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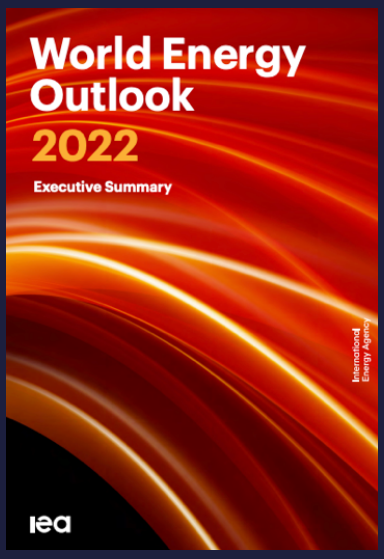
IEA's Flagship Report WEO Provides Unique Guidebook to Address the Energy Crisis and Outlines the Pathways for Clean Energy Transitions



Dr. Fatih Birol: "The global energy system is going through a major turmoil, which I considered to be the first truly global energy crisis."

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Director of the MIT Plasma Science and Fusion Center Prof. Dennis G. Whyte discusses the accelerated timeline for fusion energy at IICEC Seminar in Türkiye

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Highlights

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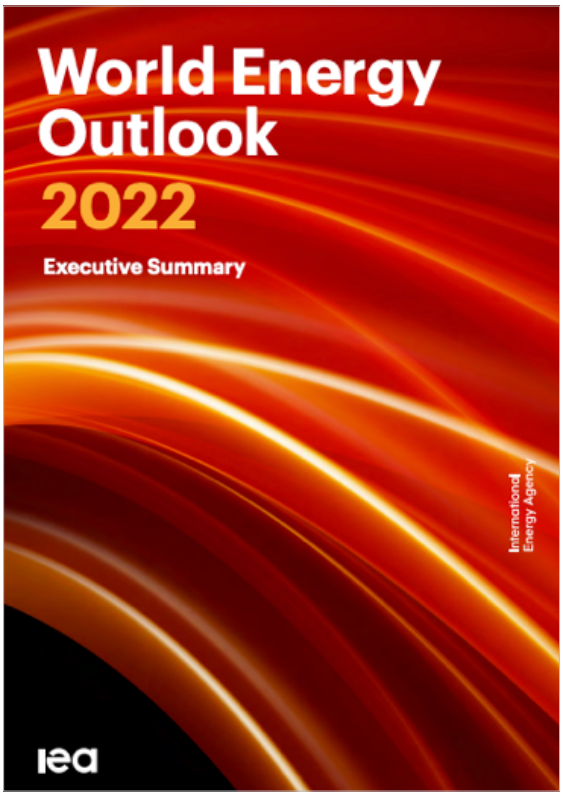


The International Energy Agency (IEA) published the 2022 edition of the World Energy Outlook (WEO), its flagship publication, on October 27 amidst a global energy crisis triggered by Russia's invasion of Ukraine. The Paris-based agency emphasizes that "the global energy crisis can be a historic turning point towards a cleaner and more secure future" while the global demand for each fossil fuel is showing a peak or plateau across all WEO scenarios.

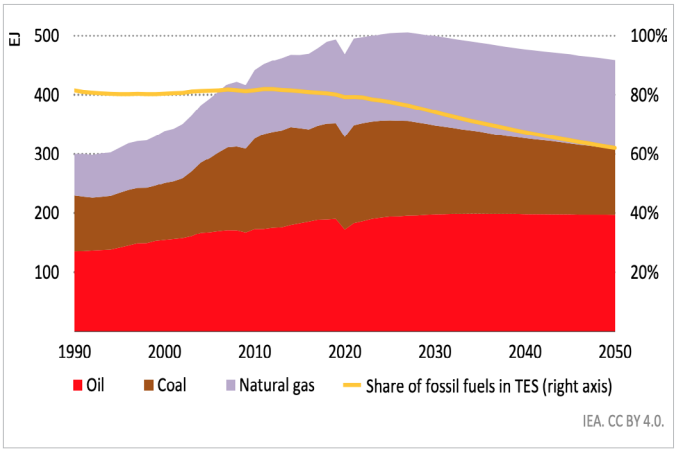
The agency also notes that the increase in renewable electricity generation is sufficiently rapid to outpace growth in total electricity generation, driving down the contribution of fossil fuels to the power sector.

On the release of the Outlook, Dr. Fatih Birol, Executive Director of the IEA, said: "The environmental case for clean energy needed no reinforcement, but the economic arguments in favor of cost-competitive and affordable clean technologies are now stronger – and so too is the energy-security case. Today's alignment of economic, climate, and security priorities has already started to move the dial towards a better outcome for the world's people and for the planet."

WEO-2022 includes three main scenarios that mainly rely on the changing dynamics of the global energy market and the climate commitments and are differentiated primarily by the assumptions made about government policies.

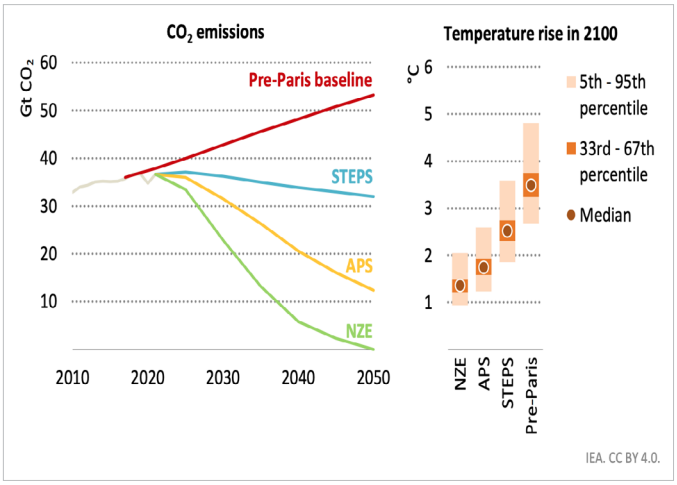
The Stated Policies Scenario (STEPS) shows the trajectory implied by today's policy settings. In it, coal use decline within the next few years, natural gas demand reaches a plateau by the end of the decade, and rising sales of electric vehicles (EVs) mean that oil demand levels off in the mid-2030s before ebbing slightly to mid-century. Total demand for fossil fuels declines steadily from the mid-2020s by around 2 exajoules (EJ) (equivalent to 1 million barrels of oil equivalent per day [mboe/d]) per year on average to 2050, an annual reduction roughly equivalent to the lifetime output of a large oil field. By 2030 in STEPS, this share falls below 75% and to just above 60% by 2050 (Figure 1).

Figure 1. *Fossil Fuel Demand in STEPS, 1990-2050 (EJ)*



A high point for global energy-related CO_2 emissions is reached in STEPS in 2025, at 37 Gt per year, after which they decline to 32 Gt by 2050 (Figure 2). This would be associated with a rise of around 2.5 °C in global average temperatures by 2100. This is a better outcome than projected a few years ago: renewed policy momentum and technology gains made since 2015 have shaved around 1°C off the long-term rise in temperature. However, a reduction of only 13% in annual CO_2 emissions to 2050 in STEPS is far from enough to avoid severe impacts from a changing climate.

Figure 2. *Energy-Related and Process CO2 Emissions, 2010-2050 and Temperature Rise in 2100 by Scenario*



The Announced Pledges Scenario (APS) assumes that all aspirational targets announced by governments are met on-time and in-full, including their long-term net-zero and energy-accessibility goals. In APS, a near-term peak in annual emissions is followed by a faster decline to 12 Gt by 2050. This is a bigger reduction than in the WEO-2021 APS, reflecting the additional pledges that have been made over the past year, notably by India and Indonesia. If implemented on-time and in-full, these additional national commitments – as well as sectoral commitments for specific industries and company targets (considered for the first time in this year's APS) – keep the temperature rise in 2100 at around 1.7°C in APS.

However, it is easier to make pledges than to implement them and, even if they are achieved, there is still considerably further to go to align with the Net Zero Emissions by 2050 (NZE) Scenario, which achieves the 1.5°C outcome by reducing annual emissions to 23 Gt by 2030 and to net zero by 2050. If all announced manufacturing expansion plans for solar PV see the light of day, manufacturing capacity would exceed the deployment levels in 2030 in APS by around 75% and approach the levels required in NZE.

NZE maps out a way to achieve a 1.5°C stabilization in the rise of global average temperatures alongside universal access to modern energy by 2030. From USD 1.3 trillion today, clean-energy investment rises above USD 2 trillion by 2030 in STEPS, but it would have to be above USD 4 trillion by the same date in NZE, highlighting the need to attract new investment to the energy sector. By 2030, in NZE, every USD 1 spent on fossil fuels is outmatched by USD 5 on clean-energy supplies and another USD 4 on efficiency and end-uses.

"Today's growth rates for deployment of solar PV, wind, EVs and batteries, if maintained, would lead to a much faster transformation than projected in STEPS, although this would require supportive policies not just in the leading markets for these technologies but across the world," the report said.

The agency underlines that a new energy-security paradigm is needed to maintain reliability and affordability while reducing emissions. WEO-2022 includes ten principles that can help guide policy makers through the period when declining fossil fuel and expanding clean-energy systems co-exist. During energy transitions, both systems are required to function well to deliver the energy services needed by consumers, even as their respective contributions change over time.

According to the IEA analysis, maintaining electricity security in tomorrow's power systems calls for new tools and more flexible approaches and mechanisms to ensure adequate capacities. Power generators will need to be more responsive, consumers will need to be more connected and adaptable, and grid infrastructure will need to be strengthened and digitalized. Inclusive, people-centered approaches are essential to allow vulnerable communities to manage the upfront costs of cleaner technologies and ensure that the benefits of transitions are felt widely across societies. Even as transitions reduce fossil fuel use, there are parts of the fossil fuel system that remain critical to energy security, such as gas-fired power for peak electricity needs, or refineries to supply residual users of transport fuels. Unplanned or premature retirement of this infrastructure could undermine energy security.

The IEA launched the World Energy Outlook 2022, which is accepted as the most reliable source of analysis and projections in the energy sector, with a live broadcast seminar.

"Our flagship publication, the World Energy Outlook 2022, comes at a very pivotal time. The global energy system is going through a major turmoil, which I considered to be the first truly global energy crisis. At the same time, our world is entering a period of major geopolitical upheaval. We all see on a day-to-day basis the negative impacts of Russia's invasion of Ukraine on people, economies, and the energy markets. In WEO, we tried to look at what kinds of responses that governments and business people can give to this crisis. Our analysis at WEO looks, as usual, to now and to 2050 for the global energy system. But in this report, we focused on the next few years up to 2030 to clearly outline energy and climate dynamics," said Dr. Birol, the Executive Director of IEA.

"My colleagues looked at the entire energy system, including all fuels, all energy technologies, and the entire geography around the world. There are many interesting findings, charts, and numbers you will see in our report that are freely available on our website. Therefore, in this report, as I said, we have many findings but there are two issues – two questions – I asked my colleagues to focus on. The first is the current energy crisis, whether it is going to slow down or to accelerate clean energy transition. This is question number one, and question number 2 is how can we secure a resilient energy system in the future and what kind of energy system we have to build in the future, which is much more secure and much more resilient, and what kind of measures we have to take? These are the two questions we try to answer in this report," Dr. Birol added.

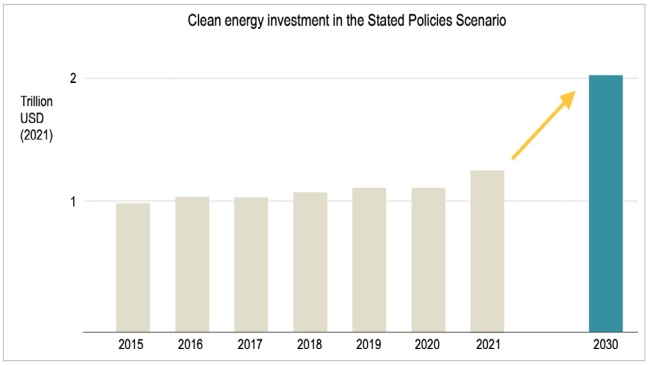
Dr. Birol continued his opening remarks as follows:

"Now, starting with the first question, some of the members of the press would remember only a few months ago, I said this energy crisis could be a turning point in the history of energy by accelerating clean energy transitions. By looking at the results and the findings of the WEO, I can confirm that the numbers and the analysis do confirm that government responses around the world to this energy crisis suggest that we are seeing a turning point in the history of energy and that this crisis, indeed, accelerated clean energy transitions. We look at the numbers – and this is our job – we are seeing an unprecedented increase in different clean energy options: solar PV, wind, batteries, heat pumps, nuclear power, and energy efficiency.

Why am I optimistic? Because we look at the responses coming from governments to this crisis. The USD 400 billion Inflation Reduction Act from the United States is on the table in terms of tax incentives, subsidies, different support for clean-energy technologies, ranging from hydrogen, solar and carbon capture to storage, nuclear, and electric cars. And in Europe, we have RePowerEU, again a major package, on the table to accelerate clean energy transitions. In Japan, we have the green transformation of Japan, a major new plan. China and India have increased their renewable and clean energy targets and supported them with real money. So, why are governments doing this? There are three reasons. Number one is energy security. Today, the biggest driver of renewable energy in many parts of the world is energy security, not necessarily climate commitments as before. Number two is climate commitments, and number three is government policies aiming to be a part of the new industrial era based on manufacturing with clean energy. So, these three drivers – energy security, climate commitments, and the industrial policy – form a very powerful combination and make me optimistic that we are going to see an acceleration of clean-energy technologies.

We calculated that clean-energy investment, which is about USD 1.3 trillion today, will reach around USD 2 trillion in 2030 with current policies [Figure 3]. This means a 50% increase in clean-energy investment with current policies until 2030. Another important finding of our study is that, for the first time in the current policy settings, without pushing climate commitments, we are seeing a peak of fossil fuels in the 2030s, the first time since the Industrial Revolution. In the last three or four decades, the share of fossil fuels in the global energy mix was about 80%, more or less constant, and now there by 2030 we will see this share will fall below 70% in the current policy context. Additional policies to push cleaner technologies may mean that this 70% will decline even further."

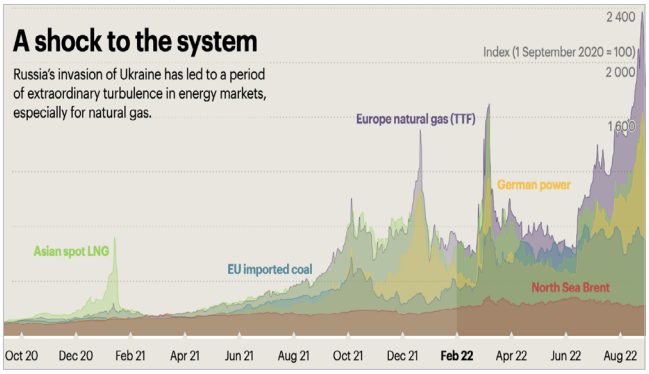
Figure 3. *Clean-Energy Investment in the Stated Policies Scenario*



The WEO-2022 highlights key measures while assessing energy markets and global dynamics:

- "The global energy crisis sparked by Russia's invasion of Ukraine is having far-reaching implications for households, businesses, and entire economies, prompting short-term responses from governments as well as a deeper debate about the ways to reduce the risk of future disruptions and promote energy security. This is a global crisis, but Europe is the main theatre in which it is playing out, and natural gas is center stage – especially during the coming winter in the northern hemisphere (Figure 4).

Figure 4. *A Shock to the System*



- High energy prices are causing a huge transfer of wealth from consumers to producers, back to the levels seen in 2014 for oil, but entirely unprecedented for natural gas. High fuel prices account for 90% of the rise in the average costs of electricity generation worldwide, with natural gas alone accounting for more than 50%. The costs of renewables and carbon dioxide have played only a marginal role, underscoring that this is a crisis for which energy transitions are the solutions, rather than the problems.

- Price and economic pressures mean that the number of people without access to modern energy is rising for the first time in a decade. Around 75 million people who recently gained access to electricity are likely to lose the ability to pay for it, and 100 million people may revert to the use of traditional biomass for cooking.

- There remain huge uncertainties over how this energy crisis will evolve and for how long fossil fuel prices will remain elevated. Meanwhile, the risks of further energy disruption and geopolitical fragmentation are high. In all our scenarios, price pressures and a dim near-term outlook for the global economy feed through into lower energy demand than in last year's Outlook.

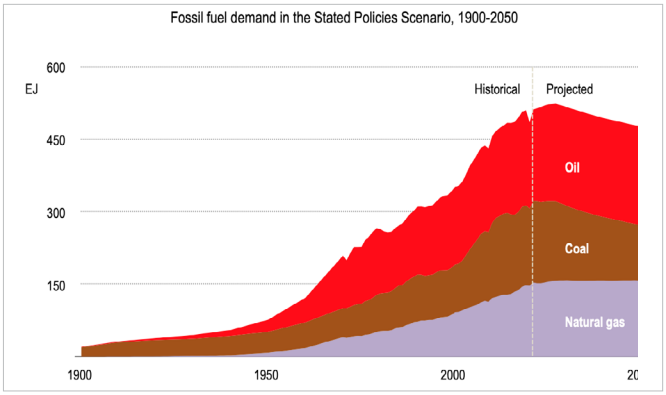
- The crisis provides a short-term boost to demand for oil and coal, as consumers scramble for alternatives to high-priced gas. However, the lasting gains from the crisis accrue to low-emissions sources, mainly renewables, but also nuclear in some cases, alongside faster progress with efficiency and electrification, e.g., electric vehicles.

- In the Stated Policies Scenario (STEPS), global energy-demand growth of around 1% per year to 2030 is met in aggregate almost entirely by renewables. Emerging market and developing economies, such as India, see increases across a broader range of fuels and technologies, while the low-emissions sources are the only ones to show growth in advanced economies to 2030.

- The cost advantages of mature clean-energy technologies and the prospects for new ones, such as low-emissions hydrogen, are boosted by the Inflation Reduction Act in the United States, Europe's increased push for clean energy, and other major new policies. The result is to turbo-charge the emerging global clean-energy economy.

- The Stated Policies Scenario (STEPS) is the first WEO scenario based on prevailing policy settings that sees a definitive peak in the global demand for fossil fuels. Coal demand peaks in the next few years, natural gas demand reaches a plateau by the end of the decade, and oil demand reaches a high point in the mid-2030s before falling slightly (Figure 5). From 80% today – a level that has been constant for decades – the share of fossil fuels in the global energy mix falls to less than 75% by 2030 and to just above 60% by mid century. In the Announced Pledges Scenario (APS), the drive to meet climate pledges in-full sends demand for all fossil fuels into decline by 2030."

Figure 5. Fossil Fuel Demand in the Stated Policies Scenario, 1990-2050



- "With the loss of its largest export market in Europe, Russia faces the prospect of a much-diminished role in international energy affairs. 2021 proves to be a high-water mark for Russian export flows. Its share of internationally traded gas, which stood at 30% in 2021, falls to 15% by 2030 in STEPS and to 10% in APS. Importers in China have been actively contracting for liquefied natural gas, and there is no room in China's projected gas balance for another large-scale pipeline from Russia.

- Energy-related CO_2 emissions rebounded to 36.6 Gt in 2021, the largest annual rise in emissions. In STEPS, they reach a plateau of around 37 Gt before falling slowly to 32 Gt in 2050, a trajectory that would lead to a 2.5°C rise in global average temperatures by 2100. This is around 1°C lower than implied by the baseline trajectory prior to the Paris Agreement, indicating the progress that has been made. But much more needs to be done. In APS, emissions peak in the mid 2020s and fall to 12 Gt in 2050, resulting in a projected global median temperature rise in 2100 of 1.7 °C. In the Net Zero Emissions by 2050 (NZE) Scenario, CO_2 emissions fall to 23 Gt in 2030 and to zero in 2050, a trajectory consistent with limiting the temperature increase to less than 1.5 °C in 2100.

- Planned increases in global clean-energy manufacturing capacity provide a leading indicator of the potential for rapid increases in deployment. In the case of heat pumps, the current and planned manufacturing capacity is below the deployment levels projected in APS. But the announced global manufacturing capacity for electrolyzers and solar PV modules in 2030 is sufficient to reach and even exceed APS deployment levels.

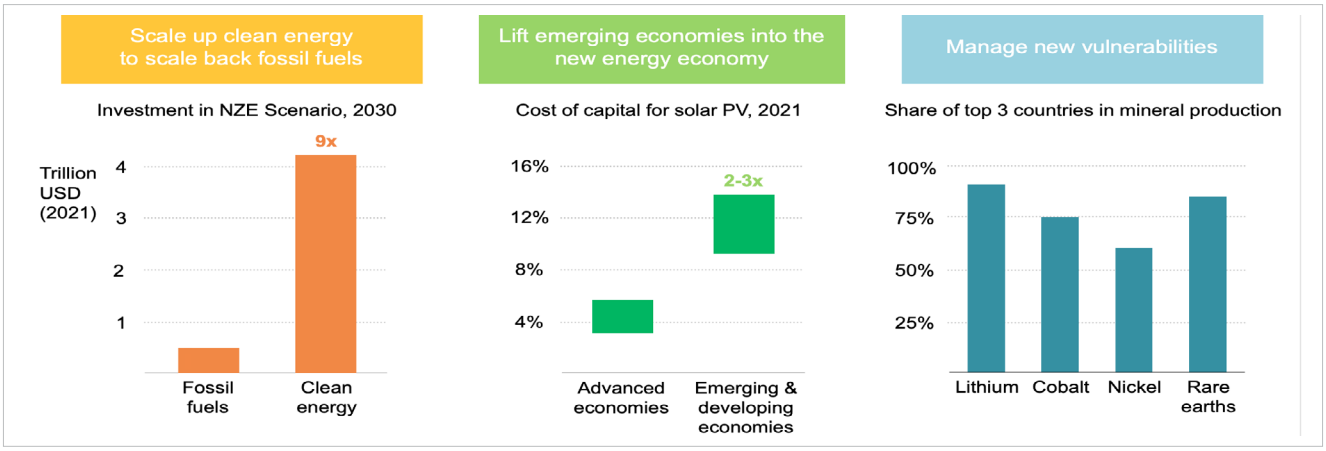
- One point common to each scenario is the rising share of electricity in final global energy consumption. From 20% today, this increases in each scenario, reaching more than 50% by mid-century in NZE. This is associated with a huge overall increase in global-electricity demand – with the bulk of this growth coming from emerging markets and developing economies – and the need for constant vigilance from policymakers to a range of risks to electricity security, in particular the ever-increasing need for flexible operation of power systems.

- The world has not been investing enough in energy in recent years, a fact that left the energy system much more vulnerable to the sort of shocks seen in 2022. A smooth and secure energy transition will require a major uptick in clean-energy investment flows. Getting on track for NZE will require a tripling in spending on clean energy and infrastructure to 2030, alongside a shift towards much higher investment in emerging market and developing economies.

- For the duration of energy transitions, the clean energy and fossil fuel systems are both required to deliver energy services; assessing & managing the evolving co-existence of both systems is crucial (Figure 6)."

The World Energy Outlook 2022 can be downloaded by clicking this link.

Figure 6. Investment NZE 2030 (USD) ; Solar Cost of Capital 2021 (%) ; Mineral Production top Three Countries (%)



Director of the MIT Plasma Science and Fusion Center Prof. Dennis G. Whyte discusses the accelerated timeline for fusion energy at IICEC Seminar in Türkiye

Fusion energy, which has the potential to revolutionize the world, was the topic of the seminar entitled "Accelerating Fusion Energy and Innovation" that was organized by Sabancı University Istanbul International Center for Energy and Climate (IICEC).

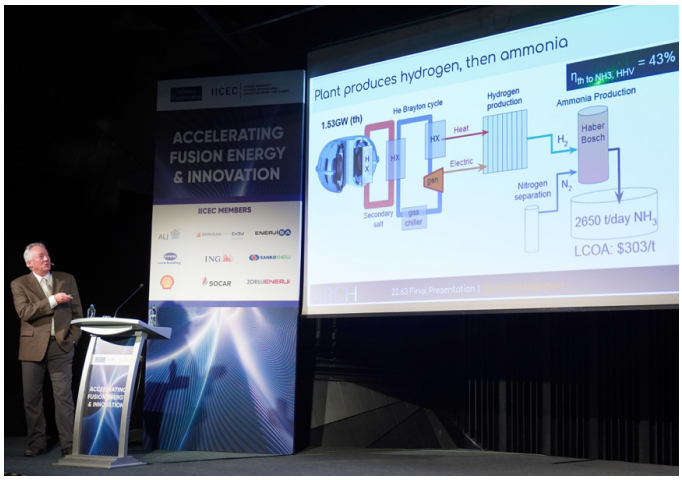
Prof. Dennis G. Whyte, Director of the Massachusetts Institute of Technology (MIT) Plasma Science and Fusion Center, a global leader in the field, stated that after decades of development of fusion technology, the world is now two-three years away with the advent of the innovative technology solutions that have been developed by the MIT center. Having successfully completed the first two phases of their studies, Whyte explained that they aim to obtain net energy from fusion in 2025 and deliver energy to the grid in 2030.

Sabancı University Istanbul International Center for Energy and Climate (IICEC) continues to bring the latest developments in energy and climate to Türkiye's agenda with its pioneering analytical studies, reports, and conferences. Within the scope of the conference series organized by IICEC with the participation of world leaders, fusion energy, which could break new ground in energy, was the topic of the seminar.

The most important person in the science world in the field of plasma science and fusion

Within the scope of the seminar entitled "Accelerating Fusion Energy and Innovation", **Prof. Dennis G. Whyte, Director of the Massachusetts Institute of Technology (MIT) Plasma Science and Fusion Center** and one of the leading figures in the field of plasma science and fusion, visited Türkiye upon the special invitation of Güler Sabancı, the founding chair of the Sabancı University Board of Trustees, for a seminar organized by IICEC at The Seed, Sakıp Sabancı Museum.

Managing the SPARC fusion project, a compact, advanced-technology, fusion energy solution, in collaboration with the private fusion startup Commonwealth Fusion Systems (CFS), a company whose mission is to provide fusion power to the world, Whyte talked about fusion energy, the latest developments in fusion technology, the success factors of the technology that they have developed, and their concrete goals for the near future.



A distinguished group of guests from the business world and energy and climate circles attended the special seminar in which Whyte was the main speaker. In 2018, Whyte received the Fusion Power Associates (FPA) Leadership Award, which is given to pioneers in the field who have developed highly innovative and faster methods for producing fusion energy and have demonstrated outstanding leadership qualities in accelerating the development of fusion.

Güler Sabancı: "Fusion technology is crucial for a clean energy future"

Sabancı University Founding Chair of the Board of Trustees, Güler Sabancı, who was the host of the event, emphasized that fusion energy technology is crucial for a clean energy future. Sabancı stated that she closely follows fusion energy technology as a member of the MIT Energy Initiative Advisory Board and Sabancı expressed that she was glad that the studies in this field were presented by Whyte, one of the field's leading scientists, at an event hosted by IICEC.

Prof. Yusuf Leblebici: "We are making the first promotion of fusion technology in Türkiye"

In his speech at the seminar, Prof. Yusuf Leblebici, Sabancı University President, said: "As Sabancı University, we are promoting a very innovative technology in Türkiye together with the Energy Initiative of the Massachusetts Institute of Technology, one of the world's leading universities. The fusion technology that Prof. Whyte is presenting to us has the potential to radically change the energy and development of humanity in the coming centuries. It shows that a result that has been talked about for over 50 years but could not be achieved is now very close.

The relationship established between Sabancı University Istanbul International Center for Energy and Climate (IICEC) and the MIT Energy Initiative has been ongoing for years. It is the result of years of experience rather than being a new step for Sabancı University. Here, we also see what an important role IICEC plays. We are happy to host such an important person from the scientific community at this IICEC event and to be involved in the coming studies."

Prof. Dennis G. Whyte: "Net energy from fusion will be obtained in 2025, it will be available to the grid in 2030."

"Given the current situation and global developments, fusion is much closer than we previously thought. This means that we urgently need to develop technologies that highlight fusion as a commercial, viable energy solution to combat climate change and for energy security. Before our breakthrough inventions, fusion was expected to occur many years later. Now there are only four years to fusion. This also presents us with an important opportunity to apply this new energy source," said MIT Plasma Science and Fusion Center Director Prof. Dennis G. Whyte.

He shared the following comments about the importance of fusion and their studies: "Governments, research institutions, scientists, the business world, and private investors need to come together for fusion technology to truly materialize. It is important to transform the scientific development principles created by decades of public funding into innovative technical and organizational models. A great example of this is the recent emergence of the private fusion industry, with companies focusing on solutions to shorten the development time of fusion and produce an economically competitive product.

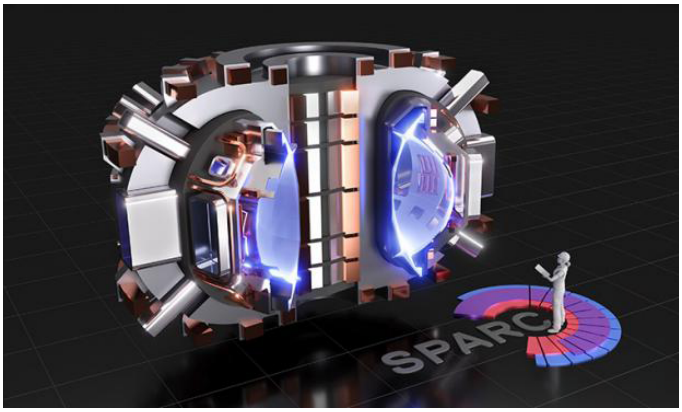
We, as MIT and its private sector partner, Commonwealth Fusion Systems, are realizing an important example of it. This plan brings the disruptive technology in superconducting magnets and the deep-rooted science of fusion to life with innovative collaboration models comprising scientists, academia, business, and investors to make a significant difference in tackling climate change.

In the project we run at MIT, fusion energy is delivered to the grid and put into use in four phases. We performed the first phase, Alcator C-Mod, and completed the TFMC spiral phase in the second phase. We got a positive result from the test results that we carried out on September 5, 2021. Now, in the third phase, SPARC facilities near Boston will be completed and put into service in 2025 to generate net energy directly. Finally, with the ARC phase, we aim to make fusion energy available to the grid.

There are no longer periods of 20-30 years. We are talking about two-three 3 years from now. The old rules no longer apply. Now we are talking about a new horizon and the near future. Maybe we will talk about fusion energy in a very different way in the next 10 years. In this way, we will overcome many energy problems."

Bora Şekip Güray: "Competitive fusion could provide invaluable gains for net-importer energy markets like Türkiye."

Stating that IICEC continues to contribute to a more secure and cleaner energy future with the public-industry-academia success triangle model, IICEC Director Bora Şekip Güray mentioned that fusion technology has recently come increasingly to the fore in studies towards a better energy future. Stating that as Sabancı University IICEC, they are very pleased to host Prof. Dr. Whyte, Director of the MIT Plasma Science and Fusion Center, who has signed a leading project with the technological solutions that he has developed in this field, Güray said that the developments to be achieved in sustainable fusion solutions will be critical for the energy and climate future. As far as the fields of energy security, combating climate change, and energy economy are concerned, Güray drew attention to the potential of fusion to transform global energy balances among all these factors and stated that competitive fusion can also provide invaluable gains in the future for energy markets such as Türkiye that have growing energy demand and are net importers of energy.



Dr. Mehmet Doğan Üçok: "IICEC's Success Triangle became a significant motto and a role-model for Türkiye."

IICEC Coordinator Dr. Doğan Üçok highlighted the accomplishments of IICEC and the reasons behind the success: "IICEC's Success Triangle became a significant motto and a role-model for Türkiye. The triangle – composed of policymakers, industry, and academia – works towards a common purpose: to provide a more secure, clean, and sustainable energy future. This provides IICEC with a unique convening power and makes it a distinguished platform that naturally flourishes through a synergy of working together with all the key stakeholders involved in the energy and climate fields. Thereby IICEC continues to foster the exchange and development of ideas for developing common solutions for common energy and climate challenges. And of course, all of this (within the "IICEC Triangle") would not be quite possible without the support of the distinguished members of the IICEC Board of Directors. Hence, as always, we would like to especially thank all IICEC members, including ALJ-Toyota Türkiye, Borusan EnbW, EnerjiSA, Eren Holding, ING Türkiye, Sanko Energy, Shell, Socar, and Zorlu Energy, for their continuous support to IICEC."

About Prof. Dennis G. Whyte:

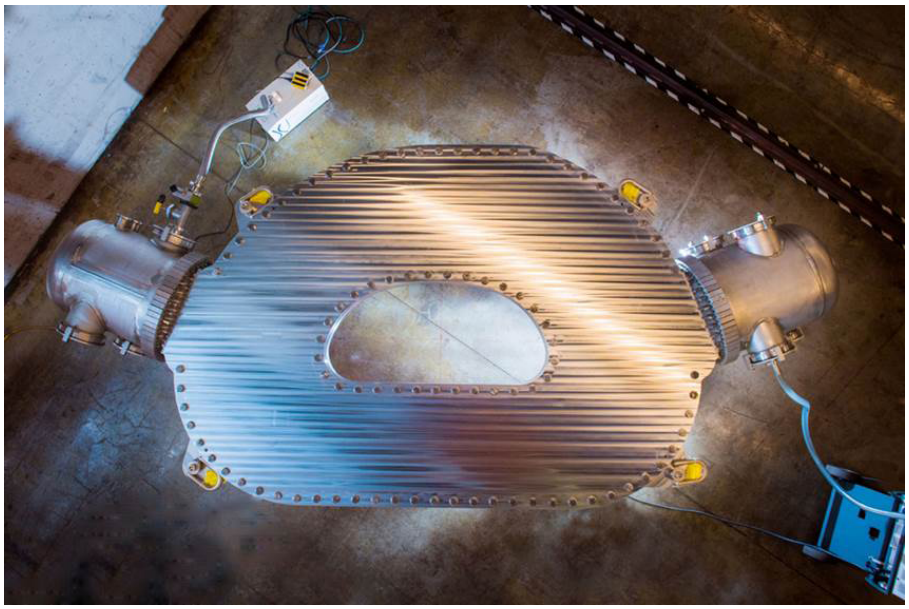
Dennis G. Whyte is the Hitachi America Professor of Engineering at MIT and the Director of the MIT Plasma Science & Fusion Center. He has spent the last 35 years producing fusion energy, a clean energy source that has the potential to provide a monumental breakthrough in the battle against climate change. A recognized leader in fusion research, especially in the magnetic confinement of plasmas, Whyte has paved an innovative and faster path to producing fusion energy.

He leads the fusion project, SPARC — a compact, high-field, net fusion energy fusion device — in collaboration with private fusion startup Commonwealth Fusion Systems (CFS), a company whose mission is to provide fusion power to the world. The core of the SPARC project was formed over eight years ago during a design course led by Whyte to challenge assumptions in fusion. Many of the ideas underpinning the high-field approach — including the use of HTS for high-field, demountable magnets, liquid blankets, and ARC (a fusion power plant concept) — have been conceived of or significantly advanced in his design courses.

Whyte has over 300 publications, is a fellow of the American Physical Society, and has served on panels for the National Academies, the United States government, and the Royal Society. In 2018 Whyte received The Fusion Power Associates (FPA) Board of Directors Leadership Award which is given annually to individuals who have shown outstanding leadership qualities in accelerating the development of fusion. Whyte earned a BS from the University of Saskatchewan, and an MS and Ph.D. from Université du Québec.

Please click here to watch the seminar (in English)

Please click here to watch the seminar (in Turkish)



COP 27 started with expectations to pursue the promises of the Paris Agreement

The United Nations Climate Change Conference COP27 opened on November 6 with an extensive agenda to deliver the promises of the Paris Agreement. UN Climate Change Executive Secretary Simon Stiell asked policymakers to provide focus on three major items at COP27:

- A transformational shift to implementation of the Paris Agreement and putting negotiations into concrete actions.
- Cementing progress on the critical workstreams including mitigation, adaptation, finance and loss and damage, while increasing finance to address the impacts of climate change.
- Enhancing transparency and accountability throughout the UN Climate Change process.

Source: UNFCCC

"With the Paris Rulebook essentially concluded thanks to COP26 in Glasgow last year, the litmus test of this and every future COP is how far deliberations are accompanied by action. Everybody, every single day, everywhere in the world, needs to do everything they possibly can to avert the climate crisis. COP27 sets out a new direction for a new era of implementation: where outcomes from the formal and informal process truly begin to come together to drive greater climate progress — and accountability for that progress," Simon Stiell noted.

A number of Ministerial and other important meetings and events related to current climate change efforts will take place during the COP27 in Sharm el-Sheikh, Egypt. COP27 will be concluded on November 18.

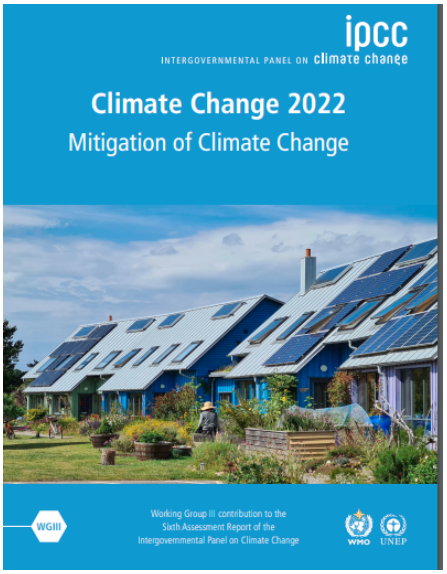
For further details:

https://cop27.eg/#/

https://unfccc.int/

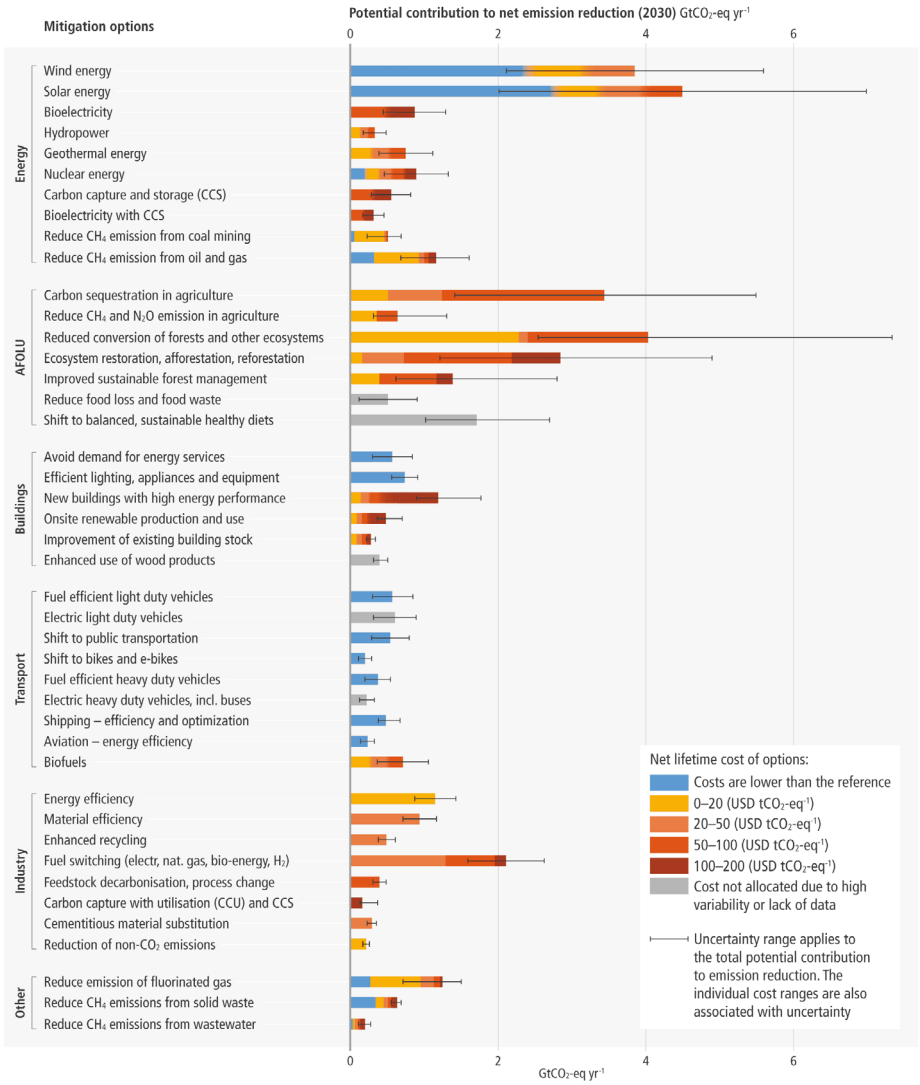
"Financial flows remain low compared to the goals of the Paris Agreement"

IPCC Chair Hoesung Lee referred to the IPCC reports presented earlier this year which showed the technology options for tackling climate change. Lee underlined that these options are limited by the availability of finance. "Progress on the financial flows comparable to the goals of the Paris Agreement remains low. Accelerated international financial cooperation is a critical enabler of low emission and just transition." IPCC Chair also warned that losses and damages would increase and additional human and natural systems would be pushed to adaptation limits with increasing global warming.



A latest report by the IPCC assesses mitigation trends and a set of options for climate change including the impact of national climate pledges in relation to long-term emissions goals to limit the global warming. The report list the options across sectors to enable a cleaner energy future by reducing net emissions by 2030.

To visit the report: https://report.ipcc.ch/ar6/wg3/IPCC_AR6_WGIII_FullReport.pdf



Source: IPCC, 2022

Türkiye and Azerbaijan Agree to Accelerate Energy Cooperation

The second Türkiye-Azerbaijan Energy Forum, co-chaired by the Minister of Energy and Natural Resources of Türkiye Fatih Dönmez and Energy Minister of Azerbaijan Parviz Shahbazov, was held in Istanbul on October 5-6, 2022.

Türkiye and Azerbaijan jointly declared the agreement to double the capacity of the Trans-Anatolian Natural Gas Pipeline (TANAP) to 32 bcm/y from the current 16-bcm/y year capacity. TANAP has been one of the major global projects and transports natural gas from Azerbaijan's gas fields to Türkiye and further to Europe with the Trans-Adriatic Pipeline (TAP).

The results of the workshops of the four joint-working groups on hydrocarbons, renewable energy, energy efficiency, electricity markets, and regulatory aspects were evaluated by the parties during the Forum. The strengthening of partnerships related to the supply of natural gas and electricity was also discussed.

"We negotiated with Minister Shahbazov and decided to double TANAP's pipeline capacity. Currently, TANAP transports 16 bcm/year, 10 bcm of which goes to Europe and 6 bcm to Türkiye. I hope this capacity will be doubled to reach 32 bcm/y in a short time. Türkiye will undoubtedly benefit from this capacity expansion and will also contribute to Europe's energy supply security," Minister Dönmez underlined at the joint press meeting after the forum.

Minister Fatih Dönmez continued his speech as follows: "We know that Azerbaijan, having significant hydrocarbon resources, has similar goals as we do for energy transformation. Azerbaijan has always been a part of both our public and private sectors. The projects already implemented and expected to be executed jointly by our countries would create new opportunities to carry us forward. We are planning to sign an intergovernmental agreement that will further advance cooperation in energy fields." Minister Dönmez also stated that the construction of a gas pipeline with 0.5-bcm/y of capacity from the Turkish city of Iğdır to Nakhichevan will be completed.

Azerbaijan's Energy Minister Parviz Shahbazov emphasized that the forum serves to strengthen energy cooperation between Azerbaijan and Türkiye. Referring to global challenges, Shahbazov said that the strong Azerbaijan-Türkiye Energy Union is a historic necessity and a guarantor of secure and sustainable energy supplies on a regional basis and on a European scale. It was noted that in the current conditions of an energy crisis, TANAP and TAP have already become symbols of reliability in supplies. "Such will bolster the ever-increasing geostrategic role of Azerbaijan and Türkiye," Shahbazov added.

Minister Shahbazov noted that from July 2018 to October this year, TANAP supplied 18 bcm of natural gas to Türkiye, with 4.2 bcm of the 6.1 bcm of gas supplied to Türkiye being transported via this pipeline during the first nine months of 2022. The Minister emphasized that gas exports from Azerbaijan to Türkiye will reach 9.3 bcm/y by 2023.

Minister Shahbazov revealed that electricity from Azerbaijan can be exported to Türkiye and transmitted to Europe through the Zangazur corridor and that Azerbaijan and Türkiye would further strengthen cooperation towards enhanced energy security in electricity, following earlier steps in oil and natural gas.

TANAP to Strengthen Supply Security and Diversification

The capacity expansion project of the Southern Gas Corridor aims to increase TANAP's capacity to 32 bcm from 16 bcm and TAP's capacity to 20 bcm from 10 bcm by constructing new compressor stations.

Launched in mid-2018, TANAP comprises the longest stretch of the multinational Southern Gas Corridor, a series of pipelines that carry gas from Azerbaijan's Shah Deniz II field to Türkiye and Europe.

ELDER: Electricity Distribution Companies Collectively Invested 14.7 billion TL in 2021

Türkiye's Electricity Distribution Services Association (ELDER), the umbrella organization of 21 electricity-distribution companies across Türkiye, has published its annual report for 2021. According to ELDER's sector report, electricity-distribution companies collectively invested 14.7 billion TL in 2021, 57% up from 2020, and 78% of this (11.4 billion TL) was spent on grid investments. The companies spent 1.3 billion TL for modernizing and improving their grid-operating systems.

The investments result in an increase in the distribution line length from 1.2 million km to 1.4 million km and in the number of transformers from 499,700 to 508,900. According to the report, 44% of total electricity demand in 2021 came from industrial subscribers.

The consumption of this sector increased by 12% from 99.8 TWh to 111.6 TWh. The electricity consumption of commercial subscribers also rebounded in 2021 after an almost 8% decline. Agricultural irrigation consumption increased from 10.8 TWh in 2020 to 13.4 TWh in 2021, and residential consumption increased from 60.1 TWh to 61.3 TWh according to the report.

Elder

Please click here to visit ELDER's Annual Report in Turkish

Türkiye to become a New Renewable Energy Hub

The ascending prominence of renewable energy for mitigating climate change and enhancing supply security brings forth the importance of domestic equipment manufacturing on a global scale. Türkiye, prioritizing the domestic manufacturing sector by promoting research and development studies and fostering engineering services, has now become a key regional player in renewable energy equipment and services. The Wind Europe Hamburg 2022 Conference and Fair hosted high-level delegates and many industry representatives from Türkiye.

Minister Fatih Dönmez: Türkiye Aims to Become Europe's New Renewable Energy Hub

Speaking at the opening ceremony, Minister of Energy and Natural Resources Fatih Dönmez stated that the Turkish wind industry continues to expand. Minister Dönmez revealed that Türkiye is now Europe's fifth largest wind-equipment manufacturer and the European leader in both blade and tower production.

Minister Dönmez stated that wind-equipment manufacturers in Türkiye reached a stage to produce 70% of turbine components and the share of exports now represents more than 70% percent of the domestic industries' overall revenues.

"Our installed capacity share based on renewable resources is above the global average. We reached an installed capacity of approximately 12 GW in wind. Developing technology reveals that our country has a potential exceeding 100 GW of onshore wind and 57 GW of offshore potential. Türkiye exported approximately €1.5 billion of wind turbine equipments to nearly 50 countries

in 2021. In addition to all these, our country also has important opportunities for potential investors thanks to its growing economy and population and its goal of being a new supply center by granting various incentives. We aim to become the new production and innovation center of both Europe and the region with Türkiye's high potential."[1]

Minister of Industry and Technology Mustafa Varank also emphasized Türkiye's potential in renewable energy-equipment manufacturing, reminding the audience of the heavy pressure on global supply chains. Türkiye ranks 12th globally in installed wind power capacity of about 12 GW as of the end of October.

[1] TÜREB

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