

TRANSLATED TEXT

Determining the emission effects of bi-fuel enabling automobiles in Tehran, and their environmental consequences

Summary

In this study, based on present information, precise automotive pollution tests, data analysis, and use of Long-range Energy Alternatives Planning System (LEAP) software, we have attempted to evaluate the amount of emission in Tehran, as a result of bi-fuel enabling automobiles.

Results show that utilizing bi-fuel automobiles compared to their modeling phase over the last 20 years, resulted in 103,077 thousand tons of CO emission, 20,952 thousand tons of NOx emission, 26,902 thousand tons of THC, and 3,843 million tons of CO2 greenhouse gas emission. Considering these results, following current policies regarding bi-fuel automobiles will impose annual 435 million USD environmental expenses compared to not manufacturing such automobiles.

Emission test results from passing bi-fuel automobiles show that by executing the bi-fuel automobiles policy, emission rates of bi-fuel cars increase at a higher rate, compared to their petrol-fueled counterparts. This increase indicates inattention to the method and quality of policy implication. It is unmistakable that bi-fuel automobiles must be designed with dual functionality in mind, and their conversion kit must be specifically catered for each type of automobile. On the other hand, the low quality manufacturing of conversion kits and near obsolete technology of converted automobiles' motive forces explains this inconsistency. Therefore, natural gas consumption as automotive fuel must be limited to an extent where its maximum potentials can be benefited, in a way that only standard automobiles designed specifically for this technology are manufactured and introduced to consumer markets.

Key words: Modeling, LEAP, emission factors, emission test

ORIGINAL TEXT

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