The scale component of biofuel production in developing countries
Small size – big opportunities?

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Context...

Despite the overall predominance of **large** scale biofuel projects worldwide, **small** scale bioenergy initiatives, such as microdistilleries, have been acknowledged as a sustainable way for rural communities to access affordable energy services. Yet, the current experience as to the development of small scale projects raise questions particularly related to its socioeconomic viability and capacity to make large energy contributions.

...objectives

In this study, our main objective is to explore the economic viability of an ethanol microdistillery under different scenarios for ethanol prices, plus underline opportunities and limitations for biofuel production under small scale.

... approach

Ethanol microdistilleries (from 1,000 to 5,000 l of ethanol per day) in Southern Brazil had been visited in 2014. From this field work a database was created based on the agricultural, industrial and commercialization stages of sugarcane and ethanol production. The Internal Rate of Return (IRR), Net Present Value (NPV) and the Capital Expenditure (Capex) are explored under different scenarios for ethanol prices and compared against a standard large scale Brazilian ethanol distillery.

...results

Table 1. Scenarios and selected economic indicators.

Scale	Scenario: ethanol price (US$)	IRR (%)	NPV (US$)	Capex (million US$)
Large	0.55	11.5	-11,832,000	188.2
Small	0.55	n.a.	-964,960	0.114
Small	0.82	-1	-158,746	0.114
Small	1.23	42.9	524,512	0.114

…conclusions

Small scale ethanol projects (microdistilleries) performed poorly under current ethanol prices. Opportunities are associated with relatively high fuel prices (1.23 US$) and/or diversification strategies that include high value added products (e.g. sugar and *cachaça*).

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