Research Assessment Exercise 2020
Impact Overview Statement

University: The Education University of Hong Kong
Unit of Assessment (UoA): 10 Earth science (incl. oceanography, meteorology) and other physical sciences (incl. environmental science)
Total number of eligible staff of the university in the UoA: 15

(1) Context

i. *the main non-academic user groups, beneficiaries or audiences for the unit's research include:*
a.) policy makers and public services – government departments and services in Hong Kong (HK) such as Environmental Protection Department; Agriculture, Fisheries and Conservation Department (AFCD); Drainage Services Department (DSD); Water Supplies Department; Education Bureau; HK Wetland Park; Ocean Park theme and conservation park; b.) national and international agencies, such as United Nations (Partnerships in Environmental Management for the Seas of East Asia); c.) teachers and students; d.) mass media; e.) industry professionals in the marine/water/water treatment/environmental/engineering sectors (eg Chartered Institution of Water and Environmental Management and HK Waste Management Association); and f.) the general public in Hong Kong, mainland China and internationally.
ii. *the main types of impact include*: impact on human health (through pollution reduction and improved water quality); impact on the marine and land environment; impact on policy; economic impact for related industries; educational impact; societal impact on public knowledge, perceptions and behaviours, based on the greater scientific understanding of environmental issues and the individual/societal actions needed to address them.

(2) Approach to impact

Our approach to impact aims to fulfil the University's strategic aim of serving local and international communities with needs-focused scholarship, knowledge transfer (KT) and community service, and its encouragement that academics engage in competitive research; commissioned/contract projects, consultancies, professional development courses, local or international professional conferences, seminars and workshops as well as social, community and cultural events. Our approach to achieving impact during the review period has involved 8 major elements:

1. *Ensuring the quality, rigour and relevance of our research*. This underpins our growing reputation with stakeholders and in the wider society;
2. *Building strong networks* with other academics; policymakers (such as AFCD, EPD, EDB); international agencies (e.g. UN); major donors such as Ocean Park; industry professionals; and engaging with school leaders, middle-leaders, teachers and the general public. We have done this by accepting invitations to participate in national and international agencies and, locally, in policy advisory committees such Curriculum Development Council-Hong Kong Examination and Assessment Authority subject committees; as advisor to HK Science Museum; member of NGOs; and by participating in the annual HK Science Festival, and organising or taking leadership roles in international conferences such as International Conference on Biological Waste as Resource; publishing the open-access and peer-reviewed journal called *Asia-Pacific Forum on Science Learning and Teaching*; delivering Professional Development Programmes for teachers ; and promoting service learning activities for EdUHK students to share our knowledge with the education sector and wider society.
3.We have *tendered for contract research and knowledge transfer projects* that addresses environmental issues and promotes environmental education, For example, as a result of previous projects and the strength of the Unit's reputation and networks, Cheang was approached by AFCD to tender for research on the Wetland Park as an environmental education

field resource; and Tsang was commission to investigate the effect of bioaersols on indoor environments of green buildings, for Telemax Environmental and Energy Management Ltd.

4. We have sought out *cross-disciplinary and international collaboration* to strengthen our research and impact, such as joining the State Key Laboratory on Marine Pollution (SKLMP) and establishing a branch laboratory at EduHK, positioning us to scale up our research and impact in addressing this global challenge.

5. *We maximise public engagement* by participating in local and overseas public events or exhibitions, for example the HK Science Festival; InnoTech Expo 2018, Hong Kong; InnoCarnival 2017, Hong Kong; China Hi-Tech Fair 2017, Shenzhen; EduTECH Asia 2017 Conference and Exhibition, Singapore; and International Exhibition of Inventions of Geneva 2018.

6. We provide knowledge transfer activities directly to the school sector through the invention of innovative devices and organising public talks, workshops, conferences and interschool competitions for students and teachers from schools. For example, we organised the Hong Kong STEM Olympiad 2016 which attracted over 700 students and teachers to participate, from around 100 different schools, with a theme on environmental pollution and a related talk by an assistant director of DSD.

7. We implemented a *coherent communications and media strategy* across multiple platforms to engage with the potential beneficiaries of our research and KT activities. Researchers have strong on-line presences through their own and project related websites and social media activity and reach out to wider audiences through media engagement.

8. *We monitor impact achieved,* to inform future research and adjust KT activities, through longitudinal evaluation and gathering participant feedback on KT activities such as the Science Festival.

This approach draws on University-wide resources of the KT unit in the Research and Development Office; the Communications Office for media engagement and monitoring; and the University's well-established local, national and international partnerships and networks, and events.

(3) Strategy and plans

The *Unit's strategy and plans for achieving and enabling impact* will refine and build on the approach detailed above. It will include continuing to organise and host the HK Science Festival; participate in talks and events at HK Science Museum; develop scientific activity for the elderly; develop more competitions for children; and include outcomes of research in STEM education activities. We will use the new SKLMP (EdUHK Branch), opened in 2018, to work with other world-class experts of sister institutions in the consortium in Hong Kong and mainland China, to tackle major problems presented to the marine environment in HK, mainland China and around the world. Specifically, the EdUHK team is focused on the environmental and public health risks of endocrine disrupting chemicals, and developing novel approaches to their detection and removal. This strategy aims to significantly increase the impact of our research on the marine and land environment, human health; public policy; economic impact for marine and water-related industries, as well as impact on education (schools, teachers and students) and society (through environmental awareness and changed behaviours).

(4) Relationship to case studies

Tsang's case is underpinned by robust, cutting edge research addressing a key issue in water treatment and pollution; draws on strong networks with Water Supplies Department, Environmental Campaign Committee; and the water and water treatment industry locally and internationally; has involved collaboration beyond Hong Kong and achieved further societal impact through tendered knowledge transfer activity and education, the latter both within and beyond schools; and public engagement with environmental organisations such as Fung Yuen Butterfly Reserve - Environmental Association.