# The Application of Social Innovation in Designing an Aged Care Centre in Malaysia

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**Abstract:** Social innovation is the commercial application of ideas and technology towards improving societies. Of key importance, social innovation works best when the community concerned is empowered to help co-create the innovation. In this paper, social innovation is considered in a Southeast Asian context and how a bottom up approach improves the sustainable design of public buildings such as schools and community centres. A living lab case study is used to demonstrate how identifying and analyzing community needs by consulting the latter is fundamental to the design of a community care centre for the aged. The centre incorporates assistive technologies, access design and care features as well as sustainable design such as urban gardening, rainwater harvesting, waste recycling and energy efficiency. The building is also designed for intergenerational use as it is intended to have other users of different ages so that the elderly will be encouraged to interact with them thereby promoting the benefits of active ageing.

**Key words:** Social Innovation, sustainability, aged care, Malaysia

## 1. Introduction

Social innovation is the commercial application of ideas and technology towards improving societies and works best when the community concerned is empowered to help co-create the innovation. In this paper, social innovation is considered in a Southeast Asian context and how a bottom up approach improves the sustainable design of public buildings such as schools and community centres. To take this idea further a living lab approach was applied in Kuala Lumpur to design an aged centre in a suburban area.

## 2. Social Innovation

Social innovation can be defined as [1], "new solutions (products, services, models, markets, processes etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and

better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act." Social innovation, much like technical innovation, involves creative ideas and problem solving skills with the aim of improving social conditions.

Five core factors for social innovation are:

- Novelty: Social innovations are new to the field, sector, region, market or user, or to be applied in a new way;
- From ideas to implementation: Social innovation focuses on implementation and application of new ideas, rather than just inventing new ideas;
- Meets a social need: Social innovations are explicitly designed to meet a recognised social need;
- Effectiveness: Social innovations are more effective than existing solutions – they create a measurable improvement in terms of outcomes; and
- Enhances society's capacity to act: Social innovations empower beneficiaries by creating

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new roles and relationships, developing assets and capabilities and/or better use of assets and resources.

Thus, social innovators are individuals who have come up with product or service solutions for a specific social problem. For instance, a person who has developed an app for translating an aboriginal dialect into English to improve communication between indigenous tribes and health workers could be considered to be a social innovator. Another example could be an engineer who has invented a way of low cost construction for housing the homeless. In these cases, the innovator may or may not be seeking a profit out of his or her work. But commonly social innovators would want to see some commercial return on their ideas but not necessarily as a business. Government too sometimes comes up with social innovations, e.g., providing free or subsidized bicycles for school children whilst making the school zones car-free to avoid traffic jams around schools. Some NGOs have also provided social innovations such as using cookery or art as a means for the mentally disabled to express themselves.

Over the past decade social innovation has been applied to sustainability and to encourage sustainable living as a lifestyle and behaviour change. The very nature of social innovation, which is community-driven, ensures that institutions, enterprises, non-profit organizations and networks of collaborative persons are able to find common platforms to work together generating a variety of initiatives such as community-supported agriculture, co-housing, carpooling, community gardens, neighbourhood care, talent exchange and time banks [2]. These initiatives propose viable solutions to complex problems, e.g., social cohesion, urban regeneration, healthy food accessibility, water and sustainable energy management and, at the same time, they represent working prototypes of sustainable ways of living.

## 3. Living Labs

Living labs are platforms like a building or a community for user-centred products before they are commercially available. As living labs usually involve partnerships, they are appropriate mechanisms for social innovation. Such partnerships can comprise government agencies, companies and research institutes to pool their research on built environment and city management, urban mobility, IT and info-communications, public safety, waste and water management and clean energy. Members of communities are furthermore invited to contribute and shape the tested product.

Social innovation [3] applied in a living lab allows:
- Unprecedented connectivity and networking, which means new possibilities for competition as well as cooperation;
- Global awareness (e.g., about climate change), thanks to information from other citizens and sensors alike, which can enable access to culture and inclusion;
- New solutions for sustainability, based on collective intelligence, including not only new financial and economic models, but also support for a true low-carbon economy, and renewable energy production.

Living labs have the potential to strategically frame co-production processes in two ways [4]. First, consulting users and stakeholders allows complementary sets of projects to be strategically planned that offer holistic solutions to sustainability challenges. Second, by emphasising the iterative process of experimenting and learning from year to year they provide a more coherent basis for action over time. Living labs [5] are emerging as a form of collective urban governance and experimentation to address the sustainability challenges and opportunities created by urbanisation. Five key characteristics are identified:
- Living labs are situated in a real urban context where the process in focus is taking place. This may be

a region, an agglomeration, a city, a district or neighbourhood, a roador corridor, or a building.

• Living labs represent a specific form of experimentation, whereby processes of innovation and learning are formalized, unlike policy experiments, and enable the co-production of knowledge and ideas with the users.

• Participation and co-design with stakeholders such as residents and users is at the core and appears in all stages of the living lab approach – from identifying stakeholder needs, deciding upon living lab goals, planning and designing to developing, implementing, evaluating actions and updating.

• A clear leader or owner is crucial for a living lab to be effective, although a fine balance exists between steering and controlling. The living lab needs to be flexible for different stakeholders to engage in its development and direction.

• Finally, evaluation of the actions and impacts of a living lab is important to feed back the results, and revisit and refine the goals and visions over time. Evaluation underpins the ability of living lab projects to facilitate formalised learning amongst the participants.

## 4. Ageing Populations

Globally, the population of persons aged 60 and above is projected to double to more than 2 billion by 2050 or 21% from 11.7% in 2013. By 2047 the number of older persons is expected to surpass the number of children for the first time [6]. Not only are the numbers of older persons increasing substantially, they also have longer and healthier lives due to higher standards of living and advancements in healthcare. Population ageing is found to be more prominent in developing countries due to the rapid decrease in fertility rates in recent years compared to developed countries [7]. Asian countries stand to face the biggest growth in their ageing population, as one in four Asians will be over the age of 60 by the year 2050.

Malaysia, one of the modern nations in ASEAN, faces an ageing problem. Compared to European countries which took 100 years to double their populations aged 65 and above, Malaysia will take only 23 years to double from 7% in 2020 to 14% in 2043 [8]. This is a reflection of longer life expectancy, good public healthcare and lower fertility but the downside is that the country does not have much time to prepare for a new set of issues that come with ageing.

Firstly care and attention for the elderly will be critical. The old are more prone to chronic diseases, sleep disruption, psychological problems and cognitive decline [9]. Healthcare models will have to be reconfigured to cater for the aged who have spent a lifetime of modern living with all the associated stresses. Housing will be another challenge as homes designed for the young and active become difficult for the elderly to cope with. Whilst ageing in one's own place is the best approach for a greying population, the practicalities of stairs and toilets will become physically insurmountable with ageing. Moving to aged care homes is a possibility but affordability will be an issue and many elderly will probably end up in aged homes of a basic nature unsuited for their needs. Other problems include physical and psychological degeneration. Even with extended retirement ages, there will come a time when people can no longer work and rapidly deteriorate through emptiness and boredom. Deprived of human company, aged decrepitude becomes synonymous with being abandoned or ignored.

## 5. Intergenerational Community Centre Case Study

The KL Centre for Sustainable Innovation has been involved in the design and development of an innovative community centre in Kuala Lumpur as a social innovation and a living lab that will cater to the needs of the immediate local community — the elderly, adults, youths and children. The centre's facilities and programs will cover health, social, recreational and educational purposes. The community centre is a

model for intergenerational care that can be easily replicated across other communities in urban areas across Malaysia.

The basis of this approach comes from intergenerational housing models where the young share living quarters with the elderly [10]. In Japan, 40% of older people live with their adult offspring and over 17% live with their grandchildren in contrast to the UK where less than 10% of those aged 70 and over live with their adult offspring and around 2% live in multigenerational households with offspring and grandchildren. Home sharing is where an older person offers accommodation to a younger person at a reduced rate in exchange for support with basic tasks such as shopping or gardening. Co-housing is the development of private households with shared facilities that invoke a sense of community. The best example of an intergenerational model is in Alicante, Spain [11] where 200 affordable, intergenerational housing units were created in central urban areas and populated by older persons over the age of 65 and young people under the age of 35 in a ratio of 80:20 respectively. On the basis of a "good neighbor agreement", each young person had responsibility for four older people in the building with resulting positive feedback from the elders (increase in well-being and independence within a family-like environment) and the young people (knowledge gaining and the opportunity to nurture real relationships of friendship with the older persons they assisted).

KLCSI in conjunction with Kirk Architects came up with a design to apply the intergenerational concept for a community centre in a suburban setting. This centre was to be designed specifically with the local community in mind, after a study of the demographics and lifestyle patterns in the area and identifying any gaps or needs not being fulfilled from the perspectives of a wider community. Factors to be taken into consideration include:

- Inclusivity. The community centre will be designed to meet the basic needs of the local community regardless of age, beliefs and social standing. These include a safe environment, modern technology, adequate facilities and open spaces.

- Active. The community centre will provide products and services that the community need or want like classes, activities and assistive tools. These will be provided at a discount through sponsorship.

- Adaptability. The centre will be able to adapt to the changing needs of the community over time through regular stakeholder focus groups.

- Sustainability. The centre will be a showcase for sustainable living that the community members can adapt and apply in their own homes such as urban gardening, waste recycling and energy efficiency.

## 6. Living Lab Design

KLCSI conducted a survey on elderly users on their preferences for a community centre. Working with a group of senior adults, the following findings emerged:

- 97% of the respondents prefer that a medical centre should be nearby, and 91% want to live close to their children.

- All of the respondents prefer well trained caregivers (staff or nurses), 97% want swift response and accessible means of summoning help in emergencies, and 97% agree that a 24/7 ambulance service is crucial.

- 94% of the respondents want wheelchair accessibility and 96% want safety features in the buildings. Green technologies received 73% of votes.

- 87% of respondents feel that the reputation of the developer as well as the care centre operator is important, 93% want security features and 96% agree that street lighting is crucial. Gardening and sports received 54% and 48% of the responses.

Kirk Architects produced a pavilion-based design using a reinterpretation of a traditional Straits shop

house that was adaptive, viable and flexible with a framework to support a wide range of uses, and allowed multiple modes of management and operation for different generations. Key features include:

- Broad space typologies of activity space, office, amenity and service spaces and circulation in combination with passive strategies to deal with the tropical environment for natural light and ventilation, shading and glare, views and privacy.

- The modular structure of the pavilions allows a loose fit model using structural simplicity and open span functional areas that offer flexibility for a multitude of configurations depending on the particular program requirements whether for elderly or non-elderly use. These include larger spaces suitable for dining, exercise studio, arts and crafts, seminars, celebrations and libraries to smaller configurations suitable for counselling, medical consultation and more personalised services for the elderly such as health planning and management, and non-invasive therapies, and at the same time can be used for playrooms or youth activities if needed.

- The central courtyard forms the key space of the building to connect the community. Security and safety would be ensured in all public spaces and the courtyard acts as a spine to allow easy movement and clear way for the elderly and non-elderly community. The building is permeable allowing continuous connection to landscape elements such as roof top gardens, water, window seats and informal social breakout spaces.

- Utilitarian functions are located each end of the pavilions for vertical circulation, amenities, offices, stores and plants etc. This planning arrangement and the modular nature of the pavilions allows for a building model that can scaled and sized for different sites.

- Technological advances through internet communication allow for remote access for

people to online specialist counselling and medical care. This unlocks opportunities for medical screenings, health and nutritional management, counselling and rehabilitative training close to home at the local community facility.

From a sustainable building perspective, sustainability is considered holistically in the design whereby the building responds to climatic conditions such as high rainfall, solar and sky glare, reflective and radiant heat. Features such as natural diffused daylighting and thermal massing, renewable energy such as solar panel and solar air cooling systems, and rainwater collection and harvesting are incorporated. A roof garden serves as an edible food source using rainwater for irrigation and food waste for compost. The centre furthermore utilizes intelligent building systems and real-time software to verify building performances. It is possible that through use of durable, resilient and low maintenance materials, innovative and sustainable building technologies (including glue laminated and cross laminated timber technologies) together with low energy demand that the building could be a leading exemplar as a zero carbon footprint building and act as a catalyst for growth and regeneration in the neighbouring community.

## 7. Discussion

Although the intergenerational model of aged care has been shown to be successful elsewhere, there are inherent challenges in Malaysia. Other than family ties, it would be justified to say that the model has not taken root in any large measure, possibly due to the unpopular notion of having to share facilities with strangers. There are further issues to do with the fact that Malaysia is quite diverse in its population mix through ethnicity (Malays, Indians, Chinese), religion (Muslim, Christian, Buddhist, Hindu) and culture. But the benefits exist — older people can benefit from reduced bouts of loneliness and isolation and increased levels of civic participation, while younger generations

can also gain in similar ways and through the learning of new skills and experiences.

In the living lab example presented, the social innovation lies in tackling three issues simultaneously: (1) creating an intergenerational centre for sharing of knowledge and well-being; (2) active ageing to enrich the quality of life for the elders; and (3) sustainable design to lower the footprint of the building and at the same time provide an educational tool to highlight a sustainable lifestyle. The living lab itself benefits from stakeholder consultation and it is planned to do further community profiling to determine potential users.

The architectural design is a creation taking traditional ideas interwoven with more contemporary ones. The application of the modular approach is key to the design as it allows flexibility for the different age groups and their interests, while at the same time does not neglect the needs of the elderly and the potential for active ageing. With further opportunity spaces for interaction (like the urban garden and activity rooms for cooking and dancing) the intergenerational aspects can be tested to see which ones work best. The use of passive strategies like ventilation and natural light provide a degree of comfort and sustainable living, and the overall design further imbues character to the place and a sense of belonging to the users.

To develop the living lab there still remains further exploration of ideas to be completed:

- More community outreach to assess the needs of the non-elderly users – the original idea was that the centre could be used for elderly and very young i.e. toddlers so that it becomes a one-stop shop for families to leave their dependents there during the working day. Surveys need to be done for parents and youths (18-24) who may want to drop by the centre to enrol on courses to learn skills from the elderly.
- The modular design needs to be refined to allow interchange ability of units for different purposes. At this stage, the operators of the centre will need to be consulted on the types of service offerings and the fixtures needed to deliver them so that the units can be designed accordingly.
- The active ageing element provides an opportunity to try out new assistive technologies that can help elders still maintain a level of mental and physical ability to be able to socialise and contribute. Further research needs to be done on what types of technologies are available, particularly leveraging on ICT and smart building and personal technologies.
- The sustainability aspects can be further developed. Life cycle costing can be carried out to establish the economic benefits as well as the environmental benefits for each measure. There are other innovative applications that can be incorporated like water recycling and zero waste.

## 8. Conclusions

Social innovation is the commercial application of ideas and technology towards improving societies. Linking social innovation with a living lab allows the idea to be taken to a live demonstrable example which can be replicated to achieve greater impact. An example of this is how to provide for ageing populations. Use of an intergenerational approach could be a social innovation, coupled with active ageing carried out in a sustainable built environment. A case study is used to demonstrate this effect. Further research, in particular on user needs, is recommended.

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