



Feed the Future Country Fact Sheet

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Partnerships Provide Cleaner Energy Options for Rural Senegal



USDA

US Cochran Fellows and Senegalese Fellows discuss the merits of clean, high-efficiency technologies such as biodigesters and low-emission cookstoves.

Each day, community members in rural Senegal bend over wood-, crop residue- or dung-fueled fires to cook their family's meals. This task is essential but creates health hazards for those who must breathe in the sooty smoke generated by their fires. Burning such biomass fuels takes a toll on the environment as well. These traditional energy sources produce high carbon emissions and contribute to the depletion of forest, soil and water resources.

Senegal is taking steps to expand affordable, clean electrical energy to rural areas, but the shift to cleaner energy does not happen overnight. It takes time to build an electricity distribution infrastructure and to bring down the cost of electric power. In the meantime, biomass fuels continue to make up a sizeable share of the energy sources in Senegal, particularly in rural areas.

The Government of Senegal is tackling this challenge by working with nongovernmental, entrepreneurial, and microfinance organizations to increase affordable, clean energy. In 2015, it partnered with the Cochran Fellowship Program, funded by the U.S. Department of Agriculture, to explore two technologies that provide energy for cooking: concrete biodigesters and high-efficiency, low-emission cookstoves. Concrete biodigesters use manure to efficiently generate methane or electricity while high-efficiency, low-emission cookstoves provide a cooking option that's safer than open fires for both users and the environment. The partnership also includes the University of Missouri's College of Agriculture, Food and Natural Resources International Program.

Until electrical energy is more readily available, these technologies offer promising ways to reduce the harms of biomass fuel and increase its efficiency. They aim to conserve soil and water, reduce the use of firewood and emissions, and improve animal waste management. Most critically, they could be reliable energy sources for safe food preparation, improving the overall food security of families.

Both technologies can be made from materials that are locally available, and they fit within socio-cultural contexts: Rural households keep such animals as horses and cattle onsite and can use their waste in the biodigesters, and by using more efficient fuel generators, they minimize their energy demand without compromising their energy supply.

In partnership with the Government of Senegal, the Cochran Fellowship Program trained three Senegalese fellows: Gora Fall,

manager of Federation du Baol; Rosalie Seck, livestock trainer for Yaajeende; and Hamila Maguizo Ep Diagne, research assistant for the Senegalese Institute of Agricultural Research. The training, comprising workshops, field visits and interactive discussions, explored such topics as the different scales of biodigestion, from the provision of energy for small farms to larger operations; the uses of biodigestion co-product as organic biofertilizer; the strengths and limitations of replacing firewood with biogas; and soil and water conservation practices. This training helped to prepare the fellows to survey technical and policy challenges to expand uses of biodigesters in Senegal. They also learned about the construction of low-cost, high-efficiency tin cookstoves, which could potentially reduce firewood consumption and up to 90 percent of harmful smoke.

Since last summer, the fellows have begun promoting local production and marketing of the improved cookstoves in Senegal. Seeing the program's potential, the National Biogas Program of the Senegalese Ministry of Energy awarded a four-year contract (approximately \$900,000) to Fall's company for the construction of 500 biodigesters in houses and schools across the Diourbel region. These biodigesters, along with training in feedstock management and soil conservation, will help diversify affordable, clean energy options for Senegalese farmers.