

RGC Ref. No.: UGC/IDS25/15 _____ (please insert ref. above)
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**RESEARCH GRANTS COUNCIL  
COMPETITIVE RESEARCH FUNDING SCHEMES FOR  
THE LOCAL SELF-FINANCING DEGREE SECTOR**

**INSTITUTIONAL DEVELOPMENT SCHEME (IDS)  
RESEARCH INFRASTRUCTURE GRANT**

**Completion Report**

*(for completed projects only)*

<p><b><u>Submission Deadlines:</u></b></p> <ol style="list-style-type: none"> <li>1. Auditor's report with unspent balance, if any: within <b>six</b> months of the approved project completion date.</li> <li>2. Completion report: within <b>12</b> months of the approved project completion date.</li> </ol>
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**Important Note:**

**In completing the report, please use the following format:**

Page limit: Items 1 to 5 and Summary of Completion Report: no page limit  
Items 6 to 9: maximum **20 A4 pages** (excluding any appendices and attachments)

Font: Times New Roman

Font Size: **Not smaller** than Point 12

Margin: Two centimeters margin all around

Spacing: Single-line spacing

**1. Project Title**

Research on Sustainable Living: Phase One of the Capacity Building Plan

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**2. Investigator(s) and Academic Department(s) / Unit(s) Involved<sup>#</sup>**

Project Team	Name / Post	Department / Unit	Average Number of Hours Per Week Spent on this Project
Project holder* (i.e. Head of Institution)	Prof Christina HONG / President <sup>1</sup>	THEi	2 hours
Team leader	Prof CHUA Hong / Dean <sup>2</sup>	Faculty of Science & Technology/THEi	2 hours
Team member(s)	Prof PUN Kwok Leung / Department Head <sup>3</sup>	Faculty of Science & Technology/THEi	3 hours
Others	Dr WONG Simon / Programme Leader	Faculty of Science & Technology/THEi	2 hours
	Dr KWAN Tracy Research Manager	Research Office	16 hours

	Miss MAK Hilda Assistant Lecturer and former Project Officer	Faculty of Science & Technology/THEi	40 hours
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# Please state the **key** staff and department/unit involved in the project. Please add row(s) as necessary. Please also highlight the approved changes in project team composition and quote the date of the RGC approval for such changes.

\* Refer to "Applicant" for 2015/16 exercise and "Project holder" for 2017/18 exercise onwards.

<sup>1</sup> Applicant changed from Prof David Lim to Prof Christina Hong approved by the RGC in Jan 2017

<sup>2</sup> Team leader changed from Prof Amazon Lee to Prof Chua Hong approved by the RGC in Jan 2017

<sup>3</sup> Addition of new member Prof PUN Kwok Leung approved by the RGC in Jan 2017

### 3. Project Duration

	Original	Revised	Date of RGC / Institution Approval (must be quoted)
Project Start Date	1 January 2016	NA	NA
Project Completion Date	31 December 2018	NA	NA
Duration (in month)	36	NA	NA
Deadline for Submission of Completion Report	31 December 2019	NA	NA

#### 4. Project Objectives

Summary of objectives addressed / achieved:

Objectives*	Percentage Achieved	Remarks**
<b>General Research Capacity Building Plan</b> 1. To establish and furnish, in the first year, a Central Research Office for the Institute to support research in all of the Institute's strategic research centres	100%	NA
2. To hire an extra clerical staff for the Office for three years	100%	NA
3. To purchase a site licence of an electronic research administration software for use by researchers, the Central Research Office, the Finance Office and senior management of the academic units for three years	100%	NA
4. To subscribe for three years to the full text version of electronic peer-reviewed journals which are currently not available in the VTC library system	100%	NA
5. To purchase 40 licences of the statistical software <i>SPSS</i> for three years <sup>1</sup> , and 10 licences of the analytical software <i>NVivo</i>	100%	The number of SPSS licenses proposed to be purchased had changed to 20 due to the reduced grant amount received. The revision had been made in the implementation timetable and approved by the RGC after result announcement in 2015.
6. To organise workshops to strengthen the knowledge and skills of academic staff on the use of various research tools and effective project management	100%	NA
7. To organise informal research sharing sessions to foster an atmosphere of research and facilitate inter-disciplinary research collaboration	100%	NA
<b>Research Centre for Waste and Resource Management (the Centre)</b> 8. To establish a regional strategic research centre for research and development, technology transfer, and education and training in the areas of waste and resource management technology.	100%	The Centre was officially opened in Nov 2016 and has been running since. The physical entity of the Centre and analytical equipment was set up at THEi Tsing Yi Campus. All the analytical and field-sampling equipment listed in the project proposal have been purchased and installed by end of 2018.
9. To develop collaboration within the Institute and with various external stakeholders in establishing research excellence in the broad areas of solid waste management and resource recovery of importance and high impact to Hong Kong	100%	The research managers of the Centre oversaw the research activities initiated by THEi staff from different areas within the Faculty of Science and Technology and

Objectives*	Percentage Achieved	Remarks**
and the PRD Region.		encourage collaboration with external parties. The Centre has accommodated over 30 inbound visits since 2016. The visit groups mainly composed of local, mainland China and overseas academics/researchers and industrial experts. An outbound trip to the Greater Bay Area had been made to transfer the research findings from some of the research projects initiated by THEi staff.
10. To establish research excellence, as measured by publications, technology and patent developments, technology transfer and licencing, in producing practical solutions for solid waste disposal and management problems in Hong Kong and the PRD Region.	100%	The research managers of the centre and research staff continued to publish on high-impact international journals and in international conferences. Two (2) journal papers and six (6) conference papers focused on material recycling technologies were published and 6 FDS funded projects were granted during the reporting period.
11. To provide a forum and/or springboard for showcasing technology, technology transfer, technology training and education.	100%	The centre has organised a seminar series and a conference in addition to co-organising an international conference to facilitate exchange of knowledge and collaboration on researches related to waste and resource management.
12. To establish an education and training centre for students and the general public for creating environmental and sustainability awareness.	100%	Marketing materials of the Centre have been developed. Some of the research outcomes from the RCG projects were incorporated into the relevant modules of the undergraduate programmes of THEi, e.g. Construction Materials, Advanced Construction Materials and Technology, Waste Management and Control, Sustainable Energy Systems, Introduction to Environmental Engineering, and Introduction to Sustainable Development. Fourteen (14) school talks have been conducted to promote public awareness on sustainable living. Three (3) sessions of workshop related to food waste treatment were conducted for secondary school students and the general public.

\* Please refer to the originally approved objectives. If there are changes in objectives, please highlight the changes and quote the date of RGC approval for such changes.

## 6. Research Outputs

### 6.1 What are the accomplishments of the project?

- (i) *Please provide reports on conference, seminar, workshop, exchange programmes or other activities held (if applicable). (Please provide details of the activities organized, including the theme / objectives of the activities, targeted participants, attendance, analysis of participants, e.g. country of origin, research background, etc., evaluation forms of the activities and a summary of the participants' evaluation. Photos of the activities are preferred.)*

#### 6.1(i) I. General Research Capacity Building Plan

##### I.(1) Workshop on Online Literature Search

Literature search workshops were organized annually for THEi staff and students to enable participants to conduct effective, discipline-focused search for online literature and to access available library resources in THEi. The workshops in 2016 & 2017 had been reported in the Year 1 and Year 2 progress reports. In Year 3, two more workshops were organized on 18 & 19 Oct 2018 in the Chai Wan and Tsing Yi campuses, respectively. Dr Will Ma, Head of Learning Commons of THEi conducted the workshops. A total of 48 students and staff members participated.

##### I.(2) Workshops on the Use of the Electronic Research Administration System

After the launch of the electronic research administration system “Sophia” in 2017, user-training workshops were organized in 2017 and 2018 for THEi staff. Dr Tracy Kwan, Manager of the RO, conducted these workshops. Details of the 2017 workshop were reported in the Year 2 progress report. A similar workshop was held on 22 Nov 2018 with 11 THEi staff participants. User guides were also developed for different kinds of users, namely researchers, senior management and system administrators. The guides were accessible by users from the institutional website.

##### I.(3) Workshop on Project Management

To enable researchers to carry out and complete their research projects effectively, two workshops on project management were held in Year 2 and Year 3, respectively. The first one was reported in the Year 2 progress report. Due to the positive responses received from the participants, the same speaker, Dr Joseph Wong was invited to conduct a similar half-day project management workshop on 28 Nov 2018 for staff. The PIs of RGC projects or other externally funded projects, especially the newly awarded ones, were encouraged to join, and eight of them participated.

##### I.(4) Research Sharing Sessions

To facilitate knowledge exchange and research networking, quarterly research seminars has been organized since Jun 2017. Altogether 5 sessions were organized with nine THEi researchers having presented their research to staff and students. The sessions in 2017 were reported in the Year 2 progress report. Details of the 2018 sessions can be seen in attachments. On average, 20 staff and students attended each session.

#### 6.1(i) II. Research Centre for Waste and Resource Management

##### II.(1) Seminar Series

Six (6) technical seminars were organized between Nov 2016 and Sep 2018. The seminars focused on 1) stimulating discussions on the opportunities and challenges in relation to solid waste management in Hong Kong, 2) exchanging technical knowledge and practical experience, 3) dispersing research outcomes, and 4) generating ideas for applied research projects and research collaboration. Experts and researchers from different technical backgrounds were invited to deliver seminars on topics related to advanced recycling technologies and waste management strategies. The seminars targeted researchers, academics, consultants, practitioners of the recycling industry and tertiary students who are studying in environmental related fields.

Seminar #	Speaker/Topic	Remarks
1	Dr YAU Wing Kwong JP, Chief Executive of the Environmental Association Topic: The Rise of Environmental Concerns Matching Infrastructure and Development Needs	Date: 18 Nov 2016 No. of participants: 223
2	Ir Kenneth Lai Vice Chairman of the Chartered Institution of Highways and Transportation Topic: Green Transport in Hong Kong	Date: 18 Nov 2016 No. of participants: 223
3	Ir Dr Gordon Leung Ir Dr Simon WONG Assistant Professor of THEi Topic: Development of Environmentally Friendly Pavement Materials and Systems	Date: 3 Apr 2018 No. of participants: 67
4	Dr Keane Liu Assistant Professor of THEi Topic: Biodegradable Plastic, an Option to Control Plastic Waste Pollution	Date: 11 Apr 2018 No. of participants: 42
5	Dr Alex Tsang Teaching Fellow of THEi Topic: Wood Waste Valorization and Conversion to Fuels	Date: 25 Apr 2018 No. of participants: 35
6	Dr Helen Lu Assistant Professor of THEi Topic: Recycling LiCoO <sub>2</sub> with Organic Acids for Regeneration of Lithium-ion Battery Electrode Materials	Date: 21 Sep 2018 No. of participants: 87

## II.(2) Conferences

### **(a) The 21st International Conference of the Hong Kong Society for Transportation Studies**

THEi was one of the co-organisers of the 21st International Conference of the Hong Kong Society for

Transportation Studies (HKSTS) held on 10-12 Dec 2016 in Hong Kong. The HKSTS international conference has been organized in a yearly basis over the past 20 years with the objectives to stimulate researches and generate solutions to practical issues associated with urban transportation systems.

The theme of the conference in 2016 was “Smart Transportation”. Distinguished scholars from University of Sydney (Australia), Ajou University (Korea), Tohoku University (Japan), Chinese University of Hong Kong, Oklahoma State University (USA), Tongji University (China), and Washington State University (USA) and were invited as plenary speakers to share their visions and experience in transportation research. Over 230 abstracts from 18 countries and regions were submitted to the conference and 160 papers were selected for presentation in the conference. Some of the research papers presented were focused on sustainability issues in transportation and the materials used in transportation infrastructures. The research managers of the Centre presented three papers related to the performance of recycled pavement materials in the conference. A total of 215 researchers, engineers, consultants and business representatives attended the conference.

### **(b) THEi Conference on Sustainable Living 2018: From Waste to Resource**

The Centre organised the THEi Conference on Sustainable Living 2018: From Waste to Resource, which was held on 27 October 2018 in Hong Kong. The one-day conference was aimed to provide a platform for exchanging knowledge and fostering future academic-industrial collaborations in relation to solid waste recycling and management.

Eight speakers from Hong Kong and mainland China academic/research institutions and local industrial associations were invited to share their research outcomes, experience and visions in managing and transforming solid waste. The topics that have been covered in the conference included the challenges and opportunities for the local recycling industry, management strategies for organic waste, advanced recycling technologies for cellulosic waste, and the applications of reused and recycled materials in construction works. Two research managers of the Centre shared their research experience and outcomes during the conference. The conference attracted over 200 participants, including researchers from local universities (HKUST, City U and EdUHK), professional engineers (environmental scientists, civil and environmental engineers and consultants), industrial practitioners (local recyclers), representatives from the Hong Kong Productivity Council and the Hong Kong Waste Management Association, and local tertiary students and graduates.

### II.(3) Visits

The Centre has accommodated over 30 inbound visits since 2016. The organisations and institutes that have visited THEi since 2016 include the University of Technology Sydney (Australia), Massachusetts Institute of Technology (USA), Nanyang Polytechnic (Singapore) and Coventry University (UK). The visiting groups mainly composed of local, mainland China and overseas academics/researchers and industrial experts. The objectives of the visits are to show case THEi's achievements in scientific and applied researches, provide the opportunities for THEi staff to meet and establish connections with external researchers and potential sponsors or partners, and promote collaborative research. During the visits, the guests were accompanied by THEi research staff to visit the research facilities of THEi including the entity of the Centre and were introduced to some of the current research projects initiated by THEi staff including the RGC funded projects.

The Centre also assists THEi staff in reaching out to the industry to encourage partnership. In March 2017, the Centre participated in a mini-exhibition organised by a local recycling company to promote a research concept initiated by a group of THEi staff. The research concept involved using recycled rubber powders made of locally collected scrap tires as raw materials for lightweight roof greening media and building façade. Representatives from the Environmental Protection Department of HKSAR, EcoPark, Hong Kong Waste Management Association, and many local recyclers visited the booth of the Centre.

In Nov 2018, a small group of THEi staff, including research managers of the Centre, made an outbound trip to the Dongguan Province to share the research findings from some of the applied research projects initiated by THEi staff with the industry and explore collaboration opportunities for future research projects. The research projects that were selected for demonstration focused on green building materials in which a portion of the virgin raw materials was replaced by recycled materials. The group exchanged ideas and views on the future development of green building materials with the director of a concrete company and discussed the technical issues related to production and application of the green building materials.

### II.(4) Public/School Talks

In 2018, THEi research staff were invited to share findings from research projects related to systematic solid waste quantification and waste reduction tracking in a few public talks organised by the Environment and Conservation Fund and the Environmental Protection Department. THEi research staff also incorporated some research findings from projects that focused on beneficial reuse and recycling of household solid waste in a series of talks for secondary school students. A total of 14 inbound and outbound talks were conducted between 2017 and 2018.

*6.1(ii) Please provide reports on asset purchase such as acquisition of research facilities, communal equipment, software licence, dataset and / or status of infrastructure / physical research structure building such as research centre, research supporting unit (if applicable).*

*(Please provide supporting documents and / or photos, and provide the utilization rate.)*

## **6.1(ii) I. General Research Capacity Building Plan**

### I.(1) Establishment of a central Research Office (RO)

The RO was established in 2016 and has been providing research support services to the whole institute since then. The RO has two staff members – a clerical staff supported by the present IDS grant and a manager by THEi. In 2018, the RO was relocated to the new Chai Wan campus (Location: Room S601, South Block, THEi Chai Wan). The office's furniture and equipment such as computers and printers were partly supported by the project grant.

#### I.(2) Installation of an electronic research management system

To improve the efficiency and accuracy of research administration, an integrated, interactive cloud-based electronic system called the Sophia Knowledge Management System (Sophia) was acquired in 2016. Sophia has since been used by researchers to submit research grant applications, and by RO to process applications, administer funded research projects and store data and documents about researchers and projects. Sophia is used by THEi academics, senior management, finance office and RO. At present, there are over 200 researcher users and over 400 project records in the system. Sophia is available for use by annual subscription and its use during the project period was supported by the project grant.

#### I.(3) SPSS software and NVivo software

The number of SPSS license purchased was based on the expressed need of the PIs each year. The numbers acquired in Year 1 and Year 2 had been reported in the respective progress reports. Twenty SPSS licenses were acquired in Year 3.

Ten perpetual NVivo licenses had been purchased in Year 1 based on the expressed need of PIs of on-going projects. Once a project has been completed and the NVivo license was no longer needed, the licence would be recalled and released for use by others. Throughout the project period, 14 projects had used NVivo.

#### I.(4) Subscription of electronic academic journals

Sixteen e-journals that were unavailable in the VTC libraries and requested by academic staff were subscribed in Year 1, and renewed in Year 2 and Year 3 (the list of journal subscribed had been reported in the Year 1 progress report). The full text papers published by these journals are available for online browsing or download by THEi staff and students.

### **6.1(ii) II. Research Centre for Waste and Resource Management**

The Research Centre for Waste and Resource Management (the Centre) was officially opened in November 2016. The entity of the Centre was set up at level 10 in the Tsing Yi Campus of THEi. The Centre houses the analytical instruments acquired under this project including the Atomic Absorption Spectroscopy (AAS), the Total Organic Carbon Analyser (TOC), and the Gas Chromatography - Mass Spectrometry (GC-MS). A full-time project officer supported by this project was employed from May 2016 to Dec 2017 to establish the Centre, oversee the procurement and installation of the equipment, and support the day-to-day operation of the Centre. From January 2018, the Centre was operated by the Faculty of Science and Technology (FST) of THEi. Research assistants supported by external funding were employed to support research works initiated by THEi research staff. Six senior research staff of FST were assigned as the research managers of the Centre and were dedicated to leading the research activities in the six defined areas.

Installation of all the instruments supported by this project, including the AAS, TOC and GC-MS was completed in Dec 2018. The instruments are open to all THEi staff and THEi students for

conducting research works. To encourage sharing of the equipment supported by this project, a shared equipment policy was approved by the Faculty in 2018 and the shared equipment information was uploaded to the website of the Research Collaboration Alliance of the Local Self-financing Degree Sector webpage as well as the Centre's webpage for open access. External users, including staff and students from other RCG funded self-financed institutions, are now able to use the shared equipment on campus for research related works. As of the end of 2018, 35 uses on the AAS, 68 uses on the TOC and 13 uses on the GC-MS have been recorded. No access request from external user has been received so far.

6.1 (iii) Please provide reports on research activities carried out (if applicable).

### 6.1(iii) I. General Research Capacity Building Plan

#### Research-related activities carried out by the Research Office

- Explored external research funding opportunities and issued calls for application to academics. Calls for about 15 external funding schemes were issued each year.
- Processed internal and external research grant applications.
- Monitored the progress of internally and externally funded research projects including requesting progress update, issuing report alerts, facilitating report submission, and taking disciplinary actions against non-compliant projects.
- Provided administrative support for PIs of funded projects in the preparation of progress reports and coordinated report submission to funders.
- Liaised between PIs and funders to facilitate fulfilment of funders' requirements.
- Organized annual internal RGC application briefing session
- Organized annual orientation session for PIs of newly supported RGC projects
- Facilitated the application for and attainment of ethics and safety approvals for research projects.
- Developed research policies and guidelines

### 6.1(iii) II. Research Centre for Waste and Resource Management

THEi research staff have been active in carrying out researches in advanced solid waste treatment technologies and have won a number of competitive research grants. The focuses of the recent/on-going research projects lay on the beneficial reuse and recycling of construction waste, management and recycling of wasted lithium batteries, production of fuels from cellulose and organic waste, and production of biodegradable plastics from wastewater sludge. Some of the projects that are supported by grants from the RGC under the FDS scheme during the reporting period are listed below.

Project Reference No.: UGC/FDS25/E14/17

Project Title: Study on the use of high percentage reclaimed asphalt pavement materials in road construction in Hong Kong

Principal Investigator: Dr LEUNG Gordon Lai-ming (THEi)

Project Reference No.: UGC/FDS25/E07/16

Project Title: Development of fluorinated Si/C composites with porous and micro/-nanoarchitectures for advanced Lithium ion batteries

Principal Investigator: Dr LU Xiaoying (THEi)

Project Reference No.: UGC/FDS25/E04/16

Project Title: Study of the performance of asphalt with high-volume plastic waste for highway pavement in Hong Kong

Principal Investigator: Dr WONG Ho-fai (THEi)

Project Reference No.: UGC/FDS25/E11/16

Project Title: Enhanced biodegradation of petroleum hydrocarbons and energy harvest from field contaminated marine sediment by coupling sediment microbial fuel cell with nitrate induced biostimulation

Principal Investigator: Dr YAN Yuk-shing (THEi)

Project Reference No.: UGC/FDS25/E16/17

Project Title: Synthesis of PHAs using Carbon Source from Ferrous Activated Persulfate Oxidation combined with Alkaline Fermentation of Excessive Activated Sludge

Principal Investigator: Dr LIU Yaohui (THEi)

Project Reference No.: UGC/FDS25/E09/17

Project Title: Treatment and Catalytic Upgrading of Mixed Oil Wastes and Wood/Paper Wastes to Transportation Fuels in Hong Kong

Principal Investigator: Dr TSANG Chi-wing (THEi)

- 6.2 Please describe where and how the IDS Research Infrastructure Grant project assisted in building up the research capacity of the institution in its strategic areas (e.g. has the IDS Research Infrastructure Grant project facilitated the academics in formulating their research proposals under the Faculty Development Scheme, etc.).

### **I. General Research Capacity Building Plan**

Prior to the RO's establishment, about 13 applications for external research funding schemes were submitted each year. During the project period, the RO has facilitated the submission of 137 external grant applications to various funding schemes such as the RGC's FDS, IIDS and IDS, the Health and Medical Research Scheme, the Innovation and Technology Fund; and the acquisition of over HK\$40M of grant awards including another RGC-IDS grant of HK\$14 in 2016. During the project period, 50 externally funded projects commenced and 22 were successfully completed.

### **II. Research Centre for Waste and Resource Management**

This project supported the purchase of three pieces of analytical instruments reported in section 6.1(ii) of this report. The instruments are installed at the Research Centre for Waste and Resource Management of THEi Tsing Yi campus. Academic staff members of THEi made use of these facilities to support final year projects, generating initial results that facilitate further investigation of some specific research topics relating to environmental sustainability. The instruments also support the academic staff members to apply for research funding from various sources, e.g. Environment and Conservation Fund, and UGC Research Fund, etc.

The research managers of the Centre took the lead to seek collaborative and funding opportunities and encourage other staff to participate in forums, seminars and conferences related to their



(iii).

## 6.7 Other education activities and / or training and development

### **Research Centre for Waste and Resource Management**

Some of the research outcomes from the project led by THEi research staff have been incorporated into the core modules of the Environmental Engineering and Management, Civil Engineering, and Food Science & Safety programmes of the faculty. Selected final year students were encouraged to participate in the preliminary literature research and experimental work of some of the FDS projects listed in section 6.1 (iii) to facilitate research-informed teaching and enhance the students' research skills.

6.8 Please highlight any deliverables indicated in the project implementation timetable endorsed by RGC, which have not been covered or achieved as per sections 6.1 to 6.7 above, and explain / elaborate.  
N.A.

6.9 Please elaborate the role of the managing team in coordinating and managing the project.

The IDS project team and the manager of the RO formed a management team and had regular meetings since 2016 to manage the implementation of the project, in particular the setting up of the RO and the Research Centre, to review progress and to discuss and resolve any problems encountered. If needed, other relevant staff were also invited to the meetings.

Six experienced academic staff were designated as the research managers of the Research Centre in areas related to waste management and sustainability: Construction & Industrial Solid Wastes, Food Wastes Recycling Technology, Plastic & Polymeric Wastes, Waste Minimisation, Landfill & Incineration Technology, and Education and Training. The managers regularly communicate with academic staff who have expertise in those areas to support their research grant applications, collaboration between THEi staff and external researchers, and project management needs. Academic staff from both engineering and non-engineering programmes of the Faculty were involved in this project. Relevant academic staff members were also invited to the management meetings to express their needs to project team.

## 7. Awards And Recognition

7.1 Have any research grants been awarded that are **directly** attributable to the results obtained on this IDS Research Infrastructure Grant project? (*Please provide details*)

The RO had contributed to the Institute's success in securing over HK\$40M of external research grant awards (see item 6.2), and the projects listed in item 6.1.(iii).II during the project period through the support services provided.

7.2 Other awards and recognitions as a result of this IDS Research Infrastructure Grant project (*Please specify*)  
Nil

## 8. Other Impacts

8.1 What are the current and expected impacts of the project in terms of its contribution to the local and regional economic and societal well-being? (*e.g., technology transfer, collaboration with external organizations, etc.*)

Some of the research projects reported in this report (e.g. the researches focused on reuse and recycling of lithium batteries and conversion of waste oil into fuels) have led to following up research work and collaborations. The staff who initiated the projects received additional funding from RGC and other sources for further investigations and the outcomes of the investigations are expected to have an impact in improving the recycling processes and the recycled products, which eventually would help in reducing the burden of solid waste disposal and management and sustaining the recycling industry.

Some of the outreach activities listed in 6.1 (i) incorporating the latest ideas to deal with solid waste have shown to the general public and the next generations that attracted their attention to the potential of research on solid waste treatment and management. It is expected that some of the students who participated in the activities would be inspired to pursue a career in research.

8.2 Others (*Please specify*)  
Nil

## 9. Statistics on Research Outputs

	Peer-reviewed Journal Publications	Conference Papers	Scholarly Books, Monographs and Chapters	Patents Awarded	Other Research Outputs (please specify)	
<b>No. of outputs arising directly from this project</b>	5 + 1 in progress	7	Nil	Nil	Type	No.
					NA	

## 10. Sustainability of The IDS Research Infrastructure Grant

### 10.1 Whether there are new ideas evolved **directly** from the project?

The RO had helped to encourage and facilitate staff's engagement in research. In turn, more needs of the researchers were identified including the need for space for research assistant and the need to improve the English academic writing skills.

Some of the academic staff who initiated the FDS projects reported in section 6.1(iii) have come up with some new research ideas built up on the outcomes from their on-going or completed FDS projects. The research on lithium battery recycling technology has led to the research on reusing waste electric car batteries for stationary electrical energy storage systems. The new research direction is still at the early stage of development. The responsible staff has started to sort list the suitable funding opportunities and gather support for research grant applications.

Another new idea was further from the researches on converting cellulous wastes into biofuels. The responsible staff is now looking at ways to extend the application of the technology to cover some types of food wastes to make the technology more suitable for adoption in Hong Kong, where food waste is a more serious issue than brown waste. This new direction is also at the early stage of development. The responsible staff has been collaborating with researchers from Dalian University of Technology (DUT) in previous researches and will continue to seek collaboration opportunities with them.

### 10.2 Whether there are new projects evolved **directly** from the project?

As a result of the above 10.1, another application for IDS was submitted and approved (Project Ref. No. UGC/IDS25/16). In addition, the experience of this project has been passed on to the other two faculties of THEi, in which one is currently implementing the said new IDS project, and the other is planning to applied for the IDS in the near future.

The staff who initiated the two new ideas reported in section 10.1 are likely to apply for external research grants in a near future.

### 10.3 Whether there are new collaborations developed **directly** from the project?

The activities aim at fostering collaborations in scientific and applied researches (e.g. inbound and outbound visits to the Centre and inter-institutional research work) are on-going and new collaborations are expected to result from those effort.

The staff who initiated the two new ideas reported in section 10.1 are in the progress of seeking collaboration opportunities with the industry and other research institutes.

Moreover, the activities aim at fostering collaborations in scientific and applied researches (e.g. inbound and outbound visits to the Research Centre and inter-institutional research work) are on-going and new collaborations are expected to result from those efforts.

### 10.4 Please give details on how much money and from which sources has been obtained for the specific purpose of continuing the work started under this IDS Research Infrastructure Grant project.

The Faculty of Science and Technology of THEi will continue to maintain the Research Centre and its experimental facilities to support academic staff in developing their research capability. Academic staff will apply for research funds from various finding sources. THEi has a good track record in securing research funds, particularly from RGC and the Environment and Conservation Fund.

**11. Public Access Of Completion Report**

*(Please specify the information, if any, that cannot be provided for public access and give the reasons.)*

<b>Information that Cannot Be Provided for Public Access</b>	<b>Reasons</b>
Nil	

RGC Ref. No.:
UGC/IDS25/15
(please insert ref. above)

**INSTITUTIONAL DEVELOPMENT SCHEME (IDS)  
RESEARCH INFRASTRUCTURE GRANT**

**Summary of Completion Report**

*(Please list all the stages since project inception)*

Project Title: Research on Sustainable Living: Phase One of the Capacity Building Plan

Stage Completed	Period		Milestones	
	(Month / Year) to (Month / Year)		Deliverables to be Achieved <sup>2</sup> (Please summarize in <u>three</u> bullet points where details should be left to the report proper)	% of Each Deliverable Achieved <sup>3</sup>
Year 1	01/2016 – 12/2016		1. Set up a central Research Office 2. Set up the physical entity of the Research Centre for Waste and Resource Management 3. Define research topics and develop research proposals	1. 100% 2. 100% 3. 100%
Year 2	01/2017 – 12/2017		1. Organize workshops and research sharing sessions 2. Submit research grant proposals 3. Acquire on-site sampling and analytical equipment	1. 100% 2. 100% 3. 100%
Year 3	01/2018 – 12/2018		1. Organize workshops and research sharing sessions 2. Deliver a conference 3. Deliver school talks and seminars	1. 100% 2. 100% 3. 100%
<b>Total to-date:</b>				

Note: <sup>1</sup> Justifications for significant under-spending or over-spending ( $\geq \pm 10\%$ ) should be given in **section 5.1** of the completion report.

<sup>2</sup> The key milestones to be achieved by the project within the respective stage as indicated in the approved implementation timetable.

<sup>3</sup> Justifications for significant slower rate of progress compared with the approved implementation timetable should be provided in detail in **section 4** of the completion report.