

Order your copy today at [www.routledge.com/9781138016552](http://www.routledge.com/9781138016552)

# Resource Recovery From Waste

## Business Models for Energy, Nutrient and Water Reuse

Edited by Miriam Otoo and Pay Drechsel, International Water Management Institute, Sri Lanka

### About this Book

Humans generate millions of tons of waste every day. This waste is rich in water, nutrients, energy and organic compounds. Yet waste is not being managed in a way that permits us to derive value from its reuse, whilst millions of farmers struggle with depleted soils and lack of water. This book shows how resource recovery and reuse (RRR) could create livelihoods, enhance food security, support green economies, reduce waste and contribute to cost recovery in the sanitation chain.

While many RRR projects depend on subsidies and hardly survive their pilot phase, hopeful signs of viable approaches to RRR are emerging around the globe including low-and middle-income countries. Many of these new commercial pathways are being charted in the informal sector, delivering innovative approaches for cost-recovery. These enterprises or projects are tapping into entrepreneurial initiatives and public-private partnerships, leveraging private capital to help realize commercial or social value, shifting the focus from treatment for waste disposal to treatment of waste as a valuable resource for safe reuse.

The book provides a compendium of these success stories. It presents for energy, nutrient and water recovery innovative business models based on approximately 70 empirical cases from around the world, each described and evaluated in a systematic way. The focus is on municipal, agro-industrial and food waste and business models with potential for large-scale out- and up-scaling. For each model, safety concerns and risk mitigation measures are highlighted. This is the first book on business models and their enabling environment for the reuse-oriented sanitation sector.

March 2015 · Approx. 640pp

Hardback Price: \$215.00

### Table of Contents

#### Foreword

#### Definitions and Acronyms

#### CHAPTER 1: Resource Recovery and Reuse

#### CHAPTER 2: Defining Business Models and Cases

#### CHAPTER 3: RRR Business Cases and Models

##### 3.1 Business Field – Energy Recovery

Business Model 1: Dry Fuel Manufacturing

Business Model 2: Energy Service Companies at scale

Business Model 3: Manure to Power

Business Model 4: Energy Generation from own Agro-industrial Waste

Business Model 5: Biogas from Food Waste

Business Model 6: Onsite Energy by Sanitation Service Providers

Business Model 7: Emerging Technology Model

##### 3.2 Business Field – Nutrient and Organic Matter Recovery

Business Model 8: Large-Scale Composting for Revenue Generation

Business Model 9: Subsidy-free Community Based Composting

Business Model 10: Partially subsidized Composting at District Level

Business Model 11: High value Fertilizer Production for Profit

Business Model 12: Nutrient Recovery from own Agro-Industrial Waste

Business Model 13: Compost Production for Sanitation Service Delivery

Business Model 14: Urine and Struvite Use at Scale

Business Model 15: Outsourcing Fecal Sludge Treatment to the Farm

##### 3.3 Business Field – Wastewater Use

Business Model 16: On Cost Savings and Recovery

Business Model 17: Beyond Cost Recovery: the Aquaculture example

Business Model 18: Groundwater Recharge

Business Model 19: Informal to Formal Trajectory in Wastewater Irrigation

Business Model 20: Intersectoral Water Exchange

Business Model 21: Hedging and Matchmaking of Futures Contracts

#### CHAPTER 4: Comparative Analysis of RRR Business Models

#### CHAPTER 5: Conclusions & Outlook

#### References



# Order your books today...

## IF YOU ARE IN THE UK/REST OF WORLD:

Return this form via post to:  
Marketing Department, Routledge,  
FREEPOST SN926, 2 Park Square, Milton Park,  
Abingdon, Oxon, OX14 4BR, UK

or  
Telephone: +44 (0) 1235 400524  
Fax: +44 (0) 1235 400525  
E-mail: tandf@bookpoint.co.uk  
Online: www.routledge.com

**Postage:**  
5% of total order (£1 min charge, £10 max charge)  
Next day delivery +£6.50\*

*\*We only guarantee next day delivery for orders received before noon.*

## IF YOU ARE IN THE US/CANADA/LATIN AMERICA:

Return this form via mail to:  
Routledge, 7625 Empire Drive,  
Florence, KY 41042, USA

or  
Telephone: Toll Free 1-800-634-7064  
(M-F: 8am-5:30pm)  
E-mail: orders@taylorandfrancis.com  
Online: www.routledge.com

**Sales Tax/GST:**  
Residents of AZ, CA, CO, CT, FL, GA, KY, MA, MD,  
NJ, NY, PA, TN, TX and VA please add local sales tax.  
Canadian residents please add 6% GST.

## Postage:

US:  
Ground: \$5.99 1st book;  
\$1.99 for each additional book  
2-Day: \$9.99 1st book;  
\$1.99 for each additional book  
Next Day: \$29.99 1st book;  
\$1.99 for each additional book  
Canada:  
Ground: \$7.99 1st book;  
\$1.99 for each additional book  
Expedited: \$15.99 1st book;  
\$1.99 for each additional book  
Latin America: Airmail: \$44.00 1st book;  
\$7.00 for each additional book  
Surface: \$17.00 1st book;  
\$2.99 for each additional book

### Library Recommendation

Ensure that your library has access to all the latest publications.  
Visit [www.routledge.com/info/librarian.asp](http://www.routledge.com/info/librarian.asp) today and complete our online Library Recommendation Form.

### Complimentary Exam Copy Request

To order a complimentary exam copy, please visit:  
[www.routledge.com/info/compcopy](http://www.routledge.com/info/compcopy)

*Prices and publication dates are correct at time of going to press, but may be subject to change without notice.*

Our publishing program continues to expand so please visit our website to stay up-to-date

[www.routledge.com](http://www.routledge.com)

 **Routledge**  
Taylor & Francis Group

Routledge... think about it  
[www.routledge.com](http://www.routledge.com)

## eBooks from Taylor & Francis

Helping you to choose the right eBooks for your Library

Over 30,000 eBook titles in the Humanities, Social Sciences, STM and Law from some of the world's leading imprints.

Choose from a range of subject packages or create your own!

### Key Features:

- ▶ Free MARC records
- ▶ COUNTER-compliant usage statistics
- ▶ Flexible purchase and pricing options

For more information, pricing enquiries or to order a free trial, please contact your local sales team.

UK and Rest of World: [online.sales@tandf.co.uk](mailto:online.sales@tandf.co.uk)  
US, Canada and Latin America: [e-reference@taylorandfrancis.com](mailto:e-reference@taylorandfrancis.com)

[www.tandfebooks.com](http://www.tandfebooks.com)



ORDER YOUR  
**FREE**  
INSTITUTIONAL  
TRIAL TODAY

## Routledge Paperbacks Direct

Responding to the changing needs of academics and students, we have now made a selection of our hardback publishing available in paperback format. Available directly from Routledge only and priced for individual purchase, titles are added to the selection on a regular basis.

Visit [www.routledgepaperbacksdirect.com](http://www.routledgepaperbacksdirect.com) for a full list of available titles.

Recommend key titles  
to your librarian today.

Ensure that your library has access to all the latest publications.

Visit [www.routledge.com/info/librarian.asp](http://www.routledge.com/info/librarian.asp) today and complete our online Library Recommendation Form.



## Routledge Revivals Discover Past Brilliance...

[www.routledge.com/books/series/Routledge\\_Revivals](http://www.routledge.com/books/series/Routledge_Revivals)