



22-24 June 2025 • Movenpick Hotel Al-Khobar, Saudi Arabia

AAPG/EAGE GEOTHERMAL ENERGY IN THE MIDDLE EAST: UNLOCKING A VAST RENEWABLE ENERGY RESOURCE BENEATH OUR FEET GTW



WORKSHOP BROCHURE

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WORKSHOP OUTLINE

DISCOVER THE FUTURE OF CLEAN ENERGY

Beneath the surface of the Earth lies a vast untapped source of clean and sustainable energy. This geothermal energy has the potential to revolutionize how we power our homes, cities, and industries, especially in the Middle East.

With advancements in technology and exploration, we now have the tools to unlock this resource – beyond electricity – to pave the way for a greener and more energy secure future. Aligning with the region's visions, which prioritize economic diversification, environmental stewardship, and reduced reliance on fossil fuels, geothermal energy emerges as a strategic resource in the region's quest for a sustainable future. For geoscientists, engineers, decision makers, and policy makers, the Middle East presents a unique opportunity to apply their skills and expertise to unlock the potential of geothermal energy.

The subsurface realm of geothermal systems continues to evolve, with many questions surrounding the interplay between low/medium/high enthalpy systems, structure, stratigraphy, hydrothermal activity, well design and operation, and technology. Despite these complexities, geoscientists and engineers continue to develop innovative approaches to identifying, characterizing, and tapping into these systems, driving progress toward commercial-scale geothermal energy production.

This workshop will bring together global experts to explore how geothermal could become a cornerstone of the Middle East sustainable energy efforts.

WHAT WILL BE DISCUSSED.

- How Geothermal Works: Basics of geothermal energy and why it can be a game-changer to the region.
- Societal Landscape: Case studies from around the world that demonstrate how geothermal is already making an impact.
- The Opportunities in the Middle East's: How the region's unique geology can offer exciting opportunities for geothermal development.
- Innovation in Action: Latest breakthrough in upstream, and downstream technology, from drilling to cascaded optimization of revenue streams such as heating, cooling, desalination, and mineral extraction.

WHY ATTEND?

- Be Part of the Future: Understand the possibilities of a renewable energy source that is right under our feet.
- Connect with Experts: Meet scientists, engineers, and decision-makers shaping the regional geothermal industry.
- Make a Difference: Equip yourself with knowledge and strategies to support the shift toward cleaner energy in your community or organization.

WHO SHOULD ATTEND.

- Technical experts in exploration and development, as well as academics eager to explore new frontiers in renewable energy.
- Policymakers, and business leaders looking to drive innovation and investments in sustainable energy.

WORKSHOP GUIDELINES

FORMAT

The workshop will be 3 days, consisting of oral presentations, poster presentations and breakout sessions where participants can discuss and investigate a specific theme that is of mutual interest. The first day will feature an inaugural keynote speech by a high-profile professional from the industry.

ATTENDANCE

Registrations are invited from all relevant disciplines with experience and/or knowledge of the subject areas being addressed in the workshop. Registrations will be accepted on a first-come, first-served basis.

CALL FOR POSTERS

You are invited to prepare a poster for presentation at the workshop. If you are interested in participating, please send a short abstract to cnavarro@aapg.org by **25 May 2025**. All posters will be produced as pull-up banners and delivered by AAPG and EAGE. There will not be any other format available for poster display.

REGISTRATION TYPES & FEES

Fees are inclusive of onsite documentation, coffee breaks and luncheons.

\$1,850 Non-Member	\$850 Young Professional **
\$1,650 Member *	\$500 Academia
\$1,550 Committee/Presenter	\$350 Student (Masters)

*To avail the Member rate you must be an active member of AAPG, EAGE, DGS, GSO or DGS.

**To register as a Young Professional you must be under the age of 35 with less than 10 years of work experience.

REGISTRATION DEADLINE

To guarantee your seat, please make sure to register by **15 June 2025**.

CANCELLATION POLICY

AAPG will refund the tuition, less a \$100 processing fee, if the request is received no later than 30 days prior to the workshop. Cancellations must be made in writing. The registrar will accept cancellation notices by telephone, but all such notices must be followed up by fax or e-mail. No refund will be made for cancellations received less than 30 days prior to a workshop being given. Nonpayment of tuition does not constitute automatic cancellation. If no cancellation notice is received by 30 days prior to a workshop, participants are liable for full tuition. AAPG reserves the right to cancel a workshop if enrollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future workshop if the request is received prior to the 30-day cut-off date.



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WORKSHOP SESSION DESCRIPTIONS

22-24 June 2025
Movenpick Hotel
Al-Khobar, Saudi Arabia

DAY 1: SUNDAY 22ND JUNE

SESSION 1: LEGISLATIVE FRAME FOR GEOTHERMAL ENERGY EXPLOITATION IN THE MIDDLE EAST

The Middle East is a hub of cultural diversity, economic opportunity, and geopolitical significance. With rapid advancements in energy technologies and a growing focus on sustainable solutions, the legal landscape for geothermal energy exploitation is evolving to address emerging challenges and opportunities. Our session aims to provide a platform for collaboration, knowledge exchange, and strategic insights to navigate these complexities.

To facilitate the effective implementation of geothermal energy in the Middle East, the session will examine key measures, including robust legal frameworks, streamlined licensing processes, and strong environmental compliance mechanisms. Understanding the diverse regulatory systems across different Countries where geothermal is already a relevant part of the energy mix, is crucial to ensuring efficient resource management and sustainable development.

A major focus will be on emerging policy trends and legislative reforms that support geothermal energy. Discussions will explore how regulations can foster innovation, economic growth, and sustainability while maintaining accountability. Cross-border cooperation will also be emphasized, as aligning regulatory standards can help address shared challenges and create a more cohesive regional energy market.

Financial support is another critical factor in advancing geothermal projects. Subventions, grants, and other funding mechanisms are essential for overcoming high initial costs, attracting investment, and securing long-term energy sustainability within the framework of energy security.

Participants will benefit from international expert insights, share best practices, and connect with industry leaders. This session will provide a platform for collaboration, helping to strengthen regulatory excellence and drive the successful implementation of geothermal energy initiatives.

SESSION 2: APPLICATIONS OF GEOTHERMAL ENERGY RELEVANT TO THE MIDDLE EAST

This workshop will delve into the latest technical advancements in geothermal energy and its transformative potential across multiple sectors. Participants will explore cutting-edge innovations in geothermal power generation, thermal desalination, district cooling, agricultural applications. A special focus will be placed on cascaded applications, demonstrating how integrated geothermal systems can maximize energy efficiency and optimize revenue streams.

Key highlights will include updates and focus on applications that can benefit the region such as improved drilling techniques, innovations in hybrid desalination systems as well as developments in geothermal district cooling technologies for urban and industrial applications. The workshop will also discuss enhanced geothermal systems (EGS), supercritical geothermal technology, the use of geothermal energy in connection with greenhouse heating, aquaculture, and vertical farming as well as an overview of shallow geothermal systems and their potential for residential and

commercial use in the region. The session will feature case studies, expert insights, and open discussions on how to implement these advancements to create sustainable geothermal projects that deliver economic and environmental benefits. Attendees will leave with actionable knowledge on leveraging geothermal resources to foster growth and sustainability across various industries in the Middle East.

DAY 2: MONDAY 23RD JUNE

SESSION 3: INTEGRATION AND HYBRIDIZATION OF GEOTHERMAL USE CASES AND EXISTING INFRASTRUCTURE

Geothermal energy is uniquely versatile, offering a wide range of applications beyond electricity generation. Examples include heat for district heating, and absorption chillers for district cooling - a technology already being leveraged in the Middle East.

Beyond its application in district heating and cooling, geothermal resources play a significant role in various industries where geothermal energy is applied in industrial processes like drying agricultural products, seaweed, and gravel. Furthermore, waste heat and brine from geothermal power plants are being repurposed for industrial applications that require a temperature-controlled environment, like algae and crop cultivation, aquaculture, cosmetics production, and mineral extraction, where valuable metals like lithium and zinc can be extracted. Geothermal can also be paired with complementary industries, such as green hydrogen production, to create carbon-neutral fuel that can be used in transportation, thereby expanding the reach and impact of geothermal energy.

Additionally, geothermal energy can be integrated with other renewables, like solar power, to create hybrid energy systems that leverage the strengths of each technology to achieve a more stable and consistent output. By doing so, developers can reduce power generation costs and increase returns on investment through reduced reliance on battery storage for baseload power and energy storage. As the energy sector continues to evolve, the convergence of geothermal and other renewable energies is likely to play an increasingly important role in shaping the future of sustainable power generation, ultimately leading to enhanced energy security, reduced greenhouse gas emissions, and increased economic benefits.

Finally, a key advantage of geothermal energy is its ability to be seamlessly integrated into existing infrastructure, reducing development costs and enhancing its overall value proposition. For instance, abandoned oil and gas wells can be repurposed for geothermal exploration and production, leveraging the existing drilling and completion infrastructure to minimize upfront capital expenditures. Similarly, conventional district cooling systems can be retrofitted with absorption chillers, reducing their reliance on fossil fuels and tapping into existing distribution systems and buildings, minimizing the need for costly new infrastructure. This synergistic approach reduces development costs while providing low-carbon alternatives.

This session will showcase real-world case studies highlighting the diverse applications of geothermal energy globally, demonstrating its potential to support sustainable development and economic growth across different regions and industries based on sound techno-economic assessment of the opportunities.

SESSION 4: PLAY BASED EXPLORATION FOR GEOTHERMAL ENERGY EXPLOITATION IN THE MIDDLE EAST

To enhance and accelerate geothermal development in the Middle East, a profound and detailed understanding of the existing regional and local geothermal systems and plays is essential. This session aims to underscore the urgency and significance of geothermal exploration in the region.

The session will examine the geothermal play-type concepts, including the discrimination between hydrothermal or petrothermal systems. We will delve into the specifics of these concepts, discussing how they relate to the unique geological settings of the Middle East. This includes a detailed review of the existing plays in the region, analyzing their characteristics, potential, and challenges. The importance of proper rock type characterization for well construction and techno-economic modelling will also be addressed.

Furthermore, we will discuss the enthalpy regime of geothermal plays, which significantly impacts the possibility of direct or indirect use of geothermal energy. Enthalpy regimes will be reviewed in light of their suitability for various applications, such as district cooling, electricity generation, and other industrial uses

Attendees will have the opportunity to review and discuss the geothermal plays present in the Middle East and how energy demand and location influence exploration strategies and the geothermal play-type concept.

In this session, we aim to explore and discuss the geothermal plays present in the Middle East and how energy demand and location influence exploration strategies and the geothermal play type concept, ultimately aiming to equip attendees with actionable insights for future geothermal exploration and characterization in the region.

DAY 3: TUESDAY 24TH JUNE

SESSION 5: TRANSFERRING GEOTHERMAL TECHNOLOGY INNOVATIONS AND DEVELOPMENTS FROM WORLDWIDE ANALOGUES TO THE MIDDLE EAST

This technical session will explore the transformative potential of transferring geothermal innovations and developments from around the world to the Middle East. We will explore how lessons from global geothermal analogs can play a critical role in de-risking geothermal greenfield exploration and development. By examining proven approaches from similar geological settings worldwide, participants will gain insights into reducing uncertainties in subsurface characterization, improving reservoir targeting, and optimizing exploration workflows. We will look at practical solutions available to mitigate risks associated with drilling, resource estimation, and project scalability. This knowledge transfer is key to accelerating geothermal adoption in the region while minimizing financial and operational risks.

We will delve into novel technologies that have been successfully implemented in geothermal basins with similar geological characteristics. These technologies have the potential to accelerate geothermal exploration and production in the Middle East. Additionally, the integration of digital tools and data analytics will be discussed, showcasing how digitalization can enhance

geological and geophysical (G&G) exploration, improve data accuracy, and streamline decision-making processes.

The session will also address the development drilling and completion technology enabling the implementation of deep Enhanced Geothermal Systems (EGS) and Advanced Geothermal Systems (AGS). These cutting-edge approaches have shown great promise in maximizing geothermal energy extraction from sedimentary settings. We will discuss the technical advancements and best practices in EGS and AGS, and how these can be adapted to the unique geological conditions of the Middle East.

Furthermore, we will explore examples of open and closed-loop geothermal systems for shallow geothermal energy storage and retrieval, including a variety of heat storage implementations technology (Aquifer Thermal Energy Storage (ATES), Borehole Thermal Energy Storage (BTES), Underground Thermal Energy Storage (UTES), Soil Loops). We will share knowledge and expertise, and discuss the applicability of these technologies in the Middle East.

Throughout the session, we will emphasize the importance of collaboration and knowledge sharing. By learning from the experiences of geothermal projects worldwide, we can accelerate the development of geothermal energy in the Middle East and unlock its potential. This session will provide a platform for geophysicists, geologists, drilling experts and production engineers to exchange ideas, share insights, and foster partnerships that will drive the future of geothermal energy in the region.

SESSION 6: GEOTHERMAL RESERVOIR AND PRODUCTION MANAGEMENT

Geothermal energy is a steady and reliable source of power generation, especially compared to other renewable energy options (such as solar and wind). The sustainability of a geothermal reservoir largely depends on the management practices employed during its use. Each geothermal field holds its unique potential, and with effective and focused reservoir and production management, sustainable power output is an attainable reality.

Robust and precise field management and proper use of production technologies will impact, stabilize, and increase the revenue of geothermal developers, securing project payback and maintaining output over a contract period typically lasting 30 years or more.

Like oil wells, geothermal wells may require artificial production systems to keep producing sustainably. However, the harsh geothermal conditions can present many challenges. High temperatures can be a challenge for tools and equipment. Geothermal fluids often contain minerals and chemicals that can cause scaling or corrosion. Such challenges can be addressed with advanced materials and specialized equipment configurations to withstand such demanding conditions.

This session aims to foster discussion on geothermal field management strategies from various regions worldwide. By exploring the technologies used to ensure the sustainability of different geothermal reservoirs, we can draw lessons from various geothermal fields globally. This will enhance our understanding of each field's unique characteristics and the strategies for addressing challenges, with the goal of maintaining and optimizing production.

TO REGISTER, PLEASE CLICK HERE

FOR MORE INFORMATION
middleeast.aapg.org

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