

IICEC's Conference Entitled 'Global Energy and Climate Trends & Implications for Turkey' Outlined Latest Trends with Prominent Names



Sabancı University Istanbul International Center for Energy and Climate (IICEC) hosted its 11th conference entitled "Global Energy and Climate Trends & Implications for Turkey" on November 12 with a broad range of physical and online participants.

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TIME 100

IICEC Honorary Chairman and IEA Executive Director Dr. Fatih Birol has been named in TIME's list of the 100 most influential people in the world.



Dr. Fatih Birol named to TIME100 list of the world's most influential people

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CLIMATE

Turkey ratifies Paris Agreement ahead of COP26 Summit

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Turkey's installed wind capacity reaches over 10 GW

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Hydrogen trains run for first time in France.

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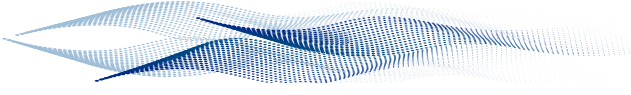
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Üniversitesi**IICEC**SABANCI UNIVERSITY
ISTANBUL INTERNATIONAL
CENTER FOR ENERGY AND CLIMATE

Sabancı University Istanbul International Center for Energy and Climate (IICEC) hosted its 11th conference entitled "Global Energy and Climate Trends & Implications for Turkey" on November 12 with a broad range of physical and online participants. The conference, organized at Sabancı Center, opened with the remarks of Güler Sabancı, Founding Chair of Sabancı University Board of Trustees, and continued with the guest speaker Ayşem Sargın, Chair of YASED. Sargın's speech was followed by Dr. Fatih Birol's keynote speech. The Executive Director of the International Energy Agency (IEA) and IICEC's Honorary Chair Dr. Birol pointed out the latest developments following the COP26 UN Climate Conference. IICEC's conference, followed by more than two-thousand online attendees, concluded with a high-level panel session on business perspectives on a clean and sustainable energy future.



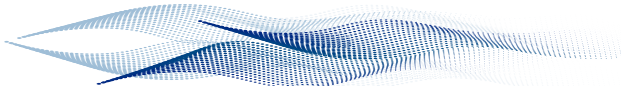
Güler Sabancı

Güler Sabancı:
"IICEC to publish another major study, *Turkey Electric Vehicles Outlook in December.*"

In her opening remarks, the Founding Chair of Sabancı University Board of Trustees, Güler Sabancı, said that they have prioritized energy and climate for a long time, and made an announcement: "We aim to make the Sabancı University campus net-zero. We share this with you for the first time on this occasion. We have started to work on it and will announce the results." Reminding that Dr. Fatih

Birol was the only person from Turkey on TIME magazine's "The Most Influential People of 2021" list, Güler Sabancı said that she was proud of him and congratulated him once again. Güler Sabancı continued as follows:

"We can secure a more sustainable future through energy policies that promote energy security, competitiveness, and transition to clean energy and investments with a focus on sustainable value, innovative business models, and clean energy technologies. As you know, we at Sabancı University have been prioritizing energy and climate for a long time. We established IICEC as an Energy and Climate center, with the vision that these two topics cannot be separated to contribute to a cleaner and more secure, and therefore, a better future of energy for economic growth and social development and new generations.



I am delighted to see that IICEC, which is now 11 years old, has grown its contribution to these goals. As you know, IICEC broke ground in Turkey and published the Turkey Energy Outlook. This study was adopted by stakeholders from the sector and received very positive feedback becoming a “reference” study. IICEC will publish another big project, “Turkey Electric Vehicles Outlook” in December. This study will cover electric vehicles, the e-mobility ecosystem, and growth perspectives in addition to opportunities in Turkey. IICEC will continue to let us meet the most important dynamics in the field of energy and climate”.

Highlighting the importance of the IEA’s latest Net-Zero by 2050’ report, Sabancı continued his remarks as follows: “I would like to thank Dr. Fatih Birol once again for his contributions to the development of IICEC as the Honorary Board Chair. As the Executive Director of the IEA, Dr. Fatih Birol has made it an institution that leads the global clean energy transition. The Net-Zero by 2050 report prepared by the IEA upon the request of the Heads of the G7

States and Chair of COP26 Climate Change Conference to determine the pathway to the critical goal of clean energy, set out important messages and recommendations to decision-makers about the transformation that energy sector should undergo to reach international climate goals and a cleaner and more secure future of energy. I also would like to thank IICEC’s Board of Directors for their support.”

Güler Sabancı revealed that Sabancı University initiated a study to have a net-zero campus.

Ayşem Sargin:
“The green transition agenda became more important for the evolution and development of international investments.”

Ayşem Sargin, Chair of YASED (International Investors Association) identified international cooperation as the key to success in leaving the impacts of the pandemic behind and sustainably fighting climate change during her speech. She underlined the crucial role of securing a lasting, sustainable transition as inclusively

as possible by pointing out that international investments are a catalyst in powering the green transition.



“The most positive development after the pandemic is that the green agenda became increasingly important, to such an extent that it is affecting the evolution of international investments. The 2021 theme of the global investment report was “a sustainable recovery”, parallel to the COP26 agenda, and pointed to the growing opportunities for green investments and financing and highlighted that there were important opportunities ahead. All global actors agree that international cooperation is the key to success in leaving the pandemic behind and fighting climate change. However, it is not only about transition; we should focus on securing a lasting, sustainable transition as inclusively as possible. International investments will be a catalyst in the green transition.” she stated.

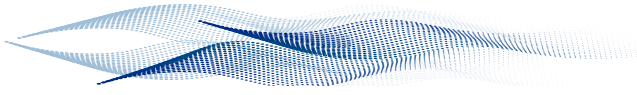
Dr. Fatih Birol: “The change has started; a new energy system is being born.”

In his keynote speech, the Executive Director of the International Energy Agency (IEA) and IICEC’s Honorary Chair, Dr. Fatih Birol, addressed the latest developments in the energy market following the COP26 UN Climate Conference held in Glasgow.

Dr. Birol highlighted the most considerable outcome of the Glasgow meeting as a solid message to investors about the significant rise in their risk factors if they invest in fossil fuels. “You have to consider this high-risk factor in your accounts.” warned Dr. Birol.



Emphasizing the acceleration of renewable energy investments, IEA’s Chair stated that 90% of the power plants built in the world last year rely on renewable resources. “The share of solar, which I have declared as the ‘new king of the energy market’, has the majority share of the growing renewables sector, and its share will keep growing in the future.”



Dr. Birol outlined the new trend in global energy markets and continued his keynote speech as follows:

“There is a certain trend in energy markets. A new energy system is being born. When you look at the energy market over the last 30 years, 80% of energy came from fossil fuels, including coal, gas, and oil, but the change has started. The shift is continuing rapidly, and the speed at which the change will occur depends on Glasgow's decisions and further governments' decisions. All countries in the world adopted the Paris Agreement. In Turkey, the Paris Agreement became law yesterday, which is a very nice development. Many countries set zero-emission targets for 2050 and some others for further years.”

Underlining the transition towards renewable resources, Dr. Birol stressed that investments in conventional fossil fuels will be more complex than ever due to newly implemented financing strategies. “Whether you believe in climate change or not, whether you like fossil fuels or not, the risk of investing in fossil fuels, particularly coal, is now factored in as a parameter for predictions. I think the most important message from Glasgow to global investors was this: 80% of emissions leading to climate change come from energy, which means that solutions to climate change must focus on the energy sector. What should be done to achieve this? A great transformation is needed in the energy sector. As Ms. Güler Sabancı mentioned, G7 leaders and the COP Presidency requested us to prepare a roadmap. What should the world of energy look like by 2050 so that there can be zero emissions? We established a big team, worked with many international organizations, and prepared a roadmap. As a matter of fact, unprecedented changes must occur to get to the level of zero-emissions.” he added.

“Hydrogen, carbon capture, advanced battery technologies, and small-scale modular nuclear reactors.”

Dr. Birol outlined the three most important endeavors that humankind must undertake to reach zero-emissions:

“First, we must increase renewable energy technologies very rapidly, especially in the next decade, which is critical for the world. We need to triple accelerate in wind, solar, and hydro production, and in energy efficiency.

Secondly, we must quickly adapt the new clean energy sources to the system, which are not currently on the market, but whose R&D continues. We must bring hydrogen, carbon capture, advanced battery technologies, and small-scale modular nuclear reactors alongside existing energy systems by 2030.

The third task is to reduce the fossil fuels we use now, starting with coal and continuing with oil and natural gas.”

“350% increase in the e-vehicle ratio.”

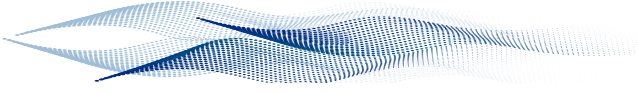
Regarding the growth of e-vehicles, Dr. Birol highlighted their contribution to reducing emissions. “In 2019, only 2 out of every 100 vehicles were electrified. This year, that rate has increased to 7%. The two leading countries in electric vehicles are China and the European Union. The infrastructure support law that the United States has recently enacted will also provide great momentum to the e-vehicle market.” Dr. Birol revealed.

“Importance of nuclear power increases.”

Dr. Birol emphasized the growth in small-scale nuclear reactors and underlined the resumed intention to build new nuclear reactors. “I have been stating for years that nuclear power plants are reliable with the right partners, the right technologies, and the right regulations. Nuclear has cooled after Fukushima, but I think the tide has turned. With the increase in natural gas prices, the importance of nuclear has increased. French President Macron had announced that if he is elected, he will reduce the share of nuclear. But last week, he announced that they would protect its existing nuclear power plants and build new ones. Nuclear power plant investments in the United States and China will continue to increase. More flexible nuclear power plants are being developed that can be built in a shorter period of time.” he stressed.

“Turkey has a great solar rooftop potential.”

“Turkey made a considerable move in solar energy but can only use 3% of its total solar energy potential. Turkey needs to focus also on expanding rooftop power plants. Rooftop solar PV should be used extensively. Turkey should be in a position to export solar energy technologies and equipment to the region.”



“Change has begun and continues at a rapid pace.”

Dr. Birol assessed the latest hikes in gas and oil prices which is marked as the top concern in the agendas of export-dependent countries. IICEC compiled his assessments as follows:

“Natural gas prices continue to be high in Asia, Europe, and America. Prices today are about five times higher than in 2019. However, the price level today is noticeably lower than it was a few months ago. I can explain the reasons for high natural gas prices as follows: The first reason is that the world economy will grow by 6% in 2021, the highest growth rate recorded in the last 50 years. And this growth is mostly triggered by fossil fuels such as natural gas, coal, and oil. When the economy contracted in 2020, economic recovery packages were put forward. At that time, we said that if these packages do not support clean energy, prices and emissions will increase. Unfortunately, only 3% of the announced USD17 trillion economic package was allocated to renewable energy.

The second reason was that some countries faced extreme weather conditions. There was a great drought in China and Brazil, and these countries

increased their LNG imports to replace the power coming from their hydroelectric power plants. Brazil imported six times more LNG than on average. Some production facilities were affected by the floods, causing production disruption.

The third reason was planned and unplanned outages in natural gas production facilities. The works that could not be done in 2020 due to the Covid-19 pandemic were delayed until 2021 and caused interruptions in production.

The problem in the natural gas market right now is not gas shortage; this is due to the fact that gas is not flowing to markets.

If this winter period is not harsh and the amount of gas coming to Europe increases, prices will decrease. But if the winter is severe in Europe and the amount of incoming gas does not increase, prices will rise.

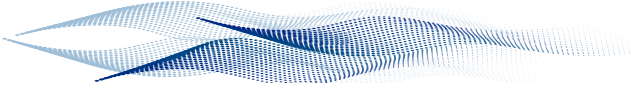
In oil, producers have reserves of around 5.5 million barrels/day. But producers take a different stance on opening valves. If they want to support the world economy coming out of the depression, they open the valves and relax the market. Next year, we expect relief in oil prices.

Important Messages from Turkish Business Leaders for Energy and Climate Change



Following the speeches, IICEC’s conference continued with the “Perspective of the Business World” panel, during which distinguished business

leaders assessed the latest developments. The panel moderated by Ahmet Erdem, Shell Turkey Country Manager; featured Sinan Ak, CEO of Zorlu Enerji;



Erkan Kafadar, CEO of Borusan Holding; Merve Öztunç, Baker Hughes, TPS Country Manager; Hakan Yıldırım, CEO of Sanko Enerji; and Kıvanç Zaimler, Sabancı Holding Energy Group President, all of whom discussed recent developments in climate and energy from the perspective of the energy sector and companies.

“Turkey ranks 5th in Europe and 12th in the world for installed renewable energy capacity.”

Ahmet Erdem, Shell Turkey Country Manager:

“We need to provide more and cleaner energy for continued growth and welfare globally and in our country. In this context, energy transition is very important. This transition can be achieved only if energy policies, energy companies, and relevant sectors work together in harmony. Thanks to its steps for energy independence and a clean energy future, Turkey ranks 5th in Europe and 12th in the world for installed renewable energy capacity. Implementation of the necessary regulations and practices is very important to achieve this transition, which is critical for our country to reach its objectives under the Paris Agreement and maintain its international competitiveness. For this to happen, we should continue to work together as all stakeholders.”



Ahmet Erdem

“Hydrogen has a growing role in renewable energy.”

Sinan Ak, CEO of Zorlu Enerji:

“As the world focuses on the transition to low carbon energy systems to attain the 2050 Paris Agreement objectives, hydrogen has a growing role in renewable energy. Currently on the agenda of Europe, hydrogen has the potential to transform the transportation sector and industries, especially those involved in manufacturing under very high temperatures such as steel, cement, refinery, and petrochemicals. In addition to renewable energy, many different technologies such as the internet of energy (IoE), Blockchain, and artificial intelligence will play an important role in making the energy sector more sustainable. Implementing digital transformation and investments with correct strategies



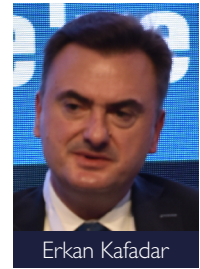
Sinan Ak

will reduce energy generation, distribution, and consumption costs and secure energy supply. It will help use inert energy, decrease losses, create new micro-networks with renewable energy sources, and securely manage consumption with transparent and traceable production data.”

“We aim to be carbon-neutral by 2030.”

Erkan Kafadar, CEO of Borusan Holding:

“We do not only focus on energy generation. As a group having industrial-production facilities and factories, we take care of the energy we consume. We monitor energy use in our companies. We aim to follow up on scope 1, scope 2, and, if possible in the future, scope 3 emissions of the goods and services that we produce, take necessary actions, and become carbon-neutral by 2030. On the other hand, we believe that wind energy will be one of the key energy sources to combat climate change in our country and in the whole world. We are confident that the existing wind potential of our country will be further utilized through investments, and that this local, clean, and renewable source of energy will be the biggest contributor to Turkey’s sustainable development.”



Erkan Kafadar

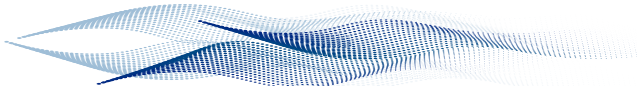
“We commit to making important steps to mitigate the environmental impact.”

Merve Öztunç, Baker Hughes, TPS Country Manager:

“As Baker Hughes energy technology company, we believe that climate change is one of the world’s greatest challenges. We commit to making important steps to mitigate the environmental impact of the energy sector on our planet. We support these steps with our company policies about climate change and our Paris Climate Agreement Commitment. We commit to decrease our GHG emissions to net-zero by 2050 and implement available products and services to help our clients decrease their emissions and invest in new technologies for the future of energy. The essence of our mission is to offer the most efficient solutions today and carry the decarbonization of energy to the future.” Öztunç also emphasized the empowerment of women’s



Merve Öztunç



roles and the increase in women's employment in all sectors, starting with energy, and thanked IICEC for its awareness about this issue.

“We are moving to a new, carbon-free economic order.”

Hakan Yıldırım, CEO of Sanko Enerji:

“Over the last 10 years, the world is on the verge of a ‘new, carbon-free economic order’. This impacts all our lives to the utmost extent. I find it important that companies have an ‘integrated’ approach to carbon. We should always ask ourselves “As a producer, at which points do I cause carbon emissions, and how should I eliminate them?” I believe the performance of the energy sector in this sense will also guide other sectors. Green energy investments can grow at full speed, and we can manage to make clean-energy technologies available to all; we as the sector can attain our targets if we focus on energy efficiency carefully.”



Hakan Yıldırım assessed Turkey's current renewable energy investment environment and warned that some infrastructural improvements are required to increase the number of projects in the private sector's pipeline. He also emphasized the importance of leadership in progress towards the net-zero target by stating: “We need the guidance of a prominent leader in addition to technology, investments, and financing to achieve these goals. A leader who leaves behind all personal agendas and interests may convert individual efforts into mass action.”

“Turkey has to accelerate liberalization and must switch to cost-based pricing in the energy market.”

Kıvanç Zaimler, Sabancı Holding Energy Group President:

Kıvanç Zaimler started his session by considering the three main pillars of the transition – climate change and environment, the cost of transition and impact on consumer prices, and the security of supply – as a trilemma. “A trilemma, often known as an ‘impossible trinity’ in economics, can only be solved by optimizing each option rather than maximizing them.” he stated. Zaimler, Sabancı



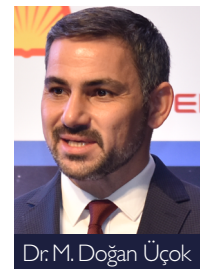
Holding's Energy Group President, underlined the importance of liberalized market structure to secure sustainable finance for the transition. “Global markets, including Russia and China, are now implementing liberalized market structures. Turkey must accelerate liberalization and switch to cost-based pricing in energy markets to avoid the implications of subsidizing consumer prices. If a market fully relies on subsidized prices, the supply security faces hurdles.” Zaimler stressed.

Zaimler also urged that the energy policies be implemented as a state policy rather than a government policy to sustain predictability and trust. “The success of the energy transition, innovation, and new energy technologies will be the most critical elements. The transition should be supported with social awareness and realistic targets.” he added.

“First high-level panel in Turkey right after the COP26 UN Climate Conference, held in Glasgow.”

Dr. Mehmet Doğan Üçok, IICEC Coordinator

IICEC's latest conference, entitled “Global Energy and Climate Trends & Implications for Turkey”, started with the introduction by IICEC's Coordinator Dr. Mehmet Doğan Üçok. Üçok provided information about IICEC's research and activities, which gained momentum in the last couple of years despite the Covid-19 pandemic:

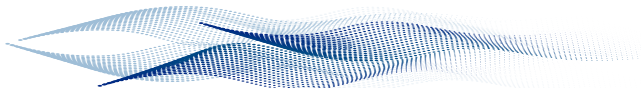


“Celebrating its 11th year in 2022, IICEC has organized eleven international energy and climate forums, six panels for launching World Energy Outlook in Turkey, eighteen seminars and roundtable meetings, and ten high-level webinars since its establishment. IICEC continued its work without slowing down despite the pandemic that began in 2020. For instance, we organized the IICEC Energy and Climate Webinars series in 2020 and 2021. The number of audiences for each webinar averaged around two thousand and brought us all together digitally.”

Üçok also underlined the good timing in holding this IICEC conference, as it is considered the first high-level panel in Turkey immediately following the COP26 UN Climate Conference in Glasgow.

To watch the conference in Turkish: <https://www.youtube.com/watch?v=N2EvzEYNdvc>

For English Version: <https://www.youtube.com/watch?v=UupOZRXdQ0w>



Dr. Fatih Birol named to TIME100 list of the world's most influential people

Dr. Fatih Birol, Executive Director of the International Energy Agency (IEA), has been named as one of the world's 100 most influential people of 2021 by TIME magazine.

The annual list of the magazine, considered as a global trendsetting list, classifies the most influential people of the year under four major categories: 16 icons, 18 pioneers, 13 titans, 16 artists, 20 leaders, and 17 innovators. Dr. Birol, the only Turkish individual on the list this year, was selected as a 'pioneer' alongside U.S. President Joe Biden, former U.S. President Donald Trump, Indian Prime Minister Narendra Modi, newly elected Iranian President Ebrahim Raisi, European Commission's Executive Vice President Frans Timmermans, and Prince Harry and Meghan Markle, the Duke and Duchess of Sussex, among others.

In the introductory text for Dr. Birol's appearance in the TIME100, John Kerry, former U.S. Secretary of State and currently U.S. Special Presidential Envoy, highlighted the IEA's global guidance towards a net-zero world by mid-century under Dr. Birol's leadership: "In a world where facts are assaulted, Fatih Birol combines the best of high-tech data, optimistic know-how and old-



school rhetorical finesse. A trusted counselor to world leaders, he's an objective authority on what it will take to slash carbon emissions and save our planet. His data-driven approach is like Moneyball for the clean-energy revolution. Birol has transformed the International Energy Agency from a body mostly monitoring oil markets into a leading adviser to the world's major economies across the full suite of energy technologies. Building on over ten years of analysis, this year, his IEA released its first comprehensive road map for reaching global net-zero emissions by 2050 and minimizing the risk of catastrophic climate impacts. Countries including India, China, Indonesia, and Colombia have all asked him to chart road maps to speed climate action and reach net-zero emissions. When we get there, and if we get there in time, trust that Fatih Birol guided the course to turn words into reality."

Following the announcement of the list, Dr. Birol thanked the IEA team on his Twitter account: "I'm humbled to be on the TIME100 list of the world's most influential people. I share this honor with my dedicated IEA colleagues. Whatever influence I may

have, I want to use it to help countries reach Net Zero while ensuring an affordable, just & secure transition."

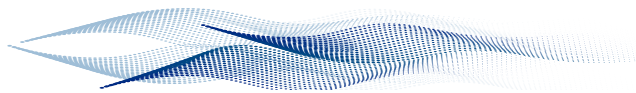
Having a BSc degree in power engineering from the Istanbul Technical University and an MSc and Ph.D. in energy economics from the Technical University of Vienna, Dr. Birol worked at OPEC in Vienna before joining the IEA. After rising through the ranks of the agency over two decades, he was appointed as the Executive Director in 2015. Besides TIME, he has also been named by Forbes magazine as one of the most influential people in the world of energy and by the Financial Times as the Energy Personality of the Year in 2017. He chairs the Energy Advisory Board of the World Economic Forum in Davos. He is the recipient of numerous state decorations, including the Japanese Emperor's Order of the Rising Sun, the Order of the Polar Star from the King of Sweden, and the highest Presidential decorations from Austria, Germany, and Italy. He was awarded a Doctorate of Science honoris causa from Imperial College London in 2013 and currently serves as the Honorary Board Chairman of IICEC.

Turkey ratifies Paris Agreement ahead of COP26 Summit

The Grand National Assembly of Turkey (TBMM) ratified the Paris Agreement on October 6, just weeks before the 26th UN Climate Change

Conference of the Parties (COP26) to be held October 31–November 12 in Glasgow.

The agreement was ratified unanimously by the 353 MPs present who voted in the Parliament. Although Turkey has been a signatory of



the deal since April 2016, it had not ratified it because it has been claiming that it was being unfairly categorized as a 'developed country' contrary to its historical responsibility in accounting for a tiny share of global carbon emissions.

The UN Framework Convention on Climate Change (UNFCCC) has been listing Turkey in 'Annex I', the group of industrialized countries that were members of the OECD in 1992 plus countries with economies in transition (the EIT Parties), including the Russian Federation, the Baltic States, and several Central and Eastern European States. Annex I parties do not receive any funding. 'Annex II' parties consist of the OECD members of Annex I, but not the EIT Parties. These countries are required to provide financial resources to enable developing countries to undertake emissions-reduction activities.

'Non-Annex' parties are mostly developing countries vulnerable to the adverse impacts of climate change and receive financial aid from Annex II countries. The 'least developed countries (LDCs)' are also given special consideration under the climate accord on account of their limited capacity to respond to climate change and adapt to its adverse effects.

The Turkish Parliament approved the climate accord and published a 'declaration' announcing that it will "implement the agreement as a developing country" and as long as it "did not harm its right to economic and social development." Turkey also sent a proposal to the UNFCCC Secretariat in Bonn to have its name removed from Annex I, which will be submitted to the provisional agenda of the COP26 Summit. If Turkey's request is approved at COP26, it would be able to benefit from the Paris Agreement's funding channels.

The Turkish Parliament's move came right after President Recep Tayyip Erdoğan's announcement at the UN's 76th General Assembly in New York on September 21 that the Turkish government plans to submit the agreement for the Parliament's ratification in October. "We are one of the first countries to sign the Paris Agreement. However, we have not yet put this agreement into effect due to the injustices related to obligations. I would like to announce to the whole world from here: we plan to submit the Paris Climate Agreement to our Parliament next month, in line with the constructive steps to be taken and within the framework of our nationally determined contribution. We consider this process, which will lead to

radical changes in our investment, production, and employment policies, as one of the main elements of our 2053 vision." he said.

Turkey committed in its first Intended Nationally Determined Contribution (INDC), which was submitted to the UN Secretariat in 2015, to reduce its emissions increase by 21% by 2030. After the ratification of the Paris Agreement, Turkey is now expected to update its NDC in line with its new target of Net-Zero by 2053, as declared by President Erdoğan.

Following Turkey's long-awaited ratification, Dr. Fatih Birol, Executive Director of the International Energy Agency (IEA), tweeted: "Very pleased that Turkey has ratified the Paris Agreement ahead of COP26. This can be a catalyst for Turkey to accelerate its clean energy transition by taking advantage of its huge renewables potential & advancing other clean energy technologies by supporting innovation & deployment."

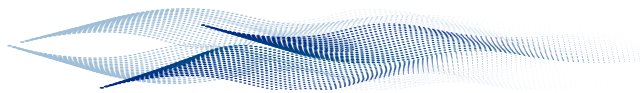
Murat Kurum, the Minister of Environment and Urbanization, announced that the ministry plans to organize a well-attended meeting in January 2022 to finalize the country's long-term National Action Plan on Combating Climate Change.

IEA's Flagship Report WEO Provides Essential Guidebook for COP26 Decision-Makers

The 2021 edition of the World Energy Outlook (WEO), the flagship publication of the International Energy Agency (IEA), was launched on October 13, just before the Glasgow Climate Change Conference (COP26). The IEA emphasizes that "a new global energy economy is emerging, but the transformation still has a long way to go," while 2021 has been marked by the second-largest

annual increase in CO2 emissions in history because of the skyrocketing oil and coal consumption with the "rapid but uneven recovery" from Covid-19. On the bright side, the agency also notes that solar PV or wind represents the cheapest available source of new electricity generation in most markets, and electric vehicles (EVs) set new sales records.

On the release of the Outlook, Dr. Fatih Birol, Executive Director of the IEA, said: "The world's hugely encouraging clean energy-momentum is running up against the stubborn incumbency of fossil fuels in our energy systems. Governments need to resolve this at COP26 by giving a clear and unmistakable signal that they are committed to rapidly scaling up the clean and resilient technologies of the future."

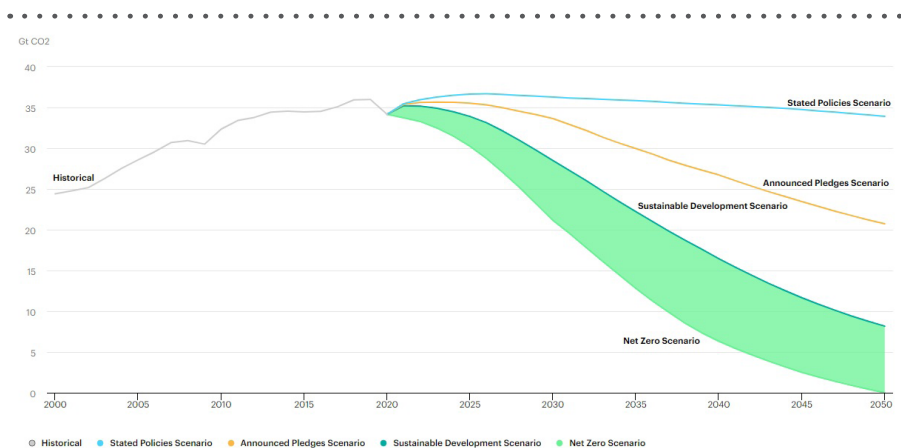


WEO-2021 includes three main scenarios and mainly relies on the agency's recent report published in May 2021, Net-Zero by 2050: A Roadmap for the Global Energy Sector, which includes the Net Zero Emissions by 2050 Scenario (NZE). The first scenario within this year's report, NZE, sets out a narrow but achievable pathway for the global energy sector to achieve net-zero emissions by 2050.

The second main scenario, the Announced Pledges Scenario (APS), assumes that all climate commitments made by governments so far will be met in full and on time. And the third scenario, the Stated Policies Scenario (STEPS), reflects current policy settings based on a sector-by-sector assessment of the specific policies that are currently in place, as well as those that governments around the world have announced.

Although the agency's projection confirms that global energy-related CO₂ emissions will fall by 40% over the period to 2050 in APS, this scenario does not achieve the net-zero emissions target, and the global average temperature rise in 2100 is held to around 2.1 °C above pre-industrial levels. While almost all the net growth in energy demand to 2050 is met by low-emissions sources in the STEPS, this leaves annual emissions at around current levels, resulting in 2.6 °C above pre-industrial levels in 2100. The IEA calls for more collaboration and alignment to realize a successful, orderly, and broad-based energy transition in which "no one is left behind."

The WEO-2021 highlights four key measures that can help to close the gap between today's pledges and a 1.5°C trajectory over the next ten years:



Graphic 1 : CO₂ emissions in WEO-2021 scenarios (2000-2050)¹

1. A massive additional push for clean electrification that requires a doubling of solar PV and wind deployment, a major expansion of other low-emissions generation, a huge build-out of electricity infrastructure and all forms of system flexibility, a rapid phase-out of coal, and a drive to expand electricity use for transport and heating.
2. A relentless focus on energy efficiency, together with measures to temper energy service demand through materials efficiency and behavioural change.
3. A broad drive to cut methane emissions from fossil fuel operations.
4. A big boost to clean energy innovation.

The agency underlines that almost half of the emissions reductions achieved in the NZE in 2050 come from technologies that today are at the demonstration or prototype stage.

The most challenging part of the first measure, a massive additional push for clean electrification, seems to be the phase-out of coal. China's announcement of an end to support for building coal plants abroad is potentially very significant because it could save some 20 gigatonnes

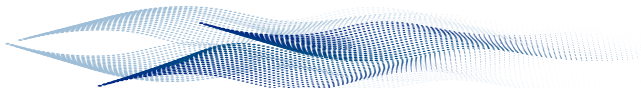
in cumulative CO₂ emissions if these plants are replaced with low-emissions generation, an amount comparable to the total emissions savings from the European Union going to net-zero by 2050.

Meanwhile, oil demand goes into eventual decline in all the scenarios with varying timing and speed. While peak demand will be reached in the mid-2030s, and the decline is very gradual in the STEPS, a peak soon after 2025 is followed by a decline towards 75 million barrels per day (mb/d) by 2050 in the APS.

Natural gas demand increases in all scenarios over the next five years, but there are sharp divergences afterwards. Many factors affect to what extent and for how long natural gas retains a place in various sectors as clean-energy transitions accelerate.

The IEA underlines that clean-energy transitions can provide a cushion from the shock of commodity price spikes since households will be less reliant on oil and gas to meet their energy needs. As electricity takes up a progressively larger share of household energy bills, governments must ensure that electricity markets are resilient by incentivizing investments in flexibility, efficiency, and demand-side response.

¹ International Energy Agency, (October 13, 2021) World Energy Outlook 2021

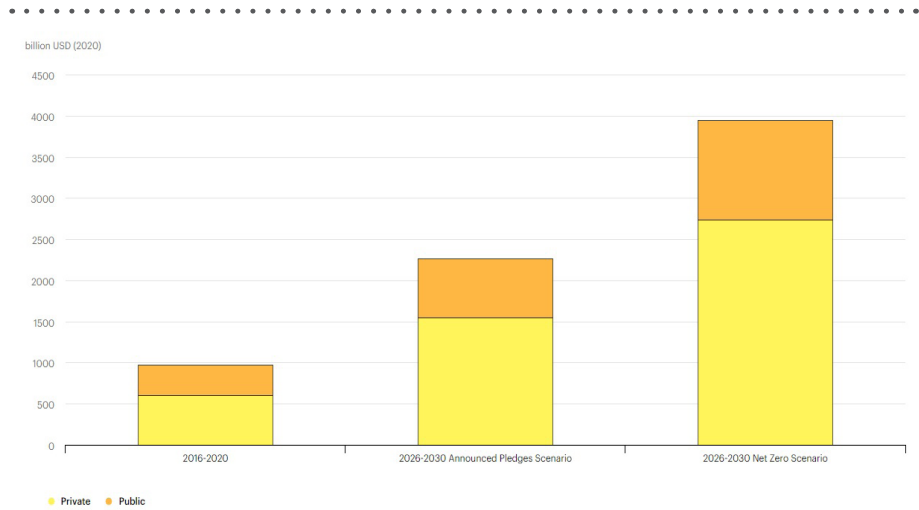


According to the IEA analysis, while the potential costs of inaction on climate are immense, the potential prize will also be huge for those who can make the leap to the new energy economy. The agency estimates that the annual market volume of wind turbines, solar panels, lithium-ion batteries, electrolyzers, and fuel cells will reach up to 1 trillion USD by 2050, approximately equal to the current global oil market. The IEA analyses, reflecting the pledges announced during COP26, show that the temperature increase can be limited by 1.8 °C. Reducing methane emissions will play a key role in reducing overall emissions.

COP26 Glasgow ended up with a 'phase down' deal for coal

The UK hosted the 26th UN Climate Change Conference of the Parties (COP26) on October 31–November 13, 2021 in Glasgow.

During the 14-day conference, the event saw leaders making climate commitments, reproaches by communities experiencing the devastating effects of climate change, and slogans of the masses in the streets demanding climate justice. Despite the objections, the text of the agreement was signed by all countries. Climate negotiators ended two weeks of intense talks with a consensus on urgently accelerating climate action.



Graphic 2 : Annual average clean energy financing by source in the APS and NZE scenarios (2016-2050)²

On November 13, COP26 concluded with all countries agreeing to the Glasgow Climate Pact to keep alive the 1.5°C goal and finalize the outstanding elements of the Paris Agreement. The text of the pact consists of 97 articles under eight headings, listed as follows: science and urgency, adaptation, adaptation finance, mitigation, finance, technology transfer and capacity building for mitigation and adaptation, loss and harm, implementation, and cooperation.

The Glasgow Climate Pact, combined with increased ambition and action from countries, means that 1.5°C possible and scales up action on dealing with climate impacts, but the pact will only be realized with concerted and immediate global efforts.

Still, it is the first-ever climate deal to explicitly plan to reduce coal, the worst emitting fossil fuel of greenhouse gases. The deal also presses for more urgent emission cuts and promises more support for developing countries to help them adapt to climate impacts.

A commitment to phase out coal that was included in earlier negotiation drafts led to a different wording, adjusted, after India and China led opposition to it. India's climate minister Bhupender Yadav asked how developing countries could promise to phase out coal and fossil fuel subsidies when they "still have to deal with their development agendas and poverty eradication." Countries agreed to "phase down" rather than "phase out" coal, amid expressions of disappointment by some.

Turkey's installed wind capacity reaches over 10 GW

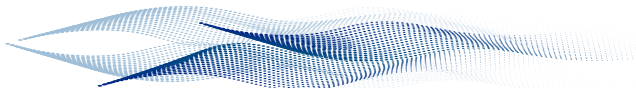
Turkey increased its wind energy capacity tenfold over the last decade and surpassed the 10 GW threshold in August. The 10.014 MW of wind capacity comprises 10.17% of the total installed capacity of 98,493 MW, according to transmission system

operator TEİAŞ's data. Wind is now the second biggest source in Turkey's renewable capacity after 31.4 GW of hydropower.

Turkey ranks among the top five countries in Europe with €1.6 billion of new investments in wind energy

in 2020, according to WindEurope's Finance and Investment Trends Report. The country ranked sixth in Europe in terms of wind power plant installations with 1,224 MW during 2020 despite Covid-19 restrictions. The 1.2 GW of capacity addition

² International Energy Agency, (October 13, 2021) World Energy Outlook 2021



compromises 8% of Europe's total installations, including offshore and onshore wind. In 2020, the total electricity generation from wind reached 25 TWh, constituting 8.4% of total electricity generation.

Turkey's wind power installed capacity has demonstrated significant growth since 2011 thanks to the Renewable Energy Sources Support Mechanism (YEKDEM), which offers 10-year, USD-based feed-in tariffs. The YEKDEM scheme has played an instrumental role in fostering momentum while contributing to a giant leap in Turkey's renewable energy capacity with impressive investments in almost all types of renewable energy sources. Turkey's wind power installed capacity, which was 1.4 GW at the end of 2010, increased to 9,3GW in 2020.

Turkey extended the 10-year term of YEKDEM for another 6-months before the expiration of the support scheme at the end of last year. Following the end of the USD-based YEKDEM term on June 30, 2021, Turkey introduced new TL-based renewable FITs enacted by a presidential decree in January 2021. The feed-in tariffs escalate quarterly by a formula in which the share of the PPI and CPI is 52%, while the shares of the dollar and euro exchange

rates are 48%. Ceiling prices varying between 5.10-8.60 \$/kWh are then applied to escalating prices.

The year 2021 is considered a milestone in Turkey's renewable energy investment environment, as Ankara implemented the first-ever TL-based pricing mechanism for renewable feed-in tariffs and the Renewable Energy Resource Zones (YEKA) model. Investors are now testing the TL-based tariffs following the expiration of the existing USD-based support mechanism at the end of June.

The YEKA model, first introduced in March 2017 for a 1-GW solar power plant project in the Karapınar district of the central Anatolian city of Konya, is also expected to play a major role in raising the renewable capacity of wind and solar.

Hybrid Projects will be important in the coming years

Hybrid power generation projects combining different power generation technologies on site will help enhancing utilization of Turkey's wind and solar potential with major benefits for energy security and environmental performance. These projects are also important for long term sustainability

of renewables-based growth in the Turkish power market.

Turkey plans offshore wind after 2023

Turkey plans its first offshore wind plant project after 2023, according to the information shared by Murat Zekeriya Aydın, the Managing Director of the General Directorate of Energy Affairs, in late May. "Offshore wind is one of the important items on our agenda, but we would like to prioritize onshore wind potential and plan to carry out preparations for offshore up to 2023. We are also collaborating with Denmark for the preparations," said Aydın during the Turkish Wind Energy Association's (TÜREB) webinar in May.

Turkey exports wind equipment to 45 countries

Turkey ranked as the fifth largest equipment producer in Europe in 2020, according to TÜREB's report. The report reveals that there are 77 wind turbine equipment producers with production facilities in Turkey exporting into 45 countries. The latest data shows around 3,500 companies active in the Turkish wind energy sector, with more than 20,000 people directly or indirectly employed.

Hydrogen trains run for first time in France

The first hydrogen-powered trains were tested for the first time in France on September 6. Alstom's Coradia iLint trains already entered commercial service in Germany in 2018, while successful trials have also taken place in Austria, the Netherlands, and Sweden.

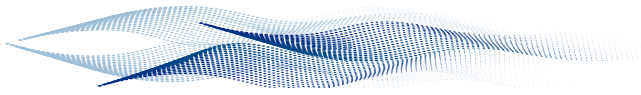
French state railways operator SNCF ordered 12 dual-mode (electric/hydrogen) trains from Alstom for four regions. These hydrogen-powered trains, carrying 220 passengers

at speeds of up to 160 km/h, are expected to make their first interregional runs in late 2023 and launch commercial operation in late 2025.

Hydrogen trains constitute a critical step within the Hydrogen Plan initiated by the French government in 2018 as part of the French Recovery Plan and the Important Projects of Common European Interest launched by the EU in 2020. While the French government pledged €7 billion to

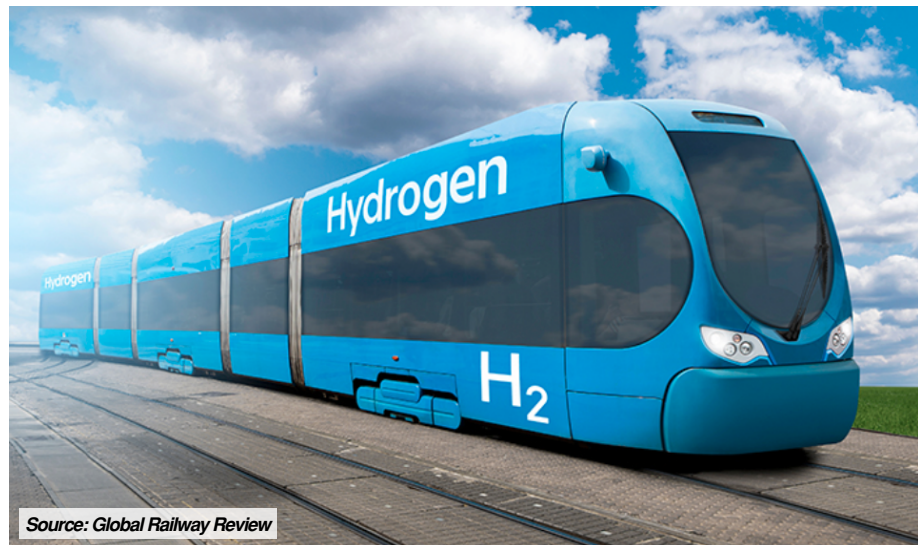
2030 for the development of 'green hydrogen', produced via a process of electrolysis using renewable energy sources, newly tested hydrogen trains use 'grey hydrogen' made from natural gas.

"In hydrogen trains, conventional diesel engines are replaced with fuel cells, batteries, and hydrogen tanks – a traction system that emits zero greenhouse gases. In the fuel cell, hydrogen from tanks on the train's roof combines with oxygen in the air



to produce electricity, which is stored in the batteries and used to power the train. And there's only one waste product: water," explained SNCF.

The trains reduce greenhouse gas emissions and noise and are more cost-effective in the long term. Although hydrogen trains currently cost around 30% more than conventional diesel trains, these models need less servicing and maintenance. One thousand two hundred diesel trains in total currently serve SNCF's fleet, accounting for 26% of its energy consumption and 61% of its CO2 emissions. The French government aims to replace all diesel-powered locomotives



Source: Global Railway Review

with new hydrogen-powered trains over the next ten years to reach the

net-zero emission target in railroad transportation.

MIT project team successfully tests world's first high-temperature superconducting fusion magnet

Massachusetts Institute of Technology (MIT) announced on September 5 that MIT's Plasma Science and Fusion Center (PSFC), together with startup company Commonwealth Fusion Systems (CFS), performed a successful demonstration in which a large high-temperature superconducting electromagnet was ramped up to a 20 tesla magnetic field, the highest field strength ever for a high-temperature superconducting fusion magnet.

Project partners ultimately aim to build the world's first fusion device, called SPARC, by 2025, which is expected to lead to the world's first practical, inexpensive, carbon-free fusion power plants that can make breakthrough change in tackling climate change. The fuel used by SPARC to create fusion energy comes only from the water.

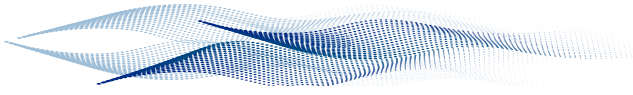
The device simply replicates the process that powers the sun, the merging of two small atoms to make a larger one that results in releasing prodigious amounts of energy. But



Source: CNBC

as the process requires temperatures far beyond what any solid material can withstand, it's done through intense magnetic fields that form a kind of invisible bottle to contain the hot swirling soup of protons and electrons called a 'plasma'. Because the particles have an electric charge, they are strongly controlled by the magnetic fields, and the most widely used configuration for containing them is a donut-shaped device called a 'tokamak'.

While the only way until now to achieve the colossally powerful magnetic fields needed to create a magnetic 'bottle' capable of containing plasma heated up to hundreds of millions of degrees was to make them larger and larger, the new high-temperature superconductor material used by the MIT project team made it possible to achieve a higher magnetic field in a smaller device.



Maria Zuber, MIT's Vice President for Research and Professor of Geophysics, said she's optimistic that this technology will be scaled up soon. "There are still many challenges ahead, not the least of which is developing a design

that allows for reliable, sustained operation. And realizing that the goal here is commercialization, another major challenge will be economical. Someday in a hoped-for future, there may be thousands of fusion plants powering clean electric grids

worldwide. We're going to look back and think about how we got there, and I think the demonstration of the magnet technology, for me, is the time when I believed that we could really do this," Zuber concluded.

Turkish Businesses Call for Climate Action

Turkey's policies regarding climate change after the ratification of the Paris Agreement by the parliament and the further steps to comply with the EU's Green Deal are being discussed by the public and business platforms to contribute to the state's core policy. Climate change was one of the key topics of the High Advisory Council meeting of the Turkish Industry and Business Association (TÜSİAD) that convened in Istanbul on October 19, 2021. In his opening remarks, President Simone Kaslowski reiterated the Turkish business world's calls for reforms, strengthening of democratic standards and the rule of law, and climate change policies.

Marking its 50th anniversary, TÜSİAD published a major new report entitled "Building the Future," a roadmap to building a future by achieving progress in these three fundamental

areas. "We were very pleased with the ratification of the Paris Climate Agreement, and we must now quickly adapt to its criteria," said Kaslowski during his opening remarks. "The European Green Deal, which outlines the growth strategy for the EU, our biggest trading partner, will have consequences for our industry as well as our service sector. We think that it is essential to update the Customs Union with the EU to consider green as well as digital transformation," he added.

Tuncay Özilhan, the President of TÜSİAD's High Advisory Council, pointed out that 60% of Turkey's lands are at risk of desertification, based on the latest UN climate



Simone Kaslowski

report outcomes. He continued his statements as follows: "The latest UN climate report revealed that the Mediterranean basin will be one of the areas most affected by global warming, with 60% of Turkey at risk of desertification. Agricultural practices based on irrigated agriculture, irrigation systems that cause water loss, and misuse of underground and surface water sources compound the water shortage. Water reserves are at historically low levels. With the ratification of the Paris Agreement by the parliament, Turkey is no longer one of the six remaining countries to have not adopted it. But the urgency and importance of the problems we face demand more. To delay in acting means that future generations will pay the price of the reckless consumption of natural resources today. This approach is wrong and no longer sustainable."

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