

THE FUTURE OF RENEWABLES IN OMAN BUILDING OPPORTUNITIES THROUGH ALTERNATIVE ENERGY SOURCES



QUANTITY SURVEYING
PROJECT MANAGEMENT

THE GROWING IMPORTANCE OF RENEWABLES IN OMAN

Investment in renewables and related infrastructure is steadily increasing as demand for energy alternatives is growing. To ensure sustainability, reduction in environmental impact and more effective long-term energy operation costs, renewables must be considered for the future of a country's infrastructure and greater global economy at large. Key renewable energy components currently being invested in include hydropower, biopower, geothermal power, concentrating solar thermal power (CSP), ocean energy – a largely untapped source, wind power, and solar.

As many developing and emerging countries expand their deployment of, and investment in, renewables and related infrastructure, the private sector is increasingly playing a role in driving the deployment of renewable energy through its procurement and investment decisions.

Why is the private sector increasing the drive for investment? Renewables accounted for an estimated 70% of net additions to global power capacity in 2017/8, due in large part to continued improvements in the cost-competitiveness of solar photovoltaic (PV) and wind power. Renewable contributed 20-25% of the world's total energy consumption in 2018.

Of note, in 2018, the global renewable power sector saw strong growth, while other renewable sectors grew slowly by comparison. In fact, PV capacity installations nearly doubled those of wind power, who came in second for growth. These PV installations added more net capacity than coal, natural gas, and nuclear power combined.

While renewable energy policies and targets differ throughout the world, which will impact where investors look, the consistent theme is the continued increase, regardless of growth speed, in renewables as alternative energy sources.

OPPORTUNITIES FOR RENEWABLES ACROSS THE MIDDLE EAST

Specifically, in Oman, despite the solar and wind resources available, there is little activity to expand renewable energy alternatives in three primary areas: heating and cooling, transport, and power. However, with rising domestic energy usage and an increase in cooling, there is a good case for investment.

Similar to other Middle Eastern countries, renewable markets have not yet made any significant strides. The share of renewable generation in the region is very low (around 2.5%), with non-hydropower renewables providing less than 0.6%. However, several countries have added renewable energy targets or increased the ambition of existing targets. For instance, a large pipeline of solar PV and CSP projects exists in the region, with projects under construction in Israel, Jordan, Kuwait, Saudi Arabia and the United Arab Emirates.

As energy demand for cooling continues to rapidly increase, access to cooling is becoming an issue for a population's health and well-being. Renewables currently play a very small role in providing cooling services, although there is considerable potential. While contribution of renewables to heating and cooling in the region is very small, interest is rising in developing solar thermal solutions to address the energy demand. As such, some demonstration cooling plants were constructed in the region. While benefits are still being realized, the renewable investment in heating and cooling will see a reduction in fossil fuel requirements, the need for fewer new power plants, and lower greenhouse gas emissions, improving the overall air quality.

With these types of benefits realized, many countries in the region have increased existing targets or put forth ambitious new ones, driven by rapidly falling solar technology costs, the desire to diversify their energy mix, and climate change objectives.

A great example of this is currently underway in the UAE. A CSP tender was awarded for what is expected to be the largest CSP facility in the world when completed. The 700 MW CSP plant in the Mohammed bin Rashid Al Maktoum Solar Park was designed to incorporate a 260-metre solar tower along with parabolic trough capacity and is expected to enter commissioning in 2020.

With other Middle Eastern countries investing in projects, such as the above CSP facility, Oman will undoubtedly pay attention so to remain competitive with advances in renewables for the benefit of the country.



TODAY'S OPPORTUNITIES FOR RENEWABLES IN OMAN

Oman is in a unique location primed for renewable opportunities. Due to its plentiful sunlight and high irradiation levels, solar energy seems to be a clear favourite among policy-makers in Oman, followed by wind power. In Oman, the expected power demand scenario projects 7% annual growth in energy demand (i.e. average demand) between 2017 and 2024.

With this annual increase, the Government of Oman's Fuel Diversification Policy requires that new renewable energy (RE) projects contribute 10% of generation output by 2025. As such, solar and wind projects are planned to be developed towards the RE target.

SOLAR ENERGY

The current procurement of 500MW solar PV (Ibri II Solar IPP) is scheduled for completion in 2021. Plans for successive annual tenders of 500 MW are expected. Future solar tenders may be for larger installed capacity levels than 500 MW. Oman Power and Water Production (OPWP) plan that solar energy development will occur at multiple sites. OPWP has a process underway for site allocation and transmission access, with the full support of the relevant Government agencies. OPWP expects that solar PV projects will contribute at least 30% of their peak installed capacity.

WIND ENERGY

The most promising areas for onshore wind energy development are in coastal highland areas of Dhofar and Al Wusta Governorates, the location of a utility-scale wind farm. The first wind-farm in the Sultanate is being financed by UAE's MASDAR. The 50 MW project is under construction at Harweel in Dhofar Governorate and is expected to begin operations in 2020. Additionally, certain mountainous areas of Sharquiya Governorate have potential for similar investment. The wind energy development program is linked to the transmission line development, with the first project scheduled to reach completion in 2023.

WASTE-TO-ENERGY (WTE)

For several years, Oman Environmental Service Holding Company S.A.O.C. (be'ah) has been exploring alternatives to landfill storage of municipal solid waste in Muscat and South Batinah. In 2018, OPWP conducted a feasibility study of a WTE project, building upon previous studies by be'ah. OPWP also launched a qualification process in 2018 to procure a WTE project with capacity of around 50MW.



CONSIDERATIONS FOR RENEWABLE ENERGY IN OMAN

Renewable topics that will undoubtedly be discussed as they continue to increase in market share are energy storage, heat pumps, electric vehicles, and energy efficiency. At MEC, we believe as this demand continues to grow, there will be a need for more efficient building envelopes to reduce energy needs for cooling. In the Middle East, several countries and regions – including Kuwait, Saudi Arabia and the Emirate of Dubai – are gradually removing subsidies for electricity. In turn, this is generating increased demand for renewable cooling solutions as air conditioning accounts for the highest portion of both household and commercial electricity bills. By considering how renewable energy needs for cooling will impact the overall power demands of a building once completed, more developers are recognizing the cost benefits of renewables in the assistance of overall building effectiveness and efficiency.

Incidentally, the buildings sector itself accounts for nearly one-third of global final energy consumption. Residential buildings consume about three-quarters of this energy, while the rest is used in commercial facilities for services. A particular focus that must be further explored is how renewables factor in to the efficiency of energy use in buildings as it relates to building envelopes, design, and orientation. Additional considerations must include determining the efficiency of energy-consuming devices, including climate control systems, lighting, appliances, and office equipment, as technology plays a larger role in design and building functionality.

As interest and investment of renewables increases – out of demand and necessity – government targets for renewables and building efficiency (both residential and industrial) coupled with planning for the integration of renewables into existing physical and legal energy systems will allow renewable energy markets to continue to expand in an orderly manner. A key benefit above cost and building efficiency is the creation of jobs for Omanis within the renewables sector.

To meet this growing demand, current building codes must be considered. There also must be assurance that codes are updated to incorporate international standards for energy efficiency policy.

The benefits of renewables are still in their infancy, but it is clear that investment in them is a must for the sustainability of Oman. MEC provides Project and Cost Management service which are value adding services to any renewable project. In addition, many of our team have significant experience in PPP (Public-Private Partnership) solutions and can provide technical due diligence and construction related support.

To discuss your next project, or further about the future of renewables, visit www.majaneng.com or contact Kevin Ellis at k.ellis@majaneng.com.

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