

# 3. Sustainability

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▲ Ras Tanura Refinery,  
Saudi Arabia

## Net-zero ambition

In 2021, Aramco announced its ambition to achieve net-zero Scope 1 and Scope 2 greenhouse gas emissions across wholly-owned operated assets by 2050.

In support of this ambition, Aramco has set interim targets to reduce or mitigate net Scope 1 and Scope 2 GHG emissions from the Company and its operationally controlled entities by 52 mmtCO<sub>2</sub>e compared to 2035 business as usual forecast emissions.

# aramco

# Commitment to act responsibly

Sustainability is embedded within the Aramco strategy. The long-term sustainability of the business will be driven by the Company's ability to leverage its competitive position while reducing its emissions. Acting responsibly across all aspects of its business will enable Aramco to successfully navigate and benefit from a lower emissions future.

## Sustainability governance

Aramco's Board of Directors oversee sustainability efforts through the Sustainability, Risk and Health, Safety and Environment (HSE) Committee. The Committee reviews and provides oversight on sustainability, risk and HSE policies and practices to ensure they are discussed, understood, owned, and promoted at the Board level. The Committee receives quarterly updates from management regarding the Company's performance across a range of sustainability key performance indicators (KPIs), and provides oversight with respect to strategy, goals, and important areas of focus. The Sustainability, Risk and HSE Committee reports its findings to the Board.

At a management level, the Company's Sustainability Steering Committee (SSC) aligns all sustainability-related activities under the guidance and oversight of a single body. The SSC is comprised of Aramco Senior Vice Presidents representing business lines and administrative areas, and is led by the Executive Vice President of Strategy and Corporate Development. The SSC reports to both the Strategy Council and Management Committee, and is responsible for identifying sustainability issues and their impact on long-term value creation for the business and stakeholders. See Section 4: Risk for more information on Aramco's risk management framework, and Section 5: Corporate governance for the Sustainability, Risk and HSE Committee Report.

## Four areas of focus

Aramco has identified the following four sustainability focus areas to oversee its sustainability performance:

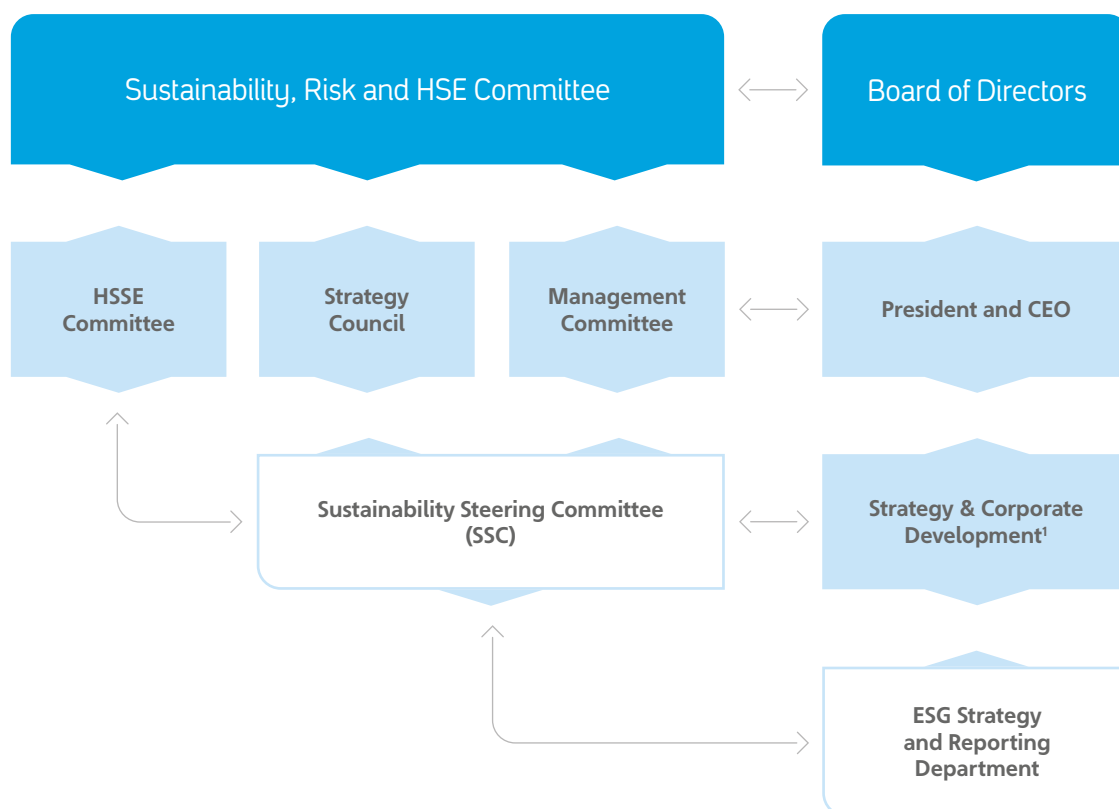
- Climate change and the energy transition;
- Safe operations and people development;
- Minimizing environmental impact; and
- Growing societal value.

Aramco takes both a strategic and operational approach as it seeks to address these significant areas, and has identified KPIs for each focus area. A high-level overview of the 2022 sustainability performance is provided in this section. Aramco will elaborate on its overall sustainability performance and plans in its upcoming 2022 Sustainability Report.

## Four areas of focus



## Sustainability governance management framework



1. Effective January 1, 2023, the Corporate Development business line title was updated to Strategy & Corporate Development.

# Climate change and the energy transition

The challenge of decoupling economic growth from greenhouse gas emissions is clear. Events over the last year have underlined further that energy security is equally important and highlighted ongoing underinvestment in energy sources. Both COVID-19 and geopolitical events have provided a reminder that the transition of the global economy, energy systems, and materials towards a lower-carbon future is complex, multi-dimensional, and will stretch across generations.

Alternatives to traditional hydrocarbon-based energy sources are progressing, but, on their own, are not yet ready to meet the world's energy demands and ensure a smooth energy transition. Oil demand is expected to grow for the rest of the decade and the world will likely continue to need oil and gas for the foreseeable future.

With access to some of the world's largest hydrocarbon resources, Aramco has a role to play in helping the world navigate towards a lower-carbon future. The production of hydrocarbons accompanied by carbon capture technology, in which Aramco is investing, could complement emerging alternatives and serve as an integral component of the future energy mix.

Aramco aims to leverage its strengths and strives to maximize the value of the energy it produces, while seeking to reduce the negative impact of greenhouse gases. And it is not just about energy; hydrocarbons could also be essential to the development of potential new materials that are expected to play a significant role in the energy transition. Advanced, durable materials are essential for manufacturing wind turbines, solar panels, transportation, storage devices, and infrastructure.

The Company's many decades of careful long-term reservoir management and technology investments underpin its low-cost, efficient operations that have helped it maximize value from the Kingdom's resources.

Supporting this is the ambition to achieve net-zero Scope 1 and Scope 2 greenhouse gas emissions by 2050 across wholly-owned operated assets, and achieve zero routine flaring by 2030. This is an important part of the Company's focus on long-term value creation, and complements the Kingdom's aim to reach net-zero emissions by 2060 through the circular carbon economy approach.

As disclosed in the 2021 Sustainability Report, interim targets have been set to reduce or mitigate net Scope 1 and Scope 2 GHG emissions from the Company and its operationally controlled entities by 52 mmtCO<sub>2</sub>e compared to 2035 business as usual forecast emissions, and reduce upstream carbon intensity by at least 15% by 2035 compared to a 2018 baseline.

To achieve these targets, Aramco focuses on five key levers: energy efficiency across upstream and downstream assets; further reductions in methane and flaring; increased use of renewable energy sources; carbon capture, utilization, and storage; and development or purchase of offsets to help address hard-to-abate emissions. Within these levers are targets to achieve carbon capture, utilization, and storage (CCUS) capacity of 11 mmtCO<sub>2</sub>e annually by 2035, and plans to invest in or to have made a final investment decision with respect to 12 gigawatts of solar PV and wind projects by 2030.

During 2022, Aramco achieved the following:

- In partnership with the Ministry of Energy, announced plans for one of the largest scale carbon capture and storage hubs globally.
- Established a \$1.5 billion Sustainability Fund, one of the largest of its kind in the world. The Fund's initial focus areas will include CCUS, greenhouse gas emissions, energy efficiency, nature-based solutions, digital sustainability, hydrogen, ammonia, and synthetic fuels.
- Aramco subsidiaries SASREF and SABIC Agri-Nutrients received the world's first independent certifications for production of blue ammonia and hydrogen. In collaboration with SABIC Agri-Nutrients, Aramco also delivered the world's first accredited commercial shipment of lower-carbon blue ammonia to South Korea.
- Through its wholly-owned subsidiary Aramco Trading Company, the Company participated in the Middle East and North Africa (MENA) region's first voluntary carbon credits auction.

## GHG emissions

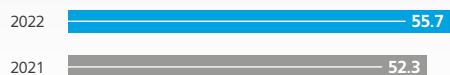
Despite increased hydrocarbon production of 10.3% in 2022, total emissions (Scope 1 emissions and Scope 2 emissions) from the Company and its operationally controlled entities increased by only 5.9% compared to the previous year. This was enabled by more efficient operations and a reduction in flaring intensity by 16.5% compared to the previous year due to improved operations of the Company's in-house flare gas recovery systems across several facilities.

An important metric for Aramco is the carbon intensity of upstream operations, which is among the lowest in the industry per barrel of oil equivalent and achieved through efficient operations, active management of the Company's prolific reservoirs, and sound engineering. In 2022, upstream carbon intensity decreased by 3.7% compared to the previous year and continues to be amongst the lowest of major oil producers in the world.

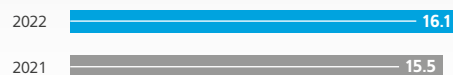
Aramco is leveraging its R&D and technology initiatives to develop, demonstrate and, ultimately, implement innovative approaches that could help lower emissions across the oil and gas industry. And some of these could have application in other emission-intensive industries.

Aramco strives to reduce flaring across its business, with investment including flare gas recovery systems and programs to improve asset integrity, energy efficiency, leak detection, and repairs. As a signatory to the World Bank's "Zero Routine Flaring by 2030" initiative, the Company shares best practices and knowledge with its peers so that its work has a broader and more positive impact.

### Scope 1 emissions<sup>1,2,3,4</sup> (million metric tons of CO<sub>2</sub>e)



### Scope 2 emissions<sup>1,2,3,4</sup> (million metric tons of CO<sub>2</sub>e)



### Upstream carbon intensity<sup>3</sup> (kg of CO<sub>2</sub>e/boe)



### Flaring intensity<sup>2,4</sup> (scf per boe)



1. The Company's GHG emissions reporting is based on the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) GHG protocol guidelines. The Company reports emissions using the operational control basis for measurement.

2. The Company's GHG emissions inventory includes emissions from wholly-owned in-Kingdom operated assets, SASREF, Motiva, and ARLANXEO.

3. 2022 figures for Scope 1 emissions, Scope 2 emissions, upstream carbon intensity, and flaring intensity have undergone ISAE3000 (revised) limited assurance and assurance results will be published on the Aramco website in Q2 2023. The 2021 figures for Scope 1 emissions, Scope 2 emissions, and upstream carbon intensity have undergone external limited assurance and can be viewed in the 2021 Sustainability Report.

4. The Jazan Refinery is excluded from the GHG emissions and flaring inventories.

# Safe operations and people development

Aramco conducts business in a manner that aims to prevent incidents with the potential to impact people, damage assets, or harm the environment. The Company adheres to the Occupational Safety and Health Administration Standards in developing and reporting its health and safety performance metrics.

While the Company endeavors to have strong controls in place to mitigate the risk of operational incidents, five fatalities (one employee and four contractors) sadly occurred during the year. The Company and its operationally controlled entities also experienced 11 Tier 1 process safety events<sup>1</sup>. Compared to 2021, the total recordable case (TRC) frequency improved by 7.4% and the loss time injuries/illnesses (LTI) rate improved by 17.6%. All incidents have been investigated during the year, with root causes identified, corrective actions implemented, and lessons shared with all relevant parties to limit the risk of reoccurrence.

To protect its workforce, the Company implements its enterprise-wide safety focus with robust policies and standards under the stewardship of the Company's Health, Safety, Security and Environment (HSSE) Committee. Aramco also deploys its subject matter experts to independently verify the compliance and implementation of its Safety Management System, and establish appropriate action plans to further improve its safety performance and environment.

	2022 <sup>2</sup>	2021 <sup>2</sup>
<b>Tier 1 process safety events</b>	<b>11</b>	11
<b>TRC frequency<sup>3,4</sup></b>	<b>0.050</b>	0.054
<b>LTI rate<sup>3,4,5</sup></b>	<b>0.014</b>	0.017
<b>Number of fatalities<sup>3,5</sup></b>	<b>5</b>	1

- The Company and its operationally controlled entities.
- Total workforce (employees and contractors).
- Per 200,000 work hours.
- 2022 figures are undergoing ISAE3000 (revised) limited assurance and may be subject to change. Assurance results will be published on the Aramco website in Q2 2023. The 2021 figure for number of fatalities has undergone ISAE3000 limited assurance and assurance results can be viewed at [2021-independent-assurance-statement-of-social--energy-intensity-kpis.pdf](#).

The Company promotes and supports diversity and inclusion (D&I), occupational health, and mental well-being.

Over the past five years, Aramco's commitment to D&I has resulted in the percentage of female hires increasing due to a concerted effort to achieve strategic targets and KPIs administered under a dedicated Diversity and Inclusion Division. There has been an increase of 22.6% for females in leadership positions at the Company from 2021 to 2022 with strategic plans to continue on this upward trajectory.

A major contributor to Aramco's success in boosting diversity has been the establishment of diversity and inclusion corporate targets, and KPIs on female representation, women in leadership, and people with disabilities representation.

Aramco has a proud history of providing opportunities for education and training over many decades. These include offering world-class training, first-rate vocational programs, and a suite of opportunities to fulfill employees' career ambitions. The Company has delivered leadership and targeted development programs to over 18,500 employees through the Leadership Center, a world-class facility located in Ras Tanura, and through affiliation with top-ranked business schools and leading development partners such as Harvard, Wharton, and the London Business School.

	2022 <sup>6</sup>	2021 <sup>6</sup>
<b>Company employees</b>	<b>70,496</b>	68,493
<b>Female employees (%)</b>	<b>6.4</b>	5.6
<b>Female employees in leadership positions (%)</b>	<b>3.8</b>	3.1

1. An unplanned or uncontrolled release of any material, including nontoxic and nonflammable materials, from a process that results in one or more of the consequences listed in API Recommended Practice-754.

6. Applies to Saudi Arabian Oil Company (the Company).

# Minimizing environmental impact

Aramco is implementing best practice environmental management systems and investing in initiatives that improve natural habitats and reduce damage to shared resources as the Company aspires to create a legacy for future generations.

One of the ways this is achieved is by seeking to limit groundwater use in operations and protecting sensitive ecological areas to support Aramco's efforts to preserve the Kingdom's environment and any areas in which it operates.

Headquartered in one of the most arid environments in the world, water management has been an essential focus of Aramco since inception. Today that includes:

- Assigning value to groundwater used for projects to incentivize the use of alternative sources.
- Seeking to reduce dependence on nonrenewable groundwater by using alternative water sources like seawater, treated sewage effluent, and treated reject streams, including significant investment in desalination.

In 2022 freshwater consumption was 93.60 million cubic meters compared to 94.61 million cubic meters in 2021. This reduction is mainly the result of conservation efforts.

## Freshwater consumption<sup>1</sup> (million cubic meters)



1. Applies to in-Kingdom wholly-owned and operated assets, SASREF, Motiva, and ARLANXEO.
2. The 2021 freshwater consumption figure has been restated from the 2021 Annual Report to reflect the expanded boundary to include in-Kingdom wholly-owned and operated assets, SASREF, Motiva, and ARLANXEO.
3. Oil spill incidents with volume greater than one barrel.

Aramco strives to achieve zero spills. There were 15 hydrocarbon spills in 2022 with two of the spills responsible for more than 99% of the total volume spilled. Eighty-nine percent of the contaminated soil related to one of the spills was removed to rehabilitate the affected area and further cleanup operations are ongoing. All of the spilled oil related to the second spill was recovered.

The Company captures lessons learned from any hydrocarbon spill and shares them across its business. It also seeks to improve its spill prevention processes, asset integrity and inspection, response to hydrocarbon spill emergencies, and its hydrocarbon recovery processes. The Company is also continuously training and conducting drills to ensure competency and readiness during emergency situations.

## Natural climate solutions

During the year, Aramco planted 11 million mangrove seedlings in-Kingdom, bringing the cumulative total to 24 million mangrove seedlings. The Company also completed the third phase of its million trees initiative, bringing the total number of native trees planted in-Kingdom to three million. Mangroves have the capacity to act as carbon sinks, supporting the decarbonization plan. The replanting of mangrove coastlines supports increased biodiversity of fauna and flora. Aramco's biodiversity policy highlights the Company's aspiration to have a net positive impact on biodiversity across its operations.

## Number of hydrocarbon spills<sup>1,3</sup>



## Volume of hydrocarbon spills<sup>1</sup> (barrels)





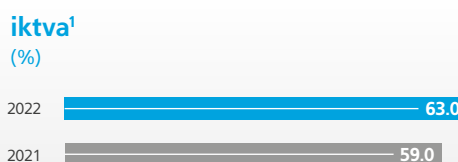
## Growing societal value

Aramco believes its commitment and investment in training, skills development, and nurturing of in-Kingdom partnerships has contributed to the development of the labor force in Saudi Arabia, while adding robustness to the Company’s supply chain through localization.

Aramco’s National Champions program encompasses a set of unique programs focused around five strategic domains — sustainability, digital, industrial, manufacturing, and social innovation — that drive development from an initial idea to a small- and medium-enterprise (SME) through to global businesses, and aligns with the Kingdom’s Vision 2030 and its Shareek Private Sector Partnership Reinforcement Program (Shareek). In March 2023, the Company signed a Shareek framework agreement in support of Aramco’s efforts to localize its supply chain and ensure its long-term cost and productivity leadership, sustainability, and resilience, while contributing to the Kingdom’s economic development.

The Company’s in-Kingdom Total Value Add (iktva) program is an ongoing success. Through the program, the local component of the Company’s overall expenditure across its supply chain now stands at 63.0%, with a target to grow to 70.0% by 2025. Billions of dollars in economic activity that historically would have left the Kingdom instead remained to serve the interests of the Company and support the local economy.

In 2022 alone, Aramco entered into over 90 agreements with an estimated value of SAR 64.9 billion (\$17.3 billion) to build long-term collaborative relationships with strategic local suppliers. In January 2023, Aramco signed over 100 agreements and Memoranda of Understanding (MoU) to help advance a diverse, sustainable, and globally competitive industrial ecosystem.



1. Applies to Saudi Arabian Oil Company (the Company).

Alongside iktva and Shareek is Aramco’s Namaat industrial investment program and the Taleed SME growth program. At the end of 2022, 61 investments had been made through Namaat with an aim to create jobs for Saudis and expand the Kingdom’s energy and chemicals value chains. The Taleed program, launched in October 2022, aims to accelerate SME growth across multiple sectors. Taleed strives to deliver SAR 3.0 billion (\$0.8 billion) in funding and financial solutions to support SME development. Aramco is partnering with a wide range of entities to deliver Taleed initiatives, and 30 MoUs have been signed with leading public and private partners to enable development of the SME ecosystem.

## Supporting Saudi Arabia's economy

In addition to its core businesses, Aramco seeks to localize the Company's supply chain and promote national champions.

**In-Kingdom Total Value Add (iktva) program**

**90+**  
agreements

Estimated value of SAR 64.9 billion (\$17.3 billion) in 2022

**Namaat industrial investment program**

**61**  
investments

**Taleed program**

**5**  
strategic partners

SAR 3 billion (\$0.8 billion) in funding and financial solutions



▲ Dammam, Saudi Arabia