

Research & Innovation

Effective Transitional Housing Delivery in Hong Kong

Funded by the Policy Innovation and Co-ordination Office of the Hong Kong Government, the Jockey Club Design Institute for Social Innovation examined more than 30 transitional housing projects located on open-air sites with newly constructed relocatable units using Modular Integrated Construction technology. These units account for about 85% of transitional housing units delivered.

By comparing this initiative to transitional housing programmes in other cities using relocatable building structures, it was illustrated that Hong Kong's programme is unprecedented in terms of scale and development speed while also having the widest societal participation. The findings did, however, highlight various pain points from the stakeholders' point of view. These included the relatively short tenure of the sites, the limited scope of the Government's funding scheme, technical issues encountered in the design and development process, concern about occupancy rates of projects at remote



locations, funding for provision of support services for tenants, and the administrative burden related to tasks including project promotion, tenant recruitment, and eligibility assessment.

While the study supports the Government taking up the role of builder in the Light Public Housing programme to enhance the efficiency of delivery, it also proposes multiple policy recommendations.

Artificial Intelligence Modelling for Air Quality Management

A PolyU research team has constructed a PM2.5 global monitoring network and established an artificial intelligence toxicity model to identify the PM2.5 components and emission sources responsible for the increased exacerbation risks of two index diseases, namely chronic obstructive pulmonary disease and ischemic heart disease. The team will weigh benefits against costs by comparing the proposed strategy of targeting the sources of PM2.5 toxic constituents to the conventional approach that targets total mass concentrations, with a view to recommending effective and economical approaches to managing air quality and its effect on public health.

It is intended that completion of the project can lead to a revision of the Air Quality Health Index algorithm and the associated "Health Advice", and a review and updates of the Air Quality Objectives in Hong Kong. The findings will also be conveyed to other national and international bodies to influence future policy formulations on air quality in different parts of the world.



Teaching & Learning

Sustainable Urban Planning and Living

The Department of Civil and Environmental Engineering offers a subject for students to explore the intersection of sustainable development and the design, planning, and governance of cities and communities. Through examining the social, economic, and environmental dimensions of urban sustainability, students learn to apply integrated, systems-thinking approaches and sustainable building strategies adopted globally to create a design for a healthy lifestyle and equitable community

planning. Moreover, by investigating current issues such as climate change, ozone depletion, the global carbon cycle, carbon footprint, and non-renewable and renewable energy, they are taught to plan and evaluate for climate change resilience and adaptation.

Similarly, the Department of Industrial and Systems Engineering offers a subject that aims to foster among students an enhanced understanding of what it means to work for a sustainable future, and for them to develop a sense of responsibility for future

generations and a spirit of optimism and hope. By acquiring knowledge related to the concepts of sustainability and sustainable development, as well as the interdependence of natural socio-economic and technological systems at local, national, and global levels, students can evaluate the impact of personal lifestyles and environmental conditions on human health and well-being, formulate practical solutions to the current social and environmental issues, and actively engage in sustainable development, and critical reflection.

11 SUSTAINABLE CITIES AND COMMUNITIES



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Outreach & Engagement

Promoting Elderly Quality of Life through Community-Based Textile Arts

An interdisciplinary research team, led by the School of Fashion and Textiles, has conducted a first-of-its-kind community-based participatory study to investigate the therapeutic benefits of engaging arts and textile crafts. This was achieved through a novel multimodal intervention for older adults, which included applying age-friendly city principles on a neighbourhood scale while also developing the wider senior community's social capital with arts engagement.

Building on the community-welfare-business-academic cross-sectoral collaboration network, researchers hosted workshops at elderly centres, residential care homes, and in active ageing organisations, **engaging around 270 older adults**. The findings indicate that the community-based arts and crafts group intervention yields significant effects on improving the self-esteem, quality of life, and social connectedness of the elderly.

Promoting Green Living and Creating Sustainable Neighbourhoods

With the aim of facilitating cross-sectoral exchanges and collaboration to achieve the collective goal of building a green community, PolyU scholars shared their views and insights on topics related to green living and cities at the forum "The Green Deck – Into the Green and Innovative Community", co-organised by the Policy Research Centre for Innovation and Technology (PReCIT) and the Green Deck Project Management Office. The general public were able to acquire a deeper understanding of this community enhancement project, which targets the area around the Cross Harbour Tunnel Toll Plaza at Hung Hom in Hong Kong, and better understand how the project could help address current environmental issues and revitalise the neighbourhood with a view to promoting green living. It is also envisioned that young people may be inspired to devote themselves to the study of related subjects and that government officials may be encouraged to examine and act on related matters.

To further stimulate public interest in this project, the PolyU Library collaborated with the Green Deck Project Management Office and the Department of Computing in launching the Inter-Secondary School Green Deck Landscape Design Competition. Similarly, with the purpose of inspiring students to develop cutting-edge designs and ideas for implementing zero-carbon transportation solutions, the Department of Building Environment and Energy Engineering and the World Green Organisation jointly organised a competition. Secondary school students were invited to showcase their creativity in designing an intelligent charging station for the artificial island in Chek Lap Kok, while tertiary students were tasked with designing a public transportation interchange and proposing a comprehensive plan for an intelligent and green transportation network.



▲ Inter-secondary school Green Deck Landscape Design Competition

◀ SMART Mobility - Social Innovation Investor - Design Competition 2022/23 organised by the Department of Building Environment and Energy Engineering

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Governance & Operations

Green and Sustainable Campus Development Projects

The Campus Development Office has launched two capital projects, the Campus Expansion at Ho Man Tin Slope and the Kowloon Tong Student Hostels which will feature renewable energy systems, rainwater harvesting, and greywater recycling, as well as an over 50% greenery coverage, positively impacting air quality, ambient temperature, and carbon emissions.

The green area at the Ho Man Tin Slope is designed in a way whereby interactions and activities among people of different ages are encouraged. Such an inclusive space promotes a healthier lifestyle and, importantly, fosters intergenerational exchange, social connectedness, and cross-generational understanding, which ultimately enhances the overall well-being and social fabric of the community.

Meanwhile, being the PolyU's newest landmark, the University Square not only offers an engaging space where PolyU members can gather, collaborate, exchange ideas, or simply relax, but also plays a crucial role in fostering a sense of belonging and unity by infusing greenery and vitality into the campus.

These three initiatives exemplify PolyU's firm commitment to green and community-centric design, creating considerable momentum and setting a positive and socially vibrant example for future urban and campus developments.



PolyU's newest landmark, the University Square



Green Commuting Practice

In order to help achieve its decarbonisation and sustainable transportation goals, the University has equipped eight on-campus parking spaces with semi-fast AC chargers and 37 others with 13A socket EV chargers. The charging service is provided for PolyU staff and student holders of a valid parking permit, who can check the charger availability on an online platform and use the charging service for free.

Meanwhile, pedestrians are granted priority access on the podium level of the campus, ensuring in a safe and environmentally friendly campus environment. Walkways and bridges have also been built to link Block Z with the main campus, enhancing connectivity and mobility for users who require to travel between the two areas on foot.

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