

ENVIRONMENT TECHNOLOGY RESEARCH PROGRAMME (ETRP)

INFORMATION ON 2ND REQUEST FOR PROPOSALS (RFP)

Research Area(s)	Call for Proposals in Waste Management
RFP Number	NEA ETRP RFP 10/01
Category	Open and Directed Call
Publication Date	4 January 2010
Closing Date and time	1 March 2010, 12 noon
Proposal Submission	Formal application shall be made in: a. One softcopy with numbered pages in PDF format and the funding details template in excel format via email to nea_etrp@nea.gov.sg by 1 March 2010, 12 noon; AND b. One hardcopy duly signed and endorsed. It shall be printed double-sided on A4 sized paper, bound and submitted in a sealed envelope by 8 March 2010 to: Environment Technology Office National Environment Agency 40 Scotts Road #11-00 Environment Building, Singapore 228231 Attn: ETRP Secretariat
Instructions and Format of Submission	Please refer to the following website: http://app2.nea.gov.sg/ETRP.aspx

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Background

1 Urban centres in both developed and developing countries are seeking cost-effective, holistic environmental solutions to meet global challenges such as climate change, energy and resource depletion. Waste management is becoming a key component of the overall package of sustainable urban solutions. Waste is increasingly seen as a resource from which energy and useful materials can be extracted and recycled into the economy.

2 Regional countries across Asia and the Middle East, where rapid industrialisation and urbanisation are taking place, are seeking cost-efficient waste-to-energy (WTE) and waste-to-resource solutions over and above basic landfill disposal to release scarce land for higher value development, minimise environmental impacts and integrate waste management efficiently with water and energy systems.

3 This Request for Proposal (RFP) for research proposals in waste management seeks to fund innovations that will lead towards the development of more cost effective waste management solutions that are applicable in Singapore as well as for other cities.

Scope of RFP

4 The National Environment Agency (NEA) invites proposals for research projects on waste management to be submitted for consideration towards funding. This is a combined open and directed call for research proposals on the following 3 focus areas:

- a. Waste-to-Energy Processes
- b. Waste-to-Resource Recovery
- c. Special Waste Treatment

Research proposals on cost-efficient and innovative technologies falling into any of the above 3 focus areas are welcomed.

Information on the OPEN ETRP CALL for Research Projects

A. WASTE-TO-ENERGY R&D FOCUS AREAS

5 This is an Open ETRP Call for research projects that could lead to cost-efficient, scalable and low environmental footprint waste management solutions or result in higher value energy products. The thrust of the Waste-to-Energy research & development (R&D) focus areas is towards the development of cost-efficient waste treatment technologies to meet the long-term strategic disposal needs of Singapore. Projects will include R&D on innovative and cost effective waste treatment technologies covering efficient recovery of energy such as:

- Advanced thermal processes;
- Biological Digestion;
- Hydrolysis; and
- Hydrothermal processes

B. WASTE-TO-RESOURCE RECOVERY R&D FOCUS AREAS

6 This is an Open ETRP Call for research projects that could contribute to either increasing the recycling rates or increasing the commercial value of the recycled raw materials. Some examples of projects falling under the Waste-to-Resource Recovery R&D focus areas are:

- a. Converting waste into higher-value products; and
- b. Supporting technologies such as:
 - Automated waste sorting technologies to separate recyclable streams from mixed waste; and
 - Environment-friendly processes for recycling of mixed waste

C. SPECIAL WASTE TREATMENT R&D FOCUS AREAS

7 This is an Open ETRP Call for research projects that could contribute to reducing the cost of special waste treatment or developing an innovative technology to treat special waste. Some examples of projects falling under the Special Waste Treatment R&D focus areas are:

- a. Cost-efficient technologies to stabilise and treat hazardous waste streams; and
- b. Treating gaseous pollutants in a cost effective manner such as the development of Selective Catalytic Reduction (SCR) technologies to treat dioxin and /or gaseous pollutants.

Information on the DIRECTED ETRP CALL for Research Projects

A. IMPROVING THE THERMAL EFFICIENCY OF WASTE-TO-ENERGY PLANT

8 The WTE plants consist of a number of critical systems (e.g. combustion chamber, grate, boiler, economiser, steam turbine and generator, ash handling and flue gas treatment systems) and auxiliary equipment (e.g. cranes, fans, pumps and water treatment systems). Typically, the thermal efficiency of mass burnt WTE plants are in the low 20s. There are opportunities to further increase the plant thermal efficiency through optimisation, use of new materials, innovation, maximise heat recovery and to minimise heat losses.

This is a directed ETRP Call for research projects that could increase the thermal efficiency of the existing waste-to-energy plants from its low 20s to above 30% as well as towards research projects that could lower the operational cost of the WTE plants. Some examples of projects under this directed call are:

- Maximise heat recovery of flue gas energy
- Novel techniques to recover low-grade waste heat
- Cost effective corrosion resistant materials
- Anti-fouling techniques and solutions for the boiler tubes
- Recirculation of flue gas for improved drying and combustion
- Improving acidic gases removal efficiencies
- Development of pollutant blockers

B. APPLIED R&D AND TEST-BEDDING AT SEMAKAU LANDFILL

9 The Semakau Landfill is an ecological offshore landfill that demonstrated the co-existence of a waste dumping ground with nature and biodiversity. The Semakau Landfill is now a unique waste disposal facility, which caters to various educational and recreational activities.

This is a directed ETRP Call for research and test-bedding projects to be carried out at the Semakau Landfill that could prolong the lifespan of the landfill as well as for test-bedding projects that could demonstrate sustainable management of waste generated from the expected increased in human activities due to educational and recreational visits etc. Some examples of projects under this directed call are:

- a. Treat and reuse the non-incinerable waste such as incineration ash and industrial sludge into raw materials for landfill capping, concrete and road construction;
- b. Develop scalable and sustainable waste management solutions for waste generated from human activities at source so as to close the waste loop, and
- c. Develop alternative cost-effective and rapid landfill capping solutions to enable redevelopment to take place over closed landfill cells.

Project Duration and Project Schedule

10 The project duration shall not exceed 3 years. The proposed project schedule shall include major milestones and allow time for the initiation of project.

Eligibility and Funding Support

11 This Open and Directed ETRP Call for research projects is extended to all Institutes of Higher Learning (IHLs), public sector agencies, not-for-profit research entities, Singapore-registered companies and for-profit research organizations.

12 IHLs, public sector agencies and not-for-profit organizations will qualify for up to 100% funding support of approved direct qualifying costs of a project. Singapore-registered companies and for-profit research organizations will qualify for up to 70% of the approved direct qualifying costs of a project. Only IHLs, public sector agencies and not-for-profit entities would be allowed support for indirect costs. These include up to 20% of approved qualifying direct costs (excluding exceptional items¹) for overhead costs and an additional support of up to 5% of approved qualifying direct costs (excluding exceptional items) each to support IP protection and commercialization activities.

Evaluation Criteria

13 Proposals will be evaluated against the following criteria:

- a. High technical/scientific merit;
- b. Potential for marketable applications;
- c. Excellent execution capabilities;
- d. Projects mainly conducted in Singapore; and
- e. Reasonable proposed budget.

Contact

14 The contact point for enquiries on submission of project proposals and all matters pertaining to this ETRP RFP are:

Mr Lim Cheng Choon DID : 67319604 Email : lim_cheng_choon@nea.gov.sg

Ms Ginny Tan DID : 67319109 Email : ginny_tan@nea.gov.sg

Office hours: 9:00am - 5:30pm, Monday to Friday

¹ Exceptional items are equipment costing more than \$100,000 and subcontracting of non-research work (e.g. the development of tools for the research)

Submissions and Results

15 Proposals are to be submitted by email to **nea_etrp@nea.gov.sg** by 1 March 2010, 12:00 Hrs Singapore Time. The softcopy submission shall be page numbered and consolidated in a single PDF file. The funding details template shall be submitted in excel format.

16 In addition, within a week after the closing date of the RFP (8 March 2010), one hardcopy of the proposal duly signed and endorsed shall be submitted to the ETRP Secretariat. The proposal shall be printed double-sided on A4 sized paper, bound and submitted in sealed envelope to the following address:

Environment Technology Office
National Environment Agency
40 Scotts Road #11-00
Environment Building, Singapore 228231
Attn: ETRP Secretariat

17 Successful proposals will be notified in writing by June 2010.