



Benefits of Using Biodiesel in the Amazonian Lowlands

Biodiesel operates in conventional engines. Essentially no engine modifications are required, and biodiesel maintains the payload capacity and range of diesel. Pure biodiesel is not compatible with natural rubber, sometimes found in pre-1994 vehicles, but not in most newer engines. This allows the community the flexibility to use either petroleum-based diesel, biodiesel or a mix as supplies are available. The communities also have the opportunity to sell biodiesel outside the community to help pay for ethanol and Sodium Hydroxide, which are required to convert vegetable oil to biodiesel. Also, diesel engine technology is well understood in the area and service and replacement parts widely available.

Biodiesel does not require special storage. In fact, in its pure form or in blends, biodiesel can be stored wherever petroleum diesel is stored, except in concrete-lined tanks. It handles like diesel and uses the same infrastructure for transport, storage and use. At higher blend levels, biodiesel may deteriorate natural rubber or polyurethane foam materials.

Biodiesel is safer to use than petroleum diesel. The flash point (the point at which fuel ignites) for biodiesel in its pure form is a minimum of 260 degrees versus about 125 degrees Fahrenheit for regular No. 2 diesel. This makes biodiesel one of the safest fuels to use, handle and store. It is also significantly less toxic and has less risk of damaging the environment should it spill in water or on land.

Biodiesel reduces emissions significantly. The use of biodiesel in a conventional diesel engine results in substantial reduction of unburned hydrocarbons, carbon monoxide, and particulate matter. The use of biodiesel decreases the solid carbon fraction of particulate matter (since the oxygen in biodiesel enables more complete combustion to CO₂), eliminates the sulfate fraction (as there is no sulfur in the fuel), while the soluble, or hydrocarbon, fraction stays the same or is increased. Biodiesel reduces carbon dioxide by 78%¹ or more on a life cycle basis.

Biodiesel is significantly less up-front capital than other renewable energy forms. Once initial research has been done, the initial capital costs are estimated to be approximately 1/10 photovoltaic energy.

Scaling production will be relatively cost effective and easy to accomplish. If additional production is needed for internal use or for external sale, it's relatively easy and inexpensive to add to feedstock or refining capacity. Furthermore, it would be feasible to finance the expansion by temporarily cutting back consumption long enough to generate enough surplus fuel to sell.

Adequate supplies of degraded land are available to meet community needs. The amount of land needed to supply adequate amounts of feedstock is modest. Many communities in the region have access to suitable land which has been degraded.

¹ This is the figure for soy-based. Palm-based is expected to reduce CO₂ even more.