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# Acc4<sup>th</sup> INTERNATIONAL WORKSHOP ADVANCES IN CLEANER PRODUCTION

“INTEGRATING CLEANER PRODUCTION INTO SUSTAINABILITY STRATEGIES”

## Critical Analysis of Large-Scale Integration of Electric Vehicles in Brazil

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### Abstract

The transport sector is a drag on worldwide search for sustainability. More than 850 million vehicles annually burn trillions of liters of fuel, across the planet, emitting almost three billion tons of carbon dioxide. One alternative that has established itself around the world is about electric vehicles. 4.5 million of them, 95% hybrids, are already in circulation. Brazil, with its fleet of 35 million vehicles, was licensed by 2012, less than 100 electric vehicles (not 100 000, are 100). Why? This study aims to provide a critical analysis for large-scale integration of electric vehicles in Brazil. Specifically are presented and discussed aspects related to charging, autonomous, acquisitive investment, operating cost, impacts on the Brazilian electrical system, on the chain of ethanol and gasoline, reflexes in the country's energy matrix, and other related factors. Data are presented by classical methodology of research, analysis and synthesis, occurring under their treatments multidisciplinary perspective. It developed a quantitative and qualitative scientific vision of the present facts and future projections, presenting them with answers about the ideality. The study concludes (1-6): 1) Electric vehicles represent a clean option from urban centers, consuming less fuel and advantageous for countries with renewable resources for processing in electricity, the case of Brazil, 2) The government has refrained meaning barrier integration, due to the concentration of efforts on ethanol and flex-fuel engines, 3) The main determinant of growth will be represented by public policies that may be adopted; 4) In the current parameters, the integration should occur slowly without introducing large array of problems in the country's electricity generation, 5) In the long term, large-scale integration could provide reduction of final consumption for the energy matrix; 6) The big risk would not integrate: the country would lag behind of the forefront of technology and by consequence lose the participation opportunity of the Brazilian economy in an international market that already grows and tends to loom.

**Keywords:** *energy, electric vehicles, energy planning, renewable resources, sustainability.*

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