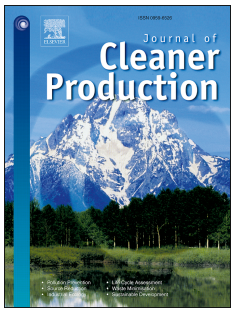
Accepted Manuscript



Can electric vehicles significantly reduce our dependence on non-renewable energy? Scenarios of compact vehicles in the UK as a case in point

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PII: S0959-6526(18)32449-1

DOI: 10.1016/j.jclepro.2018.08.107

Reference: JCLP 13891

To appear in: *Journal of Cleaner Production*

Received Date: 15 March 2018

Revised Date: 8 August 2018

Accepted Date: 11 August 2018

Please cite this article as: Raugei M, Hutchinson A, Morrey D, Can electric vehicles significantly reduce our dependence on non-renewable energy? Scenarios of compact vehicles in the UK as a case in point, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.08.107.

Can Electric Vehicles significantly reduce our dependence on non-renewable energy? Scenarios of compact vehicles in the UK as a case in point.

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Abstract

Electric vehicles (EVs) are increasingly regarded as the way forward to deliver a much-needed improvement in the transport sector's sustainability profile, and the UK is embarking on a major transition towards them. While previous studies focused mainly on greenhouse gas (GHG) emissions, this article assesses the extent to which EVs may contribute to reducing the UK's dependence on (mostly imported) non-renewable primary energy. The study combines a life-cycle model of a compact battery electric vehicle (BEV) with a prospective energy analysis of a range of electricity supply alternatives for the vehicle's use phase. The key metric analysed is the non-renewable cumulative energy demand (nr-CED). Results show that, already under current conditions, the nr-CED of a compact BEV in the UK is lower by approximately 34% with respect to that of an otherwise similar internal combustion engine vehicle (ICEV). Such reduction is then expected to improve further under all future scenarios, indicating that a transition to EVs is indeed a