Newsletter – August 2017

Partner news

RRfW Annual Conference 2017

Making the Business Case for Resource Recovery

The successful implementation of ideas, frameworks and technologies for resource recovery from waste will require the formulation of strong business cases for a variety of actors in industry and government. What are the key elements of business cases for these actors? How can business cases integrate environmental and social as well as technical and economic costs and benefits? What do business cases for resource recovery look like, what can we learn from successful examples?

This year's conference strives to present both conceptual ideas and practical experiences on the formulation of business cases for resource recovery as part of the circular economy.

Call for Abstracts

The call for abstracts is now open: full details can found here as a downloadable pdf. The submissions deadline is 11th September, with successful abstracts being notified by 25th September.

Abstract are being accepted for the following types of presentations:

- ***Plenary presentation***: on cross-cutting topics.
- ***Poster presentation***: technology demonstrations are also welcomed.
- ***Panel discussion***: short presentations on the challenges for formulating the business case for resource recovery, followed by interactive discussion.

- ***Special session presentation***: presentations in sessions on A) Resource recovery in the bioeconomy, B) Landfill mining, C) Innovative sustainability assessments, or D) Sustainable mining technologies.

Further Conference Information

Up to date information can be found on our conference webpage including an indicative schedule, and venue and registration details. Please note the deadline for registration is 31st October and that RRfW project members should register directly by contacting Juliet Jopson to avoid paying the conference fee.

End of Waste Session at Biosolids Conference

This year's RRfW Annual Conference has been organised in conjunction with the European Biosolids and Organic Resources Conference, 20-21st November, at the Royal Armouries in Leeds. The conference will include an 'End of Waste' session on 21st November, co-organised with RRfW. In addition, we will hold a free dinner on the evening of 21st for attendees of both meetings to facilitate networking. Invitations will be sent to registered participants at the beginning of November and places allocated on a first-come, first served basis.

Discount for RRfW Annual Conference attendees at Biosolids Conference

RRfW Annual Conference attendees are eligible for a 20% discount on the registration fee for the European Biosolids and Organic Resource Conference. The discount code will be given as part of the booking confirmation when you register for the RRfW Annual Conference.

RRfW Project Publications

The following papers have been recently published by members of the RRfW projects.

CVORR

The first new paper by CVORR is a comprehensive review of metrics for assessing resource recovery from waste in a circular economy considering all four key domains of value: environmental, economic, social and technical. The second, published in Waste Management, uses the co-firing of biomass and solid recovered fuel with coal as a case study to look at the interconnections between the environmental, economic, social and technical impacts, and implications on overall value delivered through the use and recovery of waste resources.

- Iacovidou, E., et al. 2017. Metrics for optimising the multi-dimensional value of resources recovered from waste in a circular economy: A critical review. Journal of Cleaner Production, in press. Open Access.
- Iacovidou, E., et al. 2017. Technical properties of biomass and solid recovered fuel (SRF) co-fired with coal: Impact of on multi-dimensional resource recovery value. Waste Management, in press. Open Access.

MeteoRR

Three papers have been recently published by the MeteoRR team. Further to Malaysia's pledge to reduce its emissions intensity by up to 40% by 2020, Sadhukhan et al. investigate a whole range of bioenergy and biorefinery technologies and systems relevant for Malaysia and developing countries in creating a bio-based circular economy and looks at their roles in meeting sustainable development goals. The next, in Bioresource Technology, presents material flow and sustainability analyses of novel mechanical biological chemical treatment system for complete valorization of municipal solid waste. The last introduces a special issue in sustainable availability and utilisation of wastes for the journal of Sustainable Production and Consumption.

- Sadhukhan, J. et al (2017) Role of bioenergy, biorefinery and bioeconomy in sustainable development: Strategic pathways for Malaysia Renewable and Sustainable Energy Reviews, in press.
- Sadhukhan, J., Martinez-Hernandez, E. (2017) Material flow and sustainability analyses of biorefining of municipal solid waste Bioresource Technology, 243, pp 135-146.
- Sadhukhan, J. (2017) Special issue: Sustainable availability and utilisation of wastes Sustainable Production and Consumption, 9, pp 1-2.

R3AW

Two new open access papers have also been published by R3AW in recent months. The first in Environmental Science and Technology highlights the processes that control the release of vanadium from steel slag. Vanadium is simultaneously an environmental pollutant and an element of economic importance (e.g. for high grade steel and mobile energy storage). The paper demonstrates that weathering of slag can limit environmental release of vanadium which increases scope for bulk reuse of the material. The second paper in Science of the Total Environment demonstrates the importance of both biotic processes and physical configuration of treatment systems in remediating highly alkaline wastewaters. The work also demonstrates for the first time the importance of biofilm communities on remediation at pH >11, which potentially gives scope for new bioremedial approaches to leachate management.

- Hobson, A.J. et al. (2017) Mechanism of Vanadium Leaching during Surface Weathering of Basic Oxygen Furnace Steel Slag Blocks: A Microfocus X-ray Absorption Spectroscopy and Electron Microscopy Study. Environ. Sci. Technol., 51 (14), pp 7823–7830
- Gomes, H.I. et al. (2017) Hydraulic and biotic impacts on neutralisation of high-pH waters. Science of The Total Environment, 601–602, pp 1271-1279

MeteoRR Engages with Industry as Newcastle Team Visit Quorn Foods

Researchers from the Newcastle MeteoRR team visited Rob Johnson, Biotechnology Specialist at Quorn Foods (Stockton-on-Tees) on the 2 August as part of the MeteoRR activities for industrial

engagement. Quorn Foods produce a range of foods based on the product of a large-scale fermentation process that ends up with large volumes of waste waters containing a number of potentially high value products. Quorn Food is interested in collaborating in research related to the recovery and efficient use of these process streams that would otherwise go to waste. On that basis, Quorn recently joined MeteoRR as a new industrial partner. During the visit, sector strategy, environmental objectives, processes and integrated wastewater management were all discussed. This site visit was crucial to identify future research opportunities and knowledge gaps.

MeteoRR Newcastle Team Welcomes Visit by Dr Hai Pham

Dr. Hai Pham from Vietnam National University is visiting Prof. Keith Scott in Newcastle University from June to October 2017, to investigate the development of bioelectrochemical systems (BES) as a means to remove zinc from industrial wastewater through electro-chemical precipitation of $Zn(OH)_2$. This technology, once successfully developed, will potentially have positive economic and environmental impacts. The current metal removal strategies based on physic-chemical techniques are high-cost and energy demanding while giving low metal recovery. The BES uses microorganisms to oxidize organic matter at the anode. This produces electrons at the anode which are transferred to the cathode externally for reduction reactions. Therefore, the technology can be an efficient environmental solution for removing organic matter and metals from wastewater. Moreover, a BES does not require much energy for operation and can be reusable and thus is really cost-effective. Dr. Hai Pham is an expert in BES with particularly experience in studying the microbiology of these systems at both species and community levels. He has worked with BESs for removing organic and chlorinated pollutants in wastewater and to develop applications for detecting metals and reclaiming the water quality of aquatic environments.

Knowledge Exchange Workshops on RRfW

Understanding how change in the governance of waste and resource management can be achieved

is vital to promote resource recovery and increase resource efficiency as part of the transition towards the circular economy. To address this, four one-day workshops will be hosted by RRfW to promote knowledge exchange between academia, government and industry. Each workshop will focus on a different technology area and the outcomes will be used to formulate policy recommendations for governmental bodies throughout the UK, as well as to shape our ongoing research.

Date	Place	Technology Area
21 Sept 2017	Durham	Vanadium recovery from steel slag landfills
4 Oct 2017	Belfast	Producing soil conditioners from bioenergy residues
13 Oct 2017	Edinburgh	Copper recovery from distilleries' waste water and mine drainage
3 Nov 2017	Cardiff	Metal recovery from legacy landfills using passive leaching technology

Further details, including how to register, are available on the RRfW website event page.

Other News

Open Consultations

Welsh Government: Taking forward Wales' sustainable management of natural resources

The consultation seeks views on new regulatory approaches to the sustainable management of natural resources in Wales including: promotion of the circular economy, nature-based solutions, new markets and innovative mechanisms, and smarter regulation. The consultation closes 13 September 2017 and is available as an online questionnaire.

European Commission: Public consultation investigating options for reducing releases to the environment of microplastics

The EC is launching this consultation to collect the views of stakeholders and citizens with regard to the policy options to reduce microplastics entering the marine environment. You can contribute to this public consultation by filling out the online questionnaire. The consultation closes 16 October 2017

NERC Early Career Researcher Evaluation

NERC is undertaking an evaluation of its support for early career researchers (ECRs). This evaluation aims to gain a better understanding of the challenges and issues facing ECRs during this crucial period for their career development. The online survey will run from 1 August to 2 October 2017 and NERC intends to publish the findings of this evaluation in December 2017. More information is available here or go straight to the online survey.

Post Brexit Compliance Report

CIWM has prepared a report on Post-Brexit Compliance for the UK resource and waste management sector. The report covers the timeline, general economic and political impacts, as well as legal & policy impacts for environmental & product law and resource & waste law. It concludes "There are many potential impacts on the UK's resource and waste management sector from Brexit, ranging

from macroeconomic impacts such as currency rates and investment decisions through to future policy developments on recycling targets. Some of these are likely to be largely negative and some largely positive, but for most it is difficult to predict for now."
The full report can be read here.

China Bans Waste Imports

China has been the world's biggest importer of recyclable materials including plastic, paper and textiles, fuelling its growing manufacturing industry for decades. In 2016 alone 7.3 million tonnes of plastic waste were imported to China, accounting for 56% of the global plastic waste imposts. However, on July 2017, China announced that by the end of the year it will ban imports of plastic, paper and textile wastes as a measure to control the environmental impacts caused by these imported wastes that are often mixed with dirty or even hazardous waste, posing environmental and serious health impacts. This decision has created havoc in the industry due to the high uncertainty posed in the recycling market, whilst many countries that were heavily relying on China for exporting their recyclable waste, such as the UK, would be left unprepared to deal with their recyclables. For more, see this blog on Materials Recycling World website.

Role of the Circular Economy in Sustainable Prosperity

A blog by Geraldine Brennan on the CUSP website tackles the role of the Circular Economy in sustainable prosperity. Sustainable prosperity is underpinned by the principle that value creation and increased quality of life can both be decoupled from resource use – making the circular economy a key aspect. However, the question remains whether the current discourse goes far enough? In this blog, CUSP research fellow Geraldine Brennan summarises some of her recent findings.

Funding Calls

NERC Ideas for Strategic Research

NERC is seeking ideas for research challenges that should be priorities for strategic research investment through strategic programme areas. NERC would welcome ideas from both researchers and those who use environmental science research. Ideas for new strategic programme areas should be submitted by 7 September 2017. Guidance to explain what they are looking for and how to submit ideas can be found on the ideas for strategic research page.

RCUK Industrial Fellowships

In response to the industrial strategy, Research Councils UK (RCUK) (soon to be UK Research & Innovation, UKRI) have developed a fellowship programme targeted at early career researchers (ECRs). The Industrial Innovation Fellowships will support the delivery of the industrial strategy by supporting early career researchers to explore interdisciplinary solutions as well as addressing focused sectoral needs. For applicants within NERC's science remit, NERC will be delivering these fellowships through the following routes:

- RCUK (UKRI) 2017 Industrial Innovation Fellowships - 3.5 year research fellowships
- RCUK (UKRI) 2017 Industrial Mobility Fellowships - 6-12 months fellowships to be conducted in industry, or for industrial researchers to be seconded to a research organisation.

The deadline for applications is 19 September 2017 with applicants commencing their fellowships by 1 January 2018.

The Leverhulme Trust Research Fellowships

The Leverhulme Trust invites applications for its research fellowships. These enable experienced researchers to conduct a programme of research in any discipline (except medical research to inform clinical practice or the development of medical applications). Fellowships are worth up to £55,000 each over a period between three months and two years. The deadline for applications is 9 November 2017.

Global Challenges Research Fund

We have several interested partners to contribute and/or lead on GCRF proposals – visit the GCRF website for further information funding scope and calls. Please contact us for further details on interested partners.

POST fellowships

The Parliamentary Office for Science and Technology (POST) runs various fellowship schemes - visit their website for the current open and upcoming calls. Please note the recent deadline for outline applications to the Academic Fellowship Scheme has now been extended to midnight 4 September 2017.

Zero Waste Scotland

The Circular Economy Investment Fund is open to businesses and organisations in Scotland working in all business and social economy sectors.

Bio-Based Industries – Joint Undertaking

2017 Call for proposals has a deadline for submission of 7 September 2017. BBI JU initiative is a public-private partnership with the public funding coming from Horizon 2020. The 2017 Call will refocus on the need to better integrate biomass feedstock suppliers on the front end of the chain to create a demand for biomass feedstock from biorefining processes. Similarly, the Call will stimulate the formation of partnerships with end market actors to create a 'market pull' for bio-based products for identified applications. Strategic orientations for 2017 include: Feedstock, Process, Products, and Market uptake.

UK-India industrial waste challenge 2017

UK organisations can apply for a share of £8 million to work with Indian partners on biotechnology solutions for industrial waste in India. Projects should address reducing industrial waste and pollution, and improve value recovery from waste using biotechnology in one or more of these 5

sectors: leather / tanning / textiles; MSW; paper and pulp; sewage; sugar cane. Further news on this challenge can be found here and the call details here. Registration closes midday 11 October, and applications must be submitted by midday 18 October 2017.

Events

Policy-UK forum: Reuse, Remanufacture and Recycle - The Future for Circular Economy, Reducing Food Waste and Improving Resource Efficiency, London 7 September 2017

2nd International Symposium on Coupled Phenomena in Environmental Geotechnics, Leeds 6-7 September 2017

RWM – Resource and Waste Management exhibition – building a resource efficient future, Birmingham 12-14 September

KTN Chemistry & Industrial Biotechnology Showcase 2017 York, 20th-21st September 2017, including Optional Networking Breakfast: Value from Unavoidable Food Waste
This is KTN's national, flagship event for the chemistry and IB sectors, attracting 300+ delegates from industry, research, investors and Government. The breakfast session is organised by BioVale and can be attended separately to the main event.

Scottish Resources Conference 2017, Edinburgh, 27-28th September

European Biosolids and Organic Resources Conference, Leeds, 20-21 November The AVAnD project will be represented at this meeting presenting a poster entitled “Formulation of novel fertilisers from bioenergy wastes: nutrient fractionation, dewaterability and stability of anaerobic digestate and biomass ash mixes”.

Resource Recovery from Waste Annual Conference, Leeds, 22 November

International Biohydrometallurgy Symposium, Freiburg 24-27 September 2017

ISWA World Congress, Baltimore 25-27 September 2017

Sustainable Management of Food Waste: Challenges and Opportunities Conference, Northampton, 5th October

18th ERSCP Conference, Sporades 1-5 October 2017

Sardinia 2017 – 16th International Waste Management and Landfill Symposium, Forte Village 2-6

October 2017

International Society for Microbial Electrochemistry and Technology (ISMET) International Meeting, Lisbon 3-6 October 2017

Manchester Science Festival, Manchester 19-29 October 2017

Any news, events or funding calls to include in our next newsletter in November 2017? Email S.J.Jopson@leeds.ac.uk

Join our network on LinkedIn and Twitter to get the latest news!