

IICEC's Flagship Report TURKEY ENERGY OUTLOOK Launched



Fatih Dönmez

Turkey Energy Outlook is a Significant Resource in Shaping Our Ideas

“ This report, a first of its kind in Turkey, prepared by the Sabancı University IICEC is a highly significant resource in shaping our ideas. ”



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Güler Sabancı

Public – Private – Academia Partnership is the ‘Success Triangle’

“ This study is a first-of-its kind in Turkey and a pioneer in its field. And it is exemplary for all other emerging countries. ”



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Fatih Birol

TEO addresses multiple opportunities in the Turkish energy sector

“ TEO presents the perspective until 2040. I believe that it addresses multiple opportunities in the Turkish energy sector. ”



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OIL

The international oil market is still suffering from sluggish demand but the recently-approved Covid-19 vaccines may herald a sooner than expected recovery

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RENEWABLES

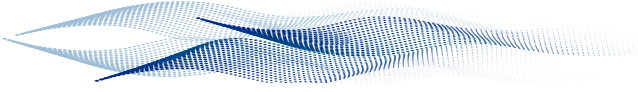
Capacity and power generation growth in Turkey mainly fueled by renewables throughout 2020

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* You may download the full report on IICEC's [TEO Website](#) and also watch the video of the launching meeting on [YouTube](#).

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IICEC's Flagship Report 'Turkey Energy Outlook' was Launched on 23 November



IICEC's Turkey Energy Outlook (TEO – [download here](#)) was launched on November 23 at an IICEC Webinar featuring Mr. Fatih

Dönmez, Minister of Energy and Natural Resources, Ms. Güler Sabancı, Founding Chairman of Sabancı University Board of

Trustees, Dr. Fatih Birol, Executive Director of the International Energy Agency (IEA), and Mr. Bora Şekip Güray, Research Director of IICEC.

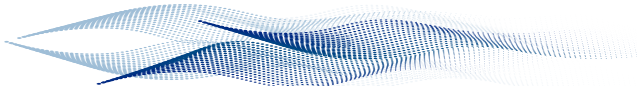
Minister Dönmez: We can't Continue Our New Path With Old Methods in the Post-Pandemic World

During the TEO Launch Minister Dönmez said: "Up until now, we had hoped that others would also carry out energy studies and we would also benefit from them. Sabancı University IICEC has fulfilled our wish. This report, a first of its kind in Turkey, prepared by the Sabancı University IICEC is a highly significant resource in shaping our ideas. We benefit not only from



Fatih Dönmez

our intellect but also from the intellect of universities and research centers. I extend my thanks to all who contributed to this study".



“As it is clearly stated in IICEC’s TEO report, a future where renewable energy and energy efficiency are at the center awaits us,” he added. Citing Turkey’s historical record of 80% renewables’ share in total power generation in April 2020, he noted that Turkey’s renewable installed capacity is even more than total installed capacity of 17 European countries combined. Minister Dönmez said that the government attaches great importance to energy localization through R&D. “We consider 3 aspects critical for R&D and technology initiatives: Institutionalization, culture and participation. Many different institutions work for R&D and this approach reduces productivity. We need to collect public - private - university studies in a single pool. The synergy to be achieved here will pave the way for international collaborations. We need to spread technology culture to the general public. We need to create synergy through participation of different ideas. We cannot talk of independence when the source is domestic and the technology is imported. We see that the share of domestic R&D in oil, gas, lithium, rare elements and thermal power plants has increased. Digitalization is one of the most important components in this respect.”

* You may download the full report on IICEC’s [TEO Website](#) and also watch the video of the launching meeting on [YouTube](#).

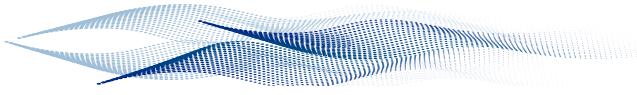


Ms. Sabancı: This is a Pioneering Study That I Dreamed of While Establishing IICEC

Ms. Güler Sabancı said that TEO coincides with the 20th anniversary of the university as well as the 10th anniversary of IICEC. Underlining that IICEC team carried out a participatory process through meetings and exchanges with related stakeholders, Ms. Sabancı said: “This report will stand out not only with its academic quality but also with its feature of being a guideline for the sector. It will shed light on policymakers, business community, and academia, the ‘Government-Industry-Academia Success Triangle’ as I define. This study is a first-of-its kind in Turkey and a pioneer in its field. And it is



exemplary for all other emerging countries.” Stating that TEO has five main goals as a more secure, efficient, competitive, technology-oriented, thus a more sustainable energy future, Güler Sabancı pointed out that this report will be positioned as an independent and objective academic study to serve these objectives.



Dr. Birol: TEO addresses multiple opportunities in the Turkish energy sector

Dr. Fatih Birol shared some stunning figures about the impact of the Covid-19 pandemic on global energy industry. Sharing that the IEA predicts global energy demand to fall by 5% this year due to the pandemic, seven times more than the one during the 2008 global financial crisis, he underlined that renewable energy--particularly solar-- investments have not decreased although oil, gas and coal investments hit historical bottom. Saying that 50% of the all new power plants commissioned this year alone were solar, he named solar as the “new king of world energy markets”.

Dr. Birol said that energy companies had to take two measures to survive during the global outbreak: Freeze investment plans, which resulted in a 18% fall in global energy investments, and implement extensive job cuts, which yielded 4 million job losses globally in the energy industry.

Saying that Turkey will benefit from lower oil and gas



Dr. Fatih Birol

prices thanks to the pandemic, he added: “We had two good news from Turkish energy sector this year: Firstly, natural gas discovery in Black Sea was very important. Secondly, electricity demand in Turkey has rapidly recovered and reached up to its pre-crisis level. This is also very critical as it stands as one of the major indicators of economic recovery.”

Dr. Birol said that similar studies have been carried out in various countries and he thought it would be very beneficial to conduct such a study in Turkey. “IICEC has been able to bring this idea to life. TEO presents the perspective until 2040. I believe that it addresses multiple opportunities in the Turkish energy sector.” Dr. Birol concluded.

Güray: TEO supports a stronger energy future for Turkey with solid recommendations

Following opening speeches, Bora Şekip Güray, Research Director of IICEC, presented the key TEO findings and 10 recommendations. Güray highlighted that the report is based on a comprehensive modeling framework and scenario analysis approach, inspired by the IEA’s World Energy Outlook. “We aimed not only to present an outlook towards the Turkish energy future but also to become an exemplary report for all emerging countries. That’s why we prepared this report originally in English as we hope it would be closely followed by foreign investors and technology community” Güray added.

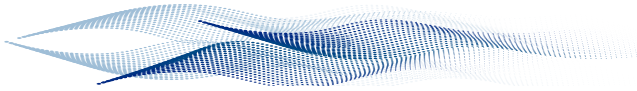
Güray stated that two scenarios are provided in the TEO: The ‘Reference Scenario’, which outlines the continuation of current policies but not necessarily achieving the most ambitious and challenging long-term targets, and the ‘Alternative Scenario’, which assumes additional policy initiatives that, while cost-effective, require more challenging policy obstacles to



Bora Şekip Güray

be overcome. Both scenarios also consider the current and possible future impacts of the Covid-19 pandemic on each sector and fuel including a long-term sensitivity analysis for assessing the most probable permanent impacts on the energy sector, notably in travel activity and oil demand, Güray said.

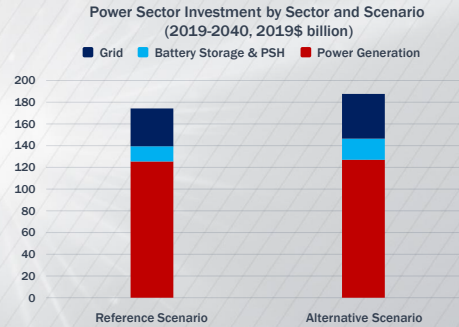
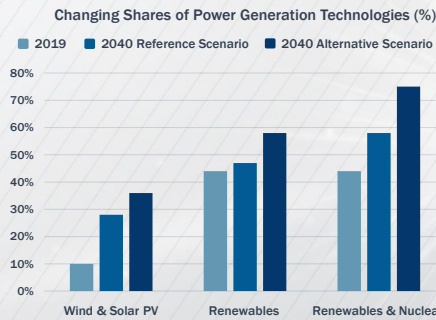
Both TEO scenarios project an increased share of renewables as well as nuclear in the power sector, more emphasize on power grid, more use of electricity, natural gas, and renewables in all energy end-use sectors and increased energy efficiency along the supply-demand chain, while scenarios differ in terms of how much and how fast these gains can be realized with stronger energy policies assumed in the Alternative Scenario towards a more sustainable energy future.



“Sustained investments are needed for a more localized and sustainable power mix”

TURKEY ENERGY OUTLOOK | 2020

Turkey’s power system moves towards a more localized structure with investment allocation shifting more to the grids.



Sustained investments are needed for a more localized and sustainable power mix backed by increasingly robust power grids to accommodate more variable supply and demand features with enhanced flexibility.



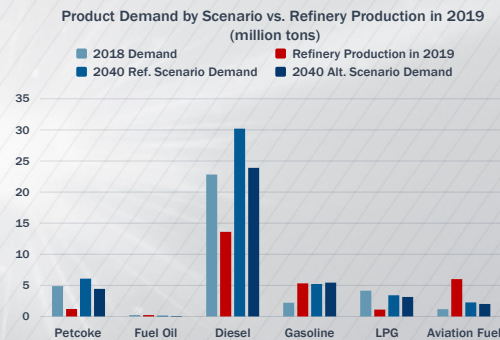
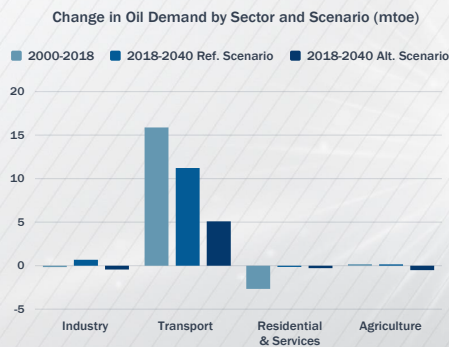
As for the power sector, renewables’ share in power generation mix will substantially increase in both scenarios, while solar and wind would potentially increase their combined share up to 36% by 2040 in Alternative Scenario from 10% today. As the need for investments annually differ only 1 billion USD

(8 billion USD in Reference and 9 billion USD in Alternative Scenario), behavioral changes in electricity consumption and more flexible grids will be the determinants of the upcoming period. The Alternative Scenario achieves wider gains across the power sector.

“Transport is yet an oil story”

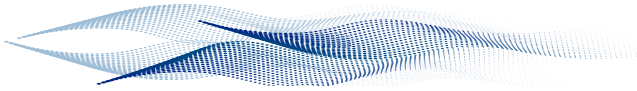
TURKEY ENERGY OUTLOOK | 2020

Transport is yet an oil story but Turkey has opportunities to lower oil demand growth and imports with policy and technology choices.



Modal shifts from road to rail and marine, fleet renewal policies, electricity and natural gas vehicles, fuel taxation and urban transport planning can help achieve a better matching of refinery and import slates.

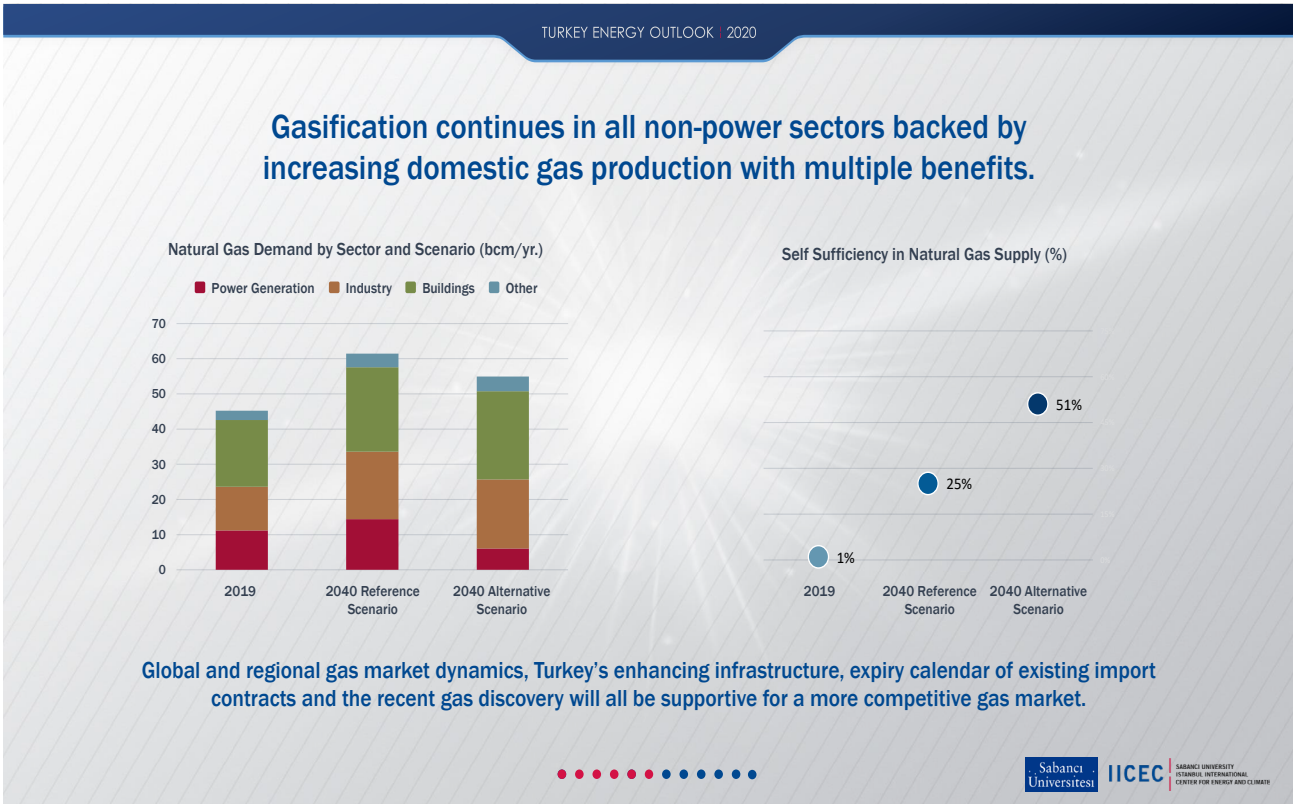




Regarding the transportation sector, Güray said: “Although the number of electric vehicles (EVs) on the roads will significantly increase towards 2040, transport will remain an oil story. Turkey covers 40% of its current diesel demand from imports. In order to improve trade balances, we have to think of policy measures and benefit from technology developments to achieve a more sustainable transport energy

economy”. Most important policy tools proposed in the TEO include shifting the volume of road transport to rail and marine, renewing the vehicle fleet with more efficient vehicles, implementing fuel taxation policies, increasing penetration of electric vehicles and gas-fueled vehicles, and ensuring a data-driven urban transportation planning and implementation.

“Gasification continues in all non-power sectors backed by increasing domestic production”



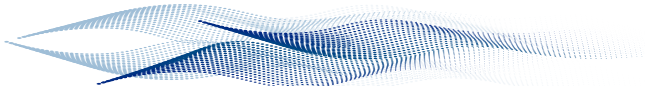
The natural gas demand will increase in all non-power segments, particularly in industry and buildings. The share of natural gas in power generation will decrease due to the increasing power generation from renewables and nuclear, but the gas-fired power plants will certainly take a much more critical role in the market in order to balance intermittent renewables and more variable demand. TEO also reflects the impact of the recent gas discovery on energy balances and assesses the natural gas production estimates.

Self-sufficiency in gas supply, which is just around 1% today, is estimated to reach up to 25% in the Reference and to 51% in the Alternative Scenario by 2040 thanks to recent discovery in Black Sea. Further discoveries may increase this figure further up, the TEO noted. TEO proposes a more competitive natural gas market backed by favoring global and regional dynamics, Turkey's expanding gas infrastructure, the ongoing E&P efforts and the timetable of the existing import contracts.

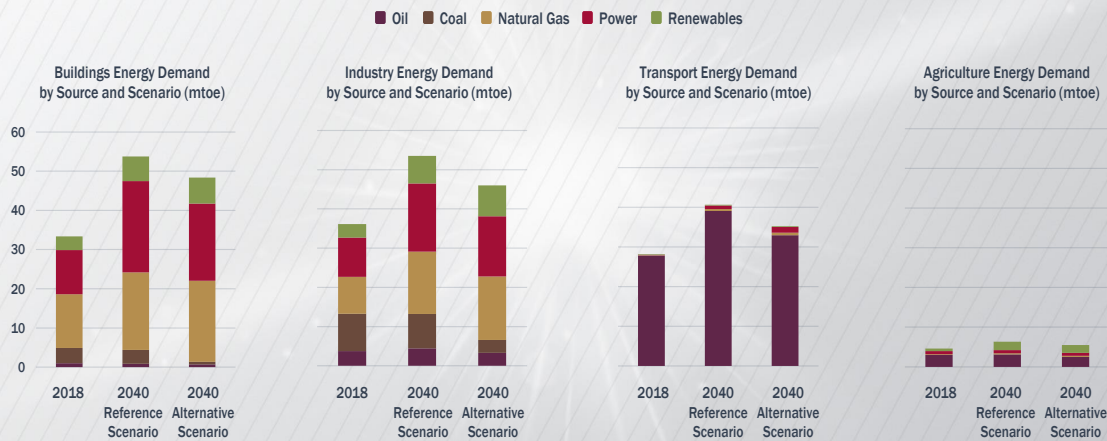
“Energy efficiency is the most important energy source for Turkey”

TEO analyzed all energy consuming sectors including buildings, industry, transportation and agriculture. In all end use sectors, energy efficiency potential is significant. By means of a cost-effective and

sustainable shift in fuel preferences, the demand for oil and coal will be greatly reduced. Although the share of EVs in transportation increases, its share in transport energy use will still be low compared to oil until 2040.



Energy efficiency and fuel shifts drive a more sustainable and technology-driven growth of energy demand services.



Energy efficiency measures and fuel shifts supported by technology and digitalization can further be leveraged by innovative business and financing models in all end-user sectors.



TEO suggests that technology and digitalization should play a critical role in both efficiency and changing the fuel preferences of consumers. If this shift can be supported by innovative business and financing models, a substantial transition towards a more efficient and sustainable energy demand structure can be achieved.

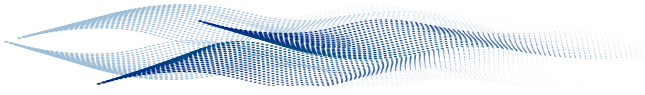
TEO aims to achieve a more sustainable energy economy and presents projected inventory of energy related GHG emissions. Touching upon the energy related greenhouse gas emission intensity, which is around 3.6 tons of CO₂-eq/toe today, Güray said that this figure can be decreased through policies and technology advances down to 2.5 in the Alternative Scenario in 2040. TEO outlines a technology-driven energy transition to enable a net-zero emissions pathway post 2040.

TEO presents promising energy technologies for Turkey to develop a domestic manufacturing industry while advancing through energy transition towards a net-zero emissions pathway post-2040. These include Renewables and energy storage, nuclear power including SMRs (small modular reactors), EVs and supporting charging infrastructure, hydrogen production from local coal via CCUS (carbon capture, utilization and storage), hydrogen utilization in transportation and industry, and advanced data analytics and digitalization. TEO outlines that enhanced R&D and innovation would serve broader energy gains such as reduced energy and equipment imports, a cleaner and more efficient energy infrastructure and a localized energy technology ecosystem in Turkey.

“Covid-19 may impact longer-term travel choices”

As for the potential impacts of Covid-19 pandemic on Turkey’s energy demand, TEO estimates total oil products demand by 2040 will not be greatly affected

despite a possible downside in jet fuel and diesel demand due to behavioral changes that may affect travel mode and vehicle choices.



R&D and innovation progress can enable energy technology localization and prospects for domestic manufacturing.

The TEO discusses promising energy technology choices for Turkey to develop a domestic manufacturing industry while advancing through **energy transition**

- Renewables and energy storage
- Nuclear power including the SMRs
- Electric vehicles
- Carbon capture from air
- Hydrogen production from local coal via CCUS
- Hydrogen in transportation and industrial sectors
- Advanced data analytics and digitalization

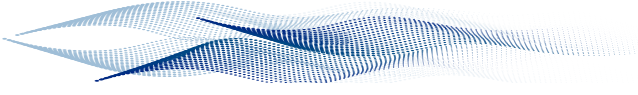


Turkey can become a clean energy technology developer and exporter rather than importing these technologies while, at the same time, advancing towards near-zero emissions pathway post 2040.



10 TEO Recommendations

1. 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,
2. Faster progress towards competitive power and natural gas markets and wider private sector participation with cost-reflective energy prices while addressing the social dimension,
3. Increased renewable and nuclear power with more flexibility in the power grid including demand side services,
4. Increased energy and fuel efficiency across all sectors supported by fuel shifts towards further electrification and larger use of renewable energy,
5. Strong policy initiatives, market based and innovative financing and business models to exploit the energy efficiency potential in buildings and industries,
6. Faster uptake of EVs and Turkey's recharging infrastructure and faster retirement of older, inefficient and polluting transportation vehicles,
7. 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,
8. Sustained exploration and production efforts and investments to discover and produce more domestic oil and gas,
9. 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.



Ms. Sabancı: "It was one of my dreams to establish a center dedicated to energy"

Sabancı
Universitesi**IICEC**SABANCI UNIVERSITY
ISTANBUL INTERNATIONAL
CENTER FOR ENERGY AND CLIMATE

In a private interview with the business daily *Dünya* on December 5, Güler Sabancı, Founding Chairman of Sabancı University Board of Trustees, touched upon IICEC and Turkey Energy Outlook while describing her approach to public – private – academia partnership:

"A worldwide study suggests that the creativity cannot flourish without 3T, namely Technology, Talent, Tolerance. Its high rankings confirm that we could succeed 3T at Sabancı University. We live in an era in which many different disciplines work together and find solutions to global problems. The most important issue now is more cooperation, co-working, and generating common sense. This can only be achieved through an 'interdisciplinary' educational structure. At Sabancı University, we've been establishing centers that will enable this structure. Probably the most important policy-making center we have founded is IICEC.

It was one of my dreams about our university to establish a center dedicated to energy. I saw this model in 2007 when I was invited to the MIT Advisory Board. It was one of the best examples of university-industry cooperation. The head of the center, Prof. Ernest Moniz, later served as the Minister of Energy in Obama Administration.

With the support of Mr.Fatih Birol, we established IICEC ten years ago as one of the few centers in the world in



Güler Sabancı

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"With the support of Mr.Fatih Birol, we established IICEC ten years ago as one of the few centers in the world in this field. We designed here such a center for generating ideas."

"Now it's impossible anywhere in the world to succeed alone as public, private sector, or university. At the point where you bring these three elements together with a common purpose and vision, success comes naturally. That's why I call it the 'Success Triangle'."

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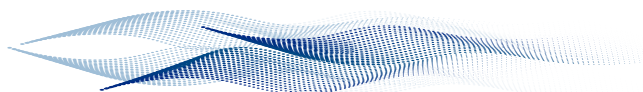
The latest study published by IICEC sheds light on the energy industry towards 2040 while taking an X-ray of the sector. I attach great importance to this as it is an independent and objective university study.

**Public – Private – Academia
Partnership is the
"Success Triangle"**

IICEC is a first-of-its-kind in Turkey where leading energy players gather

as members. Even the name of IICEC carries an important meaning in itself. The emphasis on climate change, along with energy in the name of this center, is the most concrete indicator of our vision.

Now it's impossible anywhere in the world to succeed alone as public, private sector, or university. At the point where you bring these three elements together with a common purpose and vision, success comes naturally. That's why I call it the "Success Triangle".



Renewables will be the main growth engine in sustainable energy supplies of the future

Global: The IEA published a market update on renewable energy in May 2020, providing an analysis that looking at the impact of Covid-19 on renewable energy deployment in 2020 and 2021 with a forecast of 2025. The report showed that the Covid-19 crisis was negatively affecting global renewable energy growth, but not stopping the growth. Renewable markets, especially electricity-generating technologies, have shown their resilience to the crisis.

As the pandemic continues to affect the global economy, the Covid-19 has caused unprecedented impacts on the world energy system. Global energy demand is set to drop by 5% in 2020, energy-related CO2 emissions by 7%, and total energy investment by 18%. Despite present difficulties, however, while second waves of the pandemic in many countries threaten to delay economic recovery, there exists a ground for optimism on clean energy transitions.

Renewables are the only source increasing in 2020, and renewable power additions defy Covid-19 to set new record. Contrasting with the sharp declines triggered by the Covid-19 crisis in many other parts of the energy sector, renewable power is growing robustly around the world this year. The new IEA report says that the renewables will account for almost 90% of the increase in total power capacity worldwide in 2020 and will accelerate in 2021 to their fastest growth in the last six years.

The Renewables 2020 report forecasts that; driven by China and the United States, new additions of renewable power capacity worldwide will increase to a record level of almost 200 gigawatts this

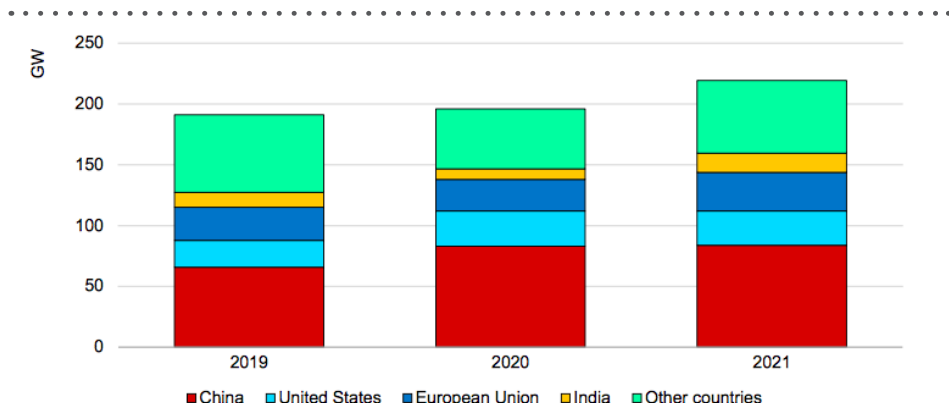


Figure 1 – Renewable capacity additions by country/region ¹

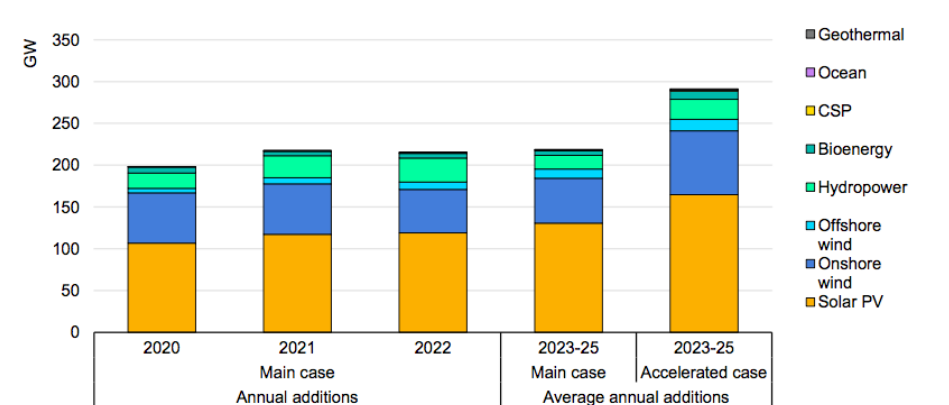


Figure 2– Renewable capacity additions by technology 2020-25, main and accelerated cases ²

year. This rise – representing almost 90% of the total expansion in overall power capacity globally – is led by wind, hydropower and solar PV. As developers rush to take advantage of expiring incentives, wind and solar additions are set to jump by 30% in both the United States and China. Even stronger growth is to come from India and the European Union (EU), according to the report. India and the EU will be the driving forces behind a record expansion of global renewable capacity additions of nearly 10% next year – the fastest growth since 2015.

In the European Union, capacity additions are forecast to jump in 2021. This is mainly the result of previously auctioned utility-scale solar PV and wind

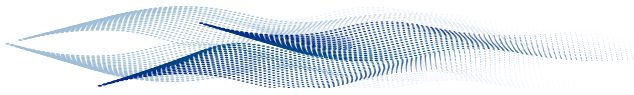
projects in France and Germany coming online. India is expected to be the largest contributor to the renewables upswing in 2021, with the country's annual additions doubling from 2020. A large number of auctioned wind and solar PV projects are expected to become operational following delays.

In the Middle East and North Africa (MENA) region, led by the commissioning of major IPP projects awarded in competitive auctions in the United Arab Emirates, Qatar and Oman, renewable capacity additions recover in 2021. A similar increase will happen in Latin America as Brazil's delayed wind projects from previous auctions become operational.

Although the Covid-19 crisis has

¹ IEA, Renewables 2020, Launch Presentation, 10 November 2020

² IEA, Renewables 2020, pg.32



introduced additional challenges for renewable energy, the fundamentals of the growth of renewable energy have not changed globally. The IEA reports forecasts that total installed wind and PV capacity surpasses coal by 2024. Total wind and solar capacity doubles, in the main case, expanding 1123 GW between 2020 and 2025. Two important milestones during the forecast period are achieved with this growth, wind and PV. Their total installed capacity surpasses that of natural gas in 2023 and that of coal in 2024. Overall, renewables account for 95% of the increase in total power capacity through 2025.

Overall, governments have a unique opportunity to boost economic growth, create jobs and put global emissions into decline if they put clean energy at the heart of the economic response. However, renewables also are not immune to the crisis. Faster deployment would be possible if governments devoted a larger share of economic recovery support to renewables. Finally, a few final take-aways from the report ³:

- Unlike all other fuels, renewable electricity was very resilient in 2020, underpinned by record growth of solar and wind.
- Renewables are set to grow globally by almost 40% by 2025, becoming the first source of electricity.
- Despite Covid-19, investor appetite for renewables remains strong in 2020, in particular in countries with supportive policies providing transparent and predictable remuneration.
- Solar is breaking one record after another, boosted by improving competitiveness. Even faster deployment is possible from 2022 on, hinging on new policies in the US and China, and on rooftop solar developments.

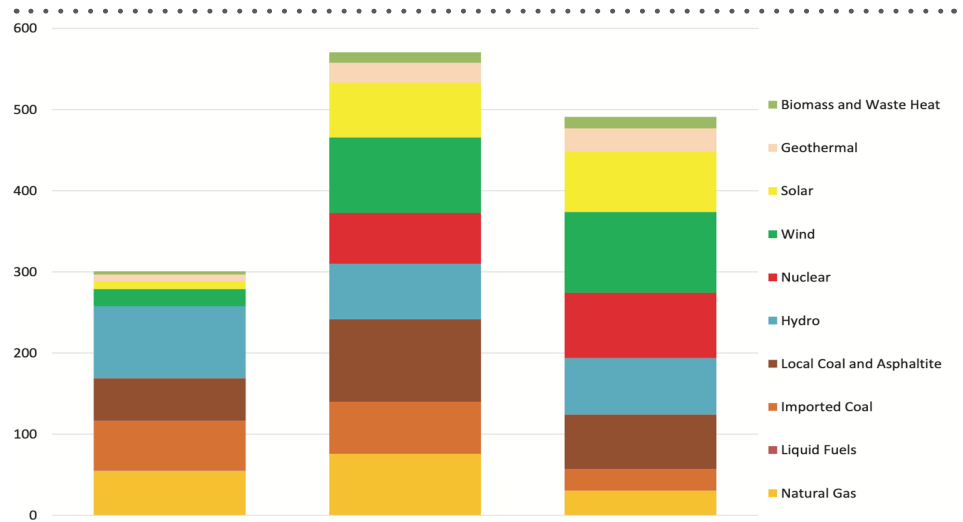


Figure 3– Gross Power Generation by Source and Scenario (TWh)

● Wind generation is forecast to grow by 80%, driven by China, the US and Europe. Offshore wind additions are set to more than double thanks to rapid cost declines, with expansion shifting to Asia and the US.

Turkey: Turkey is one of the leading countries across Europe in cumulative renewable energy development and deployment. The recently launched IICEC Turkey Energy Outlook (TEO) [“Download Here”](#) assesses that further progress can be achieved through policies driven by investor interest and current and future technology developments. Renewable energy is one of the most promising opportunities towards a more sustainable energy future in the TEO.

Solar PV and onshore wind are expected to become the fastest growing power generation technologies and renewables combined can generate around 60% of total power generation in the Alternative Scenario pathway. Solar PV will become the leading technology in installed capacity by 2040 and when combined with wind produces 36% of total power generation, up from 11% at present. TEO also projects that the largest percentage increase in final energy demand will occur in renewable energy, including direct use of solar, biomass and geothermal heat (33% of final energy demand in 2040 in the Alternative Scenario compared to 14%

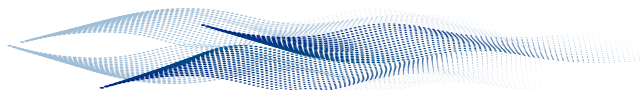
now).

The TEO suggests that, due to global and national technology advancements, the most important economic and environmental pathway for Turkey will be renewables. The TEO projects that Turkey will become one of the European leaders in renewables-based asset portfolio while progressively lowering the emission intensity from its growing power sector. This is especially evident in the TEO Alternative Policy Scenario. Turkey’s localization efforts would cause Turkey to become a renewable energy technology exporter, especially to the regions with high renewable energy growth potential such as the Middle East and North Africa and South East Europe.

The TEO also underlines that the recent initiatives introducing Green Electricity Supply Agreements in the form of market based power purchase agreements and a voluntary green tariff. In the longer run, renewable energy will continue to thrive in market with less reliance on government tenders where electricity prices reflect full costs and overall economic parameters improve. As with other industrialized countries with deregulated power sectors, an important government role still persists with market reform to ensure energy security, localization, environmental sustainability and social responsibility ⁴.

³ IEA, Renewables 2020, Launch Presentation, 10 November 2020

⁴ Turkey Energy Outlook, 2020



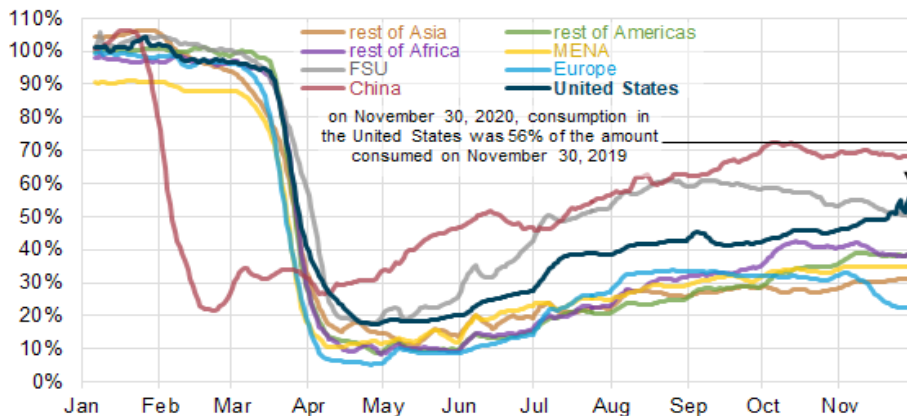
The international oil market is still suffering from sluggish demand but the recently-approved Covid-19 vaccines may herald a sooner than expected recovery

The IEA expects oil demand to decrease by 8.8 mb/d (or -8.8%) in 2020 as a result of the Covid-19 pandemic. However, a sooner-than-expected recovery may occur because of newly approved Covid-19 vaccines. As a result, a return to more normal travel may result by the Spring as an increasing number of people become vaccinated and the Winter flu season recedes. In addition, the recent agreement by OPEC+ to avoid lifting production quotas too quickly may also help support a price recovery. As a consequence of these developments, Brent futures have recently moved to over \$50/b for the first time since March.

The IEA's recent Oil Market Report in December 2020 cautions that the number of vaccinations needed to produce a large enough number of economically active people will take time. The report also points out that there will remain a large oil stock surplus of 625 mb at the start of 2021 over the end of 2019⁵.

Prices: Asia has been the only region with demand recovery during late 2020. Due to stronger-than-expected Asian demand combined with OPEC+ supply management. The EIA Short-Term Energy Outlook in December reported Brent to average \$49/b in 2021 (\$47/b in 2021/Q1 and \$50/b in 2021/Q4), up from an expected average of \$43/b in 2020/Q4. The EIA expects inventories to decline due to increasing global oil demand and restrained OPEC+ oil production. EIA also forecasts OPEC crude oil production will average 27.5 mb/d in 2021, up from 25.6 mb/d in 2020.

Jet Fuel: The Energy Information



Source: U.S. Energy Information Administration using raw flight data from Cirium
Note: China including Hong Kong and Macau; MENA = Middle East and North Africa; FSU = Former Soviet Union; consumption assigned to the region from which each flight departed.

Figure 4— Ratio of 2020 Jet Fuel Demand by Passenger Jets compared to 2019 Consumption (%)

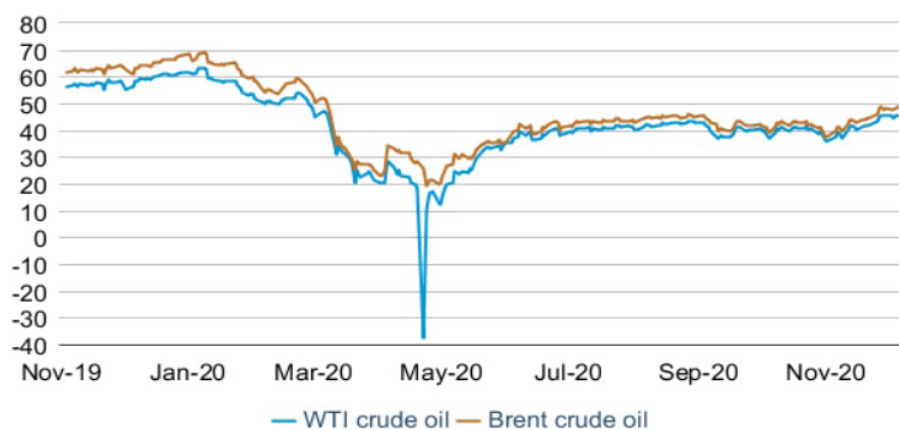


Figure 5— Crude oil front-month futures prices (USD per barrel)⁷

Administration (EIA) investigated the 2020 oil demand dynamics across regions. The largest hit has been on commercial aviation in all regions. The EIA estimates that commercial jet fuel consumption in the United States has been 44% lower year-over-year while Asia and Europe had larger hits throughout 2020 (31% and 23% of commercial jet fuel demand during the same period in 2019)⁶. The IEA World Energy Outlook 2020 assesses that the aviation demand growth will be the lowest across all oil demand sectors including road transportation, industry

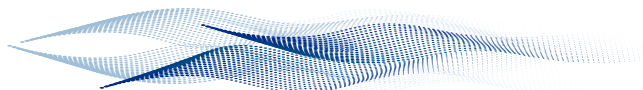
and petrochemicals. The IEA also revised its 2021 demand estimate down by 170 kb/d due to downside in aviation travel induced demand that corresponds to about 80% of the anticipated 3.1 mb/d reduction in demand in 2021 compared to 2019. On the other hand, the IEA expects that demand for both gasoline and diesel, major fuels in global road transportation, would return to up-to 99% of their 2019 realizations.

OPEC+: On the supply side, various news outlets claimed in late November that the so-called OPEC+ group,

⁵ IEA Oil Market Report, December 2020

⁶ This Week in Petroleum, EIA, 16 December 2020

⁷ U.S. Energy Information Administration, (December 8, 2020) Short-Term Energy Outlook



consisting of the Organization of the Petroleum Exporting Countries (OPEC) members and other major producers including Russia, have recently considered to delay next year's planned increase in oil output but haven't decided yet as to how the supply cuts from the current 7.7 mb/d would be revised. Ongoing uncertainty and internal disputes among leading OPEC+ members ahead of the December meeting caused volatility both in Brent and WTI. When market rumors eventually confirmed the announcement that the OPEC+ meeting was postponed, the increasing trend in global oil benchmarks suddenly reversed. While the OPEC+ group has been considering extending existing cuts of about 8% of global demand into the first quarter of 2021, a position backed by Saudi Arabia, some other producers including Russia, Iraq, Nigeria and the United Arab Emirates allegedly has been backing a gradual increase. The IEA forecasts that oil production may increase by 500 kb/d before OPEC+ meets to consider increasing its quota on 4 January 2021.

IEA Executive Director Dr. Fatih Birol emphasized that even if a viable vaccine becomes widely available, only a little recovery would be expected in oil markets. "Currently, oil prices are very low, at around \$50/b. I do not think that oil prices will rise to a level of \$70/b in a short time. There is great uncertainty in the oil market and it may take a longer time for demand to recover." said Dr. Birol during his meeting with Association of Economy Journalists (EGJ) on 22 December 2020. Dr. Birol also warned that a third wave of the outbreak might hit oil prices again.

Bracing for higher oil prices in Turkey: With regard to Turkey's exposure to higher oil prices, the IICEC Turkey Energy Outlook (TEO) provides several recommendations

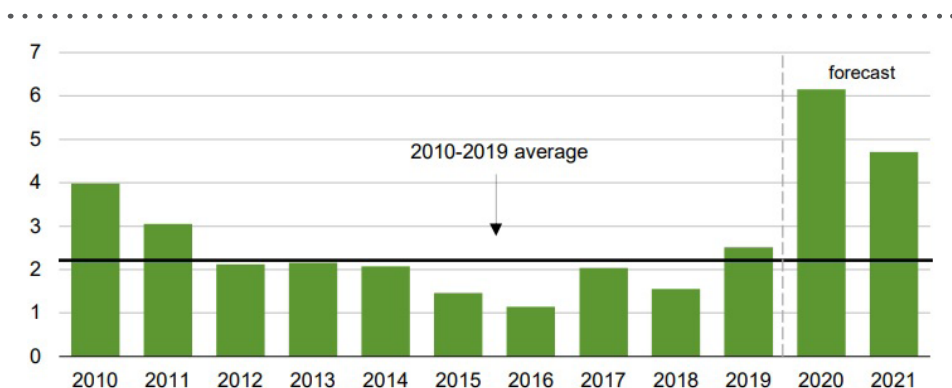


Figure 6 – OPEC surplus crude oil production capacity (mb/d)⁸

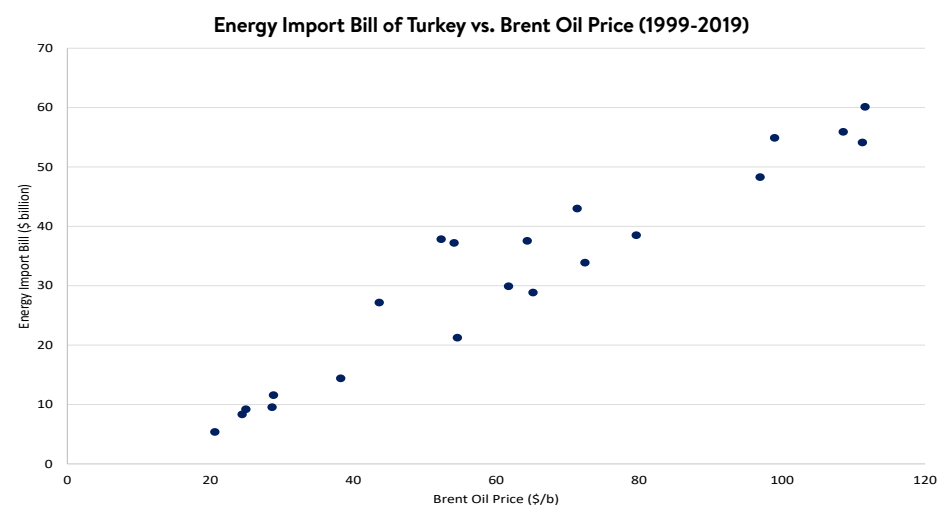


Figure 7 – Energy Import Bill of Turkey vs. Brent Oil Price (1999-2019)⁹

Source: IICEC Turkey Energy Outlook, 2020

to lower Turkey's energy import bill and increase its energy security. Turkey currently imports around 90% of its crude oil and oil products demand and absent any major discoveries oil imports will remain a large portion of Turkey's energy imports.⁹

However, Turkey has policy and technology opportunities to lower oil demand growth in the next two decades. These mainly include enhanced energy and fuel economy in transportation that relies 99% on oil products at present and developing and deploying vehicle technologies fueled by alternatives to oil, namely electricity and natural gas. Although rationalizing oil demand growth would bring many benefits to Turkish energy economy, including its economic and environmental performance, oil security should remain a key policy priority.

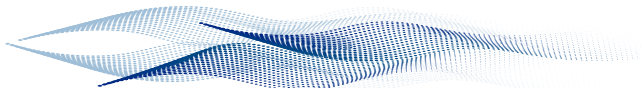
TEO recommends the following oil-related policies for a more secure, efficient and sustainable energy future for Turkey.

- Seizing Demand Side Opportunities Across Sectors, notably in the Transportation
- Increasing Domestic Oil Production
- Developing the Petrochemicals Industry
- Improving the Gasoline vs. Diesel Fuel Balance
- Improving Oil Supply Security

An in depth discussion of these recommendations is provided in the TEO "[Download Here](#)".

⁸ U.S. Energy Information Administration, Short-Term Energy Outlook, 8 December 2020

⁹ IICEC Turkey Energy Outlook, 2020



Similar to global trends, capacity and power generation growth in Turkey mainly fueled by renewables throughout 2020

Power generation in Turkey has been largely unchanged in 2020 (0.2% year-over-year increase in the first 11 months) and renewable energy has been the major growth engine both in installed capacity and annual electricity production growth. Total renewables based installed capacity has increased by 3.1 GW compared to a net increase in total installed capacity of 2.3 GW. Reductions in net capacity have occurred in coal, natural gas and liquid-fueled capacities.

This development, together with low demand growth, is also reflected in breakdown of power generation. Thermal generation has grown by 2%. All renewables except for hydro posted significant generation growth: solar by 26%, wind by 14%, geothermal by 5%, and biomass and waste combined by 17%. Hydro output has been lower than 2019 by 11% due to lower hydrology despite a notable increase in installed capacity.

Turkey aims to increase the output from renewable energy sources and the current investor interest together with cost improvements in technology is also supportive towards this direction. Turkey aims to pass 10,000 megawatts (MW) of installed capacity threshold in wind energy soon, said Energy and Natural Resources Minister Fatih Dönmez during his opening remarks at Turkish Wind Energy Association's (TUREB) online conference. "As of the end of October, wind power plants account for 9% of Turkey's total installed capacity and 17.5% of our renewable energy installed capacity. We are able to supply clean energy to 9.6 million households with these power plants," Dönmez added. Wind capacity now corresponds to over 8% of installed capacity.

Current wind installed capacity reached to 8.5 GW with over 300 power plants as of December,

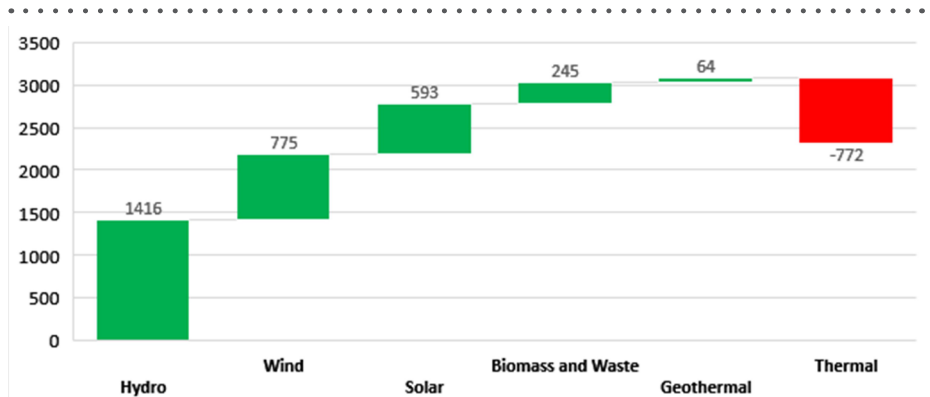


Figure 8 – Net change in Installed Capacity in 2020 (first 11 months)

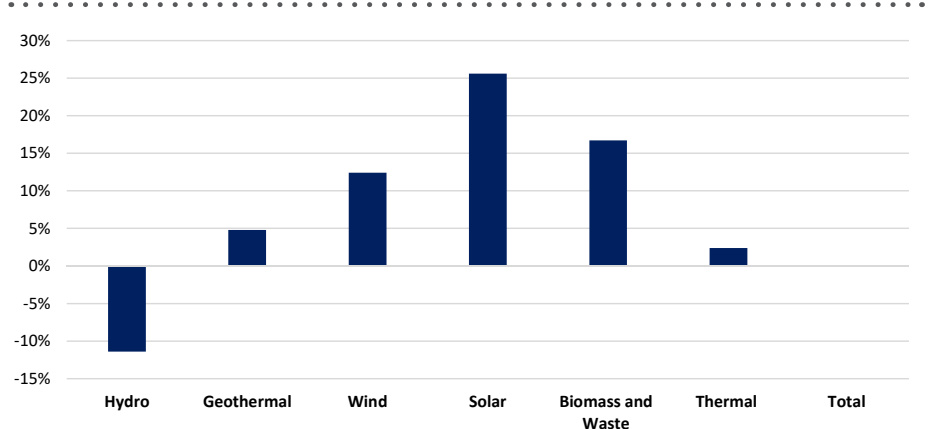


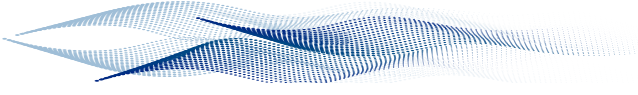
Figure 9 – Year-over-Year Change in Power Generation by Source (First 11 months, %)

according to transmission system operator TEİAŞ's data released periodically on its web site. Turkey aims to increase this capacity to 10,000 MW in the short-term and further to 20,000 MW. Turkey's wind industry employs 15,000 people which help localize energy technologies with a reported localization rate of around 55-60%, Mr. Dönmez noted. "Turkey ranks 7th in Europe and 12th globally in terms of installed wind capacity," the Minister said and assured his full trust in Turkish wind sector to further strengthen this position in the future.

Minister Dönmez also said Turkey has taken important steps for wind energy via the Renewable Energy Resource Zones (YEKA) tenders. Recalling that a wind turbine and R&D factory was established in Turkey's western Izmir province as part of wind YEKA

project, Dönmez underlined Turkey's objective to become a leading country with its growing experience and high technology in the field of wind energy. The YEKA tenders, initiated in 2017, constitutes the major part of Turkey's aim to constantly increase the share of domestic and renewable sources in electricity generation. Energy Minister Dönmez also noted that Turkey has become the 5th largest producer in wind sector in Europe and capable of exporting 80% of its production capacity.

Solar has also been among the leading technologies in power generation and now contributes to over 4% of total annual generation, up from 3.1% in 2019. Wind and solar combined represents one-sixth of total installed capacity and 12% of total generation as of the end of November 2020.



CEO of Petrol Ofisi Mr. Selim Şiper: "We Have Assumed Our Duty from the Call for Covid-19 and Responded with Full Support"



Selim Şiper

“Mr. Selim Şiper, the CEO of Petrol Ofisi, said: “With our mission to provide energy for the social and economic development of our country and our people, which we have been assuming for the last 79 years, we took responsibility for ITU Çekirdek's #FightCOVID call for entrepreneurs and immediately responded with full support. Of Out of the 257 projects of entrepreneurs who responded to this call, 125 passed the pre-qualification. Upon evaluation of the projects, 46 have reached the finals. As the jury, we examined them one by one, evaluated and discussed them, and decided to contribute to 11 projects. In addition to all the financial resources needed by entrepreneurs, we have taken part in every aspect wherever we can contribute, such as mentoring, jury membership”.

Turkey's biggest entrepreneurial stage, Big Bang 2020, ended with a grand ceremony that included many firsts. At the event, which was followed on-line by thousands of participants due to the pandemic, the TOP20 finalists presented their projects on the specially prepared virtual stage and received their awards.

During the event, which hosted the rising initiatives of Turkey and the world, Petrol Ofisi also awarded 11 initiatives to fight against the COVID-19 within the scope of ITU ARI Teknokent cooperation. During the event the CEO Mr. Selim Şiper announced the projects awarded by Petrol Ofisi, which mentors and fully supports the entrepreneurs who offer important solutions for the fight against the pandemic within the scope of the #FightCOVID19 call.

Mr. Selim Şiper, the CEO of Petrol Ofisi, said: “With our mission to provide energy for the social and economic development of our country and our people, which we have been assuming for the last 79 years, we took responsibility for ITU Çekirdek's #FightCOVID call for entrepreneurs and immediately responded with full support. Of Out of the 257 projects

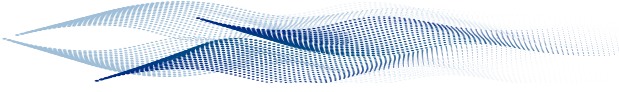
of entrepreneurs who responded to this call, 125 passed the pre-qualification. Upon evaluation of the projects, 46 have reached the finals. As the jury, we examined them one by one, evaluated and discussed them, and decided to contribute to 11 projects. In addition to all the financial resources needed by entrepreneurs, we have taken part in every aspect wherever we can contribute, such as mentoring, jury membership”.

The 9th Big Bang Start-up Challenge, of the ITU Çekirdek Incubation Centre, which is among the top 5 university entrepreneurship centres in the world, organised every year to choose the best initiatives ended with a spectacular visual event. The Big Bang 2020 final event, which was held on-line for the first time this year due to the pandemic, began with a magnificent special dance

show choreographed by famous artist Beyhan Murphy and was performed on a virtual stage.

During the event, which is Turkey's largest entrepreneurship event presented by journalist-writer Serdar Kuzuloğlu, the finalists described their projects to the blue microphone prepared by artist Ceyhun Yılmaz after presenting their projects on the virtual stage and asked for support. At the event, where Turkey and the world's rising initiatives were hosted, participants also took a virtual ride on 87 initiative stands focused on technology and innovation and enjoyed a unique on-line experience. At the Big Bang Start-Up Challenge award ceremony, which set off with the motto 'Rise Together' this year, it was also announced that more than 54 million TL funds were extended to entrepreneurs.





Big Support from Petrol Ofisi for Young Start-Ups

Petrol Ofisi also took the stage at the event, where Turkey and the world's rising initiatives were hosted. Due to the global pandemic affecting the humanity as a whole, Petrol Ofisi has provided the necessary visors, intubation booths and UV Box-Ambient Sterilisation Devices to 500 healthcare institutions in 81 provinces until now, in collaboration with ITU ARI Teknokent. Petrol Ofisi also supports projects that offer important solutions to the fight against COVID-19. In this context, Petrol Ofisi rewarded 11 projects that have made significant contributions to the fight against the pandemic as well as to human health, social and business life with the use of advanced technology.

Petrol Ofisi CEO Mr. Selim Şiper connected on-line to the stage during the award ceremony, where there was great excitement, and announced the selected projects one by one. "This year, Turkey's biggest entrepreneurial stage Big Bang is held on-line for the first time, and I wish this would also be the last Big Bang held on-line" said Mr. Selim Şiper, who stated that they were very happy to award initiatives that revealed Turkey's technology and creativity potential. "This year, the humanity is unfortunately going through a time no one could have ever predicted" he said.

"We Immediately Responded Voluntarily to ITU Çekirdek's FightCOVID Call"

Mr. Selim Şiper reminded that Petrol Ofisi was established in 1941 as a company created from the country's own resources in order to meet the fuel need of the country, and continued:

"We strive to act with full awareness of

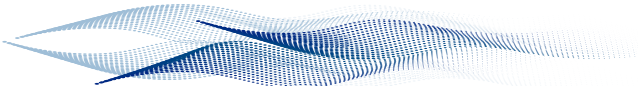


|| The CEO Mr. Selim Şiper announced the projects awarded by Petrol Ofisi, which mentors and fully supports the entrepreneurs who offer important solutions for the fight against the pandemic within the scope of the #FightCOVID19 call. **||**



this responsibility. Providing energy for the social and economic development of our country and society is one of the cornerstones of our mission. As Petrol Ofisi, we aimed to make long-lasting contributions. Accordingly,

we assumed responsibility from ITU Çekirdek's call to combat COVID-19 for entrepreneurs, and immediately responded with full support. 125 of the 257 projects that we received passed the pre-qualification."



Zorlu Energy Published its 6th Sustainability Report **ZORLUENERJİ**

Zorlu Energy, led by the Sustainability Committee, published its 6th Sustainability Report in accordance with the GRI Standards. Zorlu Energy, which positions sustainability at the focal point of its business model to implement the smart energy systems of the future, transparently discloses its development performance with the public.

Acting as one of the pioneers in Turkey's domestic and renewable energy area, Zorlu Energy published its 6th Sustainability Report in line with its sustainability vision, in accordance with a framework of Global Reporting Initiative (GRI) standards, United Nations Global Compact - to which it is a signatory to- and Women Empowerment Principles. Zorlu Energy has been publishing a report that discloses sustainability activities biennially since 2009 .

The latest report of Zorlu Enerji, disclosing all of the work related to combating the climate change, reducing carbon emissions, sustainable use of resources, social governance, energy efficiency and security of energy supply, covers all corporate activities between 2018-2019.

Zorlu Enerji, while executing activities in order to fulfill the expectations of its stakeholders by providing continuous engagement, contributes to the improvement and development of the sustainable economy of our country, manages all risks in the environmental and social areas and contribute to the society, it also positions people and nature at the focal point of its production and investment activities. In the Sustainability Report, Zorlu



Sinan Ak

Energy addresses its future goals, its efforts on combating climate change and awareness raising, monitoring and assessment activities for the goal of sustainable development.

Zorlu Energy's 6th Sustainability Report is in line with the "core" option of Global Reporting Initiative's (GRI) Sustainability Reporting Standards - a well-accepted reporting standard in the area of sustainability worldwide -. Along with this report, efforts are taking place to evaluate and analyze the existing sustainability practices in order to implement gap analyzes, form the company's sustainability strategy and improve its sustainability goals.

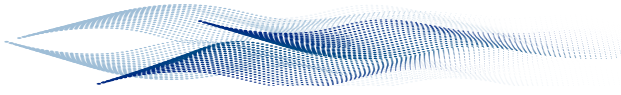
**Zorlu Energy calls for
"An Equal World"**

Zorlu Energy commits to the dissemination of its rhetoric and actions on women's participation in the workforce, establishing gender equality as a corporate policy and increasing the representation of women in senior management in both internal and external communications through "An Equal Life" program with the goal of adaptation of gender equality, which is covered as a material issue in the report as well.

Zorlu Energy aims to lead the way in order for the business world to gain an understanding regarding the topic through its program that serves Sustainable Development Goal 5 - gender equality- and 10 – reduced inequalities-. The company's Sustainability Report addresses various projects and cooperation of the firm throughout this process.

**"We are Working with all
We Have for a Sustainable
Future"**

While stating that they have been making continuous investments with their vision of being the energy company of the future, Sinan Ak, CEO of Zorlu Enerji said that they readdressed their sustainability strategies by taking future-oriented development goals and ever-changing requirements into account in accordance with the Smart Life 2030 vision which covers Zorlu Holding and all of its companies, and continued with the following statement, "In accordance with our goal of being the pioneer of the energy sector, we continue our journey which started with a single power plant more than 25 years ago, by growing on a global scale. With the strength we rely upon through our



deep-rooted past, we are working for a sustainable future with all we have and by adding onto the experiences every year. We, therefore, position sustainability as the focal point for all our work and we perform all activities and operations in an environmentally friendly manner, acting as a global brand with the awareness of fulfilling the expectations and needs of our stakeholders to move our country forward.”

“We Dedicate all New Investments to Renewable Energy”

Stating that installed capacity of Zorlu Energy is based on renewables at a rate of 85% in Turkey and 61% in the world, Mr. Ak further mentioned that the operations and activities of the corporation are carried out in line with the mission of “environmentally friendly, safe, of good quality and sustainable generation, trade and distribution of energy” and added, “Environmental awareness is one of the 7 focal points of our sustainability strategy. We perform all of our activities, operations and investments within the framework of our Environmental Policy which prioritizes preservation of natural resources and reduction of our environmental impacts. Within the scope of our Environmental Policy, we select materials and technologies that will reduce our negative environmental impact and use allow us to use resources more efficiently. We conduct electrification studies to reduce waste and emissions. Through our ZES brand we have established in accordance with these goals, we are installing charging stations in our country in order to accelerate the mobility of the electric cars. The fact that 85% of our energy generation is based on renewable energy resources is an indicator of how highly we rate the importance of carbon emissions. By the end of 2019, more than 26 percent of global electricity generation was

from renewable sources, however, this is not enough to achieve the carbon neutral target. We have to make the best possible effort in order to create an ecosystem based on renewable sources. However, we cannot afford to wait for the year 2040 or 2050 for this. Therefore, we need to solve the issue starting from its roots and create a modern economy producing carbon emission at the minimum levels. As Zorlu Energy, we have been raising environmental awareness and consciousness, sharing our environmental impact with our stakeholders transparently and working to improve it.”

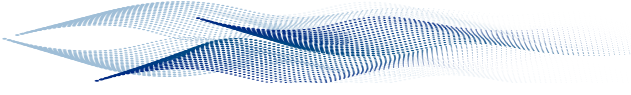
Stating that they have been investing for the establishment and operation of smart systems to initiate the transformation in the industry within the scope of innovation works accomplished, Mr. Ak further pointed out, “We are closely following and monitoring the transformation in the energy sector while our digitalization endeavors for the establishment of smart systems and cities are in progress. We are aiming to transform our business models through digitalization and create new opportunities. We take an extra step to digitalize both the channels establishing our contact with the customers and our internal processes. Through the Smart Systems department that was established in 2017, our work continues in the fields of digitalization, R&D, innovation and particularly, electric vehicles. Through Zorlu Solar, established in 2016, we provide all sorts of installation and consultancy services related to solar energy, which is considered to be the indispensable part of smart systems, and we continue to make investments in this field. We further work on electrical charging stations and energy storage projects supported by the Energy Market Regulatory Authority (EMRA) and continue to develop various projects within the scope of Horizon 2020 Program of the European Union.”

5.5 million TL for Social Investments

Zorlu Energy continues to increasingly contribute to Turkey’s future and offer benefits to society in all of its regions of operations, while generating energy from domestic and renewable resources with an innovative approach. In this context, encouraging and promoting development in various areas such as education, healthcare, culture and sports during the years 2018-2019, Zorlu Energy made social investments totaling 5.5 million TL.

Zorlu Energy’s Sustainability Activities

In line with a transparent, fair, responsible and accountable management approach, Mr. Ak addressed the practices in the economic, social and environmental areas accomplished within the reporting period of 2018-2019 and further stated, “We have concluded an agreement with Garanti Bank in 2018 within the scope of green loans established to support sustainable projects and corporations. This represents the first Green Loan agreement in Turkey. We continue to publish our CDP Climate Change and Water Management reports on a regular basis. Acting as a corporation blazing a trail in many aspects within our sector with respect to sustainability, we are included in the Borsa Istanbul’s Sustainability Index for the fourth time for the period between November 2019 and October 2020. We initiated the program “An Equal Life” in 2019 to contribute to gender equality within the scope of our Smart Life 2030 vision “An Equal Life 2030”. In this context, we became a signatory to the Women’s Empowerment Principles (WEPs), which is the joint initiative of UN Women and UN Global Compact. We are also a proud to be one of the members of the United Nations Global Compact, the world’s largest corporate sustainability initiative.”



Enerjisa Enerji CEO Murat Pinar: We Encourage Sustainability with our Financial Strength



Murat Pinar, CEO of Enerjisa Enerji A.Ş., made important statements about the sustainability vision of Turkey's giant energy retailer, in an exclusive interview with InBusiness magazine.

IIEEC Newsletter compiled Pinar's statements about the sustainability principles, gender equality and corporate governance.



Murat Pinar

Enerjisa Enerji at a Glance

At Enerjisa Enerji, we manage electricity distribution and sales, one of the most significant services to sustain life, to 21.5 million users in 14 provinces in three operational regions with the strength we get from two of our principal shareholders, E.ON, the leading energy company in Europe, and Sabancı Holding, one of the largest holdings in Turkey. As the pioneering player in energy distribution and sales market in Turkey, we have the goal to maximise the value that we create for all our stakeholders with this impact on our large field of operation.

We Adopt Global Sustainability Principles

At Enerjisa Enerji, we act with the responsibility to provide responsible public service and get ready for the new energy world. The core of our activities has the goal to provide the best quality service to the people. We developed our vision, to become a leading company in the energy sector with our Environmental, Social and Corporate Governance (ESG) performance, and sustainability strategy to get integrated into these metrics. We attach great significance to create social value through our social responsibility activities in order to improve our Environmental, Social and Corporate Governance (ESG) performance.

On the other hand, I believe the 17 Sustainable Development Goals (SDGs) and 169 targets of the United Nations offer a plan for the peace and prosperity for people and our planet. We are focused to help reaching the SDGs in every field of our main business lines. With our energy investments in the energy of the future and customer solutions, we will have a major contribution to sustainability goals. These particularly support affordable and clean energy (goal 7), sustainable cities and communities (goal 11) and climate action (goal 13).

Affordable and Clean Energy

At Enerjisa Enerji, we have the responsibility to provide access to affordable, reliable, sustainable and modern energy for our customers. Our distribution grids are a platform to enable energy producers with consumers and play a key role in ensuring security of supply. Furthermore, we offer help to our customers with our environmentally friendly customer solutions through the regulating institution. Because I believe energy shall be uninterrupted and equally accessible to all.

Sustainable Cities and Communities

At Enerjisa Enerji, we ensure cities and communities use energy in a sustainable way through our

customer solutions. These solutions include integrated solutions for smart energy management, low carbon generation and efficient heating and cooling. Moreover, we offer e-mobility solutions with Eşarj.

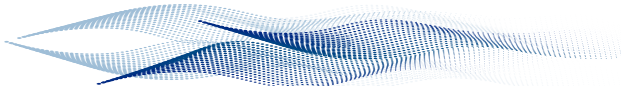
Climate Action

At Enerjisa Enerji, we have the responsibility to our country, customers and employees as well as future generations and as an energy company, I believe we play a key role in combatting climate change. We accept this role by agreeing on a road map for focusing on innovative energy solutions, smart energy grids and renewable energy resources. We reduced carbon emissions due to power consumption by supplying 989 MWh of our own power consumption directly from renewable energy.

We Encourage Sustainability with our Financial Strength

We find profitable and sustainable growth strategically important in order to contribute to the sustainable economic development in Turkey. We support local economy by recruiting over 10,000 people in various business lines that we actively operate in 14 provinces.

In 2020, we, the pioneering and leading company in our sector, maintained our strong performance



in financial and operational fields despite the unprecedented times we endured during the first half of the year and continued to meet the expectations of our investors in the best possible way and support our sector and country in their development journey. We expect to sustain this performance till the end of the year. //

We will set a Global Example by Becoming a Part of the New Energy World

//As part of our operations, we look out for creating social and environmental benefits for all our stakeholders within our ecosystem. The global trends including digitization, democratization, decarbonization, deregulation and decentralization shape us, our activities and the value we create.

Our goal is to make Enerjisa Enerji a business partner that creates new markets for its customers, provides new products, services and technologies to these customers and also preferred by policy makers and regulators in the new energy world that systematically becomes stronger and more proactive.

Today, we agreed on our road map for collecting our customer solutions based on sustainability approach under "Energy of My Work". We share our environmentally friendly

customer solutions such as Eşarj, GES, Led Lighting, Solar and Cogeneration with requesting customers. //

We Act like a Bridge for a Sustainable Future

//We do and will continue our operations as an energy company that enables social, environmental and economic contributions sustainable together with our stakeholders. Since our successful public offering in 2018, we have been focusing on corporate sustainability with the goal to develop a strategic and holistic approach in terms of economic, environmental and social factors in order to create long-term values. Thus, in 2019, we signed both United Nations Global Compact, the world's largest voluntary corporate sustainability initiative, and United Nations Women's Empowerment Principles (WEPs). We are also traded in BIST Sustainability Index, in which only companies traded in the Borsa Istanbul and having high corporate sustainability performances are traded. //

We Attach Importance to Gender Equality

//Diversity and inclusion are major principles in our vision and values. We provide equal opportunities to all our employees, while looking

out for individual differences. We manage all human resources processes in an equal manner irrespective of language, race, sex, political view, beliefs, religion, religious order, age, disability or other reasons.

We encourage gender equality in our professional lives as well as in every aspect of life. Thus, in 2019, we signed United Nations Women's Empowerment Principles to underline our sensitivity on the issue. //

The Percentage of Women in Enerjisa Board of Directors is 25%

//99% of our female and male employees who take maternity and parental leaves return to their jobs once their leave periods are over. At Enerjisa, we have a large and diverse employee profile which consists of employees from 4 different generations. In 2019, 70% of the recruitments were under the age of 30. Furthermore, as of 2019, 47% of the employees had been working under the roof of Enerjisa Enerji for 5 to 10 years. With the programmes we carry out, we encourage creativity, collaboration, skills development and innovation in the company thanks to the diversity, equality and difference among the employees at various ages, genders and levels. //

Publisher

**IICEC SABANCI UNIVERSITY ISTANBUL INTERNATIONAL
CENTER FOR ENERGY AND CLIMATE**

For any questions and additional information, please contact:

Prof. Dr. Carmine Difiglio

E-mail: carminedifiglio@sabanciuniv.edu

Dr. Mehmet Doğan Üçok

E-mail: mdoganucok@sabanciuniv.edu

CONTACT**Address:**

**IICEC, Sabancı University Minerva Palace,
Bankalar Cad. No: 2, Karaköy, 34420, Istanbul Turkey**

Phone: +90 (212) 292 49 39 / 1114

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