



# SUSTAINABLE CITIES AND COMMUNITIES

## Research



### In-Situ Project

Professor Peter Hasdell, Associate Dean of the School of Design collaborated with other organisations on his research project which is a social design oriented interdisciplinary research platform project enabling and activating local conditions towards sustainable and participatory practices. The research, which empowers local and community 'bottom-up' capacities, is exemplified in three projects: Xianniangxi Community Kitchen and Village Square, House of Dreams, and Habibi Community Centre. House of Dreams has won significant international recognition and awards, including the UIA2030-UN Habitat Award (Paris) for sustainable material use. Since 2015, numerous community projects related to the In-Situ Project have benefitted **thousands** in Hong Kong, Mainland China and Iraq.

### Healthy and Resilient City with Pervasive Localised Comfort Hubs

Led by Ir Professor Niu Jianlei, Associate Director of Otto Poon Charitable Foundation Smart Cities Research Institute, and Chair Professor of Building Environment and Energy at the Department of Building Environment and Energy Engineering, this project with HK\$34.6 million in funding from the Research Grants Council, aimed to create outdoor localised comfort hubs (LoCH) in a high-density urban environment by employing a scientific microclimate design methodology in the early stages of building design. It is expected that thermal and wind comfort can be maximised and thermal

stress risk can be minimised, and that the same idea concept can also be applied to infill redevelopment projects and other property development to create LoCHs in existing neighbourhoods.

### Jockey Club Operation Solnno's Action Projects

Two transitional social housing design projects initiated by the PolyU Jockey Club Design Institute for Social Innovation received a Merit Award at the Green Building Award 2021, organised by the Hong Kong Green Building Council and Professional Green Building Council. The project "Transitional Social Housing — Ma Wan Old Village" aims to revitalise the old village into a diversified and vibrant community through introducing community development elements. The second project "Expandable Housing by Modular Integrated Construction (MiC)" proposes a versatile MiC building system prototype for Hong Kong which is fully relocatable, reusable and environmentally self-sustainable.

### Landslide Recognition by Deep Convolutional Neural Network and Change Detection

A research team led by Professor John W. Z. Shi, Director of Otto Poon Charitable Foundation Smart Cities Research Institute and Chair Professor of Geographical Information Science and Remote Sensing

at the Department of Land Surveying and Geo-Informatics, has proposed a novel integrated approach, which combines a deep convolutional neural network and change detection, to identify landslides from remotely sensed images at higher speeds, contributing to the prevention and control of natural landslide hazards. Its effectiveness has been examined using two landslide-prone sites and, in addition to its high speed, an **accuracy exceeding 80%** was measured, demonstrating its high practicability.

### Sustainability Initiative: Green Deck

The environment of the area around the Hung Hom Cross Harbour Tunnel has long been a major concern. Located in Hung Hom, the University is committed to finding a solution to address the environmental issues and revitalise the district. The proposed Green Deck, to be built over the existing plaza, would be a unique and innovative social project bringing long-term benefits, connecting the adjacent areas and forming a landscaped platform over the traffic. With funding from The Hong Kong Jockey Club Charities Trust, a study is underway with the objective of identifying and resolving critical technical issues and demonstrating that the Green Deck is technically viable.



## Engagement



### “Playful Public Design by Children” Exhibition

In 2019, the Public Design Lab of the School of Design launched an inclusive design research project “Playful Public Design by Children”. Using the real-life setting of a Hong Kong country park, the project engaged a group of child art educators and **over a thousand children** together with their parents to study the inclusive design of country parks and participate in design projects, such as signage, whirly facilities, gazebos, and recycling bins design. In 2021, the Public Design Lab presented an exhibition showcasing the creative design and thinking process of the participants employing augmented reality and project videos.

### Jockey Club Age-Friendly City Project Extension

Funded by The Hong Kong Jockey Club Charities Trust and hosted by the PolyU Research Centre for Gerontology and Family Studies, the project extension aims to sustain the achievements of the Age-Friendly City Ambassador (AFC) Scheme. To this end, ambassador training sessions have been organised to strengthen ambassadors’ knowledge and experience regarding an age-friendly city and to maintain the ambassador network. To promote integration of age-friendly city education into the formal curriculum, the project also collaborates with academics from five disciplines to plan and infuse project activities into their curricula so as to facilitate intergenerational interaction between AFC ambassadors and PolyU students.

## Education

### Subject: Science for Healthy and Sustainable Living Environments

Hosted by the Department of Building Environment and Energy Engineering, the subject aims to nurture an understanding among students of the principles of sustainable built environment; of the application of basic scientific methods and thinking to everyday experiences and global concerns; and of the environmental, financial, cultural and socio-economic challenges faced by underprivileged people in relation to their ability to achieve and maintain sustainable practices and a healthy living environment. Students visit grassroots families to learn about their living situation, especially with respect to energy efficiency and sustainability. They then use this experience to design related learning activities for primary or secondary school students.

### Service-Learning through Design and Building for Remote Communities

In this subject hosted by the School of Design, students undertake design and construction work for remote communities. Raising students’ awareness of social issues, challenges and needs in such communities, it aims to develop their creative thinking, cultural appreciation and social responsibility as they learn from local wisdom through studying and serving the communities. Related to conservation and preservation of traditional local culture as well as the existing fabric, architecture and natural environment through sustainable design, the subject culminates in a project where students make direct contact with villagers and apply design solutions to their specific needs.

## Policies and Operations

### Electric Vehicle Charging

As part of its drive towards sustainability, the University provides eight designated parking spaces in the campus car park equipped with semi-fast AC chargers and **37 designated parking spaces** equipped with 13A socket EV chargers. The charging service is provided for use by PolyU staff and students with a valid parking permit and is free of charge. There is an online platform for users to check the availability of the chargers.



### Pedestrian-Friendly Campus

To help provide a safe and environmentally friendly campus environment, the podium level of the campus is pedestrian prioritised, allowing staff, students and visitors to walk around the whole campus without worry. Linking the main campus and the podium level of Block Z, a footbridge improves pedestrian connectivity between the two campuses.

