Case Study: Cashew Processing in Ghana

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Three cashew nut processors in Ghana had problems with controlling the quality of their product. To process cashews, first the raw nut is steamed and shelled, then dried in industrial dryers. The processors use the shells of the cashew nuts as fuel for steaming. The dryers, however, were fueled by firewood harvested locally. When the cashew nut shells are burned for fuel, they emit black oil known as Cashew Nut Shell Liquid (CNSL), which has a variety of industrial uses. Unfortunately, these three processors are not equipped to capture this liquid.

Figure 1: Cashews before harvesting

Figure 2: Cashews in their shells

Using firewood for fuel sometimes caused a problem for the businesses since the smell of the wood smoke would stay in the kernels, resulting in an unusable product. Also, it was difficult to regulate the temperature of the dryers using firewood. If the temperature were too hot, the kernels would burn, again resulting in waste product. Thus the businesses wanted to find a new source of fuel to run their dryers.

The government in Ghana was subsidizing propane gas tanks as a fuel source as part of a program to reduce deforestation. For two of the businesses, the subsidized gas was less expensive than the fuelwood. For the third business, however, fuel wood was essentially free since the staff harvested trees from on site.

All three businesses opted to switch to propane to run their dryers. The most important criteria for the decision were the ability to control temperature and smoke. Reducing

waste cashews resulted in better profitability, even for the business whose fuel costs increased with propane.

		Company A	Company B	Company C
Number of Employees		32	33	37
Age of Enterprise		4 years	3 years	3 years
Business Metrics	**Operating Costs**	$6500	$7375	$5485
	Labor Costs	$1450	$1450	$1200
	Gross revenue	$11900	$16025	$10795
	Net revenue	$1025	$4545	$1700
	Capital Expenditures	$550	$1320	$540
	Outstanding Debt	$11820	$6600	$4960
	Per unit cost of Cashews (before CP)	$4.50/kg	$3.20/kg	$4.00/kg
	Source of funding for production improvements	Own capital and microfinance	Own capital, microfinance, private grants	Own capital, microfinance, private loans
CP Metrics	**Cost to switch from firewood fuel to gas (parts & labor)**	$580	$580	$580
	Expert assistance required?	Yes	Yes	Yes
	Employee retraining required?	Yes	Yes	Yes
	Time to implement CP	NA	1 week	1 week
	Switchover downtime	NA	No	No
	Money saved	NA	$0.07/kg	NA
	Change in per unit cost	NA	-$0.07/kg	NA
	Payback period	3 years	3 years	3 years