

# Accepted Manuscript

Analysing CO<sub>2</sub> emissions from Singapore's electricity generation sector: Strategies for 2020 and beyond

H. Ali, S. Sanjaya, B. Suryadi, S.R. Weller

PII: S0360-5442(17)30119-6

DOI: [10.1016/j.energy.2017.01.112](https://doi.org/10.1016/j.energy.2017.01.112)

Reference: EGY 10247

To appear in: *Energy*

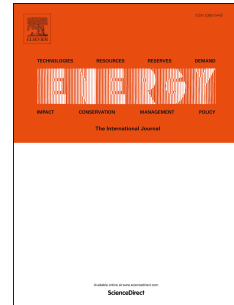
Received Date: 23 February 2016

Revised Date: 26 December 2016

Accepted Date: 22 January 2017

Please cite this article as: Ali H, Sanjaya S, Suryadi B, Weller SR, Analysing CO<sub>2</sub> emissions from Singapore's electricity generation sector: Strategies for 2020 and beyond, *Energy* (2017), doi: 10.1016/j.energy.2017.01.112.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



# Analysing CO<sub>2</sub> Emissions from Singapore's Electricity Generation Sector: Strategies for 2020 and Beyond

H. Ali<sup>a,1,\*</sup>, S. Sanjaya<sup>a</sup>, B. Suryadi<sup>b</sup>, S. R. Weller<sup>a</sup>

<sup>a</sup>*The University of Newcastle, School of Electrical Engineering and Computer Science, Callaghan, NSW, 2308, Australia*

<sup>b</sup>*ASEAN Centre for Energy, ASEAN Centre for Energy Building, Kav. 07-08 Kuningan, Jakarta-12950, Indonesia*

---

## Abstract

Since 2009, Singapore has set about implementing mitigation and energy efficiency measures in key sectors to achieve unilaterally pledged reductions in greenhouse gas (GHG) emissions of 7–11% below business-as-usual (BAU) levels in 2020. Carbon dioxide (CO<sub>2</sub>) emissions from fossil fuel-fired power plants are a major focus for emissions abatement, with an expected reduction of 4 Mt CO<sub>2</sub> from the electricity generation sector in 2020. In this paper, we explore Singapore's various strategies in the electricity generation sector to fulfil this target and use EnergyPLAN optimization model to assess the impact of these strategies on CO<sub>2</sub> emissions from Singapore's electricity generation sector through to 2020. A comparison of BAU scenario in 2020 (BAU 2020), 2020 target emissions reduction trajectory, and three emissions reduction alternative policy scenarios (denoted APS-I, APS-II, and APS-III) is carried out. The EnergyPLAN simulation results indicate that all the three APS scenarios achieve the 2020 carbon emissions reduction target in Singapore's electricity generation sector. The results furthermore suggest that the 2020 electricity generation associated emissions reduction target can be met through measures that are already available. Vulnerabilities are identified in Singapore's electricity generation fuel mix and emission reduction strategies beyond 2020 are outlined.

*Keywords:* Electricity generation; carbon dioxide (CO<sub>2</sub>); emissions; EnergyPLAN; alternative policy scenarios; climate change

---

Download English Version:

<https://daneshyari.com/en/article/5475984>

Download Persian Version:

<https://daneshyari.com/article/5475984>

[Daneshyari.com](https://daneshyari.com)