Submission: National Foundation for Australia-China Relations
June 2019

Introduction

The University of Wollongong (UOW) welcomes the opportunity to provide input on the scope and programming of the National Foundation for Australia-China Relations. UOW strongly supports efforts of the Federal Government to continue to promote and develop strong links between Australia and China, and looks forward to the establishment of the Foundation as it continues to build upon the efforts of and developments driven by of the Australia-China Council.UOW's responses to the Submission questions are outlined below.

About the University of Wollongong

UOW is a research-intensive university that has built a strong international reputation for world-class research and exceptional teaching quality, and is ranked amongst the top 250 of universities worldwide. In 2018, UOW had over 36,000 total student enrolments globally and more than 2,400 staff (Full Time Equivalent).

The University offers more than 300 undergraduate/postgraduate courses and research degrees across a wide range of disciplines through the five broad faculties of Business, Engineering and Information Sciences, Law, Humanities and the Arts, Science, Medicine and Health and, Social Sciences.

UOW is an international multi-campus university, with campuses at Wollongong, Shoalhaven, Batemans Bay, Bega, and the Southern Highlands, and three Sydney campuses (at Loftus, Liverpool and Sydney CBD). The University also has campuses in Hong Kong and Dubai. It also delivers its education programs at other international locations, including at the Central China Normal University (CCNU), the Singapore Institute of Management, INTI College in Malaysia and, the PSB Academiy in Singapore.

UOW has developed the Innovation Campus in Wollongong which is an education, research and related business precinct. This state of the art facility provides strong linkages between business and research, and complements the University's leading research and innovation institutes.

UOW Partnerships with China

In 2018, 2,980 Chinese students studied at UOW (2,390 onshore and 590 offshore), making it the largest international cohort at UOW. In 2018, China was the second most popular destination for Australian students choosing to spend part of their degree studying abroad, and China is the second most popular destination for UOW students for student mobility.

Over 15,000 UOW alumni reside and work in greater China, forging strong partnerships with government and industry leaders.

UOW is also operates the CCNU Wollongong Joint Institue, a cooperatively-run university directly under the administration of the Chinese Ministry of Education. As one of the universities on the list of 211 National Education Priority Project, CCNU is highly recognized education provider. Located in Wuhan, the capital of Hubei Province, UOW CCNU offers courses for master's and HDR students.

UOW has engaged with China and its institutions since the 1980s and currently partners with 43 Chinese universities and five academies and research institutes for research, articulation, student exchange and twinning arrangements.

UOW is among the top 10 Australian universities that have the most joint scienctific and research papers with China. In particular, UOW has the equal second-highest number of joint publications with China in the area of Materials Science. Other disciplines with a large number of join publications are Chemistry, Energy, Engineering, Physics and Astronomy.

In 2018, UOW established a partnership with HBIS Group, focusing on cutting-edge research collaborations in advanced manufacturing. HBIS and UOW have agreed to establish a Joint Innovation Centre in Advanced Manufacturing. To leverage UOW's strength in mining and the heritage of the Illawarra region, UOW is also

now working with China Coal Technology and Engineering Group to improve the efficiency, safety and sustainability of mining practices.

UOW is also engaged in a number of new research partnerships which included the Institute of Metal Resaerch CAS China, University of Electronic Science and Technology of China, Xi'an Jiaotong University, Tianjin University, University of Electronic Science and Technology, Northwestern Polytechnical University, Shanghai University; Assocation for Maternal and Child Health Studies.

A summary of some of UOW's research teams related to China are outlined at <u>Attachment A</u>.

Key Points in response to Key Consulation Questions

1. What additional activities would aid in promoting practical cooperation with China?

The Foundation has an important role to play in promoting the benefits of UOW and other Australian universities to China in key industry areas. This includes supporting UOW and other Australian universities to strengthen existing partnerships in China, and, bringing parties together to draw broader collaborations. Suggested additional activities the Foundation could help to facilitate in order to showcase strengths of UOW and other Australian universities include:

- UOW partner day, to invite partner universities (including twinning programs and research) as well as industry partners to Wollongong in order to showcase the impact of the partnerships and explore broader opportunities for collaboration. Themes of mutual interest between Austrlaian and China, which UOW has particular strengths in include:
  - infrastructure planning and simulation including application of big data in smart cities for traffic management;
  - health and aged care, incluidng research and training opportuntiies;
  - new battery and energy materials;
  - green manufacturing.

- A focus on issues relevant to the development of a 'Smart City', or some other broad-theme focusing on building government and research collaborations in areas which aim to improve the living environment of cities. Central to this idea is the delivery of a Smart city conference in Wollongong, with cross faculty/displine areas in relevant topic areas including:
  - Traffic
  - Water treatment
  - Smart power grid
  - Advanced manufacturing and automation
  - Logistics
  - Technologies: artificial intelligence, big data, the internet of things, power management, mechatronics, supply chain management

- There is opportunity for the Foundation to help instigate work with a municipality government in China to create a demonstration of a smart city in a hi-tech zone or industrial park. This could draw upon areas of exptertise of Australian universities in the areas of modelling, optimisation, simulation and data analytics to create the cities of tomorrow by addressing the challenges of today. This may address infrastructure layout including parks and green space, tree coverage, sanitation and recycling, health and well-being, walking and cycling promotion, transit opportunities, safety and accident prevention, housing and work place balance

2. What events would you propose that would enhance leadership exchange?

UOW suggests a number of possible event and activites which may help to enhance leadership exchange between UOW and China. This includes:

- Establishment of a sister city relationship between Wollongong with Taiyuan, to echo the shared heritage in coal mining and the successes and challenges of each region in the respective transformation of each economy to hi-tech sectors and clean energy. Such relationships are highly valued by Chinese provincial and municipal governments and would allow for the establishment of strong relationships between instituitons at these locations and matching with comparable industries. A high-level visit to support the signing and establishment of the sister city friendship would help strengthen such arrangement.

- Establish a series of master classes, to promote innovation and entrepreneurship for students and graduates. Topics could be tailored to suit the city or region the class is being delivered, focusing on something which UOW has strengths and is relvant to that area.

3. What activities could help to showcase the best of Australia?

It is suggested that the Foundation could leverage off existing events already taking place in China which help promote Australia's higher education sector. For example, it is suggested that it could nominate Australia as the Guest Country for the China Education Expo 2020. This would be a great opportunity to showcase Australia's education sector and highlight its research strengths which would be of particular interest and relevance to the Chinese, such as:

- Australian geography, humanities, culture diversity
- Artificial Intelligence and big data
- Energy technology (including mining, battery, solar)
- Public health and aged care
- Entrepreneurship and innovation

Other ideas which may help to showcase the best of Australia include:

- Production of short videos to demonstrate Australia as a source of technical expertise in health and aged care, environment and sustainable energy, and a tourism and study destination. Videos should also include Chinese living in Wollongong to help demonstrate the existing Chinese communities in Australia.
- Assistance to hold and promote exhibitions of "Meeting UOW/Wollongong" at partner universities in China.

4. How might the Foundation best engage the Chinese-Australian community?

There is great scope to help engage the wider Chinese and Australian communities. A positive example of this has been achieved locally to UOW through the Asia Immersion program with six schools in the Shoalhaven area with the aim of fostering intercultural respect, understanding and communication between regional young Australian and Asian students, especially from China. Each year groups of UOWstudents from Asia travel to the Shoalhaven and spend three days with staff and students at Bomaderry High and Public School, Kangaroo Valley Public School, Cambewarra Public School, Berry Public School and Shoalhaven Heads Public School. At each school UOW's students provide the high school students and teaching staff with insights into their language and culture, and historical and political background of their country. They also share cultural experiences such as food tastings, painting, dance and language. In return the UOW students gain an insight into the Australian education system and Australian society.

This program provided a positive experience for the visiting Chinese students and the students at the school, who were able to develop friendships and exposure to the international students. It is suggested that the provision of seed funding may be a good way to grow similar programs which help engage the Chinese and Australian communities.

Possible additional activities which may be of assistance to engage the Chinese and Austrlaia communities include:

- A Chinese Community Celebration, inclusive of food, performance arts, history and culture. This could be an annual event.
- Assisting the Chinese community to organize a big event on that day to welcome new Chinese Students and migrants, and introduce Chinese culture/food to locals.
- A photo and video competition on wechat and facebook for Chinese students and migrants to post a photo or short video of their living in Wollongong or study at UOW on their personal wechat and facebook account.

Further Information

Due to space limitations of this submission, it is acknowledged that suggestions of this brief are very short. The University would welcome further opportunities to elaborate upon, or further clarify, the matters raised within this submission. To do so, please do not hesitate to contact the UOW Director, Government Relations (Mr Canio Fierravanti) on 42215931 or via caniof@uow.edu.au.

Attachment A

Related UOW Research Teams

a. Asset Management & Infrastructure Systems

The UOW Asset Management & Infrastructure Systems research group aims to provide theoretical and practical solutions to engineering problems for infrastructure development, management and systems. The Group uses a range of research techniques including system dynamics simulation, system reliability modelling, statistical data modelling, risk-based infrastructure integrity management, asset management systems and big data analytics. The Group has built strong research collaboration and links with research institutes and industry worldwide. It is actively involved with various industry areas including railway, energy pipelines, bridges, wind energy, smart city and water systems. The most recent research focuses on near real time predictive deterioration models fed by smart monitoring data.

b. Supply Chains & Logistics (SMART)

The Supply Chains & Logistics research group specialises in the efficiency of supply chains in practice. Quantitative and qualitative research methods across disciplines are used to ensure results. The Group uses quantitative and qualitative research methods to enable businesses to improve productivity, processes, products and services. As a part of the Supply Chain Innovation Research Centre, the Group has expertise in supply chain integration, lean production, simulation and modelling, knowledge management, IT, supply chain technologies, novel business models, value stream design, innovation management, and business process change. The Centre is also the exclusive provider in Australia of a proven internationally applied supply chain audit methodology that clearly identifies the major causes of supply chain uncertainty and pinpoints what needs to be improved. The Group aims to help businesses better plan for the future; remove uncertainties from their supply chain and ensure business can incorporate innovations such as 3D printing or sensor technology seamlessly into their organisation.

c. Digital Health and Smart Aged Care Service (SMART)

The Digital Health & Smart Aged Care Service research group conducts cutting-edge, multi-disciplinary research and development to understand and drive smart application of digital technology. The goal is to enhance the quality, safety, efficiency, access and affordability of health and aged care services in Australia and internationally. The Group aims to use the power of digital technologies to enable health and aged care reform initiatives that provide better and more targeted care for each individual patient. It conducts cutting-edge, multi-disciplinary research and development to understand and drive smart application of digital technology. The aim is to enhance the quality, safety, efficiency, access and affordability of health and aged care services in Australia and internationally. Current research topics include: using the existing Electronic Medical Records to aid patients with alcohol problems in treatment; health data analytics to improve emergency services; ontology-based, machine-readable knowledge management system to support evidence-based aged care; community-based chronic disease management underpinned by smart phone health app; data quality management for public health information systems and clinical research trials.

d. Smarter Schools & Digital Technologies (SMART)

The Smarter Schools & Digital Technologies research group draws on cutting-edge data, smart technologies, modelling and simulation techniques to support innovation and change in education. The Group aims to draw on cutting-edge data, smart technologies, modelling and simulation techniques to support innovation and change in education. This is an interdisciplinary group including data scientists, engineers, environmental and science educators, sociologists and specialists in educational technology. Drawing on expertise from a range of disciplines, the team is able to creatively tackle complex educational problems. The team works with schools, education departments and higher education institutions to design new methods to visualize and model teaching and learning processes, to study physical teaching and learning spaces, and to analyse how people work and learn in combined online, off-line and virtual spaces. By designing better ways to understand educational

innovation and change, more schools, teachers and students will fully participate in digital society, today and in the future.

e. Centre for Intelligent Mechatronics Research
The Centre for Intelligent Mechatronics Research (CIMR) conducts innovative, multidisciplinary and applied studies on how human perception, behaviour and skills can be emulated and augmented by robotics and machine learning. The concepts and methodologies developed by the group are applied to broad disciplines of biomedical engineering, telerobotics, smart/electric vehicles and computer vision. Over the years, CIMR has developed advanced facilities and tools for its research. The Centre currently has close collaboration with industry, a number of hospitals in Wollongong, and School of Medicine.

f. Smart Cities & Communities (SMART)
The Smart Cities & Communities research group uses data-driven models and multi-disciplinary approaches to explore how cities can create more liveable neighbourhoods, open spaces and work places. The Group aims to provide data-driven analysis and modelling on the liveability metrics of our cities. Areas covered include parks and green space, tree coverage, sanitation and recycling, health and well-being, walking and cycling promotion, transit opportunities, safety and accident prevention, housing and work place balance, or other metrics as chosen by collaborators. The creation of Smart Cities is a dynamic area of study, and one that will change as technology improves and citizens see the benefit of data gathering. Over time, the technology to measure will improve, citizens may wish for other options, and the entire work package will be reinvestigated. The Group aims to be both responding to, and these changes in the cities of tomorrow.

g. Future Transport & Mobility (SMART)
The Future Transport & Mobility research group focuses on the rapidly growing area of next-generation transport system and urban mobility. The Group aims to reshape people's travel behaviour and practically improve transport systems in the era of connectivity, sharing, big data and smart cities by using a wide range of advanced tools, like modelling, optimisation, simulation and data analytics. One particular focus of our research group is to facilitate electric vehicle uptake in Australia (much lower than other developed countries) by providing optimal vehicle operation strategies and corresponding infrastructure planning. Other areas of research include Traveller Choice Behaviour Modelling, Transport Network Modelling and Optimisation, Optimisation of Transport Systems using Data-driven Approach, and Smart Cities with Smart and Sustainable Transport.