

Energy Leaders Discuss the Clean Energy Pathways and Net-Zero Perspectives in IICEC's Latest Webinar



IICEC hosted its 9th online event in its webinar series entitled "Future of Net-Zero Emission in the World & Europe and Implications for Turkey" on July 9. With a broad range of participants, the webinar opened with three keynote speeches and included a high-level panel session on business perspectives on a clean energy future.

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Panel Discussion on the Future of Clean Energy

Moderated by Garanti BBVA EVP Ebru Dildar Edin, the panel hosted five business leaders, including Ahmet Erdem, Country Chair of Shell Turkey; Zaur Gahramanov, CEO of SOCAR Turkey; Sinan Ak, CEO of Zorlu Energy; Enis Amasyalı, CEO of Borusan EnBW Energy; and Hakan Yıldırım, CEO of Sanko Energy.

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Dr. Fatih Birol



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Click here to watch the record of the Webinar : <https://iicec.sabanciuniv.edu/event/iicec-webinar-future-net-zero-emission-world-europe-and-implications-turkey>

During the opening speech of the webinar, Kivanç Zaimler, Member of the IICEC Board of Directors, highlighted that net-zero emissions have become an agenda focus both



globally and specifically among Turkey's trading partners, and that this trend would reshape the energy sector. He continued: "Currently, global and regional dynamics come to the forefront in this very strategic

sector as well as in its related sectors. It is important to create value for all the stakeholders of the energy sector by managing risks and turning them into opportunities. We are here to discuss an important subject."

Dr. Birol: "The path towards Net-Zero is extremely narrow and challenging, but not impossible."

Kivanç Zaimler's opening speech was followed by **Dr. Fatih Birol's** keynote speech. The Executive Director of the International Energy Agency (IEA) pointed out that the energy industry accounts for 80% of the emissions that cause climate change, underscoring that the solution must come from this sector. Dr. Birol also remarked that the world cannot reach Net-Zero by 2050 if it fails to achieve decarbonization until 2040.

Noting that Net-Zero is not just a matter of civil society and academics, Birol underlined the key role for policy and business perspectives: "Awareness is rising quickly and irreversibly. Climate change has been proven scientifically and is now an integral part of public opinion. Currently, all developed countries have already committed to Net-Zero by 2050. Some European countries even put this objective as part of legislation. We are always asked whether it would be possible to achieve this energy transformation globally or not. Our answer is clear: The path is extremely narrow and challenging, but not impossible."



Dr. Fatih Birol

"We need to accelerate the innovation of technologies."

While the presence of close international cooperation is essential, so are two essential developments, according to Dr. Birol: "Firstly, existing proven technologies that are currently on the market in solar, wind, hydro, energy efficiency, nuclear, and EVs in particular must grow substantially to 2050. But these alone will not be enough. We need to accelerate the innovation of three particular technologies that are either not currently feasible in the market or still in their developmental phases: hydrogen, advanced battery technologies, and carbon capture."

**“Investments should increase and shift.”**

Noting that annual energy investments amounted to 2 trillion USD globally, Dr. Birol stressed that this figure should increase up to 5 trillion USD and that most of these investments should focus on clean-energy technologies and be channeled to emerging economies rather than developed ones. “The investment budget should increase and shift from fossil fuels to clean energy. It should also shift from developed countries to emerging countries.” Dr. Birol emphasized.

Dr. Birol reminded the participants, however, that the world would still need fossil fuels, even when the Net-Zero target is reached by 2050. However, their role will shrink, as outlined in the IEA projections: global oil consumption will decrease from 100 million b/day to 25 million b/day, while gas and coal consumption will also decrease dramatically.

In addition, Dr. Birol touched upon the key role of EVs on the path towards Net-Zero. Of all the vehicles sold

in the world, 60% must be electric by 2030. Dr. Birol underlined key aspects to drive growth in EVs: “Cost reduction has accelerated, as 18 of the 20 largest automakers now target EVs. The global charging infrastructure is still inadequate. That’s why the IEA has been cooperating with countries to develop their charging infrastructures.”

Clean-Energy Awareness and Energy Transformation

Dr. Birol indicated that countries must draw roadmaps considering their specific conditions, including their levels of economic development, energy realities, and energy-supply security: “To find a solution to this global problem, everyone must do their own work, remembering that they all have some responsibilities to assume. No country is exempt from the effects of the clean-energy transformation. Every country will be affected, as it is a very strong wave coming from the deep. With decreasing costs, major economies including the United States and China will be involved in the energy transformation.”

**Dr. Bayraktar: “Clean Energy Investments Must be Channeled to Turkey.”**

As the guest of honor of the webinar, **Dr. Alparslan Bayraktar**, Deputy Minister of Energy and Natural Resources, first touched upon the ever-increasing trend of global energy consumption accompanied by carbon emissions, even though these figures were temporarily curtailed by the pandemic in 2020.



Dr. Alparslan Bayraktar

“We call the year 2021 the beginning of a period of recovery. The IEA forecasts a 10% annual increase in



energy investments. We see that many countries are making commitments to be carbon-neutral by 2050. But I cannot say that I have received serious signals as to how those targets are to be reached." he said.

Turkey achieves significant progress in renewables-based electricity

"We have made considerable investments in the field of renewable energy. 53% of Turkey's total installed capacity is currently based on renewables. The share of renewables in total power generation was 43% last year, while the same figure was within the margin of 17%-36% in the United States, China, Germany, and

the UK. In 2020, we were able to avoid about 73 million tons of carbon emissions thanks to renewables.

Emphasizing that Turkey is not treated fairly within the scope of the Paris Agreement, Dr. Bayraktar noted that Turkey has still been expending maximum effort to fulfill the requirements of the agreement. "Turkey faces serious challenges to realize absolute emissions reductions in the short-to-medium term, and it does not seem possible to set any emissions-reductions targets beyond this period. Assuming that Turkey has a 1% share in the global economy, roughly 50 billion USD of the targeted 5 trillion USD of global clean-energy investments should be channeled to Turkey."

Panel Discussion on the Future of Clean Energy



Following the opening speeches, the webinar shifted to a high-level panel session entitled "Business Leaders' Perspectives: Future of Clean Energy." Moderated by Garanti BBVA EVP Ebru Dildar Edin, the panel hosted five business leaders, including Ahmet Erdem, Country Chair of Shell Turkey; Zaur Gahramanov, CEO of SOCAR Turkey; Sinan Ak, CEO of Zorlu Energy; Enis Amasyalı, CEO of Borusan EnBW Energy; and Hakan Yıldırım, CEO of Sanko Energy.

During her opening speech on the panel, Ebru Dildar Edin, Garanti BBVA EVP, said: "Net-Zero has been one of the key topics recently. There is a target to reduce carbon emissions by 45% to keep the global

temperature increase below 1.5 °C. In this panel, we will discuss the repercussions and reflections from the private sector."

Ahmet Erdem, Country Chair of Shell Turkey, stated that Shell, one of the biggest hydrocarbon producers in the world, was headed to net-zero emissions by the 2050 target. "We aim to decrease the carbon intensity originating from our operations by 8% by 2023 by using energy efficiency and renewable energy.





We have a plan to reach a 20% target by 2030, 45% by 2035, and 100% by 2050. Our oil production peaked in 2019. By 2030, we aim to reduce oil production by 2% every year. Upon this decrease, nearly 55% or more of the hydrocarbon resources included in Shell's portfolio will be natural gas by 2030. We find natural gas critical as a fuel for the energy transition. We will see a more common use of gas in road, marine, and rail transport. We aim to convert refineries in our facilities to energy parks. We will generate hydrogen by using wind energy. Electric vehicles are also developing at a tremendous speed. With regards to chemicals, we plan to recycle 1 million tons of plastic waste to transform it into plastic raw materials by 2025."

Zaur Gahramanov, CEO of SOCAR Turkey, emphasized that sustainability should be the main driver for businesses and that R&D activities should get more attention. "We expect sizeable gains in the field of sustainability thanks to carbon capture, storage and use programs.



Zaur Gahramanov
CEO of SOCAR Turkey

We have started a big journey both in the world and in Turkey. We have started to realize major projects. We have increased R&D investments in Turkey. We are collecting the fruits of the digital transformation, and will realize energy transformation more efficiently thanks to our digital investments. We find both digital transformation and technological expansion important, and will continue to invest in these areas. Digital investments make energy transformation more effective. We should continue to work together in energy-related fields as well. We should build a common roadmap for this."

Sinan Ak, CEO of Zorlu Enerji, said digitalization, electrification, and sustainability would shape the future and lead to the net-zero target, accompanied by a huge need for investment. "Renewable energy has now hit the road. Investments are coming. While the number of investors was very small in the past, we see thousands of investors today.



Sinan Ak
CEO of Zorlu Enerji

With groundbreaking developments including electric vehicles, the most important subject going forward is digitalization, because digitalization and software are indispensable parts to managing all these systems. Our large companies should pay great attention to software development. We are doing our own bit. As Zorlu Group, we also focus on hydrogen fuels, whose current costs corresponds to the costs of solar panels back in the 2000s. We expect the costs of hydrogen fuel to fall soon."

Enis Amasyali, CEO of Borusan EnBW Enerji, underlined the importance of sustainability and how his company has embraced it. "As Borusan Group, we built our sustainability strategy on three pillars, which are climate, human, and innovation. As Borusan EnBW, the Group's energy company, we



Enis Amasyali
CEO of Borusan EnBW Enerji

have invested only in renewables since 2009. In this way, we contribute to champion the climate pillar of our sustainability strategy. Our partner EnBW recently announced an ambitious target of being climate-neutral by 2035. We are the leading wind-power generator in Turkey with 661 megawatts. The technology of wind power plants has advanced extremely rapidly. I can say that our country's potential for wind energy is now well above 100 GW. Sustainable financing, green financing, and green bonds issued at favorable conditions will play a big role in realizing this potential."

Hakan Yıldırım, CEO of Sanko Enerji, underlined that the coming 30 years would be a period of transition to a low-carbon economy in the world. "Whatever our roles or impact areas may be, we want to hand over a more livable world to the next generation. Currently, the global temperature increase



Hakan Yıldırım
CEO of Sanko Enerji

is over 1 °C, and we can feel its effects every single day. This year has been the driest one since 2014, and this affects not only hydropower generation but also agriculture. Therefore, if we want to avoid such extreme weather conditions, we must keep the global temperature increase below 2 °C, and ideally below 1.5 °C. The whole world will invest trillions of dollars into wind, solar, carbon capture, energy storage, and electric vehicles. Therefore, we should do the same and build more wind and solar power plants. We should also be making money through technology development, manufacturing, and exporting equipment."

IICEC Director Bora Şekip Güray, in his closing remarks, pointed to the importance of clean energy topics such as electrification, renewable energy, hydrogen, and digital transformation for the transition to a low-carbon economy, and emphasized IICEC activities within "Government-Industry-Academy Success Triangle" mission.



IICEC Director
Bora Şekip Güray



IEA's Director Dr. Birol Attends First-Ever Joint Meeting of G20 Energy and Climate Ministers to Curb Emissions Rapidly

Dr. Fatih Birol, Executive Director of the International Energy Agency (IEA), attended the first-ever joint meeting of the G20 energy and climate ministers focusing on policies for the ultimate target of net-zero emissions by 2050. The meeting was held on July 23 in Naples under the G20 presidency of Italy and chaired by Italian Ecological Transitions Minister Roberto Cingolani. The Italian Presidency had invited the IEA to be a strategic partner for its work on energy and climate and requested the Agency's input to inform policymakers from the world's leading economies on the clean-energy transition.

“A new global energy economy is emerging.”

During his speech at the ministerial meeting, Dr. Birol stressed the need for urgent critical action and reinforced the importance of international cooperation just 100 days ahead of the COP26 Summit to be held in Glasgow. "My message to G20 energy and climate leaders today in Naples is clear: a new global energy economy is emerging. We already have many of the technologies that we need to reach Net-Zero, and we know innovation can help finish the job. International cooperation is key to success." he said.

Providing the key messages from the IEA's recent studies on the global pathway towards Net-Zero by 2050,¹ Dr. Birol reminded the G20 ministers that only 2% of recovery spending from Covid-19 went to sustainable energy, adding that this must rise significantly if countries are to meet their energy and climate targets. The IEA Executive Director also held a series of bilateral meetings with top representatives

from G20 economies, including U.S. Presidential Envoy for Climate John Kerry, European Commission Vice-President Frans Timmermans, COP26 President Alok Sharma, and the UNFCCC Executive Secretary Patricia Espinoza.

The IEA's contributions were reflected in the Joint G20 Energy-Climate Ministerial Communiqué and other related documents from the summit. In the communiqué, G20 ministers recalled their collective commitment to hold the global average temperature increase well below 2°C and to pursue efforts to limit it to 1.5°C. They also reaffirmed their commitment to jointly mobilize 100 billion USD per year by 2020 and annually through 2025 to address the needs of developing countries for the clean-energy transition.

The communiqué also cited the IEA in two major initiatives of the G20 Presidency. Firstly, while embracing



the best practices to facilitate a sustainable, resilient, and inclusive recovery, the G20 Presidency praised the IEA's "Sustainable Recovery Tracker"² and encouraged its updating. Secondly, while recognizing cities as innovative laboratories of clean, energy-efficient, sustainable, affordable, and reliable technologies, the G20 Presidency stated that it embraced the "Digital Demand-Driven Electricity Networks (3DEN)" initiative, which was launched in collaboration with the IEA. Additionally, four reports recently launched by the IEA were also reflected in the Outcome Documents by the Italian G20 Presidency.

Climate and Energy Ministers' Meeting

Naples, 23 July 2021



Please click here to access to the Ministerial Communiqué: https://www.g20.org/wp-content/uploads/2021/07/2021_G20-Energy-Climate-joint-Ministerial-Communique.pdf

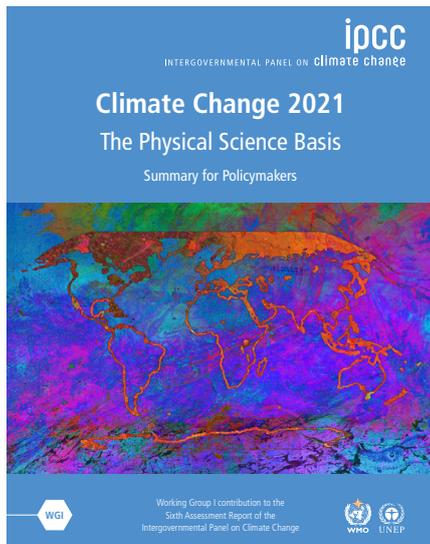
¹ <https://www.iea.org/reports/net-zero-by-2050>

² <https://www.iea.org/reports/sustainable-recovery-tracker>



UN Climate Scientists Meet as Fires, Heatwaves, Floods and Drought Hit Three Continents

The world's leading 200+ climate scientists of the Intergovernmental Panel on Climate Change (IPCC) met virtually over two weeks starting Monday July 26th to finalize the 6th Assessment Report (AR6), **Climate Change 2021: the Physical Science Basis**. The report was approved on August 6th by the 195 member governments of the IPCC.

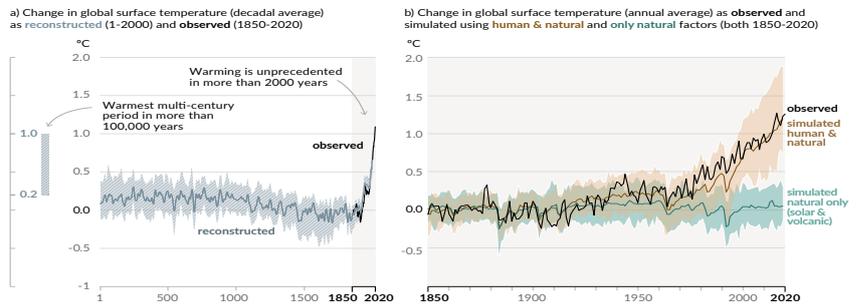


Alarming findings

Pointing out that the climate change is widespread, rapid, and intensifying, the assessment report provided scientific information relevant for the global community to meet the challenge of climate change, amid fires, heatwaves, floods, and drought across continents in recent weeks. At the opening session of the meeting,

Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years

Changes in global surface temperature relative to 1850-1900



IPCC Chair Hoesung Lee said: “This report has been prepared in exceptional circumstances, and is an unprecedented **IPCC** approval session.” The IPCC’s press release warned that “Many of the changes observed in the climate are unprecedented in thousands, if not hundreds of thousands of years, and some of the changes already set in motion, such as continued sea level rise, are irreversible over hundreds to thousands of years.”³

The World is at Climate Crossroads

UN Climate Change Executive Secretary Patricia Espinosa stated that the world is at climate crossroads and stressed the need for urgent action: “Assessments and special reports have been foundational to our understanding of climate change, the severe and growing risks it poses throughout the world and the urgent need for action to address it.”⁴ Espinosa also noted that decisions taken this year would determine whether it would be possible to limit global warming to 1.5°C above the pre-industrial era by the end of the century, to prevent catastrophic warming this century. “The world is currently on the opposite track, heading for a 3°C rise... We need to change course urgently.” she argued.

The approved Working Group I (WGI) report is the first instalment of



the IPCC’s Sixth Assessment Report (AR6), which will be completed in 2022. The report will be a key input for world leaders, as it brings together the latest advances in climate science as well as multiple lines of evidence to provide an up-to-date physical understanding of the climate system and climate change.⁵ This includes the latest detailed assessment on past and future warming projections, showing how and why the climate has changed with an improved understanding of the human impact on the climate.

One of the critical goals of the report is to help governments to address climate change, namely by helping leaders understand the effects of different policies through its five hypothetical future policy scenarios. “We have been telling the world that science has spoken, and it’s now up to the policymakers to take action.” said IPCC Chair Hoesung Lee at the opening session of the meeting.

³ https://www.ipcc.ch/site/assets/uploads/2021/08/IPCC_WGI-AR6-Press-Release_en.pdf?__cf_chl_jschl_tk__=pmd_7da281a69108ed3875d2e36c24a80b4e6601be49-1628502356-0-ggNtZGzNAqKjcnBszQci

⁴ <https://news.un.org/en/story/2021/07/1096422>

⁵ The Working Group I report is the first instalment of the IPCC’s Sixth Assessment Report (AR6), which will be completed in 2022.



Specific regional information will be included for the first time along with a greater focus on regional insights, which can be used for climate-risk assessments. “The report projects that in the coming decades, climate changes will increase in all regions. For 1.5°C of global warming, there will be increasing heat waves, longer warm seasons, and shorter cold seasons.”⁶ The report shows that heat extremes would more often reach critical tolerance thresholds for agriculture and health at 2°C of global warming.

Methane

IPCC Working Group Co-Chair Panmao Zhai said: “Stabilizing the climate will require strong, rapid, and sustained reductions in greenhouse gas emissions and reaching net-zero CO₂ emissions. Limiting other greenhouse gases and air pollutants, especially methane, could have benefits both for health and the climate.”

“Emissions resulting from human activities have been substantially increasing the atmospheric concentrations of greenhouse gases, particularly methane, in ways that are expected to affect the climate, resulting on average in an additional warming of the Earth’s surface. For instance, the atmospheric concentration of CO₂ has increased by 31% since 1750 and that of methane (CH₄) by 151%.

The atmospheric CH₄ growth rate has varied widely over the past three decades, and the causes of which have been extensively studied at a global level. Atmospheric CH₄ grew faster over the last six years (2014-2019) – a period with prolonged El Niño conditions,⁷ which contributed to high CH₄-growth rates consistent with behavior during previous El Niño events.

Due to large uncertainties in both the emissions and sinks of CH₄, it has

been challenging to quantify with accuracy the methane budget and ascribe reasons for its growth from 1980-2019. In the context of CH₄-emissions mitigation, it is critical to understand if the changes in growth rates are caused by emissions from human activities or by natural processes responding to changing climate. If CH₄ continues to grow at rates like those observed over the past decade, it will contribute to decadal-scale climate change and hinder the achievement of the long-term temperature goals of the Paris Agreement.”

Achieving a Net-Zero Pathway has long been one of the top priority items on the IEA’s agenda. On May 18, the agency released a comprehensive report “**Net Zero by 2050: A Roadmap for the Global Energy Sector**” underlining that climate pledges by governments to date, even if fully achieved, would fall well short of what is required to bring global energy-related CO₂ emissions to net-zero by 2050. The IEA points out that most pledges are not yet underpinned by near term policies and that the pledges to date would still leave around 22 billion tons of CO₂ emissions worldwide in 2050. This would result in a 2.1°C temperature rise by 2100, much higher than the critical threshold of 1.5°C. The IEA’s Net Zero report was one of the key pieces featured in the **IICEC Energy Market Newsletter Issue 21**.

To read more: <https://iicec.sabanciuniv.edu/newsletter/iicec-energy-market-newsletter-issue21>

During the **IICEC Webinar “Future of Net Zero Emission in the World & Europe and Implications for Turkey”** in July, IEA Executive Director Dr. Fatih Birol provided a keynote address around the leading dynamics, opportunities, and necessary steps towards a cleaner energy future. Dr. Birol noted that energy and climate change are

closely related. “We cannot solve the climate problem before addressing issues in the energy industry. The energy industry is responsible for 80% of the emissions that cause climate change.”

Webinar link: <https://iicec.sabanciuniv.edu/event/iicec-webinar-future-net-zero-emission-world-europe-and-implications-turkey>

“We need to come up with a global solution.”

In a previous IICEC webinar, “A New Era in Global Energy and Climate Policies: What is Next with the New US Administration?”, Birol had argued that the destructive impact of climate change would be several times worse than Covid-19, but emphasized the positive developments in renewables: “There are promising developments such as renewable energy. Many countries including Turkey have advanced greatly in this area. Many countries put special incentives for clean energy into their economic packages. However, countries doing a good job is not enough to solve the problem. We need to come up with a global solution.”⁸

Describing how a number of governments have made commitments to achieve net-zero emissions by 2050 and intend to reach an agreement at November’s COP26 summit to lead the world on the right path, Dr. Birol underlined the need for innovation for the world to achieve Net-Zero by 2050, continuing: “The magic word in the relationship between energy and climate is innovation. We need extensive, comprehensive innovation to bring all the required technologies to the market. It is impossible for this tidal wave not to hit Turkey. The industry needs to take lessons from developments around the world. We need to read the game in real-time and prepare our economy and energy industry accordingly.”⁹

⁶ IPCC, Press Release, 9 August 2021.

⁷ An El Niño condition occurs when surface water in the equatorial Pacific becomes warmer than average and east winds blow weaker than normal.

⁸ <https://gazetesu.sabanciuniv.edu/en/science-and-tech/new-era-global-energy-and-climate-policies-what-next-new-us-administration>

⁹ Ibid.



EU Unveils the “Fit for 55” Plan

The European Commission (EC) announced a new package of climate change proposals, elevating the EU's ambition of becoming carbon neutral by 2050. The package, presented by the Commission on July 14, is named “Fit for 55” and includes the EU's plan to raise its 2030 climate ambition, committing to cutting emissions by at least 55% by 2030.

The new package constitutes another milestone within the EU's critical journey towards its ambitious goal of making Europe the first climate-neutral continent by 2050. In 2008, EU leaders agreed to cut greenhouse gas emissions by 20% by 2020 from the 1990 level, which was achieved three years ahead of schedule. Later in 2014, leaders raised this objective to at least 40% by 2030. In December 2019, the European Commission announced the European Green Deal, unveiling the ultimate bloc's goal: a climate-neutral continent by 2050. More recently, in December 2020, the European Council agreed to increase its efforts to set the framework of the binding legislations towards the EU target of a net-domestic reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990.

The proposed package includes comprehensive revisions in the EU Emissions Trading System (EU ETS), Renewable Energy Directive, and Energy Efficiency Directive. It also amends the Directive on the Deployment of Alternative Fuels Infrastructure by setting new CO₂ emissions standards for cars and vans: a 55% reduction of emissions from cars by 2030, 50% reduction of emissions from vans by 2030, and zero emissions from new cars by 2035. The package also synchronizes the Energy Tax Directive and the Carbon Border Adjustment

Mechanism (CBAM) in line with the bloc's new ambitious targets.

The EC proposes to increase the binding target of renewable sources in the energy mix to 40%. Proposals include promoting hydrogen in industry and transport and increasing energy-efficiency targets with binding structures. The package foresees an overall reduction of 36%-39% in final and primary energy consumption by 2030, respectively. In addition, and in line with the bloc's motto of “leading the third industrial revolution,” the new package released under the Renovation Wave Strategy¹⁰, the

EC aims to improve the energy performance of buildings.

The commission aims to more than double renovation rates in the next ten years and ensure that renovations lead to higher energy and resource efficiency. By 2030, 35 million buildings could be renovated and up to 160,000 additional green jobs could be created in the construction sector through a renovation wave. This is particularly valuable for a sector where more than 90% of the operators are SMEs, hard hit by the economic impact of the Covid-19.

The Fit for 55 package includes the following legislative and policy initiatives:

- a revision of the EU emissions-trading system (EU ETS), including its extension to shipping, revising the rules for aviation emissions, and establishing a separate emissions-trading system for road transport and buildings
- a revision of the effort-sharing regulation in member states' reduction targets in sectors outside the EU ETS
- a revision of the regulation on the inclusion of greenhouse gas emissions and removals from land use, land use change, and forestry (LULUCF)
- a revision of the renewable-energy directive, energy-tax directive, and alternative fuels infrastructure
- a recast of the energy-efficiency directive
- an amendment of the regulation setting CO₂-emissions standards for cars and vans
- a carbon border-adjustment mechanism
- ReFuelEU Aviation for sustainable aviation fuels
- FuelEU Maritime for a green European maritime space
- a social climate fund
- an EU forest strategy

For further information:

<https://www.consilium.europa.eu/en/policies/fit-for-55/>

¹⁰ https://ec.europa.eu/energy/sites/ener/files/eu_renovation_wave_strategy.pdf



EU Proposes Carbon Border-Adjustment Mechanism

The European Commission (EC) announced a set of rules for the Carbon Border Adjustment Mechanism (CBAM) on July 14, 2021. The CBAM will be applied to the imports of iron and steel, fertilizer, cement, aluminum, and electricity generation in its first phase, and was announced as a key part of the European Green Deal that sets substantial targets for the EU to reduce greenhouse gas emissions towards carbon-neutrality by 2050. However, the production cost of EU-based manufacturers is expected to increase due to CO₂ taxation, while the diversity in production costs could lead to so-called carbon leakage, even if the companies in the EU shift their activities to regions that impose lower costs on carbon emissions. CBAM aims to prevent such carbon leakage by imposing a carbon price on the imports of a targeted selection of products.

According to the proposal, manufacturers outside the EU will have to prove that they have already paid a price for the carbon used during the production of the selected imported goods, and that the corresponding cost will be deducted from the obligation of the EU-based importer. Meanwhile, EU-based producers importing within the EU will have to buy carbon certificates corresponding to the carbon price based on the EU's carbon-pricing rules.

The price of the certificates will be calculated depending on the weekly average auction price of EU Emissions Trading System (ETS) allowances, as expressed in EUR/ton per CO₂ emitted. National authorities will authorize the company's registration of declarants in the CBAM system and will be responsible for reviewing and verifying such declarations.

Gradual Implementation with Two Key Milestones: 2023 and 2026

The CBAM will be implemented gradually. EU importers will have to declare emissions for products including iron and steel, fertilizer, cement, aluminum, and electricity from January 1, 2023 and will start paying a financial adjustment from January 1, 2026. They will then have to report the number of goods, the quantity of embedded emissions in the total goods, and the corresponding amount of CBAM certificates annually by May 31 of each year.

For further information: https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3661

Turkey Releases Green Deal Action Plan

Turkey has taken a considerable step towards adopting the climate change policies of the European Union's (EU) Green Deal by releasing the Green Deal Action Plan. The Action Plan covers 32 objectives and 81 actions in nine categories that will enhance Turkey's transition to a more sustainable, greener economy in line with the EU's Green Deal aspirations. The action plan primarily aims to enhance the integration of the Turkish economy and respective import and export regimes with the EU through the Customs Union Agreement.

The **Action Plan** outlines the following focus areas:

1. Border carbon regulations
2. Green and circular economy
3. Green financing

4. Clean, economical, and secure energy supply
5. Sustainable agriculture
6. Sustainable smart transportation
7. Combating climate change
8. Diplomacy
9. European Green Deal information and awareness activities

The Green Deal Action Plan is a roadmap aiming to support green transformation in all relevant policy areas. It mainly aims to establish Turkey's compliance with the European Green Deal, which addresses climate and environmental challenges in a broader and more effective way with the EU's strategy

of net-zero gas emissions by 2050, as well as to create jobs and improve quality of life while reducing emissions.

The Action Plan aims to harmonize Turkey with the regulations and principles adopted under the European Green Deal, in order to contribute to Turkey's transition to a more sustainable, resource-efficient and green economy in a way that will preserve and carry forward the existing integration of Turkey within the scope of the EU Customs Union.

The Action Plan is part of the recent efforts to strengthen sustainability of the economy including attracting green investments to Turkey. More than 40% of Turkey's exports go to EU countries, with the trade volume between Turkey and the EU



reaching 140 billion USD in 2020. The CBAM will cover the imports of iron and steel, fertilizer, cement, aluminum, and electricity during its first implementation period. Turkey, together with Russia, China, and

the United Kingdom are expected to be the most affected, as these economies are the largest suppliers of products defined within the CBAM's scope.

For further reading:

<https://ticaret.gov.tr/data/60f1200013b876eb28421b23/MUTABAKAT%20YE%C5%9E%C4%B0L.pdf>

Azerbaijan's Investment in Turkey Increases to 18.3 billion USD

Cooperation between Turkey and Azerbaijan resulted in a total of 18.3 billion USD of investment in Turkey and 13 billion USD of investment in Azerbaijan, according to a recent statement by Azerbaijan's Energy Minister Parviz Shahbazov. Speaking at the special session of the "4th Energy and Natural Resources Summit" organized in Istanbul, Minister Shahbazov highlighted that the main pillars of Azerbaijan's investment in Turkey are formed by the cooperation of the two states in the STAR Oil Refinery, Petkim, and many other projects. The Minister underlined SOCAR's participation in the oil refining, petrochemicals, energy, logistics, and natural gas distribution sectors: "Azerbaijan's investment in Turkey has increased to 18.3 billion USD and Turkey's investment in Azerbaijan has increased to 13 billion USD. As stated by President Ilham Aliyev, that much investment can only be made in a brotherly country. This is due to the political trust, confidence, and, of course, brotherly trust between the two countries." Minister Shahbazov remarked.

Projects are the product of joint political will

"Thanks to the determination of Azerbaijan's National Leader Heydar Aliyev, Azerbaijan's independent



energy policy, which began with the signing of the "Contract of the Century" in 1994, was implemented jointly with Turkey and resulted in global energy projects such as Baku-Tbilisi-Ceyhan, Baku-Tbilisi-Erzurum, TANAP and Southern Gas Corridor pipelines that link Eurasia. These projects, which are the product of joint political will, guarantee the energy security of Azerbaijan, Turkey, and other countries, and turn our energy cooperation into a continuous process."

"So far, more than 437 million tons of Azerbaijani oil has been shipped to Turkish and world markets through the Baku-Tbilisi-Ceyhan pipeline alone and 81.7 bcm of natural gas from the Shah Deniz field have been transported to Turkey via gas pipelines. Since July 2018, TANAP has transported 10.6 bcm of natural gas to Turkey. During the first five months of this year alone, 2.2 bcm out of 4.1 bcm of gas was transported to Turkey through TANAP. During this

period, TAP exported 2.3 bcm of gas to Europe. Joint energy projects have turned both countries into important energy traders and signify the vitality of the Eurasian energy map." he continued.

Turning Karabakh into a "Green Energy" Zone

Azerbaijan's Energy Minister also revealed that there are renewable energy projects planned for Karabakh. "The liberated territories have been declared as a 'Green Energy' zone by the President. Mainly renewable energy sources such as hydro, solar, and wind will be used there. Turkish companies are also interested in participating in renewable energy projects in these liberated areas. There are opportunities for cooperation in the construction of wind power plants in Lachin and Kalbajar. Our cooperation with Turkish companies in the process of turning Karabakh into a 'Green Energy' zone is attractive and can also be a symbol of our solidarity."



Progress in Black Sea Efforts to Discover and Produce Natural Gas

After the discovery of the 405-bcm natural gas reserve at the Tuna-1 well located in the Sakarya block in the Black Sea, TPAO announced a new 135-bcm discovery at the Amasra-1 well. Thus, the total amount of reserves discovered in the Black Sea increased to 540 bcm. The reserve was initially announced as 320 bcm at the Tuna-1 well of the Sakarya field in August last year, but, after ongoing exploration work, increased to 405 bcm with the determination of an additional reservoir level in October 2020. The first discovery came at a depth of 3,520 m, and the second at a depth of 4,775 m. TPAO continues its exploration activities in the Black Sea at the Turkali-1 and Turkali-2 wells as well as at the Amasra-1 well, where the most recent 85-bcm reserve was found.

Daily peak production targeted for 40 mcm

TPAO submitted its application file for an environmental impact assessment (EIA) that it had prepared for the Sakarya Gas Field Submarine

Production Facilities, Submarine Transmission Lines, and Land Natural Gas Processing Plant Integrated Project to the Ministry of Environment and Urbanization on February 17, 2021. According to the application, a 155-km natural gas pipeline will be built to transport the natural gas discovered from a depth of 2,200 meters to Filyos. In total, TPAO will invest 780 million TL into production and transmission infrastructure to harness the gas discovered at Sakarya.

The integrated project will consist of three separate parts. First, submarine natural gas production facilities will be established in the Turkish Exclusive Economic Zone, and then a gas-processing facility will be established in the Filyos Industrial Zone. Finally, natural gas transmission lines connecting both units will be built on sea and land, which will tie into BOTAS' transmission network.

During operation, remotely controlled systems will carry out production so that no people will be working at sea. In the first stage, 6 to 10 wells

will be connected to the submarine production system in the Sakarya field, and 10 mcm of gas will be produced daily from these wells and sent to the gas-processing facility in Filyos through a pipeline. At Filyos, it will be processed and refined according to BOTAS standards. In the second stage, 40 mcm of gas will be produced, transported, and processed daily from 30-40 wells. Regarding the land side of the project, a 49-year servitude right will be given by the Ministry of Industry and Technology to TPAO.

The offshore pipeline and its related sea-based systems will be designed for an operational life of 40 years, while the main equipment will have a design life of 25 years, according to the supplier's recommended maintenance procedures and intervals. The first natural gas from Sakarya is targeted to come online in 2023, but the full commissioning of the field will take place after 2023. According to EMRA's Annual Gas Report, 441 mcm of natural gas was produced in Turkey in 2020.



TPAO lights first gas flare at Sakarya gas field



Melih Han Bilgin

Turkey's state-owned energy company Turkish Petroleum Corporation (TPAO) performed the first flow test of the Türkali-2 well in the Sakarya gas field and burned the first flare gas during the ceremony. "This is a milestone for Turkey. The flow rates, indicating commercially viable gas in the Sakarya Basin, imply new opportunities for TPAO," said Melih Han Bilgin, TPAO chairperson and CEO.

Energy Minister Fatih Dönmez revealed that five deep-sea drilling operations had been completed in the past year at Sakarya. The Fatih drillship conducted its operations at the Türkali-1, Türkali-2, and Türkali-3 exploration wells, while Kanuni started well completion operations at Türkali-2 last month, according to Minister Dönmez's statement during the ceremony.

"We confirmed the amount of natural gas that we discovered at the exploration wells. We analyzed 140



Fatih Dönmez

gas and water samples in five wells. We finalized fluid, pressure, and temperature assessments with 1,090 mini-tests to closely examine reservoir conditions," Dönmez noted.

"We completed 11,000 square kilometers of three-dimensional seismic exploration at the Sakarya field and proceeded to the interpretation stage. Hopefully, this data will be an indicator of good news," he said. The flow tests enable TPAO to gather crucial data on the flow rate and the natural gas pressure to be extracted from the wells.





Güray: "Multi-dimensional contribution expected to support sustainable growth."

IICEC Director Bora Şekip Güray shared his assessments of the recent developments regarding Turkey's natural gas reserves. Güray expected that the 540 bcm of reserves discovered as a result of explorations recently intensifying in the Black Sea would provide multi-dimensional benefits to the sustainable growth of Turkey's energy sector.

Calling the developments in the field of natural gas positive, **Güray** said: "Steps that can enable Turkey to cater to its natural gas needs—for 99% of which Turkey depends on imports—through its own production will help decrease the share of energy imports in total energy consumption, which is currently above 70% for primary energy sources. These steps will also lower the nearly 30-billion USD energy imports bill realized in 2020, a figure that could have been much higher had it not been for the pandemic and the accompanying shrinkage of demand."

Turkey to have stronger hand

Highlighting that the recent gas discoveries were also important from the perspective of energy security and technology-focused development and would make Turkey's hand stronger in negotiations for gas



imports, Güray said: "It is important to evaluate these developments in such a way that they can contribute to efforts towards the competitive development and deepening of the natural gas market, long-awaited items that have come to the agenda this year."

Güray pointed out that natural gas had the potential to be used more commonly in residential and other buildings in an integrated way with energy-efficiency improvements, in transport in line with mobility and urbanization trends, and in some industries, and added that, considering prospective growth trends in these sectors in the short and medium term, natural gas would remain important for Turkey's plans for a cleaner energy future. Güray also argued that a reliable, efficient and competitive natural gas economy would support more renewable energy-based growth as the main axis of energy generation and would nurture a more competitive and predictable energy market.

Renewables-Based Additions Raise Turkey's Total Installed Capacity to over 98 GW

Turkey's installed capacity reached 98 GW as of end of July 2021, according to transmission system operator TEIAS's data released on the company's website. The share of renewable resources, including hydroelectric, wind, solar, geothermal, and biomass constituted 53% of Turkey's total

Breakdown of Installed Capacity (31 July 2021, %)

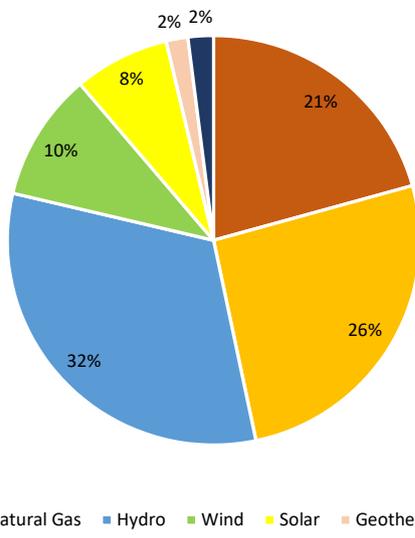


Figure 1: Installed Capacity by the end of July 2021
Source: TEIAS



installed capacity. Natural gas-fired power plants ranked second with a 26% share, and the coal-fired power plants was third with around 20% share. Wind, solar and geothermal combined made up close to 20% of total installed capacity (Figure 1).

Although hydropower remained the largest renewable electricity technology in terms of capacity (32% of total installed capacity) and remains the largest renewable electricity generation technology in the first seven months of 2021, the hydro generation share in total generation significantly declined due to heavily depressed hydrology and capacity factors. When compared to the first seven months of hydropower generation data, production declined from 53.8 TWh to 38.0 TWh (Figure 2).

Hydro is a central part of Turkey's installed capacity and power generation. Despite net-capacity additions estimated in the coming years, the hydro generation share is expected to drop as a result of lowering hydrology and capacity factors as discussed in the Turkey Energy Outlook. TEO projects that wind and solar combined will reach a larger share than hydro in Turkey's total power generation throughout 2040 (36% in the TEO Alternative Scenario by 2040 up from 12% at present).

Electricity Generation from Hydro (2020-2021, GWh)

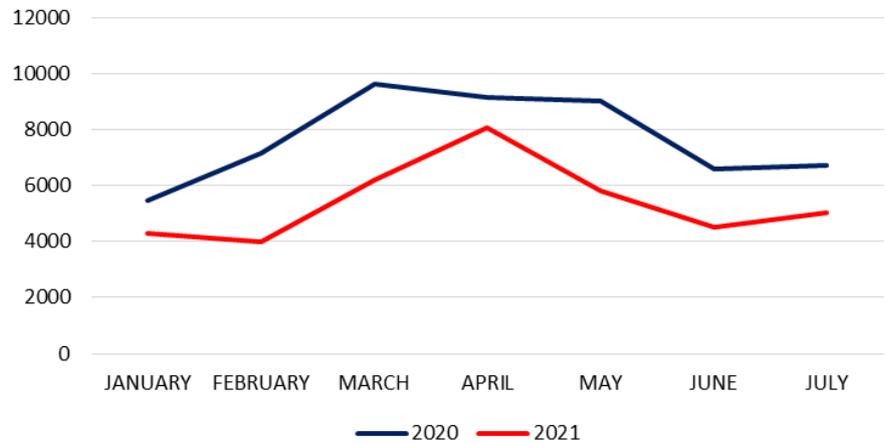
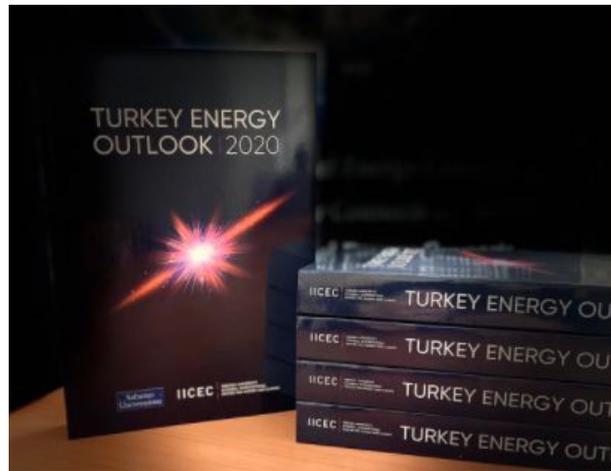


Figure 2: Hydropower Generation Comparison in Turkey (2020-2021, Jan to July, GWh)
Source: TEİAŞ



<https://iicec.sabanciuniv.edu/sites/iicec.sabanciuniv.edu/files/inline-files/TEO.pdf>

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