

Child Survival Studies

The Alliance is supporting three clean cooking and child survival studies to better understand the potential impacts of clean cookstoves and fuels on birth outcomes and child survival. These are the first studies in which truly clean technologies are being evaluated, and they will provide important information in estimating the magnitude of health impacts that can be attributed to higher PM reductions due to clean cookstove and fuel intervention programs.

Photo credit: Wana Energy Solutions

KEY FACTS

- Acute lower respiratory infections (ALRI) are a **leading cause of death among children under 5** in the world
- Very few data exist to estimate the dose-response function for ALRI in low-income countries. As a result, it is unclear how “clean” cookstoves need to be in order to see important reductions in risk of ALRI.
- Current data show that cooking with biomass causes a **90g decrease in birthweight**; however, there is no data on cooking with clean fuels and how this will affect birth outcomes.
- Although many “improved” biomass stoves reduce indoor PM concentrations by as much as **50 - 70%**, indoor concentrations remain much higher than current WHO indoor air quality guidelines.

STUDY DETAILS

GHANA:

The Ghana Randomized Air Pollution and Health Study (GRAPHS) is evaluating the impact of adopting clean cooking (biolite stoves or LPG) during pregnancy on birth weight and childhood pneumonia. This study seeks to determine the respiratory pathogens responsible for pneumonia infections in a sample of physician diagnosed severe pneumonia cases. This will shed important new light on which respiratory pathogens are most responsive to household energy interventions.

NEPAL:

The Nepal Cookstove Replacement Trial is a large, cluster-randomized, step-wedge designed trial to assess the impact of replacing traditional open burning biomass stoves with an “improved” stove or LPG on the incidence of ALRI and adverse reproductive outcomes in a rural population in southern Nepal.

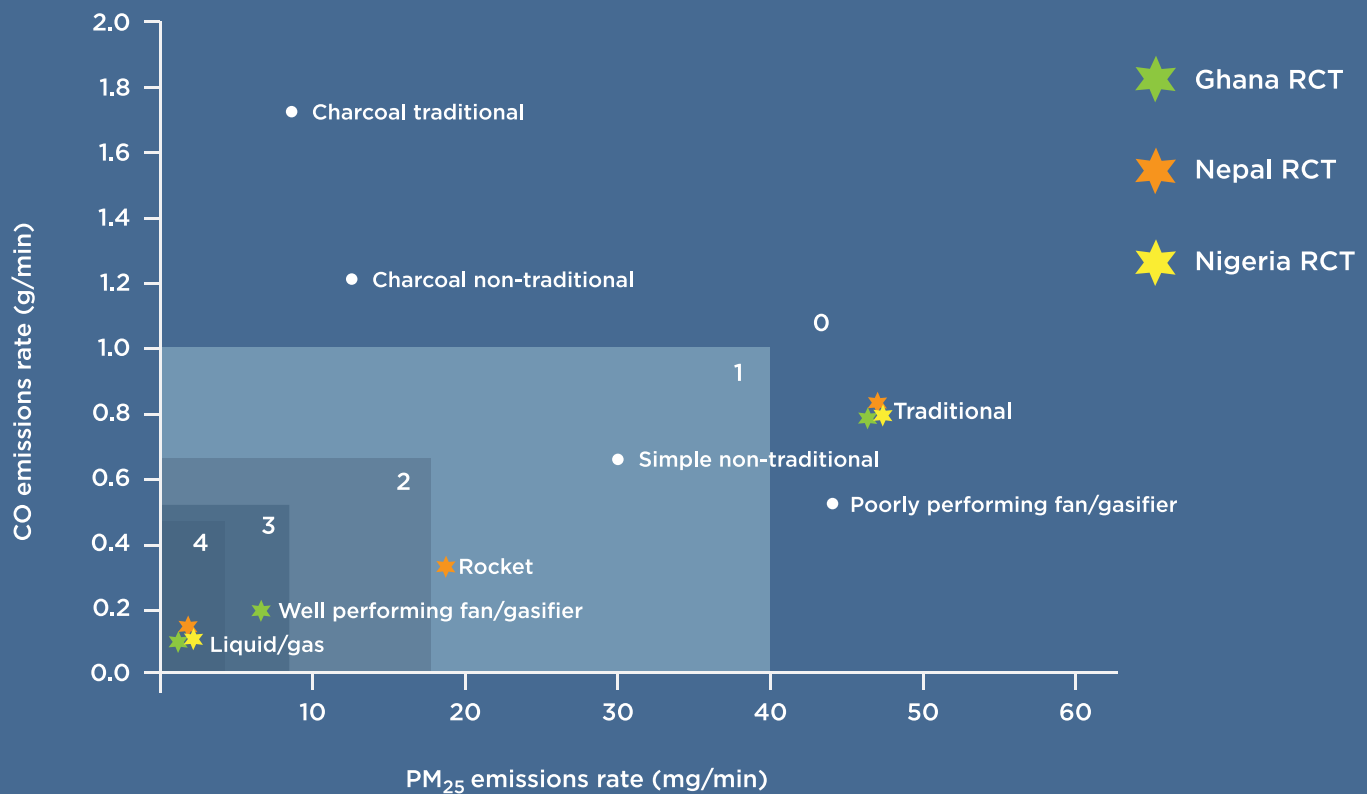
NIGERIA:

The Nigeria study is a randomized controlled trial to assess the impact of replacing either traditional biomass stoves or kerosene with ethanol on birth outcomes. This study occurs in an urban population where the majority of women use kerosene as their primary cooking fuel. Because this study will have data from open burning, kerosene, and ethanol, it will have the ability to establish a dose-response relationship between measured pollutants (PM and CO) and birth outcomes.

DESCRIPTION OF STUDIES

Location	Trial Type	Intervention	Sample Size	Outcomes Measured
Ghana	Cluster-randomized	Biolite stove, LPG	1415	Childhood pneumonia, birthweight
Nepal	Cluster-randomized, step-wedge	Envirofit stove, LPG	3600	ALRI
Nigeria	Randomized	Ethanol	300	Birthweight, intrauterine growth restriction

LAB-BASED PERFORMANCE OF COOKING TECHNOLOGIES



THE OPPORTUNITY IS REAL. THE MARKET IS POISED TO SCALE. THE IMPERATIVE FOR ACTION IS OURS.