



## Newsletter – May 2019

### RRfW programme news

#### Endings and new beginnings

The RRfW programme is coming towards its end and has been busy wrapping up. We held our final conference in January to celebrate the achievements of the programme and highlight the relevance of resource recovery for a clean, low-carbon and resource efficient economy (see [RRfW meetings](#)). For those unable to make the conference, we have put together an [end-of programme brochure](#) bringing together all the key messages and advances from the programme, including policy recommendations (also see [Publications](#)).

But it is not goodbye just yet. With new opportunities to engage and generate impact arising in recent months and from the final conference, we have been kindly granted a six month extension, so the programme now runs to the end of September 2019. To help turn this time into impact, we have recently welcomed back Anne Velenturf as research impact fellow for the programme.

In addition, we have been engaging with the RRfW community to define the future research and innovation challenges for resource recovery and circular economy (see [end-of programme brochure](#) and [recent workshops](#)), resulting in the submission of a NERC Highlight Topic Idea.

#### Providing evidence to change policy for resource recovery and circular economy

It's proving to be an interesting time in the world of resources and waste policy, with plastics and food waste particularly hitting the headlines. RRfW has been actively engaging with policy makers throughout the programme, both involving government actors in [co-creating a vision for circular economy](#) and also providing evidence to influence development of future policy.

The past few months has been especially busy, including:

- RRfW engaged extensively with Defra prior to the publication of the [Resources and Waste Strategy for England](#) and was pleased to see that the [strategy](#) cited our [policy and practice note on organic waste](#), with our [resource recovery from waste infrastructure paper](#) and [industry co-creation report](#) referenced in the [Evidence Annex](#).
- We have prepared a [response to the Resources and Waste Strategy](#) highlighting the positives and potential pitfalls moving forward.
- A 'Plastic packing metrics to measure change' workshop was held on 2 April as part of an impact acceleration grant working with Defra to apply the CVORR approach to monitoring and assessing changes in the plastic packaging system in line with the Resources and Waste Strategy. 20 invited guests attended from industry, practitioners, academia and Defra. A report on this work will be released by September on the [RRfW website](#).
- We submitted a [response to the 25 Year Environment Plan Indicator Framework Consultation](#). The final framework was published yesterday ([Framework pdf](#); [25 Year Plan](#)).
- Similarly we submitted a response to the Knowledge Exchange Framework (KEF) consultation. Furthermore we will be presenting a seminar to UKRI on 24 June sharing best practice from RRfW's knowledge exchange activities.
- A joint RRfW and All Parliamentary Sustainable Resource Group policy event was held in November to promote discussion on how the government can further include multi-dimensional value assessment into its decision making, and our event blog highlights [key messages](#) (picture shows Geraint Davies MP addressing the event).
- Overarching policy recommendations coming out of the RRfW are detailed in the [end-of-programme brochure](#), and [summarised in our blog](#) in the context of recent events.



See the [RRfW policy webpage](#) to keep up to date with all our policy outputs.

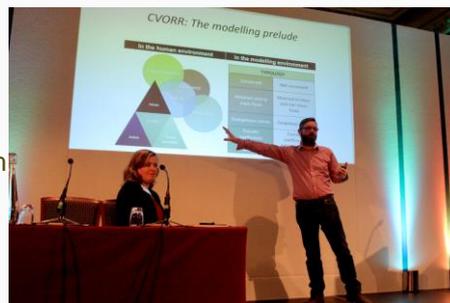
## RRfW meetings

### Highlights of the Resource Recovery from Waste Conference 2019: Resource Recovery for a Clean, Low-Carbon and Resource Efficient Economy

The final Resource Recovery from Waste conference took place on 16th January 2019, in

London, bringing together five years of research to highlight the relevance of resource recovery for a clean, low-carbon and resource efficient economy.

Speakers included Laura Sandys, Challenging Ideas, who set waste into the wider agenda of resource productivity and stressed the need to work collectively to “show, not tell” policy makers the way forward. Talks from RRfW projects highlighted key advancements and Peter Quinn (Tata Steel Europe) and Mark Sommerfeld (REA) brought perspectives from industry. Tom Murray, Defra,



talked about the Resources and Waste Strategy, highlighting where resource recovery featured and future areas of interest for research. This was followed by a panel session chaired by Libby Peake, Green Alliance, to discuss the future research and innovation challenges for resource recovery. The conference concluded with a keynote from Ned Garnett, NERC, outlining some of the funding landscape changes with the formation of UKRI.

For a full event summary and copies of the presentations, please visit the [RRfW 2019 Conference webpage](#).

### **RRfW workshops defining the future for resource recovery**

A number of RRfW workshops were held in March this year.

On 18 March a joint NERC RRfW workshop was held in Swindon, with the aim of identifying the research and innovates spaces where further investments in resource recovery and circular economy could make a valuable contribution. 32 invited participants attended the workshop and 6 responded to the survey, spanning both disciplines and sectors (academia, industry, policy). Data from the workshop is currently being analysed and a report will be released shortly. We also hope to feed in the results to the UKRI Circular Economy workshops organised by EPSRC in June (see [Funding calls](#) for further details). As mentioned in the introduction, the workshop has already led to the submission of a NERC Highlight Topic idea.

In addition, a series of Waste to Wealth (W2W) workshops were held on 11 and 15 March in Swindon and London respectively. The workshops engaged with stakeholders to map out the market size and needs for resource recovery from waste technologies (further details are on the [W2W workshop webpage](#)). A summary of workshop policy recommendations is being developed and will be shared when ready.

## Publications

### RRfW Research Topic in Frontiers journals

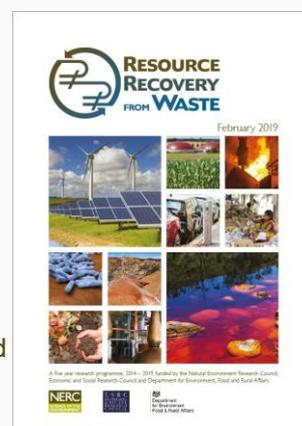
The first five papers are now published as part of the Resource Recovery from Waste Research Topic with the Frontiers family of journals, with another seven in the pipeline. The Research Topic aims to raise visibility and drive momentum in the resource recovery from waste area by bringing together research in this area. Papers can be viewed at [Frontiers RRfW Research Topic](#).

### RRfW programme publications

The following RRfW reports have been published:

#### Resource Recovery from Waste end-of-programme brochure.

Purnell *et al.* February 2019. The end-of-programme brochure outlines the strategic purpose of the programme and highlights the advances made towards these goals. A combination of the diverse themes, people and projects brought together by RRfW offered a fertile context for the radical ideas and discoveries presented in the brochure to emerge. The brochure also summarises the work on co-producing a vision for a circular economy with academia, industry and government, and the overarching policy recommendations from the programme (for a quick view of these recommendations, see the following [RRfW blog](#)). [View brochure](#).



**Multi-dimensional value assessment of compost oversize production and management from open air composting.** Iacovidou *et al.* (2019). Open Access. The CVORR framework was applied to assess the sustainability of alternative compost oversize management options. The study found that better value could be realised but that contamination of the compost oversize needs to be reduced: the implications of this are discussed. [View report](#). An article based on this report was published in [Waste Management World magazine](#) Jan/Feb 2019, pg 22-24.

For the full list of RRfW publications, please see our [publications page](#).

The following publications have come out on the RRfW projects:

### B3

**Upconversion of cellulosic waste into a potential 'drop in' fuel via novel catalyst generated using *Desulfovibrio desulfuricans* and a consortium of acidophilic sulfidogens.** Mikheenko *et al.* (2019) *Frontiers in Microbiology*. *in press*. [doi: 10.3389/fmicb.2019.00970](#), Open Access.

**Novel catalytically active Pd/Ru bimetallic nanoparticles synthesized by *Bacillus benzeovorans*.** Omajali *et al.* (2019). Scientific Reports. Vol 9, Article number: 4715. [doi: 10.1038/s41598-019-40312-3](https://doi.org/10.1038/s41598-019-40312-3), Open Access.

## CVORR

**Circulating blame in the circular economy: The case of wood-waste biofuels and coal ash.** Millward-Hopkins and Purnell (2019). Energy Policy. 129, 168-172. [doi: 10.1016/j.enpol.2019.02.019](https://doi.org/10.1016/j.enpol.2019.02.019), Open Access.

**Resource recovery and low carbon transitions: The hidden impacts of substituting cement with imported 'waste' materials from coal and steel production.** Millward-Hopkins *et al.* (2018). Global Environmental Change. 53, 146-156. [doi: 10.1016/j.gloenvcha.2018.09.003](https://doi.org/10.1016/j.gloenvcha.2018.09.003), Open Access.

**Advances in quantifying marine litter to support waste management decision making in local authorities of the Global South.** C Velis, J Cottom, M Tsakona, E Iacovidou. To be presented at the [7th International Conference on Sustainable Solid Waste Management](#), 26-29 June 2019, Heraklion, Crete.

## INSPIRE

**The case for examining fluid flow in municipal solid waste at the pore-scale – A review.** Muazz-Us-Salam *et al.* (2019). Waste Management and Research. *In press*. [doi: 10.1177/0734242X19828120](https://doi.org/10.1177/0734242X19828120), Open Access. Published online Feb 2019.

**Going to waste? The potential impacts on nature conservation and cultural heritage from resource recovery on former mineral extraction sites in England and Wales.** Sinnett, D. (2018). Journal of Environmental Planning and Management. *In press*. [doi: 10.1080/09640568.2018.1490701](https://doi.org/10.1080/09640568.2018.1490701), Open Access.

## MeteoRR

**Extending the dynamic range of biochemical oxygen demand sensing with multi-stage microbial fuel cells.** Spurr *et al.* (2018). Environmental Science: Water Research & Technology. 4, 2029-2040. [doi: 10.1039/C8EW00497H](https://doi.org/10.1039/C8EW00497H). [Open Access from 28/09/2019](#).

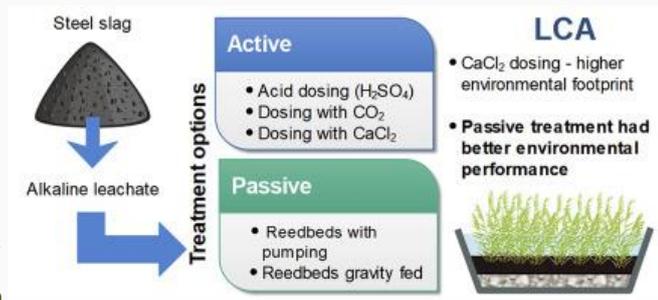
**Effects of Applied Potential and Reactants to Hydrogen-Producing Biocathode in a Microbial Electrolysis Cell.** Lim *et al.* (2018). Frontiers in Chemistry. 6, 318. [doi: 10.3389/fchem.2018.00318](https://doi.org/10.3389/fchem.2018.00318), Open Access.

**Anode potential selection for sulfide removal in contaminated marine sediments.** Daghigho *et al.* (2018). *Journal of Hazardous Materials*. 360, 498-503. [doi: 10.1016/j.hazmat.2018.08.016](https://doi.org/10.1016/j.hazmat.2018.08.016), [Open Access from 16/08/2019](#).

## R3AW

**Constructed wetlands for steel slag leachate management: Partitioning of arsenic, chromium, and vanadium in waters, sediments, and plants.** Gomes *et al.* (2019). *Journal of Environmental Management*. 243, 30-38. [doi: 10.1016/j.jenvman.2019.04.127](https://doi.org/10.1016/j.jenvman.2019.04.127).

The multi-year field study paper shows that wetlands can be used effectively for treating highly alkaline leachates produced as part of slag resource recovery and management, and may also offer additional benefits in terms of habitat creation and broader restoration of post-industrial landscapes.



All project journal publications are listed on the RRfW project pages: [AVAnD](#), [B3](#), [CVORR](#), [INSPIRE](#), [MeteoRR](#), and [R3AW](#). You can also find further publications and presentations on our [Researchgate](#) page.

## Other news

### Waste and Resource Management journal calls for papers on eco-innovation and new technologies

Proceedings of the Institution of Civil Engineers Waste and Resource Management journal has two calls out for special issues in the following areas:

- [Call for papers on new technologies in waste management](#), including new technologies for recovery of waste to resources, and bio-resource developments. Deadline for abstracts 28 May, full papers by 30 September
- [Call for papers on eco-innovation](#), including life-cycle thinking and waste-to-energy technologies. Deadline for abstracts 3 June, full papers by 4 November.

### UK Resources Council prepares for sector deal under the Industrial Strategy

UK Resources Council is leading preparations for a sector deal for resources under the Industrial Strategy. It is hoped that the deal could provide a long-term framework for businesses handling waste and build on Defra's Resources and Waste Strategy. RRfW is contributing to

this process via the People work stream. More details are given in the following [Lets recycle news article](#).

### **Baroness Brown calls for low-carbon technologies to be made circular**

Speaking at the [SoS Minerals](#) final conference on 9 May, Baroness Brown, vice chair CCC and non-exec director ORE, said that we need to start investigating how we can recycle low-carbon technologies at end-of-use to ensure we keep critical materials within the economy.

RRfW has already started work in this area, hosting a workshop in January 2018 on low carbon infrastructure decommissioning ([meeting report](#)). Similarly, Anne Velenturf recently presented on the challenges and opportunities in offshore wind decommissioning at the Offshore Wind Connections meeting (Hull, 1 May 2019): [view presentation](#). If you are interested in working with us in this area, please [get in touch](#).

### **Defra appoints Resources and Waste lead for systems research programme**

Defra has appointed Prof Frank Boons (Sustainable Consumption Institute, University of Manchester) as waste and resources system lead for a new systems research programme. The Programme, led by Defra's Chief Scientific Adviser Prof Ian Boyd, will take a so-called 'systems mapping' approach to identify how a policy change in one area might affect another, and make sure the connections between environmental issues are properly considered. [Defra news article](#).

### **Resource efficiency needed to get to net zero greenhouse gas emissions**

The Commission on Climate Change has launched a report on 2 May reassessing the UK's long-term emissions targets and recommending a new emissions target for the UK: net-zero greenhouse gases by 2050. The report highlights the need for resource efficiency and waste reduction to contribute towards decarbonisation. [View Net Zero report](#). (Also see the [Green Alliance CIEMAP "Less is, more out"](#) report (May 2018), which quantifies the major contribution that resource efficiency can make to the forthcoming carbon budgets).

### **Accelerating resource use threatens biodiversity catastrophe**

The [Global Assessment Report on Biodiversity and Ecosystem Services](#) (May 2019) finds that around 1 million animal and plant species are now threatened with extinction, many within decades. The report links biodiversity loss to continued accelerating resource use and notes that with resource extraction and production often occur in one part of the world to satisfy the needs of distant consumers in other regions.

### **Circular Economy stuck in reverse**

Circle Economy's [Circularity Gap 2019 report](#) concludes that the world only is 9% circular and our global engine is stuck in reverse. In the 12 months since the launch of the first Circularity Gap Report, the upward trend in resource extraction and greenhouse gas emissions has

continued and key indicators confirm that the problems of a linear economy are 'baked in' to the global economy and we are heading in the wrong direction.

### **Living within planetary boundaries possible (if we act)**

On a slightly more hopeful note, the [UN Global Resources Outlook 2019: Natural Resources for the Future We Want](#) report concludes that it is feasible and possible to grow economies, increase well-being and remain within planetary boundaries, through a combination of resource efficiency, climate mitigation, carbon removal, and biodiversity protection policies.

## **Funding calls**

### **UKRI circular economy workshop**

Organised by EPSRC and held at Manchester and London on 5 June and 21 June 2019 respectively. For any consortia who may want to apply for any future funding in this area, whilst not mandatory, it is recommended that you attend.

Expressions of Interest to be submitted by 16:00 on 21 May 2019. [Further details.](#)

### **UKRI Future Leaders Fellowships**

The UKRI Future Leaders Fellowship scheme (FLF) aims to develop, retain, attract and sustain research and innovation talent in the UK, the scheme will tackle difficult and novel challenges in any area of research or innovation covered by the research councils and Innovate UK. Fellowships can be hosted either at research organisations or companies.

Deadline: the 3rd round has now closed, but 4th round expected in October 2019. [Further details.](#)

### **LIFE – traditional projects on environment and resource efficiency.**

Traditional projects support pilot and demonstration projects that contribute to the implementation, updating and development of EU environmental policy and legislation, including the integration of the environment into other policies, thereby contributing to sustainable development. Thematic priorities include: waste; resource efficiency, including the green and circular economy, soil and forests.

Deadline: Concept notes due by 19 June 2019; full proposals by 11 February 2020. [Further details.](#)

## Events listing

**Securing markets and maximising value from biosolids and other biofertilisers.** [Leeds, 21-22 May 2019](#). Day 1: 'Sustainable landbank: Building and maintaining confidence in biosolids, biowastes and other bioresources'. Day 2: 'Marketing Biosolids, biowastes and other bioresources: minimise costs and maximise returns'.

**CIWM Resourcing the future conference 2019.** On the road to 'avoidable' waste by 2050. [London, 12-13 June 2019](#).

**Minerals in a Sustainable Future.** [Nottingham, 13 June 2019](#). Abstract deadline 19 May. Areas include: Sustainable mining, extraction, and ore processing; Resource recovery from waste; Waste storage, disposal and remediation; Biogeochemical cycling & mobility of natural & contaminant species; Sustainable mineral applications.

**Eco-I 2019 Innovation for Clean and Sustainable Growth.** [Lancaster, 19-20 September 2019](#). A session on Waste is proposed and there will be a special issue in the Elsevier journal Environmental Technology & Innovation for the conference.

Keep up to date with forthcoming meetings via our [Events page](#).



Any news, events or funding calls to include in our final newsletter in September 2019? Email [S.J.Jopson@leeds.ac.uk](mailto:S.J.Jopson@leeds.ac.uk)

Join our network on [LinkedIn](#) and [Twitter](#) to get the latest news!