

## Waste Research Development and Innovation Roadmap

### R&D and Innovation to advance the South African waste sector

## 2016 CALL FOR PROPOSALS

### 1 Call for proposals

The Department of Science and Technology (DST) in partnership with HP South Africa, are pleased to announce a Targeted Call for Proposals on **Waste Electrical and Electronic Equipment (WEEE)** research, development and innovation (RDI) commencing in 2017.

The objective of the Call is to support RDI projects/programmes that will –

- Develop South Africa's skill base in WEEE reuse, recycling and recovery (with a focus on the post-graduate level), thereby providing a pipeline of expertise into the sector,
- Support local WEEE recycling technology development, adaptation or localisation, with the intention of increasing the reuse, recycling and recovery of WEEE in South Africa, and
- Produce scientific evidence (through directed R&D) in support of decision-making, policy development and implementation, including the future implementation of Industry Waste Management Plans (evidence-based decision-making).

Applicants are requested to familiarise themselves with the information provided in this Call as well as in the Waste Research, Development and Innovation (RDI) Roadmap for South Africa (2015-2025), before preparing an application.

- Strategic framework of the Waste RDI Roadmap (6 Clusters) – available online at: [http://wasteroadmap.co.za/download/rdi\\_clusters.pdf](http://wasteroadmap.co.za/download/rdi_clusters.pdf)
- Waste RDI Roadmap – available online at: [http://wasteroadmap.co.za/download/waste\\_rdi\\_roadmap\\_summary.pdf](http://wasteroadmap.co.za/download/waste_rdi_roadmap_summary.pdf)

### 2 Background

The Waste RDI Roadmap is an initiative of the DST, managed by the CSIR, aimed at strengthening –

- human capital development (HCD)
- research and development (R&D), and
- innovation in the field of solid waste management

Through the strategic investment in science, engineering and technology, the Department aims to support the prevention of waste and the optimised extraction of value from waste reuse, recycling and recovery, in order to create significant social, economic, and environmental benefit for the country.

The Waste RDI Roadmap provides a framework to implement –

- More effective decision-making
- Faster insertion of context-appropriate technology
- Export of know-how and technology
- Strengthened RDI capability and capacity

### 3 Research themes

The Waste RDI Roadmap (DST, 2014) identified high level, thematic areas, or clusters, aimed at guiding South Africa's waste RDI – in response to key challenges and obstacles facing the waste sector. WEEE was identified as one of five priority waste streams of the Waste RDI Roadmap. The priority RDI needs of the WEEE sector were further unpacked by stakeholders at an Industry-meets-Science workshop, held on the 8 March 2016. The outcomes of the workshop have been summarised in a workshop report (Available at <http://wasteroadmap.co.za/industry/workshops.php>). These research needs will be expanded on over time, as the sector develops.

Research proposals addressing one (or more) of the following thematic areas and clusters of the Waste RDI Roadmap are invited –

#### Technology Solutions

1. Support local beneficiation (in-country reprocessing) of WEEE fractions through (i) development of appropriate technologies (that address volume constraints) (ii) localisation of inbound technologies, and/or (iii) co-processing of WEEE streams/fractions as by-products in other industries (e.g. mining and metallurgical sector) (*Roadmap sub-clusters TS2 and TS4*)
2. That address the following problematic WEEE waste streams –
  - WEEE plastics (e.g. brominated flame retardant (BFR) plastics; polycarbonate/acrylonitrile butadiene styrene (PC/ABS) plastics)
  - cathode ray tube (CRT) glass
  - printed circuit boards (PCBs) (particularly low grade metal recovery)
  - chlorofluorocarbons (CFCs)
  - WEEE cabling (light)
  - batteries (particularly Lithium ion, Silver oxide, Nickel-cadmium, NiMH)
  - solar panels

#### Modelling and Analytics

1. Modelling the thresholds of various WEEE streams that would support the implementation of sustainable, financially viable, local technology (*Roadmap sub-cluster MA1*)
2. Techno-economic studies to determine technical, economic and environmental feasibility of WEEE recycling in South Africa (*Roadmap sub-cluster MA3*)
3. Improved data collection and analysis across the WEEE value chain (e.g. quantifying WEEE generation, transport – including export, refurbishment, reuse, recycling, recovery) (*Roadmap sub-cluster MA4*)

#### Strategic Planning

1. Development of local WEEE *markets* (*Roadmap sub-cluster SP2*)
2. Correcting the economics of WEEE management, including opportunities for the implementation of *economic instruments* to support (i) increased WEEE collection and beneficiation in South Africa (incentivise alternative waste treatment), and (ii) influence end-user/legal owner disposal behaviour (penalise disposal to landfill) (*Roadmap sub-cluster SP3*)
3. Value chain analysis – understanding local WEEE recycling costs and benefits (*Roadmap sub-cluster SP2*)

Proposals must address **Waste Electrical and Electronic Equipment (WEEE)**, as a priority waste stream of the Waste RDI Roadmap.

## 4 Eligibility criteria

Researchers from (only) South African Universities, Science Councils and other public research institutions, working in relevant disciplines, are invited to submit proposals for a DST research grant.

## 5 Evaluation criteria

All applications will undergo evaluation by an independent review panel, to assess the suitability of the proposal in terms of the Waste RDI Roadmap's objectives. All proposals will be evaluated against the following criteria:

- i. **Alignment:** the research proposal must address the priorities and research themes of the Waste RDI Roadmap (Section 3 above)
- ii. **Relevance:** the research must have the potential to directly, and positively, influence the management of WEEE in South Africa, by moving waste up the hierarchy away from landfilling towards waste prevention, reuse, recycling or recovery, in a manner that will provide maximum environmental, social and economic benefit for South Africa
- iii. **Scientific/technical soundness and credibility:** the research proposal has a sound scientific and/or technical base, reflects a sound grasp of the issues requiring investigation, the proposed methodologies are appropriate for achieving the objectives; and the deliverables and associated time frames for delivery are realistic.
- iv. **Innovation:** the project is original and contributes to the body of knowledge or develops practical solutions to move waste away from landfilling towards waste prevention, reuse, recycling or recovery
- v. **Research Outputs/Deliverables:** the project must result in a significant research output, such as research reports, technologies, journal papers, qualifications
- vi. **Capacity development:** Preference will be given to proposals that include capacity development through the training of post-graduate students
- vii. **Institutional capacity:** the applicant should demonstrate sufficient institutional capacity to implement the project
- viii. **Value for money:** the benefits of the proposed research are measurable and the value of the benefits exceed the value of the investment

## 6 Equity and redress

In line with the national imperative of equity and redress, the research call prioritises support for designated groups viz. black, female and persons with disabilities.

## 7 Submission of proposals

To be eligible for consideration, proposals must be submitted on the research proposal template provided, and submitted in PDF format. Research proposals (Part III: Detailed description of the project) must not exceed 10 pages and should include the following:

- Title of project:
- Abstract (*max 250 words*)
- Keywords (*max 5 words*)
- Outline of the research project
  - Statement of Research Problem
  - Background and Rationale
  - Literature Review
  - Research Question/s
  - Aims and Objectives of the Research
  - Research Design and Methodology

- Significance of the Research
- Expected Outcomes, Results and Contributions of the Research
- Workplan
- References cited
- Brief CV of Lead Researcher and core team members with allocated contribution to project

## **8 Reservations**

The DST expressly reserves the following rights:

- To reject all or any proposals
- To waive any or all irregularities in the proposals submitted
- To retain the right not to select any application/s even if meeting all the requirements

## **9 Contract negotiations**

The successful applicant/s will be required to enter into a written Agreement with the CSIR, who manages the Roadmap on behalf of the DST.

## **10 Validity**

All applications will be regarded as valid for 180 days from the 14 October 2016 whereafter the CSIR may request an updated application, should this become necessary.

## **11 Closing date**

Applications must be submitted electronically via email to [info@wasteroadmap.co.za](mailto:info@wasteroadmap.co.za) in the prescribed format. The deadline for the submission of proposals is **Friday, 14 October 2016 at 17:00**.

All applicants will be notified about the outcome of their applications before the end of November 2016.

For any queries relating to the call for proposals, contact:

**Prof Linda Godfrey**

Manager: Waste RDI Roadmap Implementation Unit

Telephone: 012 841 4801

Fax: 012 842 7687

E-mail: [LGodfrey@csir.co.za](mailto:LGodfrey@csir.co.za)