1ª Conferência de Bioenergia

Workshop LACAf Moçambique 2014

3-4 de Abril, 2014
Hotel Avenida - Maputo

PROGRAMA PRELIMINAR	
3 DE ABRIL (QUINTA-FEIRA)	
13:00	**VISITA TÉCNICA:** Fábrica Açucaeira de Maragra
4 DE ABRIL (SEXTA-FEIRA)	
8:30 – 9:00	**BOAS VINDAS & APRESENTAÇÃO** José Luís Cabaço, Reitor da Universidade Técnica de Moçambique (Moçambique) Luís Cortez; Unicamp (Brasil)
9:00 – 9:20	**RECURSOS ENERGÉTICOS E BIOCOMBUSTÍVEIS EM MOÇAMBIQUE** Ministro de Energia de Moçambique (Moçambique)
9:20 – 9:40	**O PAPEL DO ENSINO SUPERIOR NA FORMAÇÃO DE PESSOAL TÉCNICO PARA O SETOR DE ENERGIAS RENOVÁVEIS COM ENFOQUE PARA OS BIOCOMBUSTÍVEIS** Vice-ministro da Educação de Moçambique (Moçambique)
9:40 – 10:00	**CANA-DE-AÇÚCAR EM MOÇAMBIQUE** Rosário Cumbi, presidente da APAMO (Associação dos Produtores Moçambicanos de Cana-de-Açúcar) e diretor da Açucareira de Xinavane (Moçambique)
10:00 – 10:20	**INTERVALO PARA COFFEE BREAK**
10:20 – 11:00	**COOPERAÇÃO ENTRE BRASIL E MOÇAMBIQUE EM BIOCOMBUSTÍVEIS** Rui da Maia, Universidade Técnica de Moçambique (Moçambique) ***15 min*** Luís Cortez, Unicamp (Brasil) ***15 min*** Manoel Regis Lima Verde Leal, Laboratório Nacional de Ciência e Tecnologia do Bioetanol (Brasil) ***10 min***
11:00 – 11:20	**O PROJETO GLOBAL DE BIOCOMBUSTÍVEIS SUSTENTÁVEIS E SEUS PROVÁVEIS IMPACTOS EM MOÇAMBIQUE** Lee Lynd, Dartmouth University (EUA)
11:20 – 12:30	**PROJETO LACAF** ***Apresentação*** Luís Cortez, Unicamp (Brasil) ***5 min*** ***Diagnóstico e Análise Integrada*** Universidade Federal de Itajubá e Universidade Estadual de Campinas (Brasil) ***15 min*** ***Modelagem da produtividade da Cana de açúcar*** Edgar De Beauclair, Escola Superior de Agricultura Luiz de Queiroz (Brasil) ***15 min*** ***Modelos de Produção Alternativos*** Manoel Regis Lima Verde Leal, Laboratório Nacional de Ciência e Tecnologia do Bioetanol (Brasil) ***15 min***
12:30 – 14:00	**ALMOÇO**
14:00 – 15:30	**SESSÃO 1: POLÍTICA, PLANEJAMENTO E REGULAÇÃO DA PRODUÇÃO E USO DE ETANOL DE CANA-DE-AÇÚCAR** ***Relator: Klaus Dalgaard, Pos-doc LACAf (Brasil)*** Rui da Maia, Universidade Técnica de Moçambique (Moçambique) Luís Augusto Horta Nogueira, Universidade Federal de Itajubá e Universidade Estadual de Campinas (Brasil) **Pontos para Discussão (sugestões)** - Situação atual dos acordos de cooperação em biocombustíveis entre Brasil e Moçambique? - Perspectivas para os programas de biocombustíveis em Moçambique – mercado interno/externo?
15:30 – 15:50	**INTERVALO PARA COFFEE BREAK**
15:50 – 17:20	**SESSÃO 2: POTENCIAL DE PRODUÇÃO E USO DE ETANOL DE CANA-DE-AÇÚCAR** ***Relator: João Dal Belo Leite, Pos-doc LACAf (Brasil)*** João Chidamoio, Ahead Energy

	Manoel Regis Lima Verde Leal, Laboratório Nacional de Ciência e Tecnologia do Bioetanol (Brasil) Edgar De Beauclair, Escola Superior de Agricultura Luiz de Queiroz (Brasil) **Pontos para Discussão (sugestões)** - Perspectivas para os biocombustíveis em Moçambique? - Experiência acadêmica (principais resultados) sobre biocombustíveis? - Trabalhos sendo feitos? - Dissertações, projetos, artigos, etc.? - Disponibilidade de dados sobre solo, clima, culturas e uso da terra?
17:20 – 18:00	**ENCERRAMENTO** Rui da Maia, Universidade Técnica de Moçambique (Moçambique) Luís Augusto Barbosa Cortez; Unicamp (Brasil)

BIOENERGY CONTRIBUTION OF LATIN AMERICA, CARIBBEAN AND AFRICA TO THE GSB PROJECT

A briefing on LACAf – Cane-I

Project Overview

Modern and sustainable bioenergy production may be an effective way to substitute substantial portions of energy demand for transportation in the future. Since the overall scale of bioenergy production will in part depend on the availability of fertile land with good climatic conditions, it is clear that, if food production is to be increased to meet future needs and biodiversity protected, basically the world will consider the Latin America, the Caribbean and Africa for future expansion of bioenergy.

LACAf Project objective is to create a robust and updated perspective for sustainable bioenergy development in these regions, particularly considering the use of sugarcane as feedstock for producing biofuel and bioelectricity; and focusing on some countries (Colombia, Guatemala, Mozambique and South Africa), aiming to build a base for consistent decision making and offering a possible approach for similar contexts.

In addition to consider national development objectives, LACAf is in line with GSB Project goal, i.e., to sustainably meet a substantial fraction of future demand for energy services while feeding humanity and meeting other needs from managed lands, preserving wildlife habitat, and maintaining environmental quality.

Coordination: Luís Augusto Barbosa Cortez, NIPE/UNICAMP
Financing Institution: FAPESP

LACAf currently includes three subprojects, oriented towards the most general and methodology aspects, and other complementary projects are in discussion, focusing on environmental and social aspects.

Subproject 1. Regional diagnosis and Integrated analysis

Team: Prof. Luiz Augusto Horta Nogueira (Leading Researcher), PhD Klaus Dalgaard, Paulo Manduca, Mauro Berni, Cindy Sarmiento (Ms student)

Objective

To assess the conditions to foster sustainable bioenergy production, especially from sugarcane, exploring perspectives and drives, proposing methodologies and evaluating the resources and constraints, in a broad sense, as well as developing an integrated analysis of the available information and data.

Papers in preparation

The Replicability of the Brazilian Bioenergy Model in Africa

Dalgaard, K.G. and others

Skepticism abounds regarding the extent to which the Brazilian bioenergy model can be replicated in other countries. This research addresses the question of whether the Brazilian bioenergy model is replicable in Africa. It begins with a brief process tracing of Brazil's foreign policy initiative to promote biofuels in African states, followed by a description of what is meant by the "Brazilian bioenergy model". This research then seeks to identify the various bioenergy production models that the Brazilian government transfers through its international agreements with African states, in order to assess to which extent the so-called "Brazilian bioenergy model" is fully replicated. It is argued that one cannot legitimately discuss the concept of "replicability" where the Brazilian model is not fully replicated in all its aspects. Instead, any form of partial replication implies adaptability, rather than replicability, of the Brazilian bioenergy model.

The challenging image and public acceptability of biofuels in Africa – a conceptual and empirical analysis

Dalgaard, K.G. and others

Bioenergy development in Africa is often obscured by popular images of resource and land grabs, and is portrayed in the media as carrying several negative environmental and social impacts, with much concern expressed about its potential risks. Such an

unfavorable discourse suggests that biofuels suffer from a negative image problem, which may be as important a factor for bioenergy development as any other factor (e.g., socioeconomic, edaphic, climactic). This research starts with a review of the literature on the subjects of public acceptance, discourse and opinion of biofuels, in order to confirm the importance of deliberation and better communication between decision-makers, technical experts, other stakeholders and the public, when deciding to implement new bioenergy projects. The research then seeks to discover empirically, through interviews with experts and stakeholders, what the prevalent opinions and concerns about biofuels are in this project's selected case-study countries: South Africa and Mozambique. These findings will help identify the main challenges that arise from public concerns about bioenergy development and form the basis for recommendations on how to overcome these challenges.

A review of Brazilian Ethanol Diplomacy

(Authors, very short abstract)

1. Bioenergy in Latin America and Africa: can we reconcile energy, food security and economic and social development?

   (Authors, very short abstract)

Reports to be prepared

1. Diagnosis and Integrated Analysis of biofuels programs
2. Basic data and information on bioenergy in Colombia, Guatemala, Mozambique and South Africa
3. Consultation and Communication in Bioenergy: issues and principles

Subproject 2. Determining Land Use and Physical Near-Term Potential for Bioenergy Production in Latin America and Africa

Team: Prof. Edgar Beauclair (Leading Researcher), André Nassar, Marcelo Cunha, Fernando Bertolani, Rubens Lamparelli

Objective

To assess the land use impacts of biofuels production in Latin America and Africa, by: building a base map of land cover; analyzing recent land use dynamics and identifying a pattern of land use change; simulating land use change according to biofuel production scenarios; evaluating potential GHG emissions due to land use change; identifying

potential areas to sugarcane production in African and Latin American countries; quantifying the different production potential of sugarcane crops in these countries and modeling a crop to estimate final production.

Papers in preparation

Determining Bioenergy Potential in Latin America and Africa: the cases of Colombia, Guatemala, South Africa and Mozambique

Beauclair, E, Nassar (ICONE), Fernando (CTC)

Subproject 3. Productive Models & Innovation Studies

Team: Prof. Manoel Regis Lima Verde Leal (Leading Researcher), PhD João Guilherme Leite, Dr Antonio Bonomi

Objective

To determine the most important items and the corresponding road map that will conduct the sugarcane ethanol production technologies from the present stage to a desired stage of performance, bearing in mind the specificities of each country under consideration.

Papers in preparation

Key points in the selection of the sugarcane ethanol production model: scale of distillery and the mechanization level in cane production

Leal, MRLV, Cavalett, O, Chagas, M F, Leite, J G, Bonomi, A

The selection of the sugarcane ethanol production model is a very important decision with respect to the sustainability of the whole system. The best alternative will be highly dependent on the local conditions, the driving forces of the ethanol production and use and on a good equilibrium among the three pillars of sustainability: economic, environmental and social. The experience shows that the economic forces tend to drive

the process at an early stage due to the necessity to attract investors, but the social aspect, especially in developing countries must be also be taken into account as soon as possible, before important decisions are taken. The environmental aspects are normally considered when the biofuel and feedstock are chosen, since this determines the GHG mitigation potential and the land demand for the intended production; nevertheless a full assessment of the environmental impacts will be necessary once the whole value chain of the sugarcane ethanol is defined. Among the key issues, the production costs and jobs and wealth creation should rank high due to the impacts on the long term survival of the business and the welfare benefits for the local community and for the country; the main points affecting these issues are the scale of the distillery, due to the economies of scale, and the mechanization level of the agricultural production of sugarcane, since it has a major impact on the quantity and quality of the jobs created by the enterprise.

This work will present some preliminary data on the impact of the choices made with respect to these two key points of the production model, based on the Brazilian conditions, and along the project the methodology will be adapted to the case studies context. This is expected to contribute to the discussion of the best production model with all project stakeholders.

Agroecological and socioeconomic impacts of sugar cane cultivation in Southern Africa

Leite, J G, Leal, MRLV

Despite the acknowledged opportunities, biofuel production still faces many challenges as failed initiatives (projects) keep mounting, with many barely reaching the feedstock production stage. A main limitation rests on resource (crop land, water, infrastructure, capital) competition between food and biofuel feedstock production and its consequences on food security, displacement of rural communities, job creation and environmental protection. Although farmers, as feedstock suppliers, can be integrated in biofuel value chains under different arrangements depending on the defined production scale and technology level (production model), limited knowledge is available on the opportunities and limitations of 'new' biofuel crops, i.e. sugar cane, *vis-à-vis* current farm activities. This information is essential to understand the impact of any bioenergy project and its ability to comply with the objectives of local communities while, at the same time, meeting the aspirations of entrepreneurs and government bodies. The main analytical components of our approach are based on data collection among farmers and local experts (scientists and development practitioners), and the assessment of different agricultural activities, such as sugar cane and other traditional crops (maize, cassava, sesame), on the selected indicators. Optimization models, among other analytical tools, might also be used during the impact assessment phase.

Reports to be prepared

1. Key Sustainability Issues to Be Considered in the Sugarcane Ethanol Production Model Selection Process: The Cases of South Africa and Mozambique.

2. The Need for Technology Improvement: A Road Map Suggestion for South Africa and Mozambique.

LACAf [and GSB] project[s] Meetings, March 2014
Terms of Reference

Rationale.

LACAf [and GSB] Projects, in the framework of BIOEN Project/FAPESP, aims to explore the main questions, potentials and constraints for implementing ethanol programs in tropical countries, particularly considering the cases of Colombia, Guatemala, Mozambique and South Africa, aiming to support consistent decision making towards to implement modern and sustainable bioenergy. In this context, one essential task is to study the reality of developing countries in Africa, Latin America and Caribbean in order to identify, model and evaluate production models for biofuels and bioenergy that could be successful in these countries. Possibly the Brazilian production model is not directly transferable to the different local characteristics of the studied countries, but offers a good starting point, for planning and evaluating purposes.

It is worth to note that the concept of "production model" is more comprehensive than "production system" (FAO, 1996; von Maltitz and Setzkorn, 2012), because it goes beyond the technological aspects of the biofuel production usually evaluated (Mandal et al., 2002; Wicke et al., 2007) and includes also direct and indirect socio-economic implications and institutional conditions, as schematized in Figure 1. Thus, the production model includes the production system.

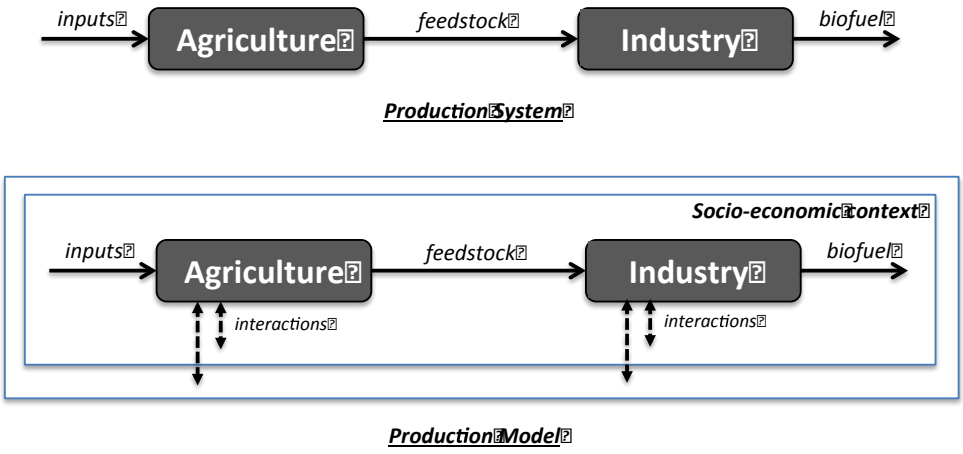

Figure 1. Production System and Production Model concepts

Since information from the field and direct interlocution with local stakeholders are essential aspects to be taken into account, the LACAf project combines experts from different fields and countries with the aim of exploring sustainable sugarcane ethanol production systems, establishing an open and fruitful discussion, where the participation of local players are very important. Under these guidelines, two sequential 3-day meetings of the Global Sustainable Bioenergy and LACAf projects are proposed during March, 31th

to April, 6th in South Africa (Kruger National Park) and Mozambique (Maputo) with the following objectives:

1) Update participants on activities associated with various parts of the project.
2) Include, hear from, and interact with representatives from the LACAf countries.
3) Enrich project participants with new perspectives.
4) Advance development of a vision for project-responsive environmental research.

Format, Participants, and Draft Schedule.

Both meetings are structured in terms of sessions considering:

1) Progress of LACAf-I Project, http:// 208.67.2.44/gsb/lacaf/index.php/lacaf-cane-i (NOT FULLY WORKING)
2) The GSB Project, http://bioenfapesp.org/gsb/
3) Perspectives from the LACAf countries, particularly South Africa and Mozambique,
4) Bioenergy & the LACAf countries (discussion),
5) New proposals on Geospacial Analysis, Socio-Economic Aspects, and Environment Impact.

In addition, the program features four "Topical Presentations" from persons who the GSB and LACAf projects are interested in interacting with and can learn from. Funding is requested to support travel and lodging expenses for Brazilian and international participants.

Invited participants.

Already covered by LACAf-I Project (10):
Edgar Beauclair- Department of Agriculture, ESALQ/USP
Luís Augusto Barbosa Cortez- FEAGRI, UNICAMP
Luiz Augusto Horta Nogueira- UNIFEI
André Nassar – ICONE
Manoel Regis L V Leal- CTBE
Fernando Bertolani – CTC
Felipe H. Gomes (Pedológica)
Klaus Dalgaard – Post-Doc LACAf-I, NIPE-UNICAMP
João Guilherme Leite - Post-Doc LACAf-I, NIPE-UNICAMP
Rubens Lamparelli, NIPE-UNICAMP

Brazilians (8): Covered by additional Fapesp Fundings

Luiz Martinelli- Center of Nuclear Energy and Agriculture, ESALQ/USP
Jansle Rocha- FEAGRI, UNICAMP
Suani Coelho, IEE-USP
Marcelo Cunha, IE-UNICAMP
Antonio Bonomi, CTBE
Marco Ospina, FEAGRI, UNICAMP
Rui da Maia, Universidade Técnica de Mozambique
João Chidamaio, Ahead Energy

Foreigners (10):

Americans (6):
Virginia Dale– Environmental Sciences Division, ORNL
Keith Kline- Environmental Sciences Division, ORNL
Lee Lynd- Thayer School of Engineering, Dartmouth College
John Sheehan- Institute on the Environment, University of Minnesota
Steve Perterson, Dartmouth College, USA
Tom Richards, PennState University, USA

Africans (4):
Mosad El-Missiry - Regional Integration and Infrastructure, NEPAD (Africa)
Ibrahim Assane Mya, NEPAD
Francis Yamba – CEEEZ, Zambia
Others suggested by NEPAD

Suggested topics for discussion:

-Sugarcane and cassava as feedstock: potential and constraints

- Biofuels in African countries: perspectives, recent evolution and national programs

- Capacity building requirements in African countries for biofuel production.

- Potential for ethanol use as fuel (in transport and cooking)

- Legal and regulatory aspects of biofuels production in Mozambique (feedstock, processing, distribution, etc.)

- Biofuels in Africa: for domestic or/and global markets?