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## Towards sustainable construction in Oman: Challenges & Opportunities

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### Abstract

Over the past few decades, Oman is experiencing a rapid economic growth associated with the flourishing and maturity of the oil production. The construction sector has seen to be the primary beneficiary with the blooming of many new infrastructure projects that serves the rapid urban development. In line with the booming awareness of the sustainable development of its neighboring countries, many proactive actions from the government and professional bodies attempts to introduce the sustainability concept to the industry. However, the lack of evidence on sustainability progress suggests that these values are not yet at the top of the construction industry agenda.

This paper reviews the current application of sustainability in the construction industry in Oman. Informative challenges and opportunities have been identified through market surveys and a qualitative observational research method of current eco-house construction project conducted by Sultan Qaboos University within a competition initiated by the research council in Oman. The proposed recommendations of this study shall help promoting and improving the sustainability application in the Omani construction practices in the future.

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## 1. Introduction

The pursuit of sustainable development in many countries as an effort to enhance the environmental, social and economic aspects puts the build environment and the construction industry high in their agenda. Among other human activities such as industry, agriculture, and transportation, the building construction sector alone consumes around 40% of entire produced energy [39]. Therefore, sustainable construction has been seen as the response of the building construction sector to the challenge of sustainable development [17].

Over the past decade, the Middle East region has experienced a rapid booming in the construction sector associated with the flourishing and maturity of the oil production, which on the other hand raised the domestic levels of energy consumption per capita [5]. Therefore, these countries are considered among the highest contributor to the emission of CO<sub>2</sub> per capita [10]. However, countries of the Gulf Cooperation Council (GCC) have responded to this situation by giving high consideration on the environmental sustainability issues with special focus on energy efficiency, renewable energy and life cycle management of assets. Over the past few years, many of these countries have started to introduce green building codes to encourage the building industry to become more sustainable. For example, Abu Dhabi has launched its Estidama (sustainability) rating system, Dubai has introduced the Green Building Decree, and Qatar has established the Qatar Sustainability Assessment System (QSAS) which was developed specifically for Qatar [3].

The objectives of this paper are to overview and analyze the current opportunities and challenges in implementing sustainable construction practices in Oman. The paper presents recent market surveys and analyzing a case study of Eco-friendly construction project within Sultan Qaboos University. The aim of this research is to conclude a general classification for the critical challenges to the implementation of sustainable construction practices in Oman, and to propose initiatives to push forward these practices between different stakeholders of the construction industry.

## 2. Sustainability opportunities in Oman

Oman; as one of the GCC countries; has witnessed in the last few years a substantial growth in the construction industry associated with the flourishing of its economy and the rapid growth in population. According to the World Bank data, the Omani's economy faces a growth rate of 71% between 2006 and 2013, from almost \$47bn in 2006 to \$80.5bn in 2013. The country's population has been increased less dramatically in the same period from 3.1m in 2006 to 3.6m in 2013 with a growth rate of 16% [37]. With a large segment of the population is young, the housing demand should heavily increase over the coming decade.

Beside the residential development many construction projects in Muscat; the capital city; are focused on increasing the city's tourism appeal, other construction projects related to industrial and transport expansion are growing substantially in cities such as Sohar, Salalah and Duqm. While the urban development requires the construction of new road networks and upgrades to existing networks, other infrastructure projects involve the upgrading of seaports are also planned [15]. A number of construction projects in Oman are already working to implement sustainable building practices. Omran, a government-owned development, investment and asset Management Company focused on the tourism sector, is currently developing four such projects [35]. However, as the construction sector expands, challenges remain.

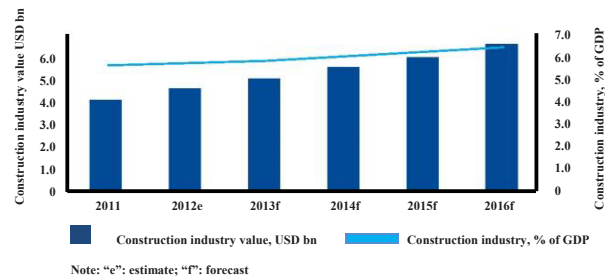


Figure 1 Construction value and growth in Oman [13].

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