

# Introduction

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Iris Lewandowski, Nicole Gaudet, Jan Lask, Jan Maier,  
Boris Tchouga, and Ricardo Vargas-Carpintero



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I. Lewandowski (✉) • N. Gaudet  
Institute of Crop Science; Biobased Products and Energy  
Crops, University of Hohenheim, Stuttgart, Germany  
e-mail: [Iris\\_Lewandowski@uni-hohenheim.de](mailto:Iris_Lewandowski@uni-hohenheim.de);  
[Nicole.Gaudet@uni-hohenheim.de](mailto:Nicole.Gaudet@uni-hohenheim.de)

J. Lask  
MSc Bioeconomy Program, Faculty of Natural Sciences,  
University of Hohenheim, Stuttgart, Germany  
e-mail: [Jan.Lask@uni-hohenheim.de](mailto:Jan.Lask@uni-hohenheim.de)

J. Maier  
MSc Bioeconomy Program, Faculty of Agricultural  
Sciences, University of Hohenheim, Stuttgart, Germany  
e-mail: [Jan.Maier@uni-hohenheim.de](mailto:Jan.Maier@uni-hohenheim.de)

B. Tchouga • R. Vargas-Carpintero  
MSc Bioeconomy Program, Faculty of Business,  
Economics and Social Sciences, University of  
Hohenheim, Stuttgart, Germany  
e-mail: [boris\\_bonal.tchouga\\_baho@uni-hohenheim.de](mailto:boris_bonal.tchouga_baho@uni-hohenheim.de);  
[ricardo.vargas@uni-hohenheim.de](mailto:ricardo.vargas@uni-hohenheim.de)

Feeding a growing population is one of the major challenges of the twenty-first century. However, 200 years ago, it was this very same challenge that initiated the foundation of the University of Hohenheim in 1818. Three years earlier, in 1815, the volcano Tambora erupted in Indonesia. This local geological event had tremendous impact on the global climate. The eruption ejected huge quantities of ash into the atmosphere, causing two ‘summers without sun’. In Europe, lower temperatures led to poor crop growth, resulting in famine and riots. On 20 November 1818, King Wilhelm I of Württemberg founded an agricultural education and research station at Hohenheim, with the aim of contributing to regional food security by educating farmers and developing better agricultural production methods.

Since then, the University of Hohenheim has grown continuously and today consists of three faculties, namely, the Faculty of Agricultural Sciences, the Faculty of Natural Sciences and the Faculty of Business, Economics and Social Sciences. Research and education is still focused on societal and environmental challenges, such as food security and climate change. Building on this basis, the ‘bioeconomy’ has recently emerged as a leading theme for the University of Hohenheim.

The bioeconomy, often referred to as ‘biobased economy’, encompasses the production of biobased resources and their conversion into food, feed, bioenergy and biobased materials. A biobased value chain includes the primary production of biobased resources, their conversion to higher-value goods via processing and commercialisation on the market. This involves a variety of sectors and brings together

different scientific disciplines and stakeholders. Thus, the field of the bioeconomy is fertile ground for inter- and transdisciplinary research. Interdisciplinary research into the bioeconomy is based on the collaboration of different disciplines across the biobased value chain including agricultural science, natural science, economics and social science. This systemic approach enables the assessment of complex challenges from an environmental, social and economic perspective. In addition, transdisciplinary approaches support the ambition of the bioeconomy to contribute to overcoming some of the most relevant societal challenges and the underlying paradigm of switching from an economy based on fossil raw materials to a new, innovative and sustainable economy based on biogenic resources.

Due to the importance of inter- and transdisciplinary competences in the bioeconomy and the need for an appropriate knowledge base, the demand for professionals specifically educated in this field is growing. For this reason, in 2014, the University of Hohenheim established the first international Bioeconomy Master program, designed to train the experts required for a successful transition.

This textbook is a joint venture aiming to explore important aspects of the bioeconomy from the perspective of Hohenheim’s educators and students and offers an orientation guideline for the future. It provides specialised knowledge in relevant disciplines as well as the systematic approaches required to shape bioeconomic projects and activities. Issued on the occasion of the 200th anniversary of the University of Hohenheim, it will be made available globally to all students and professionals aiming to drive the bioeconomy for a more sustainable future.

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