

## Oil & Gas Technology to Address Climate Change Challenges

Presented by the Kingdom of Saudi Arabia and the Organization of Arab Petroleum Exporting Countries (OAPEC)

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Saleh Al-Qahtani,  
Saudi Aramco

Adel Al-Ghamdi,  
Saudi Aramco

Yasmeen Al-Dawsari,  
Saudi Aramco

Bader Al-Najjar,  
KOCT

Hussain Makki  
Bahrain's National Oil & Gas Authority

This side event, moderated by **Saleh Al-Qahtani**, Saudi Aramco, featured four speakers from oil production and regulation entities across Arab petroleum-exporting countries. Presenters addressed proposals and initiatives based in oil and gas technologies to address the many challenges posed by climate change, as well as to help build efficiencies and resilience in oil and gas production.

**Adel Al-Ghamdi**, Saudi Aramco, presented his company's Flaring Minimization Program from a historical lens, stating that the programme has significantly reduced greenhouse gas (GHG) emissions. He focused on the issue of gas flaring, where flare stacks burn planned amounts of methane and release it into the atmosphere as CO<sub>2</sub>. He said that the Program's first phase was the "Master Gas System" phase, which took the gas captured by Saudi Aramco that reduced flaring occurrence to "emergency" situations only. Following this phase came the installation of the "Corporate Flaring Roadmap," which is a flaring monitoring programme to measure, monitor, mitigate and manage flaring through corporate Key Performance Indicators (KPIs). Finally, he noted that the "Near-Zero Flaring" programme has deployed technologies to reduce flaring from raw gas production from 1% to 0.5% since 2011, and has been patented and made available to other extraction companies.

**Yasmeen Al-Dawsari**, Saudi Aramco, presented on the ways Saudi Aramco aims to generate profit from CO<sub>2</sub> extracted through carbon capture, utilization, and sequestration (CCUS) mechanisms. She argued that, since hydrocarbons must remain part of the global energy mix during the transition to renewables, it is necessary to “strategically create value” from CO<sub>2</sub> through such techniques as: CO<sub>2</sub> polymerization and mineralization to create materials; the creation of profitable fuels and chemicals; and using it as a working fluid in the place of steam. She also outlined plans for mobile CO<sub>2</sub> capture, presenting a proof-of-concept vehicle, which has captured 10% of its emissions. She pointed out that Saudi Aramco’s work on CCUS has led to various scientific and research collaborations with the US as well as with other international partners, which have generated contributions to international journals.

**Bader Alnajjar**, Kuwait Oil Tanker Company (KOTC), presented on the challenges of environmental protection facing the shipping industry in the area of climate change. He emphasized that the effects of climate change are international and that KOTC has its own contributions to make to the challenge of emission reductions. He argued that shipping remains an economical way of transporting goods around the world, with CO<sub>2</sub> emissions from international shipping equal to 3% of global emissions. Saying that “we are going to protect the environment because it’s our responsibility,” he pointed out that KOTC fully complies with International Maritime Organization efficiency regulations. Showing examples of how KOTC attempts to exceed these regulations, he discussed initiatives for energy efficiency improvement, including: optimizing engine systems and friction drag on ships; modifying propeller systems for better hydrodynamic efficiency; and installing sophisticated emissions monitoring equipment.

**Hussain Makki**, Bahrain’s National Oil and Gas Authority, presented on “Petroleum Sector Efforts to Meet the Climate Change Issue.” He highlighted that Bahrain’s economic planning emphasizes economic diversification and though the country produces 13.5 million tonnes of oil per year, it exports 88% of its petroleum products. He also alerted participants to the discovery of shale oil and shale gas in the Khaleej Al Bahrain Basin. Makki discussed Bahrain’s GHG mitigation strategy, including investing in high-tech initiatives and transitioning to an energy mix that includes renewable energy. He announced that Bahrain will host the first Middle East CCUS Conference and Exhibition in 2019. He concluded by noting the myriad of climate-related impacts likely to affect Bahrain if climate change is not mitigated, including coral bleaching, mangrove forest decimation and biodiversity concerns, and highlighted efforts to restore mangroves in the area.

In the ensuing conversation, panelists and participants discussed the role of oil and gas in the global energy mix, and the levels of progress for CCUS technologies. Responding to a question about the ethical justification for the continued use of hydrocarbons in light of the Intergovernmental Panel on Climate Change’s latest reports, panelists could not comment on behalf of their respective governments, but asserted that they continue to support the production of oil and gas as part of the global energy mix.