

Preface

In the early 2000s, the Americans started a heavy investment for replacing part of the gasoline, used in light vehicles, by ethanol produced from corn. The global renewable energy sector incorporated a strong ally. The Brazilians, with long tradition on using ethanol from sugarcane (at that time, about half of the fuel used in light vehicles in Brazil was ethanol), saw, in this action, great opportunities to their country. If the idea would spread around, new ethanol markets would open for their economically competitive product. In 2005, a government-hired agency, Center for Strategic Studies and Management—CGEE, linked to the Minister of Science, Technology, and Innovation, financed a study evaluating the possibility of busting up the Brazilian production, to a point of being able to replace 5–10 % of the worldwide gasoline consumption in 2025, by Brazilian sugarcane ethanol. This study [a summary is in “Can Brazil replace 5 % of the 2025 gasoline world demand with ethanol?” (Leite et al. 2009)] pointed out the bottlenecks in sugarcane agriculture, in ethanol industry, in the sustainability strategy, and on the needed basic science, composing a necessary agenda to be developed, in order to accomplish this goal. As a result, a National Laboratory on Ethanol was created, initially with four scientific and technological programs designed to attack the four bottlenecks areas of this ambitious plan. I was the first director and responsible for implanting it. As scientists, we know how to measure the success of a research program: follow the publications, the leadership, the publication citations, the upcoming scientific research lines, and so on. For measuring success in technological innovation, follow the money (patent profits). Unfortunately, for a National Laboratory that needs to accomplish goals on all the above-mentioned programs and foment lines of research, it is not possible to follow the basic science reasoning for success or wait for the profit stage to grant success in technological developments. We needed a strategy for making decisions in a day-to-day basis. For this, we have hired a senior researcher, Dr. Antonio Bonomi, with great experience in computer simulations for comparing different technological routes for ethanol production. His responsibility

in this new National Laboratory was to put a team together (the co-editors Dr. Cavalett and Dr. Cunha participate actively in this group) and run a Technological Assessment Program: the Virtual Sugarcane Biorefinery, a tool to link together all other programs and help the decision makers. This book is about this initiative—a strategy understood as an effective way to develop both science and technology looking for sustainable technological development.

Marco A.P. Lima

Reference

Leite RCC, Leal MRLV, Cortez LAB, Griffin WM, Scandiffio MIG (2009) Can Brazil replace 5 % of the 2025 gasoline world demand with ethanol? *Energy* 34:655–661

Virtual Biorefinery

An Optimization Strategy for Renewable Carbon
Valorization

Bonomi, A.; Cavalett, O.; Cunha, M.P.d.; Lima, M.A.P.
(Eds.)

2016, XL, 285 p. 83 illus., Hardcover

ISBN: 978-3-319-26043-3