



Supergen



How bioenergy can support global development

Dr Julia Tomei

Institute for Sustainable Resources

University College London

Dr Mirjam Röder

Tyndall Centre for Climate Change Research

The University of Manchester



Supergen

Transformative energy research
for a secure lower-carbon future



Supergen



SUSTAINABLE DEVELOPMENT GOALS



Supergen

Transformative energy research
for a secure lower-carbon future

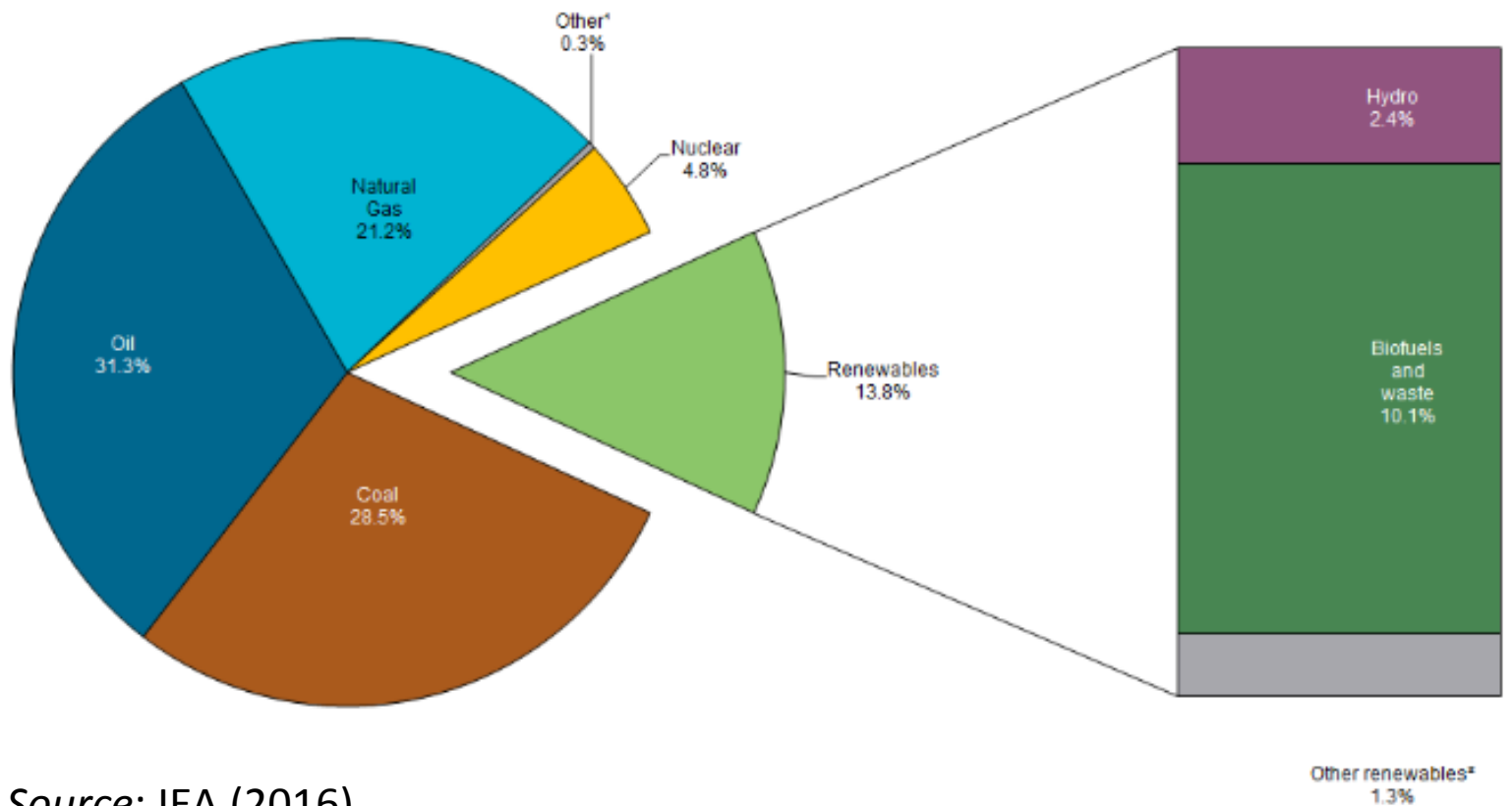


SDG7: energy

Ensure access to affordable, reliable, sustainable and modern energy for all. By 2030,

- **7.1.** Ensure universal access to affordable, reliable and modern energy services
- **7.2.** Increase substantially the share of renewable energy in the global energy mix
- **7.3.** Double the global rate of improvement in energy efficiency

Fuel shares in world total energy supply, 2014



Source: IEA (2016)



Supergen



Supergen Bioenergy: supporting bioenergy research in LMICs

- Sugarcane in Mozambique
- Sugarcane in South Africa
- Rice Straw in Philippines



Supergen

Transformative energy research
for a secure lower-carbon future



Supergen



Bioenergy in Mozambique

Objective

- Investigate the status of bioenergy development in Mozambique, with a focus on sugarcane cultivation and the role of Brazil in promoting sugarcane and ethanol production

Bioenergy in Mozambique

Key findings

- Progress of bioenergy and biofuel initiatives has been slow
- The sugarcane sector:
 - The mills produce only unrefined sugar; there is some cogeneration, but no production of ethanol
 - Sectoral interest in adding value to by-products, but few markets, lack of policy incentives, and limited land availability
 - Sectoral interest in cultivating new crops that can be grown on land unsuitable for sugarcane due to high water content of the soil
- Current policy focus on biofuels for transport risks overlooking Mozambique's diverse energy needs



Bioenergy in South Africa

Objectives

- Investigate how bioenergy from sugarcane residues can be integrated into the South African sugar value chain to:
 - (a) improve energy supply of local communities
 - (b) reduce environmental impacts
- Develop bioenergy integration pathways
- Evaluate the sustainability impacts of bioenergy integration



Bioenergy in South Africa

Key findings

- Different pathways offer opportunities and benefits for different stakeholders
- Careful consideration of who will receive the actual benefits, the social, economic and social priorities of different stakeholders, and the consequences and trade-offs between different pathways



Supergen



Bioenergy in the Philippines

Objective

- Examine how rice straw can be used for bioenergy, and the potential impacts on rural development, health and environment



Supergen

Transformative energy research
for a secure lower-carbon future



Bioenergy in the Philippines

Key findings

- Logistical challenges
- Much cheaper to burn straw than to collect and use it
- No direct perception of energy insecurity as energy use and related problems are embedded in other aspects
- Understanding stakeholder networks and social drivers and dynamics imperative to develop business models and trigger social innovation and adaptation of new technologies



Overcoming challenges and supporting fair and just development

- Important to understand:
 - Context
 - Synergies and trade-offs
 - Scale
- Need to go beyond the purely technical – interdisciplinary approaches are vital!
- Solutions exist, but need to be adapted to local circumstances
- UK bioenergy community can play a vital role in supporting progress towards SDG7



Future research?

- Whole systems
 - Understanding the needs and priorities of different actors
 - Understand the synergies and trade-offs with other aspects of the energy system
 - Beyond energy to think about the contribution bioenergy can make to meeting the SDGs
- Bioenergy imports
 - Potential supply, and opportunities for GGR
 - Social, economic and environmental impacts in LMICs
 - Positive and negative case studies
- Interdisciplinarity

Impact

- Support industrial sector to understand challenges, and highlight importance of the non-economic aspects
- Put research into practice e.g. pilot plant through Innovate UK funding
- PhD examining social innovations and governance
- Strengthening links with oversea partners
- Advise and inform DfID on development of bioenergy in global development strategy

Contact Details

Julia Tomei

Institute for Sustainable
Resource, University College
London

j.tomei@ucl.ac.uk

Mirjam Röder & Angela
Minas

Supergen Bioenergy Hub
Tyndall Centre for Climate
Change Research

The University of Manchester

mirjam.roeder@manchester.ac.uk

angelamae.minas@manchester.ac.uk