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SETTING A GLOBAL POLICY ROADMAP FOR CLEANER VEHICLES AND FUELS

A new report by the International Council on Clean Transportation, *The Impact of Stringent Vehicle and Fuel Standards on Premature Mortality and Emissions,* estimates global pollution from vehicles through 2030 and premature mortality associated with exposure to direct emissions of fine particles from vehicles in urban areas over the same period.

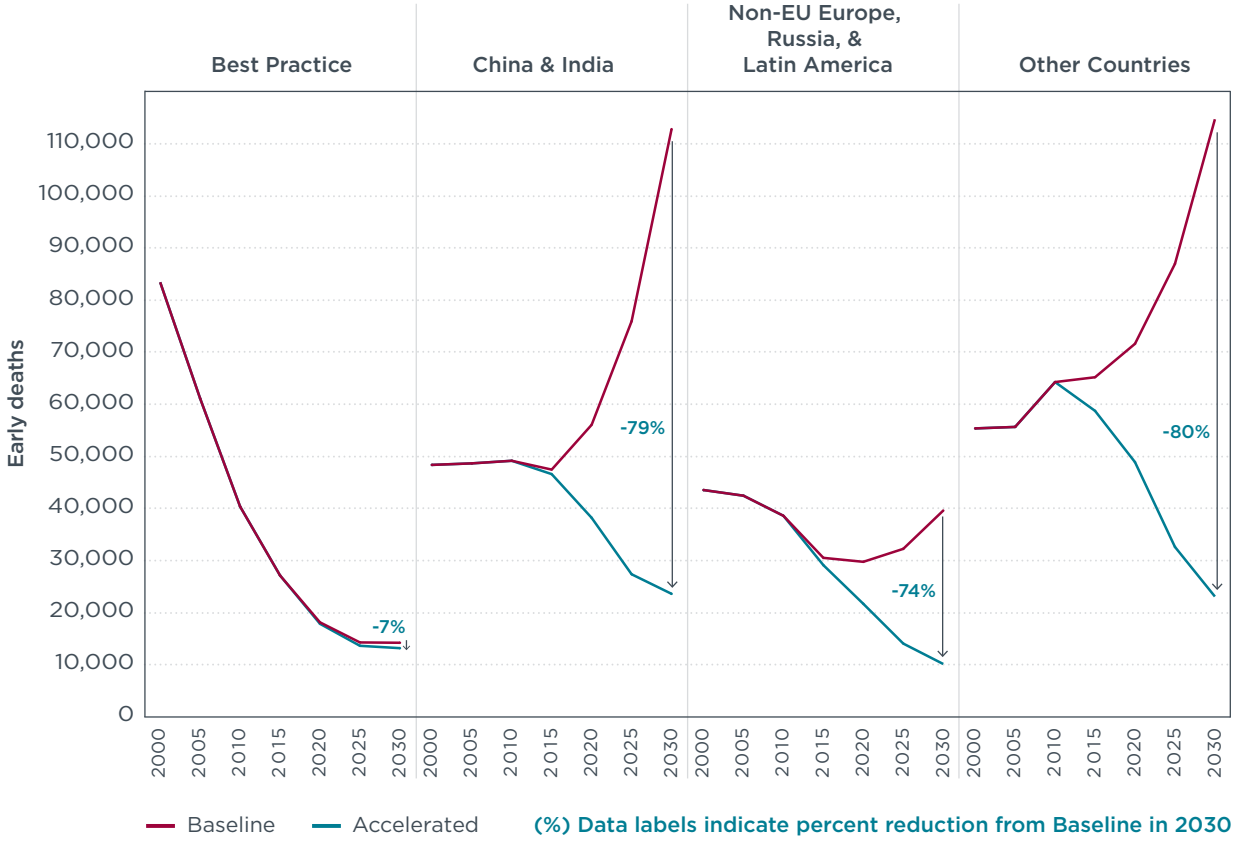
HIGHLIGHTS

- The report lays out a global policy roadmap that could significantly alter trends in pollution and mortality, ultimately preventing more than 210,000 early deaths annually (a reduction of 75 percent from the baseline trend) and preempting the near-term climate impacts of at least 710 million metric tons of CO_2-equivalent (CO_2e) emissions each year by 2030. These reductions complement strategies to reduce carbon dioxide emissions and mitigate long-term climate impacts.
- The methodology of this study results in a lower-bound estimate because it only captures primary particle emissions from on-road vehicles in urban areas. The study's estimate of premature mortality and public health benefits would be substantially increased if exposure to secondary pollutants formed in the atmosphere (including particles and ozone), emissions in rural areas, and emissions from marine, aviation, and off-road equipment were included in this analysis. Thus, these results should be used as highly conservative estimates that do not reflect the full contribution from clean fuel and vehicle standards in the future.
- Most regions worldwide have already seen declines in the risk of death from vehicle emissions because of vehicle and fuels policies. But as vehicle activity rises health impacts will begin to climb again, unless stronger controls on emissions and fuel quality are enacted.
- Stringent standards governing vehicle tailpipe emissions and fuel quality in Europe, the United States, Canada, Japan, Australia, and South Korea will reduce emissions of air pollutants by 80-90% from year 2000 levels by 2030, and reduce consequent premature mortality by over 80%.
- Africa, the Middle East, Latin America and the Asia-Pacific region (excluding the major vehicle markets of China, India, Japan and South Korea) now account for just 20 percent of global vehicle activity but 50 percent of vehicle tailpipe emissions and attendant health impacts worldwide. Without cleaner fuels and vehicles, by 2030 these regions will experience a 60 percent increase in early deaths from vehicle emissions from current levels.
- In China and India alone, adopting Euro 6/VI fuel-quality and emissions standards (the most stringent regulatory level in Europe) would prevent at least 90,000 early deaths in the year 2030—equivalent to 40 percent of avoidable deaths globally.
- In countries of Africa and the Middle East with earlier or no standards in place, adoption of Euro 4/IV standards by 2020 and Euro 5 standards by 2025 would prevent at least 58,000 early deaths annually in 2030. This puts these regions on the path to achieve Euro 6/VI standards in 2030 or shortly thereafter.

» Adoption of EU-equivalent standards by those countries that have not implemented comparably stringent regulations, if begun immediately and accomplished rapidly, could prevent at least 210,000 premature deaths each year in 2030. Since sixty percent of particulate matter emissions from the global vehicle fleet are black carbon, a strong but short-lived climate pollutant, these actions could also preempt the atmospheric release of 710 million metric tons CO_2e based on a twenty-year global warming potential.[1] Ninety-five percent of that climate-pollution mitigation would come from reductions in black carbon, primarily from diesel truck and bus engines.

» Diesel vehicles produce 90 percent of all particulate matter emissions and nearly 95 percent of all black carbon emissions of the global vehicle fleet. In September the Intergovernmental Panel on Climate Change found that one kilogram of black carbon causes as much climate impact in the near term as 3,200 kilograms of carbon dioxide. And a recent comprehensive study in the Journal of Geophysical Research found black carbon to be the second largest contributor to climate warming from human activities.

1 When using a one hundred-year global warming potential, the CO_2-equivalent emissions reductions would be 200 million metric tons.



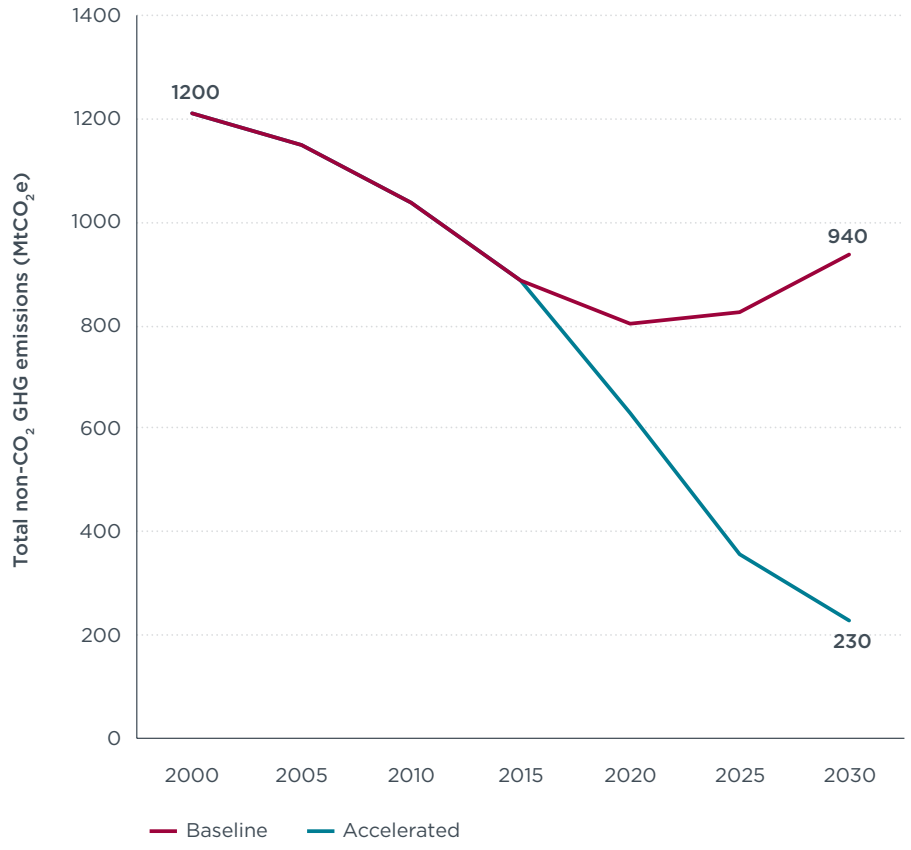
Annual premature mortality by region, 2000–2030

Health trends in this figure are driven by total vehicle activity as measured by vehicle kilometers traveled (VKT), vehicle emission limits, and increases in total urban population. In regions that have not implemented best-practice policies and regulations, growth in VKT overcomes the benefits of current policies by 2020, and premature mortality quickly rises. The Best Practice group comprises the EU-28, U.S., Canada, Japan, Australia, and South Korea. The Other Countries group includes Africa, the Middle East, and the Asia-Pacific region with the exception of China, India, Japan, Australia, and South Korea.

» Low-sulfur (50 ppm) and ultra-low-sulfur (10 ppm) fuels are crucial to reducing the health consequences of vehicle tailpipe emissions, because fuels with higher sulfur content not only emit more particulates but also inhibit the use of advanced aftertreatment devices, which require low-sulfur fuel to be effective. Fuel-quality standards should not be decoupled from vehicle emission standards.

» The US EPA estimates that its heavy-duty diesel emissions rule will generate $70 billion in environmental and public health benefits annually at a cost of $4 billion each year. Similarly, a study by ICF International for the World Bank found that an investment of $6 billion in the production of ultra low sulfur fuels for sub-Saharan Africa would generate $43 billion in benefits over ten years. And in China, a national program for clean vehicles and fuels could garner $150 billion in benefits at a lower cost than comparable programs in the United States and Europe.

» For countries that have implemented the most stringent tailpipe emissions and fuel sulfur-content limits, the California LEV III and US EPA Tier 3 standards form the basis for a next generation of standards, promising additional reductions in nitrogen oxide and hydrocarbon emissions for both light-duty and some heavy-duty vehicles.



Net global non-CO_2 tank-to-wheel GHG emissions from on-road vehicles, 20-year GWP

Accelerated policies reduce short-lived climate pollutants (SLCPs)—black carbon, methane, organic carbon, and sulfates—by 80% compared to current levels and by 75% compared to the 2030 Baseline. Organic carbon and sulfates have cooling impacts, while black carbon and methane are warming. Summing up the carbon-dioxide equivalent emissions using 20-year global warming potentials (GWP) for all SLCPs, the CO2e reduction in the year 2030 is 710 million metric tons. This is equivalent to the annual carbon dioxide emissions for all the cars on the road in Europe today.

FURTHER INFORMATION

The Impact of Stringent Fuel and Vehicle Standards on Premature Mortality and Emissions

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This report is the second in ICCT's Global Transportation Roadmap series.
See www.theicct.org/transportation-roadmap for more information.

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ON CLEAN TRANSPORTATION

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