

The Environmental Benefits of the Adoption of Emission Control for Locomotives in Brazil

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Abstract : Air pollution is a big problem in many cities around the world. Brazilian big cities also have this problem, where millions of people are exposed daily to pollutants levels above the recommended by WHO. Brazil has taken several actions to reduce air pollution, among others, controlling the atmospheric emissions from vehicles, non-road mobile machinery, and motorcycles, but on the other side, there are no emissions controls for locomotives, which are exposing the population to tons of pollutants annually. The rail network is not homogeneously distributed in the national territory; it is denser near the big cities, and this way, the population is more exposed to pollutants; apart from that, the government intends to increase the rail network as one of the strategies for greenhouse gas mitigation, complying with the international agreements against the climate changes. This paper initially presents the estimated emissions from locomotive fleets with no emission control and with emission control equivalent to US Tier 3 from 2028 and for the next 20 years. However, we realized that a program equivalent to phase Tier 3 would not be effective, so we proposed a program in two steps that will avoid the release of more than 2.4 million tons of CO and 531,000 tons of hydrocarbons, 3.7 million tons of nitrogen oxides, and 102,000 tons of particulate matter in 20 years.

Keywords : locomotives, emission control, air pollution, pollutants emission

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