

# Avoiding Greenhouse Gas Emissions The Essential Role of Chemicals



## Materials for fuel efficient tires A Japan Chemical Industry Association case study

Fuel efficient tires play a key role to improve an automobile's fuel consumption. The entire chemical products formulation, the specific structure of synthetic rubber and the dispersion technology of higher content silica in the rubber bring significant Greenhouse gas emissions reduction during the lifetime of tires.

The fuel efficient tires ensure less friction while an automobile is moving and reduce rolling resistance compatible with maintaining grip at the use phase during the car's complete lifecycle.

The study compares the GHG emissions of vehicles equipped with fuel efficient tires to emissions from vehicles with conventional tires. The avoided emissions represent 228 kg-CO<sub>2</sub>e for the selected passenger car model (over 30,000km car use for both types of tires) with 4 tires. They represent 4,423kg-CO<sub>2</sub>e for the selected truck/bus model (over 120,000km use) in Japan (see Figure 1 and 2). The results show that the avoided emissions at the use phase of automobiles are dominated by the GHG emissions related to fuel consumption.

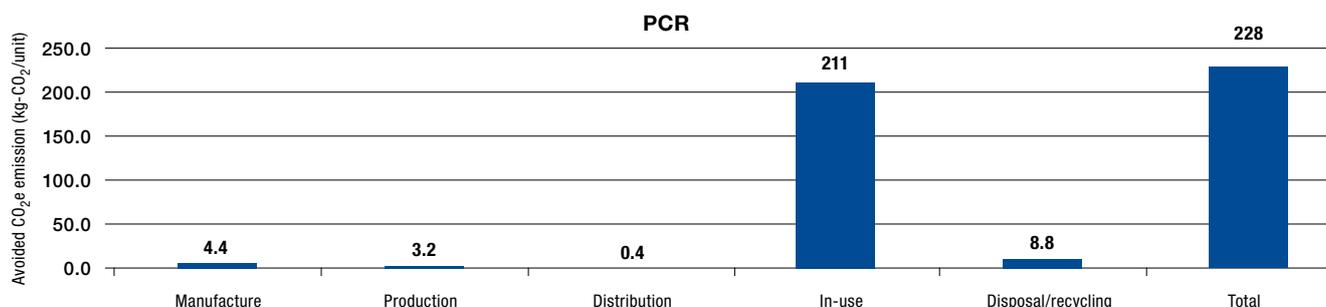
On the basis of 2012 data and forecasting the Japanese market size by 2020, the total expected avoided CO<sub>2</sub>e emissions from fuel efficient tires is calculated to reach 6.37 million t-CO<sub>2</sub>e in Japan.

Full study available at: [www.icca-chem.org/energy-climate](http://www.icca-chem.org/energy-climate)

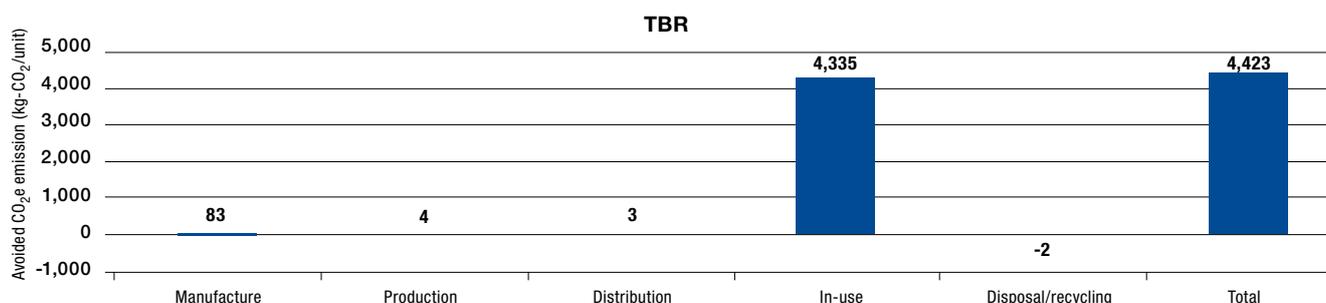
The tread portion of tire



Avoided CO<sub>2</sub>e emissions for the studied passenger car model (with 4 tires) over 30,000km use



Avoided CO<sub>2</sub>e emissions for the studied Truck/bus model (with 10 tires) over 30,000km use



This case study illustrates how the reduction of greenhouse gas (GHG) emissions can be enabled by chemical products, as part of a series of case studies brought to you by ICCA. Chemical industry members offered Life Cycle Assessment [LCA] case studies for the purpose of showing illustrative examples on how to calculate avoided greenhouse gas emissions. The avoided emission calculations were based on the guidelines developed by ICCA and WBSCD (World Business Council for Sustainable Development) - Chemical Sector, with the support of Arthur D. Little and Ecofys. Other life cycle environmental impacts such as water and land use change were outside the scope and usually not considered.

