

Bioethanol as a potential substitute for charcoal in Malawi and Mozambique

Insights from ongoing research

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Session: Sustainable scale up fuel production

Clean Cookstove Forum in Accra Ghana, 10-13th Nov 2015

About SEI

- Established in 1989, with 7 centres around the world
- Main mission is to bridge science and policy for sustainable development
- Current work related to bioenergy and cookstoves:
 - Behavior and choice initiative
 - Sustainable energy transitions programme

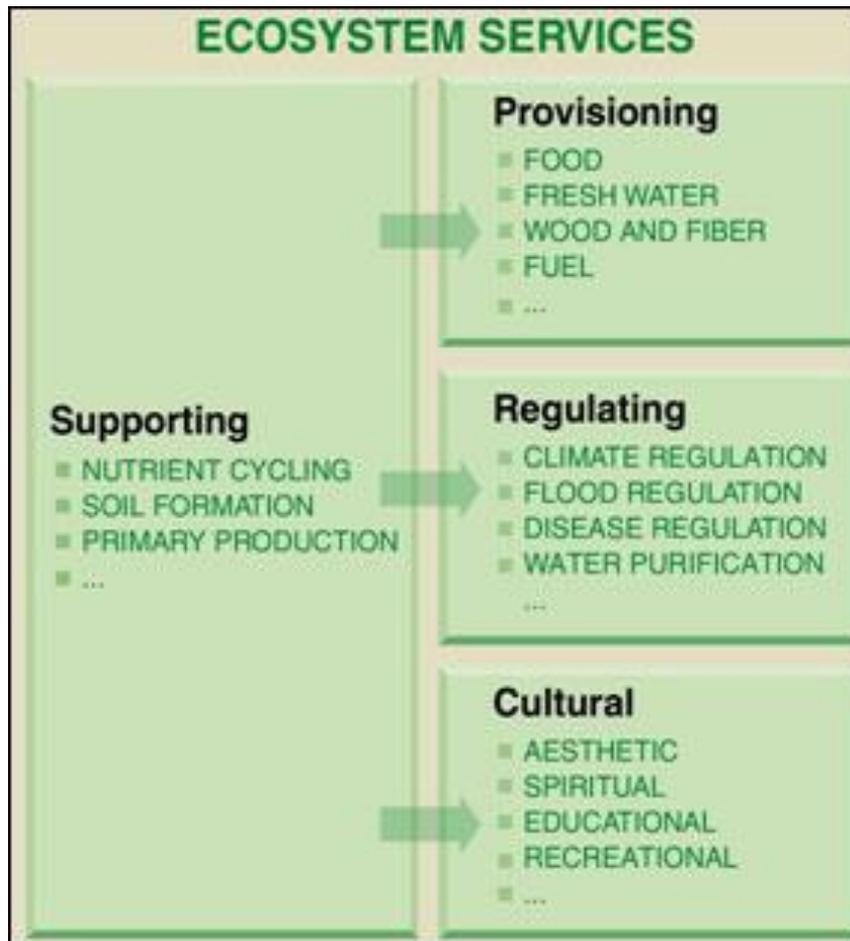
About ESPA

- A programme funded by NERC, DFID and ESRC in the UK.
- Main goal is to ensure the sustainable management of ecosystems, contributing to poverty alleviation and inclusive and sustainable growth.

Ongoing research on the potential of bioethanol as a substitute for charcoal

- Aim of study:
 - Provide evidence of how biofuel for household use could enhance human well-being and become an agent of poverty alleviation in Africa
- Conceptual framework:
 - Ecosystem service approach and was complimented by a choice experiment.
- Case selection
 - Malawi: has been producing bioethanol for transport for over 30 years
 - Mozambique: first producer of bioethanol for households in Africa
- Research methods:
 - To understand the user perspective, a stated and revealed preference studies were done in Malawi and Mozambique respectively

Ecosystem services



Insight 1:

Fuel switching perceptions is affected by experience

- It is important to understand user's needs and what they look for in a fuel or technology:
 - *Fuel switching perceptions for bioethanol users:*
 - Convenience of use
 - Social exposure
 - Smoke levels
 - Design
 - Cost of stove and cost of fuel (affects sustainability)
 - Safety
 - *Fuel switching perceptions for potential bioethanol users:*
 - Cost of fuel and cost of stove
 - Environmental impact
 - Fuel accessibility

Insight 2: Behavior change is complex

- Existing cooking behavior is fuel/stove stacking
 - Type of food being cooked determines the fuel/stove type
- For bioethanol:
 - Use of existing marketing and distribution chain in **Mozambique** helped to persuade users to switch fuels
 - Awareness creation was key in scaling up bioethanol use in **Mozambique**

Insight 3: Government support can be catalytic

- Policies and legislations that support energy solutions:
 - **Malawi** has no mandate for producing bioethanol for households
 - In **Mozambique**, government has provided tax subsidy on imported bioethanol of cooking only

Insight 4 (from Mozambique case): Project design is crucial and context-specific

Location and scale needs to be carefully considered:

- It is expensive to transport bioethanol, so production should be located close to users
- Cost of small-scale production is usually high
- Feedstock needs to be chosen wisely
 - Competition for feedstock can damage business (i.e. beer factory in Mozambique)
 - An integrated feedstock factory may be more appropriate
- Building up local human capital can make venture more sustainable
 - It is good to develop local expertise – ex-pat staff are expensive

Lessons learned: Recap of four emerging insights

- Fuel switching perceptions are affected by user experience
- Behavior change is complex
- Government support can be catalytic
- Project design is crucial and should be context-specific

Thank you.

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ABOUT OUR CENTRES

SEI is a global and decentralized institute that has seven centres in six countries, with its headquarters located in Stockholm. Our distributed structure makes us a truly international organization, complemented by a staff composed of more than 30 nationalities. Our projects and part-

identify the right questions and to ground-truth our work, as well as enabling us to apply our results and knowledge at a range of scales.

In 2015-2019 we will draw on this diversity so that we continue to develop as one

SEI's engagement in Latin America is growing. The region is undergoing rapid economic and social change, with big implications for natural resource use and management. Our aim over the strategy period is to explore the potential to establish SEI more firmly in this dynamic part

to contribute solutions. We will also bolster our presence at our existing centres in Africa and Asia, and seek opportunities and new ways to grow our presence in other regions.

SEI-Africa Centre is located at the World Agro-forestry Centre (ICRAF) in Nairobi