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# EXPANSION AND INTERNATIONALIZATION OF CBIO: STRENGTHENING THE CARBON MARKET IN BRAZIL

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Marcelo Moreira  
Gabriela Cruz



# What we do

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Our team counts with extensive experience in the execution of projects about international trade negotiations, food security, public policies, land use change, market intelligence, sustainability, climate change, territorial intelligence, certifications, remote and satellite sensing technology and also the assembly of content and communication strategies.

In addition, Agroicone's expertise is mainly focused on conducting dialogues and complex arrangements, always grounded with strong technical content.

## WORK TOPICS



**Global Agriculture  
Analysis**



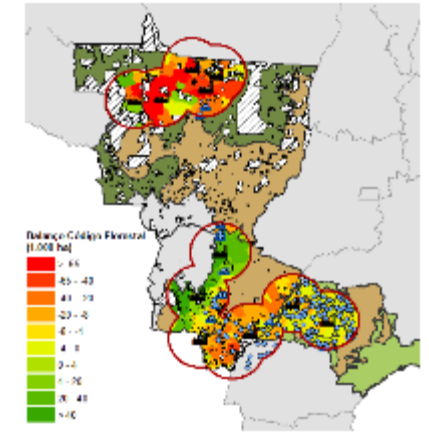
**Applied Modeling**



**Sustainability and  
Environmental  
Regulations**



**Communication  
Strategies**



**Territorial  
intelligence**



# Experiência técnica: estudos relacionados recentes

## 1.2. MODELAGEM AGRÍCOLA, USO DA TERRA E SEUS IMPACTOS

Baseada no BLUM (Brazilian Land Use Model), a Agroicone desenvolveu diversas análises com diferentes propósitos, como:

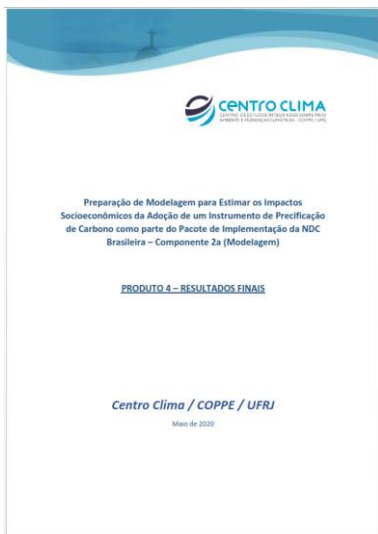
**PMR Brasil:** O projeto Partnership for Market Readiness (PMR) é financiado pelo Banco Mundial e já foi implementado em vários países. No Brasil, “*tem por objetivo discutir a conveniência e a oportunidade da inclusão da precificação de emissões de gases de efeito estufa (GEE) no pacote de instrumentos voltados à implementação da Política Nacional sobre Mudança do Clima (PNMC) no período pós-2020*”. A equipe de pesquisa de modelagem quantitativa da Agroicone foi responsável pela modelagem do Componente 2A para o setor de *Agriculture, Forestry and Other Land Use (AFOLU)*.

**Estudo de baixo carbono** – estudo realizado para o Banco Mundial sobre como apoiar os esforços brasileiros em identificar oportunidades para reduzir suas emissões e que promovam o seu desenvolvimento econômico. (2012)

**Modelagem econômica para a agricultura familiar.** Estudo encomendado pelo Ministério do Desenvolvimento Agrário – MDA. (2015)

**Outlook Brasil 2022:** projeções para o Agronegócio. (2012)

**Socio-environmental and land-use impacts of double-cropped maize ethanol in Brazil.** Artigo avaliou a produção de etanol sob condições representativas na região centro-oeste do Brasil: milho cultivado como uma segunda safra com soja em terras que anteriormente cultivavam uma única safra de soja e energia processada de uma usina combinada de calor e energia usando milho de plantação-chips de eucalipto cultivados. Estudo documentou um exemplo de como as complexas ligações da bioenergia com a produção e segurança alimentar, meio ambiente e desenvolvimento econômico podem ser gerenciadas para resultados positivos usando a tecnologia atual.



**nature sustainability** ARTICLES  
https://doi.org/10.1038/s41893-020-0044-1

### Socio-environmental and land-use impacts of double-cropped maize ethanol in Brazil

Marcelo M. S. Moreira<sup>1,2\*</sup>, Joaquim E. A. Seabra<sup>1</sup>, Lee R. Lynd<sup>3</sup>, Sofia M. Arantes<sup>1</sup>, Marcelo P. Cunha<sup>4</sup> and Joaquim J. M. Guilhoto<sup>1,5</sup>

**Abstract** Agricultural intensification, and particularly double cropping, has been suggested as a practical strategy to reconcile biofuel feedstock production with other land-use priorities. Here we assess ethanol production under conditions representative of current practice in the most central region of Brazil: maize grown as a second crop with soybean on land that formerly grew a single soybean crop, and energy processed from a combined feed and power plant using plantation-grown eucalyptus chips. For maize ethanol this produced no feed large reductions in greenhouse gas emissions compared to gasoline, and considerable economic and employment benefits at both local and national levels. We also calculate reduced land-use emissions with maize ethanol production compared to the situation without it. Our study thus documents an example of how the complex linkages of bioenergy to food production and security, environment and economic development can be—and indeed appear to be—managed for positive outcomes using current technology.

**Details are probably needed in order to stabilize climate<sup>1</sup> and offer potential benefits in terms of rural economic development<sup>2</sup>. Aggressive expansion of biofuel production is a prominent feature of Brazil's National Development Contribution Agreement to the Paris Agreement, and is targeted by the recently initiated Brazilian biofuel program, RenovaBio<sup>3</sup>. Assessments are widely dispersed, however, with respect to the feasibility and desirability of using land for biofuel production without compromising food production, wildlife habitat, livelihoods of rural populations and ecosystem carbon stocks<sup>4</sup>. Recent studies estimate the value of ecosystem services, and indeed land-use change (LULU), arising from displacement of food production by biofuel feedstocks to be comparable to that of energy<sup>5</sup>. Agricultural intensification and double cropping have been suggested as strategies that could drastically reduce land-use emissions with other land-use practices<sup>6</sup>. In the present research, we assess the potential of double cropping to intensify land use as, however, occurs.**

Our study compares, perhaps the largest to date, an existing in Brazil today in the production of ethanol from maize grown as a second crop with soybean on land that formerly grew a single soybean crop. This situation is quite different from the single-crop production of maize as practiced in the United States, where soybean and maize are grown in rotation on the same land, and where soybean and maize are produced on existing and high-yielded farmland. With the current high yields of maize production and relatively low farm gate prices, aggressive investments in ethanol have been made in Brazil, and indeed also in other ethanol plantations operated in 2017 (ref. 7). Land, without the price of production, the energy intensity, distribution of ethanol production capacity from 25% to 30% (ref. 8), based on current available economics. Further investment is expected.

Small ethanol facilities for ethanol production are expected to grow more rapidly than large plants in ME. The presence of process plants in these facilities is based on integrated maize and soybean production using wood chips from rapidly growing eucalyptus plants as the primary fuel. For this representative scenario, we analyzed

\*Correspondence: Marcelo M. S. Moreira (e-mail: marcelo@agroicone.com.br)

Agroicone, São Paulo, Brazil; <sup>2</sup>School of Mechanical Engineering, University of Campinas, Campinas, Brazil; <sup>3</sup>School of Engineering, Delft University of Technology, Delft, The Netherlands; <sup>4</sup>Department of Economics, University of Campinas, Campinas, Brazil; <sup>5</sup>Organization for Economic Co-operation and Development, Paris, France; <sup>6</sup>e-mail: marcelo@agroicone.com.br

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# Technical experience: biofuels legislations



## 1. RenovaBio:

Member of the Technical Group on Life Cycle Analysis of RenovaBio. Author of the RenovaCalc GHG calculation tool. Training of more than 200 professionals on RenovaBio regulation. Implemented protocols to implement RenovaBio standards in 14 (sugarcane and maize) bioenergy mills



## 2. RFS2:

Development of the Brazilian Land Use Model (in cooperation with FAPRI - Iowa State University), used by US-EPA in the final regulation. It resulted in a significant review of results, with ethanol classification as advanced ethanol.



## 3. LCFS:

Collaboration with CARB in improving the representation of Brazilian ethanol pathway. Elaboration of technical material, letters, modeling packages and databases for estimates of GHG emissions. Provides technical support to UNICA in public hearings, meetings, etc. Source of technical information for CARB staff.



## 4. RED-FQD and REDII:

Expert in biofuels and Brazilian land use. Invited by the European Commission to collaborate in the construction phase of the RED-FQD and RED II. Provided data and analysis and technical notes quoted in the regulation.

## 5. CORSIA-ICAO:

Official expert designated by Brazil in the Alternative Fuel Task Force (AFTF) for the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). Support in the negotiation strategy and elaboration of technical support documentation. Participation in the negotiating plenary sessions.



# Propoasal:

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## Goals:

Analyze strategies for expanding the scope and internationalization of RenovaBio through the commercialization of CBIO in the voluntary carbon market (in context with article 6 of the Paris Agreement).

Develop strategies so that biofuel producers are interested in expanding the ambition of their socio-environmental policies to reach new markets.

Evaluate the feasibility of proposed modifications and identified to the benefited and harmed segments with an eventual increase in the scope of RenovaBio, considering the related international experiences.

Estimate Indirect Land Use Changes (iLUC) of the biofuels contemplated in RenovaBio.

## PRODUCTS

- A. Benchmark of sustainable fuels and carbon credit trading programs;
- B. Mapping of stakeholders and opportunities to expand the scope of RenovaBio;
- C. Estimate iLUC and LMP for biofuels included in RenovaBio;
- D. Final recommendations (full report in word format).



# Contacts

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**Marcelo Moreira**  
**Sócio**

+55 11 3025-0506

+55 11 995293966

[marcelo@agroicone.com.br](mailto:marcelo@agroicone.com.br)

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