I have been blogging about climate solutions and barriers to implementation and scale. Among the most important solutions are those that address short lived climate pollutants, primarily methane, black carbon, and HFCs, because if we stop or sequester those emissions, they will disappear from the atmosphere relatively quickly, unlike CO2.

According to the UN Climate and Clean Air Coalition,Black carbon is a potent climate-warming component of particulate matter formed by the incomplete combustion of fossil fuels, wood and other fuels. . . . Black carbon is a short-lived climate pollutant with a lifetime of only days to weeks after release in the atmosphere. During this short period of time, black carbon can have significant direct and indirect impacts on the climate, glacial regions, agriculture and human health.

Black carbon is 500 to 1500 times as potent a global warmer as C02. In developed countries, most black carbon emissions come from diesel powered vehicles, coal fired power plants, and oil and gas flaring. But, by far the largest source of black carbon emissions – 58% — is from open flame heating and cooking by an estimated 3 billion people worldwide, primarily in developing jurisdictions.

California has done more than any jurisdiction worldwide to reduce black carbon – by about 90 percent since the 1960s. California's focus has been on auto emissions and other smog precursors, limiting diesel, changing gasoline mixtures, requiring filters and converters, limiting coal fired power, ending agriculture burning, and controlling industrial emissions. The state will cut the remaining emissions by 50 percent by 2030. It is of note, however, that black carbon emissions from forest fires, which are increasing, are not included in the calculation.
The European Union has adopted similar policies, and California has an on-going exchange with China and other countries to help promote black carbon reduction. Large cities in developing regions are slowly changing transportation fuel mixtures and vehicles. In India, for example, the NY Times reported that the ubiquitous and highly polluting auto rickshaws are being replaced at dramatic rates by electric rickshaws. The progress is slower than needed, but it is real, benefitted by the fact that reduction of black carbon emissions also reduces criteria air pollution.

The bigger and confounding challenge is open flame cooking and heating. As reported in National Geographic, "The typical cooking fire produces about 400 cigarettes' worth of smoke an hour, and prolonged exposure is associated with respiratory infections, eye damage, heart and lung disease, and lung cancer. In the developing world, health problems from smoke inhalation are a significant cause of death in both children under five and women." Village fires are also a problem. But even with dozens of efforts around the world

to provide cookstoves (Solar Cookers International and Project Surya are but two examples), uptake is slow and difficult. The barriers are many: cost, quality, maintenance, taste, access to fuel, ease of use, and culture. In Sumba, Indonesia, for example, traditional houses have high-pitched central peaks, which are used for storage of grains and other foods. The smoke from indoor cooking below the peak actually helps preserve the stored food, a function not replicated by most cookstoves.

It is also the case that reducing the black carbon emissions from open flame cooking and heating is likely the cheapest and potentially quickest path to significant GHG reduction, with the additional benefit that, because black carbon's short life in the atmosphere, the reduction will immediately reduce climate forcing (and, of course, health impacts of the indoor burning).
Real, meaningful, collaborative leadership worldwide on climate should include a multi-billion dollar effort to cut open flame burning in half in five to ten years. The impact would be dramatic, and would give us a bit more time to make progress with other GHG emissions.