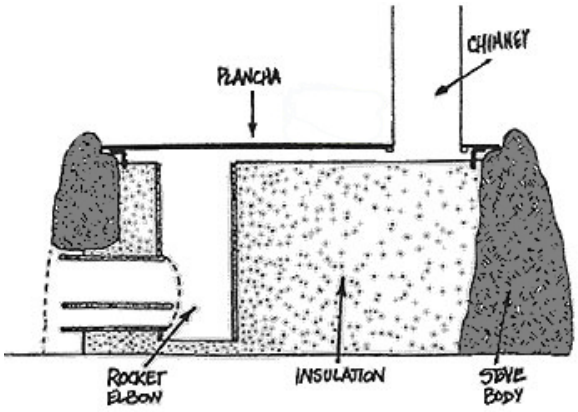
The Justa Stove

After Hurricane Mitch swept through Central America in 1998, Trees, Water, and People teamed up with the Aprovecho Research Center, the Honduran Association for Development (AHDESA), and Rotary International to attempt the dual challenge of developing a fuel-efficient, wood-burning stove that would be accepted by Honduran women. The end result was the Justa stove, which combined principles of clean combustion and local desires to create the template for dozens of other designs that have been introduced throughout Latin America. Since 1999 Trees, Water & People has built over 13,000 Justa stoves in Latin America with the help of Aprovecho, Rotary International, various foundations, regional NGO's and local communities.



The Justa stove is the result of the successful adaptation of clean combustion principles, developed by Dr. Larry Winiarski of Aprovecho and known as the Rocket elbow technology, to local cooking practices of women in Suyapa, Honduras. The Rocket elbow is an easy-to-build, highly adaptable and inexpensive cooking device characterized by a hollow L-shaped shaft made of ceramic or clay that acts as the combustion chamber. The 'elbow' sits in a metal or brick container and the space around the elbow is filled-in with lightweight insulation. The key features of this technology are the chimney part of the combustion chamber, whose draft pulls air into the fire, and the insulation, which traps the heats and forces it up against the pot or cooking surface above the 'elbow.'

At the time that Aprovecho stove engineers went down to work with women in Suyapa, women were cooking on a metal griddle placed over a 'U' shaped, rammed-earth base that consumed enormous amounts of fuelwood placed into the large open end of the stove. The idea was to create a stove acceptable to women, yet reduce the amount of fuelwood used in their everyday cooking so as to help protect the forests and water resources that were so thoroughly damaged by Hurricane Mitch.

Working with a local woman, named Doña Justa Nuñez (thus, the name *Justa* stove), the Aprovecho stove engineers simply placed the Rocket elbow and insulation inside the U-shape stove, enclosed the stove so that only the small feed chamber was exposed, and put an external chimney on the other end. The metal griddle and appearance remained basically the same and the women of Suyapa had a new improved stove that consumed much less wood, saved them money and time, and removed harmful smoke from their kitchens, all the while helping protect their local natural resources!

The Justa stove saves up to 70% on fuelwood consumption compared to long-standing, traditional forms of cooking. This helps protect local forest and water resources because communities do not need as much wood to cook meals. For those families that buy wood, they are able to save more money and buy other necessities such as medicine and schooling. Families that collect wood benefit from more time put towards other profit-generating activities, studying or simply relaxing.

In addition to the economic and environmental benefits of the Justa stove, there are also dramatic health benefits with the chimney removing 95% of the toxic gases produced by the wood. According the World Health Organization over 1.6 million people, mainly women and children, die each year due to indoor air pollution caused by traditional cooking methods, such as the open fire. Furthermore, the World Bank has listed indoor air pollution as one of the four largest environmental problems facing the developing world today. The Justa stove effectively combats these problems, while also addressing both environmental and economic aspects of marginalized communities in Latin America.

Rocket Elbow Diagram