



UNIVERSITY OF LEEDS

This is a repository copy of *Understanding sustainable biofuel development: a sub-Saharan Africa perspective.*

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/86314/>

Version: Accepted Version

Article:

Duvenage, I, Stringer, LC, Langston, C et al. (1 more author) (2013) Understanding sustainable biofuel development: a sub-Saharan Africa perspective. *African Journal of Economic and Sustainable Development*, 2 (1). 72 - 98. ISSN 2046-4770

<https://doi.org/10.1504/AJESD.2013.053055>

Reuse

Unless indicated otherwise, fulltext items are protected by copyright with all rights reserved. The copyright exception in section 29 of the Copyright, Designs and Patents Act 1988 allows the making of a single copy solely for the purpose of non-commercial research or private study within the limits of fair dealing. The publisher or other rights-holder may allow further reproduction and re-use of this version - refer to the White Rose Research Online record for this item. Where records identify the publisher as the copyright holder, users can verify any specific terms of use on the publisher's website.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

Understanding Sustainable Biofuel Development: a sub-Saharan Africa Perspective

Ian Duvenage^{a*}, Lindsay C. Stringer^b, Craig Langston^c, Keitha Dunstan^d.

^aDepartment of Sustainability Science, Institute of Sustainable Development and Architecture, Bond University, Gold Coast, QLD 4229, Australia. Tel: +61 7 5595 0162. email: iduvenag@bond.edu.au

^bSustainability Research Institute, School of Earth and Environment, University of Leeds, Woodhouse Lane, Leeds LS2 9JT, UK. Tel: +44 (0) 113 343 7530. email: L.Stringer@leeds.ac.uk

^cDepartment of Construction and Facilities Management, Institute of Sustainable Development and Architecture, Bond University, Gold Coast, QLD 4229, Australia. Tel: +61 7 5595 2233. email: clangsto@bond.edu.au

^dSchool of Business, Faculty of Business, Bond University, Gold Coast, QLD 4229, Australia. Tel: +61 7 5595 4088. email: kdunstan@bond.edu.au

Abstract

Considerable effort has been put into developing sustainability assessment frameworks for biofuel production in developing countries. Nevertheless, their successful implementation remains problematic in sub-Saharan Africa. To address this challenge in this paper, through a thorough examination of academic and grey literature, repeatedly occurring sustainability aspects/issues were drawn from internationally recognised biofuel assessment frameworks. Theoretical framings that corresponded with the interlinking socio-environmental-economic qualities and issues for achieving sustainability through ethical implementation conformity (political ecology, development economics, social capital and institutional economics) were then used to inform development of a conceptual framework that could guide biofuel project implementation in sub-Saharan Africa to address complex sustainability issues. The supporting theories pursue sustainable development through, amongst others, an emphasis on the more equitable dispersal of costs and benefits through transparent networking in rural settings and the integration of contrasting viewpoints of diverse stakeholders in emerging economies.

Keywords: developing countries; sustainability; local communities; livelihoods; equality; sustainable biofuel development; Africa; marginalisation; social, economic; environment.

Author Bibliographies

Dr. Lindsay C. Stringer

Director, Sustainability Research Institute; Reader in Environment and Development, Leeds University.

Lindsay's research is interdisciplinary and uses theories and methods from both the natural and social sciences to understand environmental change and livelihood dynamics. She has field experience in

Africa, UK and Eastern Europe. Lindsay has published numerous peer-reviewed articles in leading international journals, as well as book chapters, working papers, book reviews, magazine articles and policy reports. She has also presented her work at international conferences across the world. In addition, Lindsay has an international consultancy reputation, having undertaken commissioned work on several occasions for the United Nations, as well as for the UK Government's Department for International Development and other agencies and organisations.

Prof. Dr. Craig Langston
Professor of Construction and Facilities Management
Institute of Sustainable Development and Architecture
Bond University

Professor Langston is Associate Director (Research) and Professor of Construction and Facilities Management in the Institute of Sustainable Development and Architecture. He has made significant contributions to scholarship in the building and construction industry, including four books published by Butterworth-Heinemann and Elsevier, several book chapters, guidelines for life cycle costing practice in Australia, the production of three software packages, and numerous refereed journal and conference papers over his career. He has recently held four Australian Research Council Linkage Project grants and was presented with the Vice Chancellor's Quality Award (Research Excellence) at Bond University in 2010.

Prof. Dr. Keitha Dunstan
Head of School of Business
Faculty of Business
Bond University

Keitha Dunstan has been the Head of the School of Business at Bond University since November 2009. Prior to accepting this appointment, she had held several positions at Victoria University of Wellington, in New Zealand. She was the Head of the School of Accounting and Commercial Law and Professor of Accounting 2006 - 2009, Research Professor 2000 - 2006 and the founding Director of the Centre for Accounting, Governance and Taxation Research 2001 - 2007.

Mr. Ian Duvenage
PhD Researcher
Institute of Sustainable Development and Architecture
Bond University

Ian Duvenage has 20 years experience in agricultural project engineering, administration and agronomy. His expertise in these areas led to consultancy commissions in Africa. Since 2002 his interests turned towards sustainable development in urban and rural environments in Australia. His main area of interest and research is in sustainability engineering with a focus on renewable energy.