Oman Vision 2040: A National Blueprint for Sustainable environment and Clean Energy

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Introduction

Oman's commitment to transitioning toward a low-carbon economy dates back to the mid nineties, when the Sultanate of Oman began taking deliberate steps to reduce its over-reliance on hydrocarbons. Oman Vision 2020 was the first strategic framework aimed at shifting away from this dependency, focusing on achieving macroeconomic stability by insulating the economy from oil price volatility and laying a strong foundation for economic diversification.

With the adoption of Paris Agreement, economic diversification has regained urgency in the Sultanate of Oman. In 2020, the Oman Vision 2040 was officially endorsed to guide the nation over the next two decades to an advanced nation's position by focusing on four keys themes: society of creative individuals, competitive economy, responsible state agencies and environment with sustainable components entails keeping a safe and well-preserved environment with effective and balanced ecosystems and renewable resources to support the National Economic.

Oman Vision 2040 outlines a strategic shift towards a diversified, sustainable economy driven by technology, innovation, and competitiveness. The plan aims to reduce the oil share of GDP to 16% by 2030 and 8.4% by 2040, while increasing the non-oil sector's contribution to 91.6% by 2040. Key targets include improving energy efficiency, with energy intensity rising from 6.92 in 2014 to 14.57 by 2030 and 17.3 by 2040. On the environmental front, Oman is striving to significantly enhance its performance in the Environmental Performance Index (EPI). By 2030, the goal is to rank among the top 40 countries worldwide. Looking ahead to 2040, Oman aims to secure a position among the top 20 countries globally.

Environment as a Priority in Oman Vision 2040

Environment and natural resources are key priorities under Oman Vision 2040. The government's strategic direction aims to create effective, balanced, and resilient ecosystems that protect the environment and ensure the sustainability of natural resources, ultimately supporting the national economy. Oman recognizes environmental preservation as a fundamental pillar for its social and economic development. By safeguarding its environment and resources, the country not only mitigates the economic costs associated with environmental degradation but also fosters a more sustainable economy.

The Vision outlines specific objectives to diversify non-conventional energy sources, enhance food and water security, and increase community awareness of environmental issues. These efforts are designed to align environmental, economic, and social priorities, reinforcing the country's commitment to the principles of sustainable development.

As Oman is rich in natural resources, including abundant wind and solar energy potential, which can be harnessed to produce clean energy, the optimal utilization and sustainability of these resources are critical in supporting

the country's transition to clean energy and in fostering a green economy that reduces the dependency on fossil fuels.

Oman's commitment to sustainability is reflected in its impressive improvement in global environmental rankings. In 2024, the country rose 95 places to 54th globally (second in the Arab world) from 149th in 2022, showcasing the effectiveness of its environmental strategies and its growing leadership in sustainability efforts.

Net Zero plan 2050

Under the leadership of His Majesty Sultan Haitham bin Tarik, Oman announced in 2022 its commitment to achieve net-zero emissions by 2050, aligning with the Paris Agreement's objective of limiting global temperature rise to below 2°C compared to pre-industrial levels under the UNFCCC framework. This commitment positions Oman among the world's leading nations in shaping a sustainable future and reflects the country's ambition, as outlined in Oman Vision 2040, to overcome challenges, adapt to regional and global changes, seize opportunities, boost economic competitiveness, and enhance social well-being.

Oman has identified a comprehensive pathway that balances environmental, economic, and social priorities to ensure a smooth and sustainable transition. Six main decarbonization technologies would support an orderly transition: energy and resource efficiency, electrification and renewables, battery electric technology, sustainable hydrogen, carbon capture and storage and negative-emission solutions. Together, these technologies would cover ~90% of abatement to 2050. However, the decarbonization targets would require technology to mature, building new infrastructure, increasing adoption levels, introducing policies and legislation and market mechanisms.

Clean Energy Transition and Green Hydrogen Development

As part of its broader low-carbon transition, Oman is investing heavily in clean and renewable energy sources. The country's vast solar potential makes it an ideal location for large-scale solar power projects, particularly in its central and southern regions. Additionally, wind energy is being harnessed in specific southern areas, attracting significant investment and advancing the national clean energy agenda. Key targets include achieving a 20% renewable energy penetration by 2030, and further increasing this to between 35% and 39% by 2040.

A major milestone in Oman's clean energy journey is the establishment of Hydrogen Oman (Hydrom) in October 2022 which is a fully government-owned entity responsible for strategic planning and land allocation for hydrogen projects. By February 2023, over 65,000 square kilometers had been earmarked for renewable energy and clean hydrogen projects, including more than 50,000 square kilometers specifically for green hydrogen. The long-term goal is to produce over 1 million tons by 2030 and potentially 8 million tons by 2050. These ambitious goals solidify Oman's position as a global hub for renewable energy and green hydrogen, contributing significantly to its vision of achieving net zero emissions and transitioning to a sustainable economy.

Sustainable Aviation in Oman

The government's strong commitment to sustainability is reflected across all sectors, including aviation. Oman is dedicated to aligning its efforts to mitigate the environmental impacts of aviation industry with vision 2040 which places environmental sustainability at the core of the country's developmental agenda.

Oman has joined other countries in the adoption of the ICAO's Long-Term Aspirational Goal (LTAG) of achieving net-zero carbon emissions by 2050. This global initiative was developed to complement the goals of the Paris Agreement. In 2023, Oman has submitted its State Action Plan which outlines the expected future air traffic in Oman, the projected emissions from international civil aviation until 2050 as well as the mitigation measures.

Sultanate of Oman has taking proactive actions and efforts to address environmental issues in the aviation sector which will facilitate the reduction of emission. Key initiatives include:

- Fleet modernization,
- Enhanced data-driven aircraft performance monitoring for fuel savings.

- Adoption of industry best practices, such as single-engine taxiing, optimized fuel loading, use of minimized / or reduced flaps during takeoff and landing, minimizing reverses use and selecting aircraft best suited to the mission
- Route optimization and coordination with the CAA to enable shorter flight paths. Oman CAA is currently implementing a strategic national project known as "Ajwaa", aimed at enhancing the integration of air routes, air navigation systems, and operational procedures between the Sultanate of Oman and the airspaces of neighboring countries. This initiative seeks to ensure the highest standards of safety, security, and environmental protection.

The Sultanate of Oman was voluntarily participating in the ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) from the pilot phase onward. Oman CAA has issued national legislation to implement CORSIA as a clear legal framework outlining the responsibilities of airline operators and the Authority in managing emissions from international aviation in compliance with the requirements of ICAO.

Oman CAA is working to enhance the Sultanate of Oman's benefits from the implementation of the CORSIA scheme and to maximizing the associated social and economic returns from emission offsetting. It is in close coordination with the Oman Net Zero Centre to ensure that national projects meet the CORSIA eligible units' criteria, to streamline the process of obtaining Letters of Authorization, and to prevent double counting of emissions in line with the requirements of Article 6 of the Paris Agreement on climate change.

As outlined in Oman Vision 2040 and the Net Zero Plan 2050, the country's strategic shift toward renewable energy and green hydrogen and use of different decarbonization strategy may provide a strong foundation for decarbonizing aviation. This includes the development and use of Sustainable and low carbon Aviation Fuels (SAF-LCAF) and green hydrogen-based aviation fuels. With large-scale investments in solar and wind energy, and the allocation of over 50,000 square kilometers for green hydrogen projects, Oman is positioned as a potential future supplier of clean aviation fuels aligned with international climate objectives.

The Sultanate of Oman is actively advancing the development of Sustainable and low carbon aviation Fuel (SAF-LCAF). In 2023, the Civil Aviation Authority hosted the Forum on Innovation Support in Sustainable and Low-Carbon Aviation Fuel and Clean Energies to raise awareness and explore investment and innovation opportunities. To institutionalize progress, a national SAF Taskforce was established in 2024, uniting stakeholders from government, industry, and academia to shape national policy, promote market development, and ensure infrastructure readiness. In 2025, an interactive policy workshop was held to explore potential pathways for SAF development in line with ICAO guidance. Given Oman's position as an oil-producing country, there are ongoing efforts to promote the production of Low-Carbon Aviation Fuel (LCAF) alongside SAF. These efforts will continue to ensure a supportive environment for the production and use of SAF and LCAF in the Sultanate. Nevertheless, the widespread availability and adoption of SAF must consider the challenges associated with its production and use. These include the economic costs, scalability, infrastructure requirements, and potential impacts on operators, producers and society. It is critical to ensure that SAF development does not compromise food or water security, or lead to unintended socio-economic consequences.

The Sultanate of Oman reaffirms its commitment to reducing the environmental impact of the civil aviation sector and contributing to the achievement of the International Civil Aviation Organization's Long-Term Aspirational Goals (LTAG), thereby supporting sustainable development across the sector's economic, environmental, and social dimensions in alignment with Oman Vision 2040.