



# SSA RESEARCH INITIATIVES



## Detailed Measurement of Fuel Savings, Energy Use Patterns and Household Air Pollution Reduction from CQC's natural draft and fan-assisted stove technology with and without chimneys: Oregon State University-CQC Research Partnership

C-Quest Capital (CQC), in partnership with Oregon State University (OSU), has funded ground-breaking research in rural Malawi to quantify and compare stove usage, fuel consumption, personal and ambient PM2.5 exposure, and hours of use of Jet-Flame Kit (JFK) electronic accessories including the JetFlame insert, cellphone chargers, and LED lightbulbs provided by the study. Research will be led by Professor Nordica McCarty, School of Mechanical, Industrial and Manufacturing Engineering and her graduate students. Differences will be monitored between a traditional three stone fire, CQC-TLC Rocket Stove, and CQC-TLC Rocket Stove and JFK combination using an integrated sensor system. The integrated suite of sensors, developed by Climate Solutions Consulting will provide comprehensive data to better understand the impact of the CQC-TLC Rocket Stove and JFK in real world use.

The Jet-Flame Kit, a total household energy set, was designed by Aprovecho, USA, with support from SSM, China, and funded by the Bill Gates-supported Global Good Fund.

The Jet-Flame insert is a cast iron grate insert with stainless-steel housing a variable speed fan which drives ample air of combustion through pinholes in the grate. The Jet-Flame insert fits perfectly into the combustion chamber of the CQC-TLC Rocket Stove upgrading the stove to an "LPG equivalent" resulting in smoke-free, high-power cooking. The JFK also comes with a 20W solar panel with dual voltage USBs and 10,000 mA battery which the household can use for charging, light use, etc.

In line with our commitment to protect the health and well-being of women and children, an additional aspect of the research will investigate the effects on indoor and outdoor air when a natural draft brick chimney and hearth is constructed for use over a double CQC-TLC Rocket Stove. The World Health Organization (WHO) published intermediate and final indoor air guidelines for vented and unvented biomass cookstoves in 2014 with strong recommendations for governments and implementers to advocate technologies and fuels that are proven to protect health. We believe clean air in and around the home is essential to a healthy life and look forward to the insights afforded by this research.

Research is slotted to begin in September of this year.

<sup>1</sup> [Products \(climate-solutions.net\)](http://Products(climate-solutions.net))

