 1000 | 9440 | 709 |

Turkey's solar power capacity reached 6.9 GW by the end of March, having grown from 6.1 GW in March 2020. It now represents over 7% of total installed capacity. With Turkey's favorable resource base and continuing technological advancements, solar will become the leading technology in the Turkish power generation, according to the **Turkey Energy Outlook (TEO)**⁴.

In the TEO Alternative scenario, installed capacity for solar PV increases nearly six-fold from today, reaching almost 40 GW by 2040. This may further increase if solar is supported by wider technology improvements in the coming years and with enhanced predictability in market.

The TEO notes that the YEKA model, incorporating local content requirements, has become the prime of Turkey's high potential for growth in renewable capacity, and will stimulate new capacity investments in both wind and solar. The TEO also notes the importance of the YEKDEM model in sustaining investments in renewables and elaborates the high potential for a more distributed power system across Turkey through the largely untapped potential of rooftop solar PV solutions. The Turkish electricity system would transform into a more decentralized structure mainly driven by rooftop solar PV developments that are supported by global technological advances,

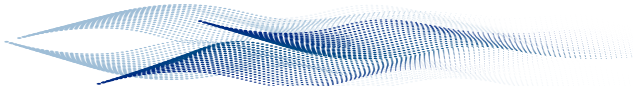
as well as by Turkey's favorable solar irradiation characteristics combined with supporting policies.

The TEO outlines that, with global and national technology advancements, the most economic and environmentally sustainable pathway forward will be with renewables. Turkey would become one of Europe's leaders in its renewables-based asset portfolio, while progressively lowering the emission intensity from its growing power sector. Turkey's localization efforts would also create opportunities to become a renewable energy technology exporter to regions with renewable energy growth potential, such as the Middle East, North Africa and Southeast Europe.

An attractive investment framework is required to secure finance to match Turkey's renewable resource base and achieve economic and environmental sustainability. The TEO emphasizes that terms and duration of PPAs including support price figures and currency choices should be important considerations in design and post-2020 implementation of the YEKA and YEKDEM models as well as any other support scheme devoted to renewables. As the actual realization rates of tendered capacities remained low over the past decade, TEO suggested an impact assessment to be made to increasingly transform the tendered capacities into operational assets.

Please click [here](https://iicec.sabanciuniv.edu/teo) to download the Turkey Energy Outlook and reach the related findings.

⁴ <https://iicec.sabanciuniv.edu/teo>



STAR Refinery became the First Refinery, Joining the Global Lighthouse Network of the World Economic Forum, in the World.

Employing a technological equipment nourished with an investment over 70 million dollars just during the installation stages as based on its vision to become one of the most digitalized refineries in the world, STAR Refinery joined the "Global Lighthouse Network" where the sites making best use of the industry 4.0 technologies are enrolled by the World Economic Forum (WEF). STAR Refinery, the only company selected from Turkey for the league of the "Factories of the Future" this year, became the first refinery in the world that has received such award.

Thanks to the value created by its digital technologies, STAR Refinery, a subsidiary of SOCAR Turkey, which is the biggest direct foreign investor in Turkey, is now selected for the World Economic Forum's (WEF) Global Lighthouse Network covering the manufacturing sites equipped with the cutting-edge technology in the world. STAR, the first refinery in the world selected for the Global Lighthouse Network, covering the "Factories of the Future", also became the first company that has joined such network from Turkey in 2021.

Petkim Followed By Star Refinery

Expressing that they are delighted to have joined the Global Lighthouse Network, where the sites making best use of the industry 4.0 technologies are enrolled, Zaur Gahramanov, the CEO of SOCAR Turkey, said; "In 2020, Petkim became the only company selected for such league from Turkey. Just after a period of one year, STAR Refinery, which is another subsidiary of us and for which we have materialized the refinery-petrochemicals integration, joined such distinguished league. We are so proud for having received such a



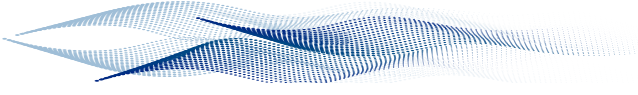
Zaur Gahramanov

notable award one after another for two companies within the organization of our group. It is an indication that STAR Refinery enjoys a digitalized operation at a level to serve as a model for the world in respect of digitalization, since it became the first refinery that has received such award in the world".

Diesel and Jet Fuel Production Increased by 10%

The investment of 70 million dollars, materialized for the cutting-edge technological equipment since the beginning of its establishment, became the most remarkable step that carried STAR Refinery, designed

as based on the vision to become one of the most digitalized refineries in the world, to the "League of the Factories of the Future". Thanks to such investments, which are of remarkably critical importance and which cover the fields such as digitalized monitoring of the assets in the refinery, including the maintenance processed, as well as creation of the digital twin of the site and machine learning, STAR Refinery accomplished to report an increase of productivity of 10 percent, on year-on-year basis, for its diesel and jet fuel production. Besides, the consumption of natural gas, being used as fuel at the refinery, decreased by 6 percent, on year-on-year basis, while a decrease of 178 thousand tons was reported for the carbon emission and a saving by 406 thousand tons was made for water consumption, all in 2020. All such results were reflected on the EBITDA (earnings before interest, taxes, depreciation and amortization) of STAR Refinery for 2020, and brought a contribution of 35 million dollars.



The award ceremony will again be held in Davos

Setting benchmarks for the companies in respect of the standard for innovative digitized practices worldwide, Global Lighthouse Network is a reputable platform consisting of the companies making best use of the Industry 4.0

technologies. Having submitted an application for joining such platform at the beginning of 2020, STAR Refinery qualified for being enrolled by the said league in the wake of the on-site surveys and the jury assessment. The new members among which only STAR was selected from Turkey of

the Global Lighthouse Network were announced by means of the press release made by WEF. The awards will be presented at that time since the meetings, held in Davos by WEF, are, for this year, rescheduled to be held during the summer months due to the pandemic.

Hakan Yıldırım Appointed as CEO of Sanko Energy

Sanko Energy's Deputy General Manager Hakan Yıldırım was appointed as the CEO of the company, effective from 1 March 2021.

After starting his career at Aselsan, Yıldırım worked as a field engineer in natural gas pipelines, combined gas cycle power plants, and coal power plants projects at Gama Power Systems. Afterward, he worked as Project Manager at Siemens Turkey

and then served as the Chairman and CEO of Siemens Turkey Gamesa. After his career at Siemens, Yıldırım assumed the CEO position of Kalyon Energy Investments.

Yıldırım graduated from Middle East Technical University's Electrical and Electronics Engineering Department and completed his master's degree in Business Administration at Boğaziçi University. He is married with two

children.

Ziya Erdem, the former CEO of the company, will continue to serve as a Member of the Board.

Sanko Energy has the capacity to generate 3.4 billion kWh of energy annually with a total installed capacity of 927 MW, all of which consists of renewable energy resources, including six hydroelectric, six wind, and three geothermal power plants.

Publisher

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