

11 September - 2024

CEO Roundtable

The Effect of The
Energy Transition on
Water Resources



The Al-Attiyah Foundation is proudly supported by:



AGENDA

Wednesday, 11th
September 2024

10:00 AM Coffee and Networking

10:30 AM Special Speakers

10:40 AM Moderated Discussion

12:15 PM Closing Comments

12:35 PM Lunch



CEO Roundtable Series

His Excellency Abdullah Bin Hamad Al-Attiyah, Chairman of the Al-Attiyah Foundation, launched the CEO Roundtable Series and Dialogues to provide a platform for knowledge exchange and support for the global community in the quest towards a sustainable energy future. All guests have the opportunity to share their opinions and insights in what is always a lively and thought-provoking discussion.

**The meeting takes place under the Chatham House Rule whereby participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed.*



EVENT OUTLINE

The Al-Attiyah Foundation will continue its 2024 CEO Roundtable Series with an in-depth discussion on the impact of the energy transition on global water resources. While the energy transition is expected to have far-reaching effects worldwide, regions facing water scarcity will be among the most severely affected.

This third roundtable of the year will delve into the critical relationship between energy and water resources, highlighting their intricate interdependencies and global significance. Energy production heavily relies on water for extraction, processing, cooling, and generation, while energy operations impact water quality and availability. The environmental implications of water use in energy production, the role of policy and technology in mitigating conflicts, and strategies for sustainable resource management, are all important considerations in any discourse involving energy transition and water management. As the demand for both energy and water escalates worldwide, and in the context of the global push to transition to cleaner sources of energy, the roundtable seeks to uncover the complex interactions, challenges, and potential solutions within the competing imperatives of the need for clean energy and water.

Water production in arid climates faces several significant challenges, particularly as the energy transition progresses. Challenges in non-arid countries are less severe but nevertheless the production and distribution of water can be an energy intensive process in most countries.





These challenges can be broadly categorised into issues related to water scarcity, energy consumption, environmental impact, technological limitations, and socio-economic factors. Below are some of the main issues that will be discussed during the roundtable:

High Energy Requirements: Water production technologies, such as desalination and water recycling, are energy intensive. As the energy transition moves towards renewable sources, ensuring a stable and sufficient energy supply can be challenging. Of course, those countries that have cheap energy have easier but necessary decisions to make on technology. Traditional water production methods often rely on fossil fuels, contributing to higher greenhouse gas emissions.

Transitioning to renewable energy sources for water production is essential to reduce the carbon footprint. Coordination between water and energy sectors is necessary to align goals and ensure that the energy transition supports sustainable water production.

Efficiency: Improving the efficiency of water production technologies is crucial to reduce energy consumption and costs. Innovations in membrane technology, energy recovery, and alternative desalination methods are necessary.

Infrastructure: Developing and maintaining the infrastructure required for water production and distribution can be costly and logistically challenging in arid regions.

Water Scarcity: In some countries there are limited natural water resources making it difficult to meet the growing water demand. Overuse of groundwater and surface water resources can lead to depletion and degradation of water quality.

Energy–Water Nexus: The interdependence between water and energy means that water production can strain energy resources, especially in regions where renewable energy capacity is still developing or financial strains mean that it is underdeveloped.

Brine Disposal: Desalination produces brine, a highly concentrated salt byproduct. Proper disposal or management of brine is critical to avoid environmental damage in areas that use desalination extensively.

Impact of Climate Change on Water

Resources: Global climate change is becoming more severe, as evidenced by the global mean temperature reaching a record high of 1.45 ± 0.12 °C above the pre-industrial levels in 2023. Ocean temperatures and sea levels are also at record highs: average global sea surface temperature for February 2024 over 60°S–60°N was 21.06°C, the highest record for any month in the dataset. At the same time, Antarctic sea ice and glaciers are reaching record lows. These changes in climatic parameters are causing long-term shifts in weather patterns (e.g. precipitation) and more frequent extreme weather events (e.g. heavy precipitation events and heat waves). As a result, critical resources such as water availability as well as energy production are being affected. Developing adaptive strategies to address the impacts of climate change on water resources is essential for long-term sustainability.

Policy and Governance: Effective water management policies and regulations are crucial to ensure sustainable water use and production. This includes setting standards for water quality, managing water rights, and encouraging water conservation practices.



OVERALL OBJECTIVES



The roundtable aims to establish key objectives that could drive actionable outcomes, ensuring that the interconnected challenges of energy and water management are effectively addressed. These objectives include:

- To identify key challenges facing the energy transition in the context of water management, such as water use in energy production and potential impacts on water resources.
- To identify opportunities for improving efficiency and sustainability in both the energy and water sectors.
- To explore and assess innovative technologies and practices that can enhance water management in energy production (e.g., cooling technologies, water recycling) and how these technologies can support a more sustainable energy transition.
- To review current policies and regulations affecting both energy and water management, with the aim to identify gaps or conflicts and propose recommendations for aligning policies to support integrated management and sustainability goals.
- To encourage strong partnerships between stakeholders, including government agencies, industry leaders, researchers, and community organisations.
- To discuss strategies for effective collaboration to address complex issues at the intersection of energy and water.
- To examine the economic implications of energy transition strategies on water resources and vice versa. This includes examining cost-benefit analyses, funding mechanisms, and potential economic incentives or disincentives.

DISCUSSION POINTS



In ensuring a balanced exploration of technical, economic, policy, and social dimensions of the intersection of energy transition and water, it is expected that the impactful conversations at the roundtable would revolve around some of the following main discussion points:

- 01)** Exploring how energy and water management systems can be integrated to optimise both resources, including potential synergies, like using renewable energy to power water treatment facilities, and trade-offs, such as water use in energy production versus its availability for other needs.
- 02)** Examining how different types of renewable energy technologies (solar, wind, hydropower, etc.) affect water use and quality. For example, an assessment of the water requirements of bioenergy crops or the impacts of large-scale hydropower projects.
- 03)** Analysing water demands of traditional and renewable energy plants, especially concerning cooling processes in thermal power stations.
- 04)** Exploring the impact of climate change on the availability and quality of water resources and, consequently, energy production.
- 05)** Examining strategies for building resilience in both energy and water systems and identifying methods for adapting energy infrastructure to changing water availability and improving water systems to cope with the demands of energy production and consumption.

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- 06) Highlighting advancements in technology that enhance the efficiency of water use in energy production or improve energy efficiency in water management. For instance, innovations like zero-liquid discharge systems or advanced desalination techniques powered by renewable energy.
 - 07) Exploring how smart grid and smart water technologies can improve the management of both resources through real-time data and analytics.
 - 08) Consideration of how policies can better integrate energy and water management to promote sustainability, including the regulatory challenges and barriers that hinder integrated management of water and energy resources.
 - 09) Examining the economic impacts of transitioning to renewable energy sources on water resources and vice versa. Discussion on the financial implications for industries and governments and potential economic benefits of integrated resource management.
 - 10) Identifying best practices for collaboration between stakeholders from the energy and water sectors to achieve common goals, and highlighting the lessons learned from these examples.
 - 11) Considering long-term strategies for sustainable energy and water management, including how future technological advancements and policy changes could shape the landscape.



MODERATOR & SPEAKERS

Moderator:



Stephen Cole,
International Broadcasting
Journalist, Director at
Brazil Communications

Speaker



Dr. Mohammed Mahmoud,
Water Management and
Climate Adaptation Expert

Speaker



Prof. Gary Amy,
Dean Distinguished
Professor at Clemson
University

Speaker



Radia Sedaoui,
Chief of Energy at the
UN Economic & Social
Commission for Western
Asia (ESCWA)

Speaker



Dr. Albert Janssen,
Principal Advisor Circular
Economy at Shell

KEY QUESTIONS

01) How will water be produced in a net zero CO2 emissions world in areas of scarce water resources?

02) Will the economics of cogeneration of electricity and water change, or will the standard configuration of gas turbines followed by steam turbines remain?

03) Will the increased efficiency of reverse osmosis gradually change the method of producing potable water?

04) How will the electricity for the reverse osmosis process be produced? Will it be "green" or "blue" electricity?

05) What technical advances in the foreseeable future will increase the energy efficiency of water production?

06) How will changing weather patterns affect the supply of water in arid regions?

07) How will countries cope with large but concentrated rainfall if they are not accustomed to it?

08) How will some countries with scarce water resources cope with prolonged droughts?

09) How will the costs of new technologies affect the ability of countries to fund abatement costs?

10) How can high water consumption be abated in the face of high population growth in water scarce countries?

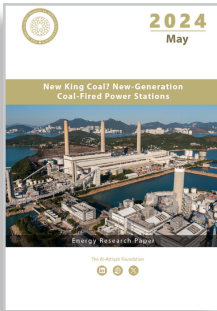
11) How can agriculture be made more water efficient?

FURTHER BACKGROUND READING AND VIDEO MATERIALS

REFERENCE:

Film: A Quantum of Solace https://en.wikipedia.org/wiki/Quantum_of_Solace

ENERGY PAPERS



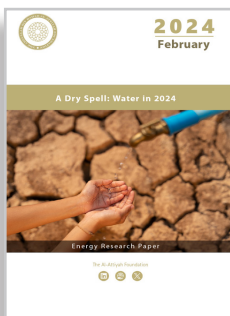
May – 2024

New King Coal? New-Generation Coal-Fired Power Stations

The prevailing belief is that the use of coal must cease to achieve net-zero emissions. However, new coal power plants, equipped with advanced ultra-supercritical, fuel cells, small supercritical, co-combustion, combined heat and power, and carbon capture, use and storage (CCUS) technologies offer enhanced thermal efficiency, reduced emissions, and increased flexibility in power generation.



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February – 2024

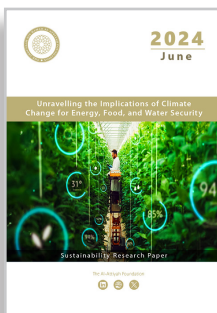
A Dry Spell: Water in 2024

Over 1.4 billion people, including 450 million children, inhabit regions grappling with high or extremely high-water vulnerability. This number is projected to increase in 2024, underscoring the urgency of optimising water use and identifying new and dependable water sources. Rapid industrialisation and urbanisation in some of the globe's fastest-growing economies have further strained already-stressed water resources.



(QRCO.DE)

SUSTAINABILITY PAPERS



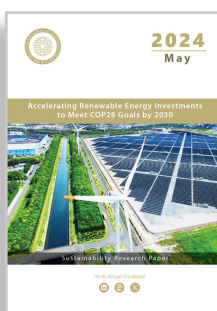
June – 2024

Unravelling the Implications of Climate Change for Energy, Food, and Water Security

Global climate change is becoming more severe, as evidenced by the global mean temperature reaching a record high of 1.45 ± 0.12 °C above the pre-industrial levels in 2023.01 Ocean temperatures and sea levels are also at record highs: average global sea surface temperature for February 2024 over 60°S–60°N was 21.06°C, the highest record for any month in the dataset.



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May – 2024

Accelerating Renewable Energy Investments to Meet COP28 Goals by 2030

At COP28, over 130 countries committed to tripling global installed renewable energy (RE) capacity from around 3,400 gigawatts (GW) in 2022 to 11,000 GW in 2030 or 60% of global power generation capacity.1,2 Thus, more than 1,000 GW of new installed RE capacity will have to be added on average every year.



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ABOUT THE FOUNDATION

The Abdullah Bin Hamad Al-Attiyah International Foundation for Energy and Sustainable Development is a non-profit think tank inaugurated by His Highness the Father Emir, Sheikh Hamad Bin Khalifa Al Thani in 2015. The Foundation works closely with its members, academia, and a wide network of international experts, to provide independent insights, in-depth-research and informed debate on critical energy and sustainable development topics.

Mission: To provide robust and practical knowledge and insights on global energy and sustainable development topics and communicate these for the benefit of the Foundation's members and the community.

Vision: To be an internationally respected independent think tank that is a thought leader focused on global energy and sustainable development topics.

Research Reports & Publications

- Daily News Flash
- Weekly Energy Market Review
- Monthly Energy Research Paper
- Monthly Sustainability Research Paper
- Monthly News Articles
- Special Industry Reports
- Webinar Whitepapers
- CEO Roundtable Whitepapers
- Annual Sustainable Development Book




Podcasts, Webinars & Videos

- Bi-monthly Podcast Interviews
- Monthly Energy Educational Video
- Monthly Sustainability Educational Video
- Monthly Webinars
- Annual High-Profile Webinar

Events & Activities

- The Al-Attiyah International Energy Awards
- Quarterly Energy Dialogues
- Qatar Sustainability Week
- The ICP Bosphorus Summit

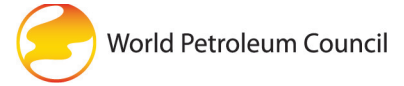
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OUR PARTNERS

The Al-Attiyah Foundation collaborates with its partners on various projects and research within the themes of energy and sustainable development.





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