

Funding Research and Research Systems Facing Global Grand Challenges

Prof. Jonathan W. C. Wong

**Sino-Forest Applied Research Centre for Pearl River Delta Environment
Department of Biology, Hong Kong Baptist University**



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Sino-Forest Applied Research Centre for Pearl River Delta Environment (ARCPE)



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Hong Kong Baptist University

- One of the ten Govt Universities
- A total population of 12000 students
- Rank Top 50 Asian University, top 350 in the world
- A liberal art University with world class research
- First University with Chinese Medicine
- Seven Schools and Faculties



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Contents

- Funding opportunities in Hong Kong for sustainability research
- Experience in Securing Funds in sustainability area
 - Adjusting research directions to tap in the different research resources
 - Partnership with the different stakeholders
 - Sustainability and community engagement



Funding Sources in Hong Kong

Local Government Funding



Local Private Funding



Croucher Foundation
裘槎基金會

Mainland Funding



National
Natural
Science
Fund

Overseas Funding



Rockefeller
Brothers Fund



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Research Grant Council (by UGC) – Individual Research

➤ Funding exercises

❖ Early Career Scheme

❖ Promotes the success of the newly appointed researchers (within 3 years)

❖ General Research Fund

➤ Focus

❖ Basic and fundamental research

❖ Relevance to Hong Kong

❖ International academic contributor.

❖ Boosting Hong Kong's scientific image globally – HK as a knowledge hub

❖ Promote excellence in the higher education sector



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General Research Fund



Discipline	No. of projects	Fund (Million HK\$)
Biology & Medicine	193 (20%)	158.3 (27%)
Humanities and Social Sciences	187 (19%)	97.0 (16%)
Physical Sciences	159 (16%)	101.4 (17%)
Engineering	287 (30%)	186.6 (32%)
Business Studies	143 (15%)	48.6 (8%)
Total (2014/2015 Round)	969	591.8
Total (2013/2014 Round)	920	560.6
Total (2012/2013 Round)	770	523.8
Total (2011/2012 Round)	801	643.1
Total (2010/2011 Round)	764	626.3



Research Grant Council Public Policy Research



- **Definition:** Academic research that will have explicit policy implications on public policy development in Hong Kong.
- Scheme was launched by the Government in 2005 to promote public policy research in higher education institutions.
- **Two categories:** Public policy research (PPR) & Strategic Public policy research (SPPR)
- The research areas set out by the Central Policy Unit (CPU)
 - ❖ Social
 - ❖ Public Administration / Government
 - ❖ Economic
 - ❖ cooperation with the Mainland
 - ❖ Reinforcing the Four Traditional Pillar Industries
- 12 - 20 Million HK\$ /year

Year	Total (M HK\$)#
2012/2013	17.5
2011/2012	18.2
2010/2011	12.6
2009/2010	17.6



Group Research : Collaborative Research Fund



- ❖ Promotes the consortium of researchers across disciplines and/or institutes within a research area - **bring in different expertise together**
- ❖ Establish a **critical mass of researcher** – Successful on global stage
- ❖ Around 5-8 Million HK\$/proposal; 3-5 years with renewal possibility
- ❖ **Criteria:**
 - long term goal of the proposal and its **potential to develop into an area of strength**;
 - Opportunities for **effective synergism** among the participating researchers; and



Group Research : Area of Excellence (AoE)



- ❖ Launched in 1998 – Till now 6 rounds had been undertaken
- ❖ Areas to be recognized internationally as of equal status to their peers in the same subject areas
- ❖ Additional investment in state-of-the-art facilities and activities which would maintain the researchers among the world leaders.
- ❖ Expertise from different areas for a consortium
- ❖ Co-funding from other sectors or other funding agencies are encouraged
- ❖ Give a multi-dimension to the proposed area of research
- ❖ Forces to include both basic and applied research
- ❖ Longer term goals eventually should strive for practical solutions
- ❖ Relevant to Hong Kong
- ❖ International excellence



Group Research : Area of Excellence (AoE)



Round	Year	Fund (HK\$)	No. of projects	Area
1	1999	126	3	Information Technology; Economics and Business Strategy; Plant and Fungal Biotechnology
2	2001	100	3	Molecular Neuroscience; Chinese Medicine Research; Molecular Technology for Drug Discovery and Synthesis
3	2004	95	2	Genomics & Skeletal Research; Marine Environmental Research
4	2007	106 (87)*	2	Circulating Extracellular Nucleic Acids; Pandemic and Inter-pandemic Influenza
5	2009	378 (195)*	5	Network Pharmacology; Anthropology of Chinese Society; Nasopharyngeal Carcinoma; Molecular Functional
6	2012	144	3	Neuro-materials

* - Other funding sources in addition



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Areas are not based on specific themes; but supported based on the merit, sustainability and viability to achieve the objectives of synergy, excellence and long-term effectivity

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Group Research : Theme Based Research (TBRs)



- ❖ Launched with one-off grant of \$18 billion in 2009
- ❖ Focus academic research efforts on themes of strategic importance to the long-term development of Hong Kong
- ❖ 3 themes (should find a potential area within a theme)
 - ❖ *Promoting good health*
 - ❖ *Developing a sustainable environment*
 - ❖ *Enhancing Hong Kong's strategic position as a regional and international business centre*
- ❖ Encourage consortium and other funding sources
- ❖ The outcomes should address/achieve the sustainability, HK as a leader in this area



Group Research : Theme Based Research (TBRS)



Change of topics over time

Theme	Topics in 1 st round	Topics in 5 th round
Promoting good health	<ul style="list-style-type: none"> ➤ Infectious Diseases ➤ Post Genomic and Personalized Medicine ➤ Neuro-degeneration and Aging ➤ Stem Cells. 	<ul style="list-style-type: none"> ➤ Infectious Diseases ➤ Understanding Disease Mechanisms to Improving Health ➤ Stem Cells and Regenerative Medicine
Developing a sustainable environment	<ul style="list-style-type: none"> ➤ Water Pollution and Waste Water Treatment in PRD Region ➤ Sustainable Water Resources ➤ Energy Efficient Buildings ➤ Organic Photo-voltaic and LEDs ➤ Development of Effective Air Quality Management Strategies for HK & PRD ➤ Strategic Urban Planning for Resilience and Sustainability. 	<ul style="list-style-type: none"> ➤ Water Pollution and Water Treatment ➤ Sustainable Built Environment ➤ Energy Harvesting, Conversion and Conservation ➤ Air Quality
Enhancing Hong Kong's strategic position as a regional and international business centre	<ul style="list-style-type: none"> ➤ HK's Future as an International Financial Center; ➤ HK as the Knowledge Center for China Business, Economics and Institutions ➤ Understanding and Promoting HK's Networking Capability ➤ Promoting HK as a Center of Excellence for Services Innovation ➤ Creating and Developing HK's Advantages as an Education Hub ➤ Hong Kong's Legal and Governance Systems as Business Advantages (including, but not limited to Intellectual Property) 	<ul style="list-style-type: none"> ➤ HK's Future as an International Financial Centre ➤ Promoting HK's business through networking capability ➤ Promoting HK as a Centre of Excellence for Business Services ➤ Innovation and Business Creation



Group Research : Theme Based Research (TBRS)



Details of funding

Round	Theme-1 (HK\$ M)*	Theme-2 (HK\$ M)*	Theme-3 (HK\$ M)*	Total (HK\$ M)#
1	177 (4)	57 (1)	13 (1)	248 (6)
2	135 (2)	52 (2)	15 (1)	203 (5)
3	116 (2)	60 (1)	-	176 (3)
4	137 (2)	47 (1)	20 (1)	205 (4)

Theme 1: Promoting good health

Theme 2: Developing a sustainable environment

Theme 3: Enhancing Hong Kong's strategic position as a regional and international business centre

* Numbers of projects funded are presented in the parentheses

Totals may not tally due to rounding-off

Health > Environment > Business



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Innovative Technology Commission

- ❖ Supports commercially viable projects in different technology areas

Automotive Parts & Accessory Systems	Biotechnology
Chinese Medicines	Communication Technologies
Consumer Electronics	Environmental Technology
Integrated Circuit Design	Logistics & Supply Chain
Management Enabling Technologies	Nanotechnology & Advanced Materials
Opto-electronics	Textile & Clothing

- ❖ Support midstream/downstream research of universities, R&D centres, industry support organizations, professional bodies and trade and industry associations
- ❖ Types of funding
 - (i) **Innovation and Technology Support Programme (ITSP)**
 - (ii) The General Support Programme (GSP)
 - (iii) The University-Industry Collaboration Programme (UICP)
 - (iv) The Small Entrepreneur Research Assistance Programme (SERAP)



Innovation and Technology Fund

Statistics of Approved Projects (as at 30/9/2014)

Programme	Approved Projects	Funds Approved (HK\$ Million)
Innovation and Technology Support Programme	1753	7,292.0
General Support Programme	1783	637.4
University-Industry Collaboration Programme	258	294.8
Small Entrepreneur Research Assistance Programme	393	470.4
Total	4187	8,694.5



Environmental and Conservation Fund

- ❖ Relevant to Hong Kong environment – technical, social and educational
- ❖ Research, technology demonstration and other projects and activities in relation to environmental and conservation matters, as well as community waste recovery projects
- ❖ Promotes individual behavioral and life style changes to protect the environment and achieve sustainable development
- ❖ Priority Research Themes (2012-2014)
 - ❖ Climate Change - Adaptation and Mitigation
 - ❖ Waste Recycling
 - ❖ Biodiversity Studies and Conservation, and Geo Conservation
 - ❖ Air Quality



Environmental and Conservation Fund

Number of projects funded and the amount in 2013/2014

No.	Scheme	Number of projects	Amount (Million HK\$)
1	Energy Conservation Projects for NGOs	146	38.6
2	Research, Technology Demonstration and Conference Projects	17	9.9
3	Community Waste Reduction Projects & Programme of source separation	27	59.9
4	Environmental Education and Community Action Projects – General & Minor Works Projects	247	37.6
5	On-site Meal Portioning Projects in Schools	8	10.8
6	Food Waste Recycling Projects in Housing Estates	23	23.5
7	Large scale Environmental education projects coordination	8	24.4
		476	204.8

Waste reduction & food waste recycling projects are getting more attention



International Funding for Developing Countries

- ❑ Concentrate on 'Global problems in a regional context' such as disease epidemics, food safety, and environmental sustainability
- ❑ Examples of funding agencies:
 - ❑ US Agency for International Development (USAID): Works with universities, businesses, and other partners in developing countries.
 - ❑ Swedish International Development Cooperative Agency (SIDA): Offers research grants in natural sciences and health research for researchers in developing countries.
 - ❑ **Rockefeller Foundation**: Funds projects to create health research networks, to run biomedical research initiatives
 - ❑ International Development Research Centre (IDRC): Supports research in developing countries to promote growth and development focusing on reducing poverty and creating equitable access to resources and services
 - ❑ **GIZ** (German International Cooperation)





**As a Uni researcher,
how we deal with it.....**



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Adjusting the Research Directions: Retrofit with Emerging Areas

Adjusting the research directions towards the demands of the sustainable society – a way to survive and excel

Own experience

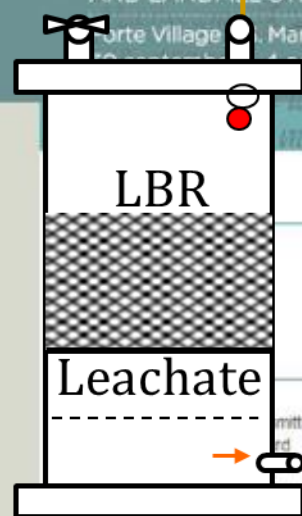
- >15 years of experience in composting a range of substrates
- Two-pilot plants in Hong Kong
- Key consultant in the waste treatment and management

Retrofitting new direction

- ☐ Agricultural sustainability in Hong Kong
- ☐ Environmental sustainability
 - ☐ Waste treatment
 - ☐ Community education and awareness
 - ☐ Corporate social responsibility



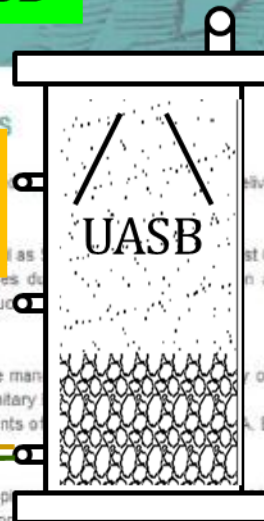
Pressure
sensor



LBR-gas-UASB

Control
LBR-UASB

MFC



Particulars	Gas transfer	Control
Methane production (L/g VS _{added})	0.27 ± 0.04	0.22 ± 0.03
COD removal efficiency (%)	94.0 ± 4.1	90.8 ± 3.8
Contribution to methane increase	40%	

Social programme

A life for waste

Best paper awards

on the base of the quality of the contents reported and the quality of visual presentation itself.

2013 Winner: 'Plasma technology for the abatement of pollutants emitted by mechanical-biological treatment plants' by M. Ragazzi, E.C. Rada, V. Torretta and M. Schiavon (University of Trento, Italy)



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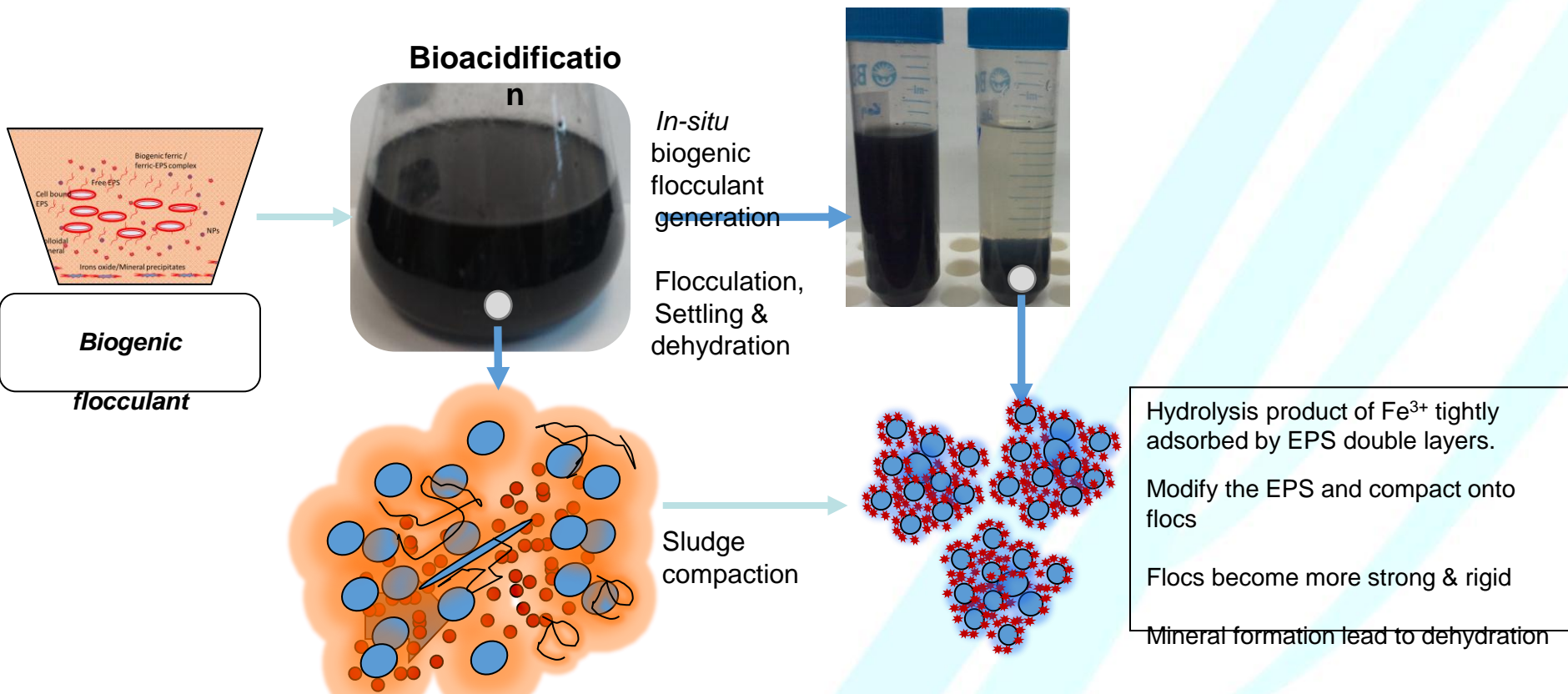
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Possible mechanisms of sludge dewatering ITF Funding



Possible dewatering mechanisms of AF biogenic flocculant



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Government Funding for Sustainable Agriculture – Organic Farming in HK

Critical for positioning the research towards the needs

Case study: Establishment of HK Organic Resource Centre (HKORC)

❖ Establishment

- ❑ Established in 2002 with the funding from **Agricultural Development Fund**, Vegetable Market organization (2002-2005)
- ❑ To develop an organic standard and certification system in Hong Kong and relative standards.
- ❑ Assist farmers to convert to organic and to educate the public about organic products and certificatio

❖ Continuous Funding Support (2002 – 2015)

❖ Current Standing

- ❑ The only third-party organic certification system and opinion surveys
- ❑ Yearly operatio nof HKD 7 million(with more than 15 staff)



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Educate the public about organic certification and organic living



3.17全城有機日

有機拾年 豐收嘉年華

精彩節目

- 謝安琪共創「有機毛巾畫巨作」體力士紀錄
- 「有機拾年」豐收回歸展
- 親子有機農莊體驗遊
- 有機低脂午餐會
- 大型有機漁農加工產品義賣
- 有機環保遊戲坊

齊來參與

日期：3月17日（星期日）
時間：10:00am - 6:00pm
地點：中環遮打道及遮打道行人專用區
(鄰近政府大廈、皇后大道中)

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10 有機拾年 Ten Years Organic

謝安琪 Amy

起和

NEOSWISSER Amway



Private Funding/Donation – Multi-stakeholders Platforms for Sustainability

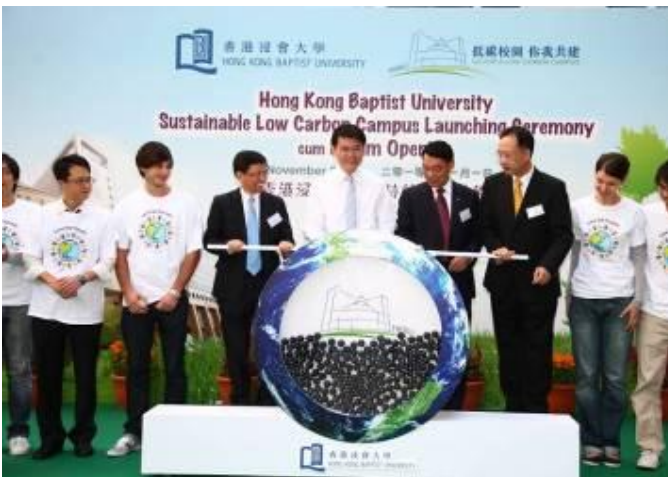
- ❑ Private – Institute partnership
- ❑ Provide a platform for applied research
- ❑ Establishment of Sino-Forest Applied Research Centre for Pearl River Delta Environment in 2008
- ❑ Sponsors
 - ❑ Sino-Forest Corporation, Wofoo Foundation & Mr. Allan T.Y. Chan
 - ❑ HKBU – Host
- ❑ Excellent Platform to attract funds from Government and from Private
- ❑ Initial funding – 9 million HK\$ Matching Fund – 4.5 million
- ❑ Funds secured during the operation - ~24 million HK\$ (~90% from Government funding agencies)
- ❑ Create platforms for collaborative research within Hong Kong and also with overseas institutions



Sustainable Future – University Positioning

Building Low Carbon Campus

- ❑ University's role in creating a sustainable culture
- ❑ Educational institutes are 'Knowledge hubs' – make public education easy and effective
- ❑ **Case study – HKBU Strategic Grants**
 - Sustainable Low Carbon Campus at HKBU – 5 Million HK\$ for hardware installation to improve campus environmental sustainability and also to instill education and awareness programs for the students
 - Won the Silver Award of the prestigious Hong Kong Award for Environmental Excellence in 2011
 - First tertiary education institute in Hong Kong build a low carbon campus



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Hong Kong Awards for Environmental Excellence



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University - Government - Private Sector

Decentralized Composting of Food Wastes

- ❑ A funding methods to encourage collaboration between university and the industrial sector
- ❑ Develop on-site composting process and inoculum for community composting
- ❑ Funding support from Environmental Conservation Fund
- ❑ Matching funds from Innovative and Technology Fund with an industrial partner – Australian Composting Company
- ❑ The IPR can be owned by the Research institute & the industry involved
- ❑ Boosting cutting edge technology



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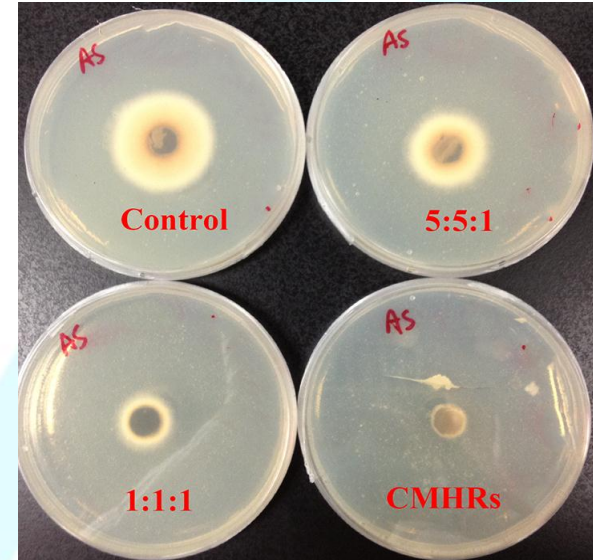


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Institutional Collaboration – Work Out the Solution

Composting of Chinese Medicine Herbal Residues

- ❑ Partnership with the industry to provide research and development support to solve their problem
- ❑ Partnered with Kwong Wah hospitals – One of the biggest Chinese medicine clinics – generate residues and need solution to dispose or recycle
- ❑ We provide our expertise in composting
- ❑ Application for Government funding support from ECF
- ❑ Win-win situation for both parties
- ❑ Develop an anti-pathogenic compost with special competitive niche in the market
- ❑ A patent has been filed and is now looking for potential investors.



Community Education and Awareness for Sustainable Waste Management

- ❑ Often the problems are regionally relevant but requires global knowledge
- ❑ Main funding body can be the Government while the local bodies supplement
- ❑ 'Waste separation, management and recycling'
- ❑ The University research centre takes up the role as a knowledge transfer centre
- ❑ Project – Waste separation study in housing estate
- ❑ Project - “Kown Your Own Waste” project
- ❑ Project – Waste characterisation and waste separation at Macau private sector



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Linking to the Community - Environmental Policy

- Environmental engagement and education program
- To supplement the government's environmental policy
- The needs
 - Ways to improve public acceptance on "user-pays" principle
 - Community engagement and environmental awareness in Hong Kong



Consortium Effort for Foreign Funds Hengxian Waste Separation Project

- ❑ Rockefeller Brother Foundation (RBF) has special focus on South China
- ❑ Building capacity of developing country in their resource sustainability
- ❑ Orient towards creating template of working modules that can be applied in other regions
- ❑ A collaboration among
 - ❑ Institution for technology development – ARCPE - HKBU
 - ❑ NGO as a local engagement agent – ActionAid China
 - ❑ Local government as the local executor – Hengxian Environment Bureau
 - ❑ Develop the first waste separation program in China and the conversion of organic waste into compost



Linking to the Community - Waste Separation System in Hengxian, China



Source Separation

Compostable & non-compostable

Collection



Transfer



composting



A simple system – But a potential template for developing countries



Corporate Social Responsibility

- Amway little organic farmer – cumulative funding of 2.4 m for 4 years for the construction of 40 school organic farms



- Hong Kong Shanghai Banking Corporation – Territory-wise carbon minus program
- HSBC high school organic farming program
- Lee Hysan Foundation – International Conference on Solid Waste



Bring Home Message

- The global emphasis on sustainability
- Funding agents expectation – more applied research
- Academic vs community work
- Inter-disciplinary collaboration
- Ready to change



Thank You!

Prof. Jonathan Wong, PhD MH JP

Professor, Department of Biology
Director, Sino-Forest Applied Research Centre for Pearl River Delta
Environment
Director, Hong Kong Organic Resource Centre
Hong Kong Baptist University
Kowloon Tong, Hong Kong

Email: jwcwong@hkbu.edu.hk

<http://www.hkorc.org>, <http://arcpe.hkbu.edu.hk>

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