

**ENVIRONMENT TECHNOLOGY RESEARCH PROGRAMME (ETRP)
INFORMATION ON 6th REQUEST FOR PROPOSALS (RFP)**

Research Area	Call for Proposals in Waste Management
RFP Number	NEA ETRP RFP 12/01
Category	Open and Directed Call
Publication Date	16 January 2012
Closing Date and Time	18 April 2012, 12 noon
Proposal Submission	<p>Formal application shall be made in the following format:</p> <ul style="list-style-type: none"> a. One softcopy via email to nea_etrp@nea.gov.sg by 18 Apr 2012, 12 noon; and b. One hardcopy duly signed and endorsed by 25 Apr 2012 to: <ul style="list-style-type: none"> Environment Technology Office National Environment Agency 40 Scotts Road #11-00 Environment Building Singapore 228231 Attn: ETRP Secretariat
Instructions and Format of Submission	<p>Please refer to the following website: http://app2.nea.gov.sg/ETRP.aspx</p>

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BACKGROUND

1 Waste generation in Singapore is expected to increase with growing affluence and a higher population. One of the main challenges faced by Singapore in managing its waste is the constraint of land scarcity. On the other hand there are commercial opportunities as solid waste is increasingly seen as a resource from which energy and useful materials can be extracted and recycled into the economy.

2 Singapore's urban waste management challenge is similarly faced by other cities that are grappling with land shortage and increasing waste volumes. Research and development projects in the areas of cost-efficient waste-to-energy, waste-to-resource and treatment of special waste will ensure that there will be technology solutions that are both cost-effective and efficient to manage solid waste in a sustainable manner.

3 This Request for Proposal (RFP) in waste management R&D, therefore, seeks to fund innovations that will lead to 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 solid waste management to be submitted for consideration towards funding. This is a combined open and directed call for research proposals in the following 3 focus areas:

- I. Waste-to-Energy Processes
- II. Waste-to-Resource Recovery
- III. Special Waste Treatment

Information on the OPEN ETRP CALL for Research Projects

a. Waste-to-Energy R&D Projects

5 This is a call for research projects that could lead to cost-efficient, scalable and low environmental footprint waste management solutions or high value energy products. The thrust of the Waste-to-Energy R&D focus area is towards the development of cost-efficient waste treatment technologies to meet the long-term strategic disposal needs of Singapore. Projects will include research and/or development of innovative and cost effective waste treatment technologies covering efficient recovery of energy such as:

- i. Advanced thermal processes
- ii. Biological Digestion
- iii. Biomass to Bioenergy

- iv. Hydrolysis
- v. Hydrothermal processes

Projects relating to engineering R&D to improve the thermal efficiencies or reduce the unit cost of operating Waste-to-Energy incineration plants would also be considered under this focus area.

b. Waste-to-Resource R&D Projects

6 This is a call for research projects that could lead to commercially viable technologies and contribute towards increasing the recycling rates through increasing the commercial value of the recycled raw materials or lowering the unit cost of treatment. Some examples of projects falling under the Waste-to-Resource R&D focus areas are:

- i. Supporting recycling technologies such as Automated waste sorting technologies to separate recyclable streams from mixed waste
- ii. Environment-friendly processes for recycling or recovery of resources from mixed waste

c. Special Waste Treatment R&D Projects

7 This is a 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:

- i. Cost-efficient technologies to stabilise and treat hazardous wastes
- ii. Treating gaseous pollutants in a cost effective manner such as the development of Selective Catalytic Reduction (SCR) technologies to treat gaseous pollutants
- iii. Development of pollutant blockers

8 The proposal may involve R&D of products or improvement to processes that support existing or new technologies of companies relating to the above 3 focus areas. The proposal shall articulate clearly the project competitiveness and show how the R&D in the products or processes will contribute towards achieving the desired technology breakthroughs or leading to their competitive advantage. Information on the preliminary assessment of the market potential and the gain in competitive advantage of the technology should be included to justify the funding for the project.

Information on the DIRECTED ETRP CALL for Research Projects : Applied R&D and Test-bedding at Semakau Landfill

9 The Semakau Landfill is an ecological offshore landfill with the distinction of being an operational waste dumping ground that is able to retain its natural surrounding and rich biodiversity. The Semakau Landfill also caters to various educational and recreational activities.

10 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:

- i. Treat and reuse the non-incinerable waste such as incineration ash and industrial sludge into raw materials for landfill capping, concrete making and aggregates for road construction
- ii. Develop scalable and sustainable waste management solutions for waste generated from human activities at source so as to close the waste loop
- iii. Develop alternative cost-effective and rapid landfill capping solutions to enable redevelopment to take place over closed landfill cells
- iv. Develop technologies to extract rare earth materials or high-value metals from Incineration Bottom Ash

PROJECT DURATION AND SCHEDULE

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

ELIGIBILITY AND FUNDING SUPPORT

12 This ETRP RFP 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.

13 IHLs, public sector agencies and not-for-profit organizations will qualify for up to 100% funding support for approved direct qualifying cost items 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 funding support for Indirect Cost. The Indirect Cost items include Overheads (up to 20%

of approved qualifying direct costs excluding exceptional items¹), IP protection (up to 5% of approved qualifying direct costs excluding exceptional items) and Commercialization activities (also up to 5% of approved qualifying direct costs excluding exceptional items).

EVALUATION CRITERIA

- 14 Proposals will be evaluated against the following criteria:
- i. High technical/scientific merit;
 - ii. Potential for marketable applications;
 - iii. Excellent execution capabilities;
 - iv. Projects mainly conducted in Singapore; and
 - v. Reasonable proposed budget.

CONTACT

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

Mr Lim Cheng Choon

DID : 6731 9604

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Ms Ginny Tan

DID : 6731 9109

email : ginny_tan@nea.gov.sg

Office Hours : 8.30am to 5.30pm, Monday to Friday

16 ETRP applications are to be submitted by email to **nea_etrp@nea.gov.sg** by 18 Apr 2012, 12 noon Singapore Time. The softcopy submission shall be page numbered and consolidated in a single PDF file. The funding details template shall be submitted in Microsoft Excel format.

17 In addition, one hardcopy of the proposal duly signed and endorsed shall be submitted to the ETRP Secretariat by 25 Apr 2012. The proposal shall be printed double-sided on A4 sized paper, bound and submitted in sealed envelope to :

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

18 Successful proposals will be notified in writing by July 2012.

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)