

# ROOF GARDENS OF ASIA

STORY AND PICS: JILL MATTHEWS MAILDM

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**ABOVE.** Seoul, Shinsegae Department Store. Trinity Garden sculpture.

The mega-cities of North Asia are troubled to varying degrees by air pollution, lack of green space for the recreation of their large populations and, in the monsoonal regions, the additional problem of sudden massive water runoff and flooding. Furthermore, with increasing affluence, many residents seek better quality food and are anxious about the freshness and amount of chemicals in food purchased from their customary suppliers. There is also a growing awareness of the issues surrounding climate change and the need for personal action to mitigate them. All of these factors have combined to encourage the proliferation of roof gardens in Seoul, Taipei and Hong Kong.

#### 4 **landscape** outlook

## **SEOUL**

Seoul in South Korea has a population in excess of 10,000,000 and until recently was troubled by debilitating air pollution. Of the three cities considered in this article, Seoul has the most extensive and sustained programme to encourage roof gardens. It is part of the major Greening of Seoul project initiated by Mayor Lee Myung-bak, later the 10th President of South Korea, as a result of which the air quality and general livability of the city has improved markedly. Many elements have contributed to this improvement including the expansion and improvement of the public transport systems and the planting of vast numbers of street trees.



Undoubtedly an additional factor is the increasing installation of roof gardens. Roof gardens in Seoul are deliberately encouraged by the city government which subsidises the construction of new ones to the tune of 70% of the installation costs. Since 2002 this has resulted in about 243,000 square meters of green space atop some 550 commercial, public and residential buildings. Nearly 40 billion won (\$A35,000,000) have been spent in incentives so far.

#### • Shop til you drop

Seoul can boast of having one of the largest roof gardens in North Asia, the Four Seasons Park above the Garden 5 Shopping Centre in Song-pa. Larger than three soccer fields, it contains walking trails, multiple ponds, a concert and exhibition area and cafes as well as garden plantings. Shinsegae Department stores are an extremely up-market chain in Korea. On the roofs of at least two of their main branches there are significant, if little known, roof gardens. Their flagship store in Myeongdong has an elegant garden with excellent views of the Seoul skyline and so many fountains that the sound of the throbbing city and major traffic intersection ten floors below is almost eliminated. This garden has notable sculptures by Henry Moore and Jean Miro, contemporary lighting, wisteria-covered pergolas, a natural water meadow, much other greenery, and beautiful wooden decking and seating which together provide an entirely pleasant outlook from the excellent food court with which it shares the rooftop. The newly opened enormous shopping mall D-cube City in Sindorim also has an extensive roof garden covering a whole city block. Within it are several cafes where the young and trendy stroll and take coffee. Then there are the roof gardens of Dongguk University, from which one can have a wonderful view of Namsan Mountain and the famously restored Cheonggyecheon Stream. The University is very proud of its green credentials, so all are open to the public.

The roof gardens described above are an almost random selection of the many accessible to the public in Seoul. It is also increasingly popular for private houses and top floor apartments in Seoul to install food-producing gardens. You can see many of these tiny patches of green from higher surrounding buildings throughout Seoul.



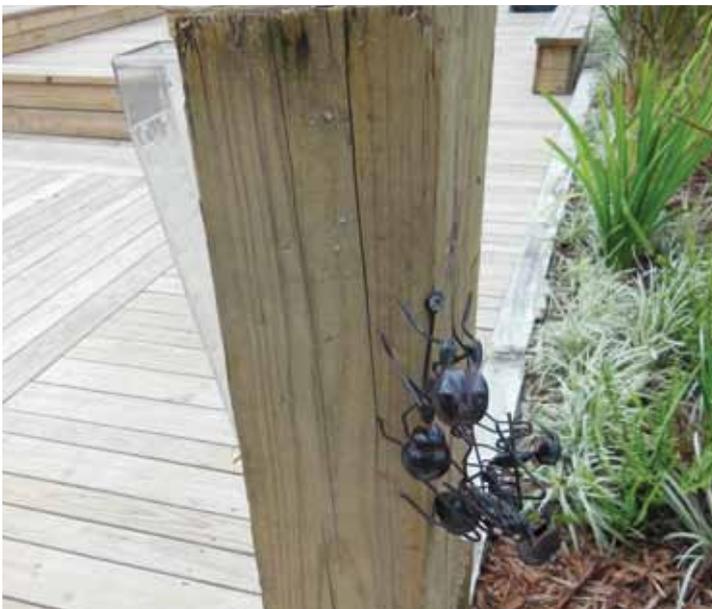
**CLOCKWISE FROM TOP LEFT.** Seoul, Shinsegae Department Store. Trinity Garden natural water meadow; Seoul, Shinsegae Department Store. Trinity Garden fountains to lessen city noise pollution; Hong Kong, Australian School.

#### HONG KONG

With just over 7,000,000 souls, Hong Kong is a less populous city than Seoul, however it is very crowded, having one of the highest population densities in Asia. Because it is situated adjacent to the highly industrialised Shenzhen Special Economic Zone in the Pearl River delta in Guangdong, mainland China, Hong Kong struggles with extreme air pollution mostly caused by this nearby conurbation over whose emissions it has no control. These two factors may explain the recent proliferation of roof gardens in Hong Kong. So many roof gardens are being constructed there these days that several small businesses have sprung up: some offer construction and educational services and others the sale of fresh organic rooftop-grown produce. One entrepreneur even offers urban beekeeping services and is kept very busy installing hives in rooftop gardens and harvesting honey and by-products for his customers when the time comes. Arthur van Langenberg, a Member of the Hong Kong Gardening Society, has his own domestic rooftop garden which covers his garage roof and in which he grows



**TOP.** Hong Kong, Australian School. Stowing the 'rusty tin shed'.  
**ABOVE.** University of Hong Kong. Green fringed sky walkway.  
**BELOW.** Hong Kong, Australian School. Rain gauge and bullant sculpture.  
**BELOW RIGHT.** University of Hong Kong. Installation of reservoir roof garden.



organically all necessary vegetables for his own household. He receives so many requests for advice on how to set up such food gardens that he has published several books on the subject, the most recent *Growing Your Own Food in Hong Kong*, which sell many copies.

• **University of Hong Kong roof gardens**

Chinese societies are renowned for the respect they have for higher education and for the huge sums they will spend on university infrastructure. The Centennial Campus project of University of Hong Kong, its oldest and foremost university, is a grand case in point. Built on a steep rock hillside on Hong Kong Island, this new multi-building complex almost doubles the size of the original campus. It will have its own train line and station tunneled through the bedrock - no squabbles about privileged parking spots at this university. There are to be many academic garden courtyards and sheltered green spaces, almost none of which will be planted in the earth at ground level. These are part of an integrated design that will enhance the natural ventilation through and around each building and insulate the new buildings underneath them. Broad, mostly covered, aerial walkways between the buildings link the roof gardens and are themselves often fringed with tropical plantings. Several of the roof gardens include solar or wind electricity-generating devices which will significantly reduce the need for more environmentally destructive power. As part of the development approval process for the new law school building, an old colonial water reservoir had to be preserved but covered. By December 2012 this had been done and a huge landscaped roof garden larger than a soccer field was being laid out on top of the new reservoir roof. It will make spectacular use of the borrowed landscape of the rocky woodland hillside behind it. The law school moot court has a beautiful flat oval shaped roof currently merely turfed but planned to become a garden with room for many trees and sitting out areas. The new music school already has several small roof gardens at various levels, newly planted with advanced



trees and tough ground covers including peanuts. Most have wonderful views over the city and the South China Sea when the air is clear enough to see through. This vast construction project only commenced five years ago but already many of the buildings are in use and many of the roof gardens constructed and planted. It will be fascinating to see the finished campus.

### • Australian School

On a smaller scale but equally impressive, is the new roof garden atop the Australian International School in Kowloon Tong. It was designed and installed by Green Roof Asia which documented the process in a fascinating time-lapse video on their website entitled *How to Make a Green Roof in 3 Minutes & 49 Seconds*. The garden features Australian plants carefully selected to withstand Hong Kong humidity and many Australian details such as corrugated iron water tanks and stands, rain gauge, bull-ant sculptures, an Aussie BBQ and a "rusty corrugated iron shed". Real rusty corrugated iron on a roof in typhoon-prone Hong Kong would have been a lethal design feature. Green Roof Asia found a whimsical solution: they took photographs of rusty corrugated iron sheets and had them enlarged and printed on roller blinds which can be stowed when necessary. There are spaces for growing veggies and for hands-on teaching about environmental issues such as recycling. This garden has such an Australian outback feel to it that the view from it over Kowloon high-rise towards the Hong Kong city skyline is disconcerting.

### TAIPEI

The capital of Taiwan has a slightly smaller population than Seoul, at under 9,000,000. Although the air quality has improved here recently too, it is still a real problem. During monsoons the air is cleaner but massive sudden urban runoff and flooding can be disastrous. Every roof garden helps with both these issues. Winkler Partners, a law firm in downtown Taipei, has three. The roof on the top of this firm with a social conscience, has been converted



**TOP.** University of Hong Kong, new music school garden with wind turbines.

**BELOW.** Hong Kong, Arthur Van Langenberg's vegetable garden.



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**CLOCKWISE FROM TOP LEFT.** Taipei, compost bins and organic waste containers at Winkler Partners; Taipei, rice seedlings and newly planted rice paddy at Winkler Partners; Taipei, diverse array of herbs and vegetables as well as fruit trees at Winkler Partners.

into a permaculture oasis. Winkler has installed large rainwater tanks, compost bins, a composting toilet and a passionfruit-draped pavilion. I counted 47 different varieties of food plants including guava, papaya and avocado trees and a diverse array of vegetables and herbs. Most startling of all, a small rice paddy had been planted between the double brick outer walls of the garden. Staff are encouraged to eat their lunches in the shade of the trees and to cultivate their own green leafy vegetables as a break between legal matters. As yet there are no fish in the pond or poultry producing manure and eating insects, however staff regularly collect organic waste, especially bulk coffee grounds

from nearby cafes, to enrich the compost. The number of bees, butterflies and small wild birds visiting the garden demonstrate that a rich micro-ecosystem is thriving on this previously barren rooftop. This policy of lightening the ecological load on the planet extends to other parts of the building which is designed to maximise the use of natural light and ventilation. On another, lower, rooftop in the same building, pot plants are cultivated for rotation throughout the offices with the intention of improving air quality. The firm encourages staff to cycle to work by providing parking for bikes and a shower room for riders. There is an in-house creche for babies and toddlers in a pleasant space adjacent to one of the smaller roof gardens thus saving Winkler Mums and Dads quite a few commuting hours. The boardroom opens onto a small third roof garden which is a riot of decorative tropical trees and plants so dense that you can't see the surrounding city through it. Altogether the firm has created an environmentally green workplace which must be a pleasure to work in however hot, humid or polluted it may be outside.

For almost 15 years until 1990 the Taipei City Government Sky Garden project provided free soil, plants and reference books to residents wishing to construct roof gardens within the city. However the history of Government incentive for green roofs since has been erratic. For a short time from 1996, the Public Space Improving, Greening and Beautifying Project offered competitive cash grants for roof gardens. This programme was axed in 2000 for budgetary reasons. At present there seem to be no specific roof garden incentives although a national planning law requires all Government buildings to pass a Green Building Evaluation measured by nine criteria: biodiversity, greenery, soil water content, energy saving, indoor environment, water resource, sewage improvement, carbon dioxide emission and waste reduction. Obviously installing a green roof would earn points in many of these categories, however Green

Building Evaluations are not required for private buildings. Such frequent changes of laws, incentives and public policies must discourage designers and builders of large new developments from including major green roofing into their plans.

It is heartening to see so many green roof initiatives being taken by private citizens, corporations and governments in these huge cities and to see such good use being made of otherwise wasted space. Such Mega-cities need multiple strategies to remain sustainable but the increasing numbers of roof gardens is certainly one brick in the sustainability wall. **L**



**TOP AND BOTTOM.** Taipei, Winkler Partners has installed large rainwater tanks, compost bins, a composting toilet and a passionfruit-draped pavilion. Bees, butterflies and small wild birds visit the roof top garden.

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