

# Accepted Manuscript

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Muhammad Imran Khan



PII: S0959-6526(17)32536-2

DOI: [10.1016/j.jclepro.2017.10.231](https://doi.org/10.1016/j.jclepro.2017.10.231)

Reference: JCLP 11023

To appear in: *Journal of Cleaner Production*

Received Date: 11 March 2017

Revised Date: 25 July 2017

Accepted Date: 19 October 2017

Please cite this article as: Khan MI, Evaluating the strategies of compressed natural gas industry using an integrated strength-weakness-opportunity-threat and multi-criteria decision making approach, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2017.10.231.

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# Evaluating the Strategies of Compressed Natural Gas Industry Using an Integrated Strength-Weakness-Opportunity-Threat and Multi-Criteria Decision Making Approach

Muhammad Imran Khan<sup>1\*</sup>

<sup>1</sup>Institute of Petroleum Engineering, Heriot Watt University, UK

\*Corresponding Author: [imran.hwu@gmail.com](mailto:imran.hwu@gmail.com)

## Abstract:

Out of available alternate fuels compressed natural gas (CNG) is the one which is meeting the maximum needs of countries worldwide, who want to switch over to alternate fuels. However, despite the fact that CNG are often seen as a panacea by policy-makers, there are a number of barriers to their widespread market penetration and diffusion. This paper aims to evaluate the internal and external environment of CNG industry in Iran applying SWOT (strengths, weaknesses, opportunities and threats) analysis and prioritizing the strategies for stimulating the growth of Iranian CNG market. Based on SWOT analysis nine strategies were suggested. Strategy prioritization to promote the development of CNG economy in Iran is a typical multiple criteria decision-making (MCDM) problem. To deal with the ambiguity associated with the judgments of decision-makers, a modified Fuzzy Goal Programming (GP) is used as an evaluation tool, where uncertainties of the decisions are translated into fuzzy numbers. The suggested technique is not limited to Iran, and it is a generic practice that can also be applied to evaluate the CNG market in other countries.

**Key Words:** CNG; Iran; SWOT analysis; Multi-criteria decision making Strategy; Goal programming

## 1. Introduction

Setting the energy policies aimed at addressing the increasing environmental concern and improving the country's energy security are the continuous challenges for many countries [1]. The challenges arise mainly because energy policy includes a number of stakeholders and needs to incorporate the interests and requirements of all the major stakeholders to make energy policy viable [2]. The interests and requirements of the stakeholders are diverse and cannot be represented by one criterion. Therefore, when aiming at sustainable and low-emission energy,

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