IGIS International Geothermal Investment Summit

MAY 9, 2025

ÜRGÜP, NEVŞEHİR, TÜRKİYE

SUMMIT REPORT

JEMYAD
JEOTERMAL YATIRIMCILARI DERNEĞİ

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EXECUTIVE SUMMARY

Founded in 2021, JEMYAD was established to ensure that geothermal resources and natural mineral water resources are explored, developed, protected, and utilized in an effective, efficient, environmentally responsible, and sustainable manner; to organize investors; to provide domestic and international representation; and to strengthen the sector's legal and regulatory framework.

Guided by science and objective evidence, JEMYAD operates with the vision of bringing Türkiye's geothermal and natural mineral water resources into the national economy in the most effective way, in alignment with the United Nations Sustainable Development Goals (SDGs) and the principles of the Paris Agreement.

Why IGIS?

In the 12th Development Plan (2024–2028), three of the four sectors designated as Priority Development Areas—energy; agriculture and food; and tourism—directly constitute the primary domains of application for the geothermal resources sector. From this perspective, the geothermal resources sector has the potential to serve as a driving force for development through these priority areas.

That said, strengthening development through the effective use of geothermal resources critically depends on reviewing the regulatory framework, improving the investment climate, and mobilizing financing opportunities.

Provided that these conditions are met, geothermal resources can enable the following:

- Within the framework of the 2053 net-zero emissions target, electricity generation from domestic and renewable sources can increase;

- In agriculture and food, supply security and food safety can be ensured through the expansion of greenhouse cultivation;

- In tourism, a new investment domain with potential comparable to the now capacity-constrained coastal tourism segment can be created, while also advancing strategic objectives to rebalance tourism diversification and to extend tourism year-round across the country.

From this perspective, the International Geothermal Investment Summit has been organized by JEMYAD to bring together all public- and private-sector stakeholders in the geothermal industry, with the aim of accelerating investment in the sector and positioning it as a driving force of national development.

In this context, the International Geothermal Investment Summit (IGIS) was organized by JEMYAD in Urgup on 9 May 2025 to examine—on a global scale—the strategic role of Türkiye's geothermal resources in national development.

Bringing together senior public- and private-sector representatives alongside academic experts, the Summit aimed to foster policy awareness in order to strengthen geothermal-based economic development and advance climate-change mitigation across the energy, agriculture, and tourism sectors.

At the event, which was attended by more than 400 participants:

- the solutions offered by geothermal energy in line with net-zero emission targets,
- geothermal's contribution to greenhouse cultivation and food supply security,
- the role of thermal tourism in triggering development in Anatolia,
- and new technologies in power generation and investment opportunities were addressed.

The Summit, through sessions that shed light on the shaping of public policies, brought Türkiye's growth potential in sectors based on geothermal energy back onto the public agenda in a very strong way.

Both in the opening addresses and in the sectoral panels, it was underlined that, as a significant geothermal energy country, Türkiye still remains far below its potential despite all the progress achieved; that under the net-zero emissions vision it is essential to raise the target for electricity and heat production from geothermal; that by developing geothermal greenhouse cultivation there is very substantial potential to reduce the risks—expected to intensify in the coming years—related to water scarcity, access to food, and pesticides; that by moving thermal tourism beyond the traditional spa understanding and establishing facilities of a quality and standard capable of serving international tourism, a new axis of development in tourism can be formed and the way can be paved for tourism to spread across the country for twelve months of the year; and that across all these sectors it is necessary to address geothermal in a holistic manner within new supportive frameworks.

Vice President of the Republic of Türkiye Cevdet Yılmaz with dignitaries at the IGIS opening ceremony

INTRODUCTION & BACKGROUND: GEOTHERMAL WORLDWIDE

Geothermal energy has been present in global energy systems for over a century, yet its overall scale and share have remained limited worldwide. Today, however, geothermal stands at an inflection point as a reliable, promising energy source with extraordinary, largely untapped potential, spanning applications from electricity generation to heating and cooling.

Over the past decade, new technologies have enabled access to heat resources previously deemed inaccessible; in parallel, declining costs, innovative financing models, and—most importantly—the imperative to reduce carbon emissions with a highly dispatchable energy source have expanded geothermal's role in energy systems worldwide. In addition, techniques and technologies developed in the oil and gas sector are increasingly instrumental in accessing deeper geothermal resources and reducing costs.

In a recent study by the International Energy Agency (IEA), The Future of Geothermal, under the Stated Policies Scenario (STEPS) the global capacity of conventional geothermal is projected to increase by 50% to 22 GW by 2030, and to reach up to 60 GW by 2050. This scenario assumes that projects currently under development and those planned for the next decade proceed under existing government policies.

Beyond 2030, IEA scenarios foresee the economic, untapped potential of hydrothermal resources growing further toward 2050, driven by long-term policy objectives and improvements in geothermal competitiveness. Indeed, under the Announced Pledges Scenario (APS), faster implementation of existing projects and the issuance of new drilling permits could increase global geothermal capacity to 80 GW by 2050, i.e., 30% above the Stated Policies baseline.[1]

[1] *International Energy Agency (IEA). The Future of Geothermal. December 2024.*

Nevertheless, under both scenarios described above, conventional geothermal power capacity in all countries remains far below the unexploited economic potential. This stems from the much higher up-front capital expenditures of geothermal projects relative to utility-scale photovoltaic (PV) solar and onshore wind, as well as from policy shortcomings and limited awareness—at the global level—regarding how to address geothermal's very high pre-investment (resource exploration and drilling) risks.

Consequently, although electricity supply from geothermal increases in all IEA scenarios, it still does not exceed 1% by 2050.

On the other hand, in parallel with rising global electricity and heat demand, the need to meet climate targets and ensure energy security requires power systems to draw on a portfolio of technologies. While PV and wind lead the clean-energy transition, low-emissions yet highly dispatchable technologies—such as geothermal, nuclear, and biofuels—will be critical to building resilient power systems.

In the future, demand volatility, extreme weather events, erratic climatic conditions, geopolitical tensions, and supply-chain risks will pose increasing challenges for grid security. Recent breakthroughs in unconventional geothermal technologies create significant opportunities for the wider deployment of geothermal energy, provided they deliver cost reductions in a domain where geothermal has remained more expensive than other low-emission options.

According to the IEA, realizing geothermal's potential requires elevating its priority within national clean-energy policy by setting specific targets and roadmaps, and by foregrounding geothermal as a reliable, highly dispatchable source of electricity and heat. To this end, beyond support for innovation and technology development, public policies must be designed—and, where necessary, reformed—to mitigate or even eliminate geothermal project-development risks. In this context, it is critical to focus on measures that address early-stage risks, especially drilling risk, while also ensuring long-term revenue predictability through appropriate regulatory arrangements.

Geothermal Resources and Clean Development in Türkiye

At the present juncture, Türkiye must reconcile economic development and environmental objectives, simultaneously addressing several policy priorities:

- the need for robust growth and support for local (regional) development,
- energy security,
- climate-change mitigation and fulfillment of associated international commitments,
- environmental protection and sustainability.

Aligned with these intersecting priorities, geothermal energy has emerged as a strategic resource, distinguished by both its technical capability and environmental advantages. Taking a 30 °C lower-bound definition into account, Türkiye ranks among high-potential countries, with over 2,000 wells and 415 geothermal fields identified.

As of 2025, Türkiye's installed geothermal power capacity stands at 1,734 MWe[2],, while direct-use heat capacity totals 5,113 MWt. These figures indicate that geothermal energy can now be regarded not merely as an alternative, but as part of the core energy mix. However, data for the last five years vary markedly across different institutions, pointing to a lack of clear institutional stewardship/ownership in the geothermal domain.

The spatial distribution of geothermal systems reflects regional geological settings. Western Anatolia, influenced by young tectonic extension and volcanism, hosts the highest density of resources. Türkiye's highest recorded downhole temperature was measured in Niğde: 341 °C at a depth of 3,845 m. In addition, medium- to high-temperature systems are present in provinces such as Nevsehir, Sivas, Erzurum, and Van**.**

However, the current distribution data have been shaped by the research, exploration, and drilling activities conducted to date and therefore do not fully reflect the existing potential. It is undisputed that Central Anatolia and Eastern Anatolia host substantial undiscovered geothermal potential; yet this reality has not been captured in drilling, plant-development, or production statistics.

2. https://ytbsbilgi.teias.gov.tr/, as of May 1, 2025; last accessed July 29, 2025

Although Türkiye's theoretical potential was previously estimated at 31,500 MWt, advances in modern drilling technologies and updated assessment criteria have surpassed these earlier estimates (Akkuş & Alan, 2016). Recent studies by public institutions and academia indicate that the true potential of geothermal resources may reach 62,000 MWt.

In the Türkiye Geothermal Resources Strategy Report:

- Considering Curie depth and heat flow in Western Anatolia, the probable thickness of the energy-bearing batholith can be taken as 10 km. Given a total granitoid area of 4,221 km² in Western Anatolia—and assuming that at least 2% of these granitoids would supply electricity and heat via Enhanced Geothermal Systems (EGS)—the EGS electricity-generation potential for Western Anatolia is approximately 8×10^7 MWh (Somerville et al., 1994). Considering all granites in Türkiye, it is clear that the recoverable energy potential from these rocks is very high (Chandrasekharam & Baba, 2021; 2022).

- In Bozköy (Niğde), a private company drilled to 3,845 m in 2016, measuring 341 °C—the highest bottom-hole temperature recorded in Türkiye to date. This indicates a high hot-dry-rock (HDR) potential within the Central Anatolian geothermal system, and it is anticipated that, using technologies now gaining worldwide traction, the geothermal system of Central Anatolia can be further developed (Sener et al., 2017).

According to the most recent studies, the conventional potential associated with known fields in Türkiye is calculated at 62 GWt.[3] It is estimated that 84% of geothermal areas consist of high-temperature fields, with temperatures reaching up to 341 °C. More than one-third of the fields are projected to be suitable for space heating, and the number of sites suitable for thermal applications such as spas is estimated to exceed 250.

3. MAPEG, Türkiye Geothermal Resources Strategy Report, 2022.

The potential available for direct-use heat is calculated at 5.1 GWt, of which 2.4 GWt corresponds to areas suitable for thermal tourism and commercial applications, 1.4 GWt to areas suitable for building heating, and 1.2 GWt to sites suitable for agricultural applications.

Based on these analyses, the potential that can be utilized for building heating corresponds to approximately 160,000 dwelling equivalents. If studies are expanded—and enhanced geothermal technologies are employed, particularly to develop deep resources—the total potential is projected to reach up to 100 GWt.[4]

In the high scenario examined in Sabanci University IICEC's Türkiye Renewable Energy Outlook, the use of geothermal energy in buildings is projected to rise from 1.3 Mtoe in 2021 to 2.9 Mtoe in 2030 and 8.9 Mtoe in 2050.In agriculture, geothermal use increases from 0.7 Mtoe in 2021 to 2.8 Mtoe in 2050 with the wider deployment of greenhouse and agricultural drying applications. This development trajectory will also bring a significant increase in the number of cities benefiting from urban/district heating based on geothermal energy.

4. Turkey Renewable Energy Outlook, Sabancı University – Istanbul International Center for Energy and Climate (IICEC), December 2022.

"IT IS INDISPUTABLE THAT TÜRKİYE POSSESSES SUBSTANTIAL UNTAPPED GEOTHERMAL POTENTIAL, PARTICULARLY İN CENTRAL ANATOLIA AND EASTERN ANATOLIA; HOWEVER, THIS HAS NOT YET BEEN REFLECTED IN DRILLING ACTIVITY, FACILITY DEVELOPMENT, OR PRODUCTION FIGURES."

In agriculture, geothermal use increases from 0.7 Mtoe in 2021 to 2.8 Mtoe in 2050 with the wider deployment of greenhouse and agricultural drying applications. This development trajectory will also bring a significant increase in the number of cities benefiting from urban/district heating based on geothermal energy.

With a growing share in power generation, geothermal energy's total contribution to final energy consumption rises from approximately 2% in 2021 to 4% in 2030 and 10% in 2050. Thus, by 2050, geothermal becomes Türkiye's third-largest source in total final energy demand, after solar (16%) and wind (12%).

According to the Türkiye Geothermal Strategy Report, the current near- to medium-term techno-economic potential for conventional geothermal power generation in Türkiye is approximately 4,500 MWe. Enabled by technologies developed in recent years and now scaling rapidly, the long-term potential is deemed capable of reaching 200,000 MWt.

Taken together, these data indicate that—when combined with geothermal's potential in agriculture and tourism—geothermal energy constitutes a critical transformative resource over the next 30-year horizon for national development and net-zero objectives.

Accordingly, with respect to the uses of geothermal energy, it has become vital to review public policies, legislation, and implementation practices on the basis of collective judgment with private-sector participation; to rapidly enact policy measures that will accelerate national development in geothermal-based sectors in line with the 2053 targets; and to meaningfully prioritize geothermal within the energy, food, and tourism sectors.

IGIS International Geothermal Investment Summit

OPENING SPEAKERS AND ADDRESS SUMMARIES

Editorial Note: This section presents summaries of the relevant speeches; it is not the full text. Quotations have been shortened where necessary and adapted for flow. The complete speeches are available at www.jemyad.org.

ÖMER TOSUN — PRESIDENT OF JEMYAD
SUMMARY OF THE OPENING ADDRESS

In his opening address, Ömer Tosun emphasized that Türkiye's geothermal resources hold significant potential for economic growth, power generation, agricultural development, and environmental sustainability. He noted, however, that current utilization remains well below capacity, and that strategic collaboration and investment are required to fully realize this natural endowment.

Mr. Tosun highlighted the following points:
Underutilized Geothermal Potential: Türkiye currently produces 1,753 MW of geothermal electricity—predominantly in the Aegean Region—ranking first in Europe and fourth worldwide. Yet this represents only a fraction of the estimated 60,000 MW national potential. When direct uses such as greenhouse heating are included, total utilization is approximately 2,000 MW, which remains far below what is achievable.

Benefits for Agriculture and Food Security: Geothermal energy can support technology-driven greenhouses nationwide, stabilizing food prices and supply amid climate challenges. Scaled appropriately, this could position Türkiye as a regional hub for geothermal greenhouse cultivation serving Europe, Russia, and the Middle East.

Imperative for Strategic Collaboration: Coordinated efforts across public institutions, industry, and civil society are critical. Drawing on Japan's successful USD 20 billion health-sector model, Mr. Tosun advocated the development of a comprehensive master plan for geothermal growth, including the expansion of thermal tourism, as an exemplary pathway.

Environmental and Resource Advantages: Geothermal energy is low-carbon and water-efficient; in greenhouse applications, most irrigation water can be recycled. Moreover, geothermal fluids may contain valuable minerals—notably lithium, essential for electric-vehicle batteries—underscoring geothermal's strategic role in the energy transition.

Mr. Tosun concluded by thanking participants, supporters, and, in particular, Vice President Cevdet Yılmaz for his attendance.

ALİ FİDAN, GOVERNOR OF NEVŞEHİR
SUMMARY OF THE OPENING ADDRESS

In his opening address, Ali Fidan, Governor of Nevşehir, stated that, owing to the province's natural and cultural endowments, it possesses significant potential not only in tourism, but also in health, energy, and agriculture through its geothermal resources.

Noting that Cappadocia is inscribed on the UNESCO World Heritage List and welcomes over 4 million visitors annually, Governor Fidan emphasized that the district of Kozaklı has come to the fore in thermal tourism. He reported that approximately 236,000 overnight stays were recorded in 22 thermal facilities in 2024, and that a 170-bed physical therapy hospital has served 17,700 patients to date.

Governor Fidan added that geothermal energy is used effectively not only in tourism but also in agriculture: geothermal greenhouses in Kozaklı produce 6,300 tonnes of tomatoes per year, and work has been completed to establish a new Geothermal Agricultural Organized Zone covering 1,352 decares (≈ 135.2 hectares) in the region.

He further noted that tourism-oriented geothermal use has begun in Mustafapaşa, a township of Ürgüp, and underlined that investments will continue to increase. Recalling that Türkiye ranks among the leading countries worldwide in terms of geothermal resources, he stressed the importance of utilizing this potential in an environmentally sound and sustainable manner.

He concluded by expressing gratitude—to Ömer Tosun, President of JEMYAD, for organizing the event, and to Vice President Cevdet Yılmaz for his attendance on behalf of the people of Nevşehir.

CEVDET YILMAZ, VICE PRESIDENT OF THE REPUBLIC OF TÜRKİYE
SUMMARY OF THE OPENING ADDRESS

In his opening address at the Summit, Vice President Cevdet Yılmaz emphasized that geothermal is a multifaceted resource that generates value not only in energy, but also in agriculture, health, industry, and tourism.

Describing geothermal as "a resource from which every component can be utilized," Yılmaz underscored the need to use this natural endowment prudently and sustainably. He cautioned that, absent practices such as reinjection, resources may be depleted.

Yılmaz called for a holistic approach to geothermal energy—not solely under the remit of the Ministry of Energy and Natural Resources, but through coordinated action by multiple ministries and sectors, including Agriculture, Health,and Industry. He also highlighted the importance of active participation by the private sector, local administrations, academia, and civil society organizations.

Noting the rapidly growing global interest in geothermal, Yılmaz stated that Türkiye ranks fourth worldwide and first in Europe with 66 power plants. He added that nearly 50,000 people are employed in the sector in Türkiye, that the domestic content share has reached 55%, and that there is potential to reach 40,000 MW of capacity.

Yılmaz further noted that geothermal offers major opportunities beyond power, contributing to food security through its widespread use in greenhouse cultivation, and serving a broad range of applications from district heating to health tourism.

Vice President Cevdet Yılmaz recalled that Türkiye ranks within the top three worldwide in thermal tourism, and underscored the sector's significance for regional development and employment. He noted that the thermal tourism market is expected to reach USD 100 billion by 2030, and stated that Türkiye should secure a larger share of this market.

Yılmaz also highlighted the importance of the green transition in combating climate change, stressing the need to prepare for the European Union's carbon border adjustment mechanism (CBAM). He stated that the emissions trading system to be established in Türkiye will mobilize resources to support the transformation of industry.

Describing Nevşehir as an exemplary city where geothermal is integrated across energy, agriculture, and tourism, Yılmaz emphasized that this model should be scaled nationwide. He affirmed that Türkiye has the capacity to compete for international leadership in geothermal, and emphasized the need to increase domestic technology production and strengthen international partnerships.

Vice President Yılmaz concluded by thanking the Geothermal Investors Association (JEMYAD) for organizing the Summit and all participants for their contributions.

Family photo with Vice President Cevdet Yılmaz following the IGIS opening session

KEYNOTE ADDRESS:
"THE FUTURE OF GLOBAL ENERGY: THE RISING ROLE OF GEOTHERMAL AND TÜRKİYE'S LEADERSHIP"

MEHMET ÖĞÜTÇÜ

CHAIRMAN, LONDON ENERGY CLUB

Mehmet Ogutcu, Chairman, London Energy Club

As the Summit's keynote speaker, Mehmet Öğütçü examined in detail Türkiye's current position, potential, and opportunities in the field of geothermal energy. He underscored that geothermal is a multifaceted resource that ought to be leveraged not only for power generation but also across agriculture, health, tourism, and district (urban) heating.

Mr. Öğütçü began by noting that Türkiye ranks among the top seven countries worldwide in terms of geothermal resources. Yet, he observed, this potential has not been realized to the desired extent. He emphasized the need for bolder, better-coordinated, and long-term actions. He identified fragmentation in the sector, ambiguity in the regulatory framework, and weak predictability for investors as principal barriers to progress.

He further argued that geothermal resources should not be confined to electricity generation. These resources can be deployed effectively in greenhouse cultivation, thermal tourism, district heating, and even industrial processes; through such diversified uses, geothermal can make substantial contributions to regional development. In particular, he maintained that smart, integrated deployment of geothermal in rural areas would strengthen local economies.

Sustainability received special emphasis in his address. Mr. Öğütçü cautioned that, where resources are not properly managed, reinjection is neglected, or environmental impacts are overlooked, geothermal can become a long-term liability. Reinjection, he stressed, is not merely a technical detail but a mandatory practice from the standpoint of sustainability, resource stewardship, and social acceptance (social license to operate).

Mr. Öğütçü also noted that many investors in Türkiye still prioritize short-term returns, a stance that limits geothermal's potential. He called for the adoption of a long-term, integrated approach by both the public and private sectors.

Assessing the regulatory framework and the investment climate, Mr. Öğütçü noted that numerous institutions and regulators operate in the energy sphere; this fragmented architecture slows processes and discourages investors. He emphasized the need to establish a single-window, investor-enabling regulatory framework that would streamline procedures and provide clarity.

Mr. Öğütçü also stressed the importance of increasing domestic manufacturing and investing in technology. He observed that most equipment used in geothermal plants is still procured from abroad, which both raises costs and sustains import dependence. He identified the development of R&D capacity and the promotion of home-grown technologies as a strategic necessity.

In the global context, he underlined geothermal's potential role in combating climate change and advancing the low-carbon economy. With its low emissions profile, geothermal aligns well with Türkiye's green transition vision. He further highlighted geothermal's strategic importance for security of energy supply, reducing import dependence, and diversification of the energy mix.
Citing projects developed in Nevşehir and its environs, Mr. Öğütçü pointed to integrated uses of geothermal in the Cappadocia region—health tourism, greenhouse cultivation, and the accommodation sector—as models that could be replicated in other regions. He underscored the importance of local governments and entrepreneurs taking ownership of such initiatives.

In closing, he argued that achieving a genuine transformation in the geothermal field requires strong and sustained collaboration among the public sector, private sector, universities, local governments, and civil society. Only in this way, he said, can Türkiye mobilize its potential; otherwise, resources will remain under-utilized. He noted that the exchange of knowledge and experience at the Summit is valuable for building a shared, evidence-based consensus.

Mr. Öğütçü concluded by asserting that Türkiye can be a significant actor in geothermal not only regionally but globally, and that—if the necessary steps are taken—the country can secure substantial economic, environmental, and societal gains in this domain.

Prof. Dr. Mustafa Topaloğlu, JEMYAD Board Member, presenting a commemorative plaque to Mehmet Öğütcü

PANEL SPEAKERS
AND
SESSION TOPICS

PANEL I — GEOTHERMAL ENERGY ON THE PATH TO NET ZERO

MODERATOR: SEÇİL YILDIZ - DEPUTY GENERAL MANAGER, DEVELOPMENT AND INVESTMENT BANK OF TÜRKİYE (TKYB)
SPEAKERS:

- MEHRALİ ECER — DEPUTY PRESIDENT, PRESIDENCY OF CLIMATE CHANGE (REPUBLIC OF TÜRKİYE)
- PROF. DR. HÜSEYİN BAĞCI — FOUNDER, ANKUDA; FACULTY MEMBER, MIDDLE EAST TECHNICAL UNİVERSITY (METU)
- JEROME OKOLO — CEO, SAFI ENERGY AFRICA

PANEL II — GEOTHERMAL GREENHOUSE AGRICULTURE AND FOOD SECURITY

MODERATOR: ALİ ŞAYAKÇI - VICE PRESIDENT, JEMYAD
SPEAKERS:

- VOLKAN ÖZTÜRK — CEO, TRIOINVEST
- HASAN GÜMÜŞ — CHAIRMAN & CEO, YAYLA AGRO
- ARZU ŞENTÜRK — CHAIR, AGROBAY GREENHOUSES
- MURAT YILMAZ — DEPUTY GENERAL MANAGER, ALARKO AGRICULTURE
- KEMALETTİN BAYAT — GROUP HEAD, AGRICULTURAL BANKING, ZİRAAT BANK
- EZGİ ÇOBAN — REPRESENTATIVE, MINISTRY OF AGRICULTURE AND FORESTRY

PANEL III — THERMAL TOURISM

MODERATOR: ÖMER TOSUN — PRESIDENT, JEMYAD
SPEAKERS:

- OYA NARİN — CHAIR, TURKISH TOURISM INVESTORS ASSOCIATION (TTYD)
- GIULIA DEVIETTİ GOGGIA — REPRESENTATİVE, RELAİS & CHÂTEAUX
- MUSTAFA ÖZDEMIR — PARTNER, OEZWALD HOSPITALITY

PANEL IV — POWER GENERATION AND FUTURE VISION

MODERATOR: ALİ KİNDAP - CHAIRMAN OF THE BOARD, JED
SPEAKERS:

- HÜSNÜ DÖKMECİ — DEPUTY GENERAL MANAGER, SANKO ENERGY
- MELİH FIRAT AYAZ — DEPUTY PRESIDENT, PRESIDENCY OF CLIMATE CHANGE (REPUBLIC OF TÜRKİYE)
- MUSTAFA ÇALIŞKAN — HEAD, DEPARTMENT OF RENEWABLE ENERGY AND NEW TECHNOLOGIES, MINISTRY OF ENERGY AND NATURAL RESOURCES (ETKB)

CLOSING ADDRESS
HAKAN ÇELIK — CNN TURK

PANEL SUMMARIES

GEOTHERMAL
ON THE PATH TO NET ZERO

Moderator Secil Yildiz (Deputy GM, TKYB) with panelists Mehrali Ecer (Deputy President for Climate Change, Republic of Türkiye), Prof. Dr. Huseyin Bagci (METU), and Jerome Okolo (CEO, Safi Energy) — "Geothermal Energy on the Path to Net Zero"

In the first panel, titled "Geothermal Energy on the Path to Net Zero," Secil Yildiz, Deputy General Manager of the Development and Investment Bank of Türkiye, served as moderator. Speakers were Mehrali Ecer, Deputy President for Climate Change (Republic of Türkiye), Prof. Dr. Huseyin Bagci, Middle East Technical University (METU) faculty member and founder of ANKUDA, and Jerome Okolo, CEO of Safi Energy Africa.

In her opening remarks, Moderator Secil Yildiz warmly commended Omer Tosun for his visionary geothermal approach and, by comparing conferences in China, Kenya, and Iceland, underscored the uniqueness of the Nevsehir event. She stated that, as the Development Bank, they attach strong importance to geothermal, yet face difficulties in channeling the USD 300 million mobilized from the World Bank to investors. Describing the risk-sharing mechanism, she noted that if a well does not discover a resource, 60% of the drilling cost (up to an upper limit of USD 4 million) is covered by the mechanism; if the resource is discovered, the project owner pays a 5% contribution back to the mechanism.

Yıldız emphasized that geothermal presents a strategic opportunity across agriculture, tourism, and energy. She stated that Türkiye's geothermal capacity is 1,734 MW, placing the country 4th worldwide, and highlighted the need to balance sustainability with security of energy supply.

Deputy President for Climate Change Mehrali Ecer, in session during the panel discussion

Deputy President for Climate Change Mehrali Ecer began by thanking the panel's organizers and noted that global warming has reached 1.55 °C, warning that surpassing this threshold would have serious consequences. He stated that Türkiye's share of global emissions is 1%, arguing for differentiated responsibility in burden sharing. He emphasized that Türkiye's 2053 Net-Zero commitment is not merely symbolic but also a strategic policy instrument.

Ecer underlined that Türkiye's long-term climate strategy was announced at the COP in Azerbaijan, and that the energy sector accounts for two-thirds of national emissions, which is where geothermal gains importance. He stressed the need to manage environmental and social risks, noting that investments are being classified according to environmental sustainability criteria and that Türkiye has prepared a draft green taxonomy.

He also shared the projection that ESG (Environmental, Social and Governance) funds could reach USD 30 trillion by 2030, and stated that geothermal is well-positioned to access such financing.

> TURKIYE'S 2053 NET-ZERO COMMITMENT IS NOT MERELY SYMBOLIC; IT CONSTITUTES A STRATEGIC OBJECTIVE THAT FUNCTIONS AS A POLICY INSTRUMENT.

Prof. Huseyin Bagci noted that he is not a geothermal specialist, but that his interest in the field grew after meeting Omer Tosun. He framed geothermal energy through the maxim "Small is beautiful," and described Türkiye's vast energy endowment with the metaphor of "a beggar sitting on a chest of treasure."

He argued that energy security is an existential matter, and that the rule of law and meritocracy are indispensable for attracting investment.

Observing that Europe has struggled to manage its energy crisis, he suggested that Türkiye, with its youthful population, could help fill this gap. While underscoring the importance of thermal tourism, he contended that, in light of Europe's aging population, Türkiye should capitalize on its health-tourism potential.

Calling geothermal a strategic asset, Prof. Bagci stressed that all stakeholders must work together "like an ant colony." He also emphasized that Europe's strategic interest in Türkiye is increasing.

Prof. Huseyin Bagci, Founder of ANKUDA; Faculty Member, Middle East Technical University (METU)

Jerome Okolo compared Kenya's geothermal journey with Türkiye's. He noted that renewables account for 91% of Kenya's total electricity and emphasized that geothermal is a baseload (dispatchable) resource, highlighting its advantages in terms of continuity and reliability.
He explained that, to enhance power-system reliability, Kenya is investing in grid software and system resilience. While small-scale plants can be attractive due to lower upfront investment costs, he cautioned that robust data acquisition and accurate site selection are critical prerequisites for project success.

Okolo also underscored the importance of the social license to operate: although the principal investor risk is resource risk (i.e., drilling a dry/non-productive well), this risk is magnified in the absence of community support. Citing the United Kingdom's onshore wind experience—where limited public buy-in impeded progress—he stressed that Türkiye's geothermal investments must be closely integrated with local communities.

Jerome Okolo, CEO, Safi Energy Africa

The panel discussions demonstrated that Türkiye's geothermal potential carries strategic value not only in technical terms, but also from geopolitical, social, and financial perspectives.

KEY FINDINGS AND RECOMMENDATIONS FROM THE PANEL:

1. Whole-of-government leadership. Geothermal should be treated and coordinated as a pillar of development at a supra-ministerial level, under the Vice President.
2. Tight public–private–finance coordination. To enhance energy security and meet net-zero commitments, government, private investors, and financial institutions must collaborate much more closely on geothermal.
3. Strengthen the legal framework. The rule-of-law environment should be reinforced with a focus on improving the investment climate and legal certainty.
4. Balanced risk allocation. While the public sector works to reduce geothermal-specific risks, private developers should be proactive—particularly by utilizing existing instruments such as the risk-sharing mechanism.
5. Diversify financing sources and instruments. To reach the highlighted targets—40,000 MW of electric installed capacity and expanded heating capacities—both domestic and international financing should go beyond conventional methods and incorporate alternative instruments and financiers. In this context, Islamic finance and risk-sharing mechanisms are especially pertinent.
6. Bankability through long-horizon, ESG-aligned planning. To secure foreign financing under current conditions, project management and investment plans must be prepared over a 20–30-year horizon, not only with economic/financial metrics but also with robust environmental and social sustainability measures developed with stakeholders. Otherwise, a social license to operate cannot be obtained, financiers perceive heightened risks, and funding becomes more difficult.
7. Strategic sector with twin keys to success. Geothermal energy is aligned with Türkiye's net-zero ambitions and holds high potential for development and inclusive growth; however, beyond technical capability, social acceptance and integration into the international financial system are decisive for success.

GEOTHERMAL GREENHOUSE AGRICULTURE AND FOOD SECURITY

In the second panel, titled “Geothermal Greenhouse Agriculture and Food Security,” the moderator was Ali Sayakci, Vice President of JEMYAD. Speakers were Volkan Ozturk (CEO, Trioinvest), Hasan Gumus (CEO, Yayla Agro), Arzu Senturk (Chair, Agrobay Seracilik), Murat Yilmaz (Deputy General Manager, Alarko Tarim), Kemalettin Bayat (Head of Agricultural Banking Group, Ziraat Bank), and Ezgi Coban (representing the Ministry of Agriculture and Forestry).

In his opening, Moderator Ali Sayakci underscored the link between geothermal agriculture and food security, noting that geothermal is 300–500% more efficient than electricity in greenhouse applications. Throughout the session he steered the discussion with questions that probed both technical and economic dimensions.

In the first round, Arzu Senturk stated that geothermal energy increases yields by maintaining optimal temperature sin crop production. While initial capital expenditure is high, she argued that over the long term geothermal is about one-third the cost of alternative systems. She added that smallholders can participate in geothermal production through shared/pooled management. Senturk also shared a personal anecdote, noting that she took over the greenhouse from her father, Hasan Senturk, and reflected on his vision.

In the second round, Senturk maintained that geothermal production must expand, but planning and the creation of new markets are prerequisites. She observed that biological control cultivation is costly and prone to losses, yet does not receive fair value; she called for the Ministry of Trade to step in to mitigate price volatility. In her third-round remarks, she noted that commercial spreads in agriculture are evolving to the detriment of producers, urged stronger support mechanisms, and highlighted the advantages of cultivating medicinal plants (e.g., hemp) in greenhouses—arguing, however, that without CBD extraction, hemp would not be economically viable in high-investment greenhouse settings.

- Head of the Agricultural Banking Group at Ziraat Bank, Kemalettin BAYAT, in his first speech, stated that Ziraat Bank regards agriculture as a strategic sector and that 70% of the loans are extended by them; that the majority of agricultural loans are subsidized; that they offer special credit packages for geothermal greenhouse investments; and that there is a 100% interest-discounted loan opportunity for women and young entrepreneurs. In his 2nd speech, BAYAT stated that geothermal greenhouses amortize themselves in 50–60 months relative to investment cost; that the credit volume in geothermal greenhouse cultivation increased 12-fold in 5 years, reaching 18 billion TL; that syndication loans are directed to green transformation projects; and he exemplified that tomato yield per dönüm rose from 20 tons to 45–50 tons. In his 3rd speech (in response to Omer Tosun's question), he stated that in glass greenhouses the cost per square meter is 110–120 euros; that with a TRY 100 million loan, approximately 2–2.5 hectares (≈ 5–6 acres) of greenhouse capacity can be established; that as the investment amount increases, the subsidy rate decreases; and that a 70% subsidy rate applies to geothermal projects.

- Representative of the Ministry of Agriculture and Forestry, Ezgi COBAN, in her first speech, stated that Türkiye ranks in the global top five in greenhouse cultivation and that 90% of production areas are located along the coastal belt; that geothermal greenhouse cultivation is carried out in 27 provinces; that Afyon is a leader in this area; that they support greenhouse cultivation through TDIOSB projects; and that Kozakli is among these projects. In her 2nd speech (upon a question on productivity), she emphasized that productivity in greenhouses in Central Anatolia is higher than on the coasts because cooling costs are low; that day–night temperature differences provide advantages for plant development; that a temperature balance is required for bees to work in greenhouses; and that summer heat on the coasts prevents pollen formation. In her 3rd speech, she stated that, by updating the Greenhouse Registration System, they created the heading of "controlled production areas" also covering plant factories; that investor guides are available on the Ministry's website; and she shared the analyses conducted with TUBITAK.

Geothermal Greenhouse Panel

- Murat YILMAZ, Deputy General Manager of Alarko Food, in his first statement said that they have entered the agriculture sector, have drilled 40 hot-water wells, and are currently Türkiye's largest modern greenhouse group with a production area of 1,250 decares; that the new investment in Eskisehir will reach 2,000 decares by 2026; that there is a shortage of qualified personnel; and that they will put the Alarko Academy into operation. In the second round, in response to the question of why Alarko wanted to enter this sector, he stated that they preferred modern and soilless agriculture due to climate change and the increase in pesticide use, that geothermal heating offers a cost advantage, and that through the productivity of modern agriculture three to four times higher output is achieved. In the third round, Yilmaz stated that following tomatoes they produce "California Wonder" peppers and kapya peppers, that they have conducted feasibility studies on special products such as saffron, that they carry out pesticide-free production and sell to European chains, and that the Ministry of Agriculture should be stricter in pesticide controls.

- Hasan Gumus, Chairman of the Board of Yayla Agro, in the first round stated that the global climate crisis threatens agricultural production, that geothermal greenhouse cultivation has now become a necessity, that out of 70 million decares of irrigated agricultural land in Türkiye only 10,000 decares are used for geothermal production, and that 100,000 decares of geothermal production area could bring USD 5 billion in exports to the country. In his second statement, he stated that a profit margin of 35% is possible in tomato production; that this rate varies across different products; that high-quality product should be supported; and that pesticide-free agriculture is more expensive but more valuable.

- Volkan Ozturk, CEO of Trioinvest International, in his first statement cited the agricultural system in the Netherlands as an example, stating that the Agriculture 5.0 model has been adopted, that productivity increased fourfold thanks to energy management, cooperativization, and technical integration, and—by referring to the Greenport infrastructure and the waste-heat system coming from Rotterdam—introduced the regional integrated production model. In the second round, in response to a question, Ozturk stated that the geothermal temperature in the Netherlands is 83 °C, that this temperature is divided among 10 greenhouses and supported with buffer tanks. He stated that infrastructure-based energy efficiency is achieved through the Heat Network system and a carbon-dioxide transmission pipeline.

PANEL FINDINGS AND RECOMMENDATIONS

- Geothermal greenhouse cultivation was identified as one of the fundamental instruments of sustainable production in the face of climate risks and energy costs.

- The development of financial incentives and cooperative models for the integration of smallholders into the system was emphasized.

- Investors and industry representatives underscored that, in addition to increasing production, the creation of new markets and the planning of the supply–demand balance are also critical. It is expected that the state will coordinate agricultural production through trade policies.

- It was requested that, in credits extended for geothermal greenhouse cultivation, subsidy rates be increased, investment upper limits be updated, and flexible financing models be developed so that a greater number of producers can gain access.

- It was requested that local supports be expanded so that small-scale producers can be included in geothermal greenhouse cultivation through shared/pooled management mechanisms; in particular, it was proposed to increase incentives for cooperativization.

- It was stated that the products of farmers employing Good Agricultural Practices should be more stringently and systematically inspected for pesticide residues, and that these inspections should be reflected in consumer awareness.

- Common expectations were expressed for the establishment of R&D centers within the Ministry of Agriculture and for the enhancement of innovation supports to expand crops other than tomatoes in greenhouses.

- It was proposed that the Ministries of Agriculture and of Trade work jointly to shape producer-friendly pricing policies, regulate (rationalize) logistics costs, and increase transparency across the product value chain.

- To address the shortage of skilled labor in greenhouse cultivation, it was recommended to establish training programs through agricultural academies, vocational schools, and public–private partnerships.

- Drawing on the practices of exemplar countries such as the Netherlands, it was stated that Türkiye should formulate its own geothermal agriculture vision and establish data-driven, technological, and sustainable planning mechanisms.

THERMAL TOURISM

In the third panel titled “Thermal Tourism,” the moderator was Omer TOSUN, Chairman of the Board of Indigo Group Tourism and Trade Inc. and President of JEMYAD; the panelists were Oya NARIN, Chair of Marti Group and President of TTYD; Giulia DEVIETTI GOGGIA, representative of the Relais & Châteaux network; and Mustafa OZDEMIR, partner at OEZWALD Consulting.

At the opening of the session, Omer TOSUN thanked the participants and emphasized that the process, under the leadership of Vice President Cevdet YILMAZ, had taken shape through a visit to Bingol with thermal investors and the subsequent thermal-tourism panels at the Tourism Investments Forum, culminating in IGIS.

Omer TOSUN underlined that Türkiye’s thermal water resources possess mineral values far higher than Europe’s. Noting that sources in Cappadocia reach the level of 15,000–18,000 mg/L, he pointed to the importance of a SWOT analysis and reiterated that thermal is Türkiye’s strength. He then gave the floor to Giulia DEVIETTI GOGGIA, the Relais & Châteaux representative, thus initiating the global perspective of the session.

In his introduction, Omer TOSUN argued that one should “start from the top of the pyramid,” proposing that thermal-tourism investments should be shaped by boutique, nature-embedded, luxury thermal facilities. Citing SGK and insurance models in Europe as examples, he stated that annual health-themed holiday entitlements could also be popularized in Türkiye, and he criticized the allocation method envisaged by the Ministry of Tourism for thermal-tourism investments, asserting that thermal investments should be granted priority status.

Giulia DEVIETTI GOGGIA, representative of the Relais & Châteaux network, stated that Relais & Châteaux is a network of independent boutique hotels and restaurants operating with 580 members in 65 countries, and that facilities bearing the “R&C Spa” label must be in harmony with local culture and comply with technical criteria.

Thermal Tourism Panel

She referred to the historical role of the spa, explaining with examples that in modern life spas have evolved into centers for individual stress relief, and that a spa does not merely offer massage services but provides multi-layered programs such as sleep therapy, nutrition counseling, and genetic analysis. She stated that at a Relais & Châteaux member property in Colorado, the nightly accommodation rate reaches USD 3,500, and that spa-equipped suites are priced separately.

She stated that, as Omer TOSUN mentioned, one can start from the top of the pyramid, that the luxury segment can play a driving role, but that facilities open to public access are also necessary.

Mustafa OZDEMIR, partner at OEZWALD Consulting, introduced himself, stating that he entered tourism at the age of 16 and has been active in this field in Vienna for 38 years.

Ozdemir stated that, according to UNWTO data, there are 1.4 billion health and thermal-tourism customers worldwide, that the sector's revenue will reach USD 1.3 trillion in 2030, and that Türkiye does not obtain a sufficient share of this market; he said that geothermal supports the potential for 12-month tourism, and he drew attention in particular to the need to remedy infrastructure deficiencies.

Ozdemir described the transformation of a town in Austria during 1998–2025: through planned work, the number of tourists increased from 1,000 to 300,000, EUR 40 million in EU funds was obtained, and 600 people were employed; he stated that spa investments can be designed both open to the public and attached to small hotels; he emphasized that both approaches must be included within a "master plan," but noted that political stability is critical for investment attractiveness.

Oya NARIN, President of TTYD, stated in her speech that Türkiye is a major economic power with a bed capacity of 2 million and USD 60 billion in tourism revenue, and that the potential of thermal tourism is high especially in Eastern and Central Anatolia.

Emphasizing that the global size of the wellness sector was USD 6.3 trillion in 2023 and will reach USD 9 trillion in 2028, Narin stated that per-capita spending in wellness tourism yields revenues 2–2.5 times higher than ordinary tourism; that Türkiye's tourism pyramid is inverted—with too many 4- and 5-star facilities and very few 1–3-star facilities; and she proposed the creation of financing models integrated with the Social Security Institution (SGK)and regional use of state incentives.

Oya Narin stated that geothermal should be positioned not only as a hotel service but as a social, cultural, and medical construct, and that the "Silver Economy" and preventive health services for the aging population will come to the fore in the future.

Among the participants, a Representative of the Union of Municipalities with Geothermal Resources stated that facilities in Türkiye are more modern than in Australia, but that there is a shortage of health personnel for thermal treatment. While emphasizing that training personnel is of critical importance, Dr. Ilgaz Nacakoglu stated that although Türkiye has a millennia-old hammam culture, its spas have not developed; he said that thermo-mineral water should not be regarded merely as a hot-water pool. He introduced USAS's project, "Anatolian Healing Routes from the Seljuk to the Republic."

Dr. Kemal Aydin stated that the concept of longevity was born within Anatolia's health heritage, announced that they will organize a forum in Ankara on the 1,000th anniversary of Ibn Sīnā (Avicenna), and emphasized that Türkiye can take an active role in global projects such as Silk Road Healing Routes.

PANEL FINDINGS AND RECOMMENDATIONS

- The view that Türkiye's thermal water quality, mineral concentration, and geographic spread are superior to Europe's was reiterated throughout the panel.

- It was emphasized that health tourism should be approached not merely as treatment, but in an integrated manner with wellness, preventive medicine, and a holistic lifestyle.

- Consensus emerged that the sector's luxury and accessible segments should be developed in tandem.

- The need for a "master plan" was stressed by every speaker; investment guidance, human capital, infrastructure, and marketing strategy were identified as its core components.

- It was underscored that the Ministry of Culture and Tourism's method for thermal-tourism allocations should be revised, and that a link should be established between geothermal license ownership/resource investments and the allocation process, thereby granting investors a direct allocation right. Otherwise, the "priority investment" status of geothermal tourism becomes practically unenforceable.

- The expansion of preventive-health-themed holiday entitlements through collaboration with the Social Security Institution (SGK) and private insurers was highlighted.

- The importance of launching training programs conferring qualifications such as spa therapist and thermal spa (balneotherapy) technician to address personnel shortages was noted.

- In tourism planning, it was requested that models prioritizing local community participation and place-based development be promoted.

Giulia Devietti Goggia — Representative of the Relais & Châteaux network

POWER GENERATION AND FUTURE VISION

In the fourth panel, titled “Power Generation and Future Vision,” Ali Kindap served as moderator; participants were Husnu Dokmeci, Deputy General Manager of Sanko Enerji; Melih Firat Ayaz, representative of the Presidency of Climate Change; and Mustafa Basaran from the Ministry of Energy and Natural Resources.

Opening the session, Ali Kindap characterized the investment period 2010–2020 as a “Turkish miracle,” noting that Türkiye reached over 1,700 MW of installed capacity in this period, and asserting that the development of integrated uses (heating, greenhouse cultivation, tourism) has now become a strategic necessity.

Kindap stated that, in a recent announcement by the President, a target of 4,000 MW of geothermal installed capacity for 2035 was set; he said that R&D and regulatory support must be increased to achieve this goal, and he emphasized the importance of hot dry rock and advanced geothermal techniques, recalling the high potential that could be accessed with these technologies especially in Central Anatolia. Kindap also stated that heat pumps based on geothermal should be disseminated in greenhouse and industrial heating applications, described the 308 °C well discovery in Salihli as a “world record,” and said that geothermal can now be utilized at much higher temperatures.

Husnu Dokmeci, Deputy General Manager of Sanko Enerji, stated that the global geothermal reserve is very large, yet humanity uses only 0.88 per thousand (i.e., 0.088%) of it. He noted that Türkiye ranks fourth worldwide in geothermal power generation and explained that Enhanced Geothermal Systems (EGS) and closed-loop systems offer alternatives to conventional technologies. Dokmeci argued that hot dry rock systems can provide energy production with deep wells without the need for a fault line, and stated that although geothermal investments are expensive at the outset, with technological developments from the oil sector, costs are expected to decline sevenfold by 2050.

Power Generation and Future Vision Panel

Dokmeci stated that although Sanko's first two wells were unsuccessful, the third well yielded high-temperature fluid, and they commissioned their third plant in 2019. He noted that geothermal provides 24/7 base load and is therefore more reliable than wind and solar.

Mustafa Caliskan, Head of the Department of Renewable Energy at the General Directorate of Energy Affairs, stated that as of 2024 Türkiye's primary energy consumption is 158.4 million toe (Mtoe), 7.8% of which is supplied from geothermal; that the 2035 target is to reach 205 Mtoe; and that the share of domestic sources must be increased from 31% to 59%.

He emphasized that, in addition to electricity generation, the use of geothermal investments in agriculture, heating, and the services sector is critical; that Türkiye pays USD 65.6 billion per year for energy imports; and that the share of renewables must be increased.

Caliskan stated that plants to be commissioned by 2030 under YEKDEM (the Renewable Energy Support Mechanism) will receive a 15-year purchase guarantee; that positive discrimination for geothermal supports sustainability; that the local manufacturing share is 55–70%; that 51 of 66 plants are within YEKDEM; that work is underway on heat-market legislation; and that 2.5 million dwellings can be economically heated with geothermal.

Melih Firat Ayaz, Directorate of Climate Change, evaluated the strategic position of geothermal in terms of environmental sustainability, energy independence, and economic development.

Ayaz emphasized that the emissions trading system (ETS) and green taxonomy will increase access to financial resources for the sector, and stressed that carbon-dioxide capture, storage, and injection systems should be integrated with geothermal plants to reduce CO_2 emissions. He stated that ETS revenues are planned to be directed to R&D projects and innovative technologies, and that a financing strategy will be developed through sectoral cooperation.

Ayaz underlined that electrification is the main backbone of Türkiye's energy transition; that over the next ten years the end-use electrification rate will rise from 23% to 40%; and, recalling the importance of the social license, stated that investment cannot be sustained without public support.

Among the participants, Omer Tosun proposed applying an additional 2.5 cents in the price for companies that implement reinjection, stating that in this way geothermal could be "as sustainable as nuclear."

Field investors and academics emphasized that scientific, independent studies on the environmental and social impacts of geothermal should be conducted by the public sector. Investors argued that, in places where geothermal activities are concentrated, impacts on agriculture and water resources should be shared transparently by the institutions that monitor and collect these data, that the public should assume a clarifying role, and that accurate information should be provided to local communities through NGO–university–private sector–public cooperation.

PANEL FINDINGS AND RECOMMENDATIONS

- Türkiye's hot dry rock (HDR) potential is high; investing in these areas would provide strategic energy independence.
- Geothermal use should be expanded beyond electricity to heating, greenhouse cultivation, and regional development.
- High-capacity-factor, baseload geothermal power plants are critical for grid stability.
- Given the risk profile of the sector, project lead times are long; appropriate incentive mechanisms and regulatory revisions are required.
- The sector's domestic technology development capacity has increased and has reached a level competitive in international markets.
- It is critical to extend the YEKDEM investment period from 2030 to at least 2040.
- Additional incentives in the purchase guarantee were proposed for facilities that implement reinjection.
- New regulations were requested to provide R&D funding for carbon-emissions-reduction projects.
- Heat-market legislation should be enacted; district heating systems should be scaled up.
- State-collected data on agricultural and environmental impacts should be shared transparently with the public to prevent disinformation.
- Regarding benefit-sharing with local communities, it was deemed critical that funds earmarked for local transfer—including those under existing mechanisms such as the "administrative share"—be used properly.

Mustafa Caliskan — Head, Department of Renewable Energy, General Directorate of Energy Affairs (Ministry of Energy and Natural Resources, Türkiye)

CLOSING ADDRESS
HAKAN ÇELİK (CNN TURK)

Throughout the Summit, journalist Hakan Celik delivered a closing address summarizing the day's discussions. He stated that the debates held over the course of the day—across the dimensions of energy, agriculture, tourism, and investment—constituted a corpus for geothermal. In addition, Celik noted the following:

- That geothermal remains a relatively new topic for the Turkish public, making JEMYAD's organization of this event highly significant;
- That holding the event outside major cities such as Istanbul and Ankara, in Nevsehir and thus in Anatolia, was valuable from the standpoint of inclusivity;
- That attendance was strong and interest remained steady, and that the loss of attention commonly observed at many summits did not occur at this event;
- That he found Omer Tosun's organizational leadership and the participation of Vice President Cevdet Yilmaz to be commendable;
- That the geothermal agenda should be addressed not only by the Ministry of Energy and Natural Resources but also by the Ministry of Environment, Urbanization and Climate Change and the Ministry of Culture and Tourism;
- That he plans to convey the information and debates from the event in television broadcasts, and that media representatives will engage with this topic;
- That themes such as cultural routes, spa–wellness investments, and diversification are important, and that Cappadocia should be repositioned;
- That, taking Budapest as an example, branding and architectural approach drive success in thermal tourism;
- That the narrative of Türkiye's "young population" is no longer valid, that aging has begun, and that wellness strategies should be devised accordingly;
- That he greatly appreciates the idea of Anatolian Healing Routes, and that partnerships—such as a Turkish Airlines sponsorship—could support this theme;
- That, citing the Museum Hotel experience in Cappadocia, work carried out with dedication and care can create brand value.

Celik concluded his remarks on a note of hope, stating that Türkiye should write new stories in geothermal, tourism, and the energy transition.

STRATEGIC CONCLUSIONS

The Geothermal Investment Summit served as a strategic platform that showcased the multidimensional utilization potential of geothermal energy in line with Türkiye's sustainable development objectives. The Summit advanced a holistic approach encompassing not only power generation but also agriculture, health, tourism, investment, and regional development, and it created a multi-stakeholder dialogue with the participation of representatives from the public sector, private sector, academia, and the media. Holding the event in a historic and touristic region such as Cappadocia reinforced both the symbolic and practical link between Türkiye's green transition and local development goals.

Presentations and discussions at the Summit revealed that, although Türkiye ranks among the top five globally in geothermal power generation, this potential has not yet been sufficiently realized. Concrete policy proposals came to the fore, notably the expansion of geothermal greenhouse cultivation in sustainable agriculture; targeting high-income visitors in health and thermal tourism; integration into the carbon-emissions trading system (ETS); and the branding of Anatolian cities with thermal-tourism potential through thermal tourism.

It was emphasized that, to position geothermal as a strategic sector, there is a need to improve the investment climate, incentivize the use of domestic technology, and ensure more effective coordination among the relevant ministries, the private sector, and local administrations. The Summit also underscored the need to integrate universities into this process, to raise public awareness through the media, and to share Türkiye's geothermal experience at the international level.

STRATEGIC FINDINGS

The global, continuous increase in electricity and heat demand brings to the fore—concurrently—the necessity of meeting climate targets and ensuring energy-supply security. In this context, power systems must not be limited to photovoltaic and wind technologies alone, but must also incorporate low-emission, high-availability technologies such as geothermal, nuclear, and biofuels. Such diversification will significantly enhance the resilience and flexibility of the grid against pressures stemming from demand fluctuations, extreme meteorological events, geopolitical tensions, and supply-chain risks.

Recent technological advances in unconventional geothermal offer serious opportunities for wider deployment, provided that costs are reduced. Should the still-elevated project costs of geothermal—relative to other low-emission energy options—be optimized, geothermal is expected to assume a critical position in diversifying the energy portfolio and securing reliable supply.

Aligned with Türkiye's net-zero objectives, geothermal energy can assume a central role by virtue of its baseload and uninterrupted resource advantages. Moreover, geothermal constitutes an integrated energy solution delivering multiple benefits not only in electricity, but also in heating, greenhouse cultivation, and industrial processes. Türkiye's hot dry rock (HDR) potential is high; investment in these areas will provide strategic energy independence. The sector's domestic technology-development capacity has increased and has reached a level competitive in international markets. High-capacity-factor, baseload geothermal power plants are critical for grid stability.

To successfully scale up geothermal energy, it is necessary to address a range of challenges, including project-development risks, permitting and licensing processes, environmental concerns, and social acceptance.

Geothermal is not merely an energy source; it is an instrument of integrated development across urban planning, agriculture, tourism, and industry. Applications such as heating, cooling, and drying enhance the versatility of energy systems, thereby improving overall system efficiency.
Indeed, geothermal greenhouse cultivation is emerging as a major opportunity, constituting one of the fundamental tools of sustainable production in the face of climate risksand energy costs.

On the other hand, thermal tourism—with a projected global size of USD 1.3 trillion by 2030—represents a significant opportunity for Türkiye. In terms of thermal-water quality, mineral concentration, and geographic distribution, Türkiye is superior to many European countries; accordingly, substantial revenues can be derived from this domain in the future. Nevertheless, it is essential that thermal health tourism be approached not solely as treatment, but integrated with wellness, preventive medicine, and a holistic lifestyle.

At the Summit, there was consensus that both the upper (luxury) segment and accessible versions of thermal tourism should be developed in parallel. However, it was also emphasized that there is a shortage of human resources in professional occupations—such as spa therapists—capable of delivering services at international standards in thermal health tourism.

STRATEGIC RECOMMENDATIONS

- Due to the high exploration risks in geothermal, investment lead times are long; accordingly, appropriate incentive mechanisms and regulatory revisions are required. Policies addressing pre-development risks and long-term revenue mechanisms are of critical importance for bringing planned projects to fruition. Establishing a framework to support R&D investments is likewise essential.

- Along the path to decarbonization, climate funds and ESG-based investment instruments should be mobilized to finance geothermal infrastructure.

- In credits extended for geothermal greenhouse cultivation, subsidy rates should be increased, investment ceilings updated, and flexible financing models developed to enable access for a larger number of producers. Financial incentives and cooperative models should be developed to integrate smallholders into the system. To include small-scale producers in geothermal greenhouse cultivation through shared management mechanisms, local supports should be expanded and cooperative incentives increased. To diversify beyond tomatoes in greenhouses, R&D centers should be established within the Ministry of Agriculture, and innovation supports should be enhanced.

- As critical as increasing production are the creation of new markets and the planning of the supply–demand balance. The state should coordinate agricultural production through trade policies.

- The products of farmers practicing Good Agricultural Practices (GAP) should be inspected more stringently and systematically for pesticide residues; these inspections should be reflected in consumer awareness.

- The Ministries of Agriculture and of Trade, working jointly, should shape producer-friendly pricing policies, rationalize logistics costs, and increase transparency along the product value chain. To address the shortage of skilled labor in greenhouse cultivation, training programs should be created through agricultural academies, vocational schools, and public–private partnerships. State-held data on agricultural and environmental impactsshould be shared transparently with local and national publics to prevent misinformation or prejudiced attitudes.

- Drawing on the practices of exemplar countries such as the Netherlands, Türkiye should formulate its own geothermal agriculture vision; data-driven, technological, and sustainable planning mechanisms should be established.

- There is a need for a “Geothermal Greenhouse Master Plan” encompassing the pillars of human capital, infrastructure, marketing strategy, and investment guidance.

- The regulation on the allocation of Treasury land for thermal facilities should be amended, and geothermal investors should be granted a direct allocation right.

- Through collaboration with the Social Security Institution (SGK) and private insurers, preventive-health-themed holiday entitlements should be expanded.

- To address the shortage of personnel, it is important to launch training programs conferring qualifications such as spa therapist and thermal-spa technician, and to establish university departments in medical hydroclimatology.

- In tourism planning, it is essential to promote models that prioritize local community participation and place-based development.

- For geothermal power plants (GPPs), extending the YEKDEM investment period from 2030 to at least 2040 would be appropriate.

- Providing additional incentives in the purchase guarantee for facilities that implement reinjection would be appropriate.

- Environmental and licensing processes should be digitized, made transparent for investors, and streamlined so as to accelerate investments.

- Providing R&D funding for carbon-emissions-reduction projects would be beneficial.

- Enacting heat-market legislation and expanding district heating systems are of critical importance.

- Proper implementation of benefit-sharing mechanisms with local communities (e.g., the administrative share), and ensuring that obligations fulfilled by investors are correctly reflected to local communities, are critical to overcoming prejudice and negative perceptions toward geothermal.

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