

Urban Agriculture and Inner Spaces in Chinese cities -sustainability issues and the current urbanisation process

URBAN FRAGMENTATION COMBINED WITH AGRICULTURE

Jintai Village Reconstruction, Bazhong, Sichuan Province, China by John Lin, Joshua Bolchover



Project Brief Introduction

1. The area hardest hit by the Wenchuan Earthquake on May 12, 2008;
2. Offer four types of houses, varying in size, function, biogas technology and accommodation for pigs and chickens.

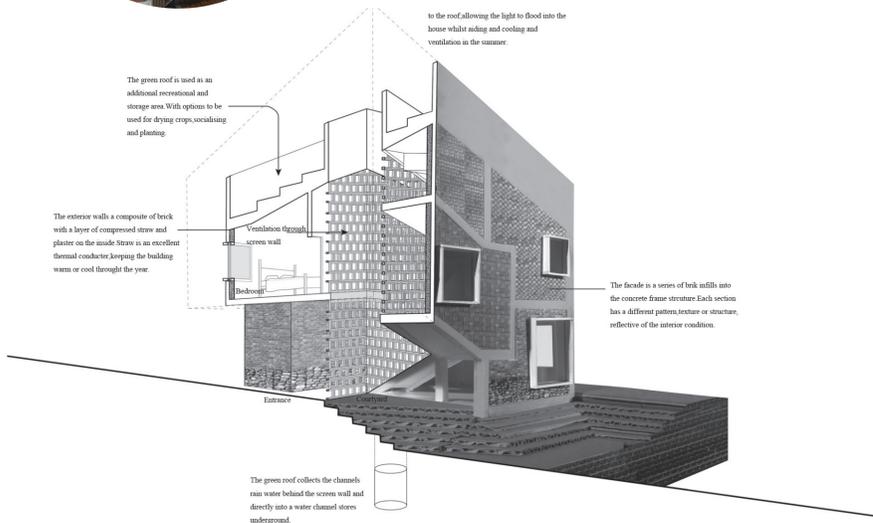
Urban Agriculture

Individual family-owned workshops are allowed in open areas above ground, while rooftops support family-owned farmland.

- Transforming the town into a model**
- Environmental responsiveness**
- Wastewater treatment**
- Collective animal housing**
- Ecological cycles**

Sustainable measures

- New uses for local materials.
- Wastewater treatment
- Ecological cycles



Bolchover Green Cloud Roof of South Garden, Shenzhen, China by Eleven Buildings



Project Brief Introduction

1. The project is "2021 Nanshan Gardens Jointly Built", led by the Nanshan District Government.
2. Create an open space on the roof of a 6-storey apartment to create an urban oasis.

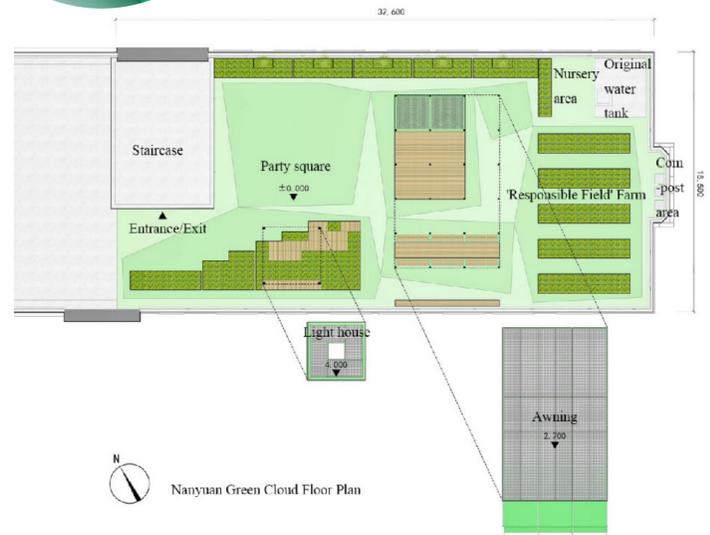
Urban Agriculture

It creates a 450-square-meter garden with surrounding flower beds, farms, and a partially shaded activity plaza.

- Responsible Field**
- Community Activity**
- Solar Energy**

Sustainable measures

- Low carbon
- Hold community activities for young people



Nature Discovery Park, Hong Kong, China, by LAAB Architects



Project Brief Introduction

1. It is located on the rooftop of Hong Kong's K11MUSEA Humanities Art Museum.
2. The spatial design promotes the coexistence of people, nature and the urban environment through ecotourism and educational projects on biodiversity and sustainability.

Urban Agriculture

Establishing hydroponic nursery greenhouses on the rooftop and farms in front of the greenhouses provide urban farming opportunities for city dwellers.

- Biodiversity**
- Sustainability**
- Coexistence of people, nature**
- Urban environment through**
- Ecotourism**
- Educational**

Sustainable measures

- Biodiversity
- Urban environment through
- Ecotourism
- Coexistence of people, nature



Planter Box House, Kuala Lumpur, Malaysia by Formzero



Project Brief Introduction

1. This project is in Kuala Lumpur, Malaysia, built by architect FORMZERO in 2017—total room size 340 m².

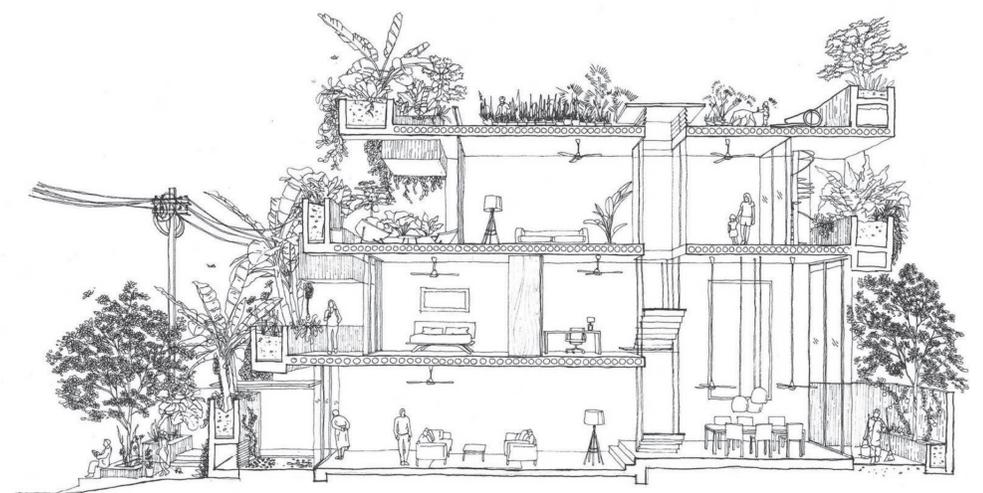
Urban Agriculture

The house's cascading concrete planters hold over 40 edible plants on each level.

- Irrigation System**
- Store and Reclaim Nutrient Resources and Rainwater**

Sustainable measures

- A customised irrigation system
- Store and recycle nutrient resources and rainwater within the land.
- Recessed façade provides additional public space for neighbourhood interaction.



Xinhua Fruit And Vegetable Market, Tainan, Taiwan Province,China by MVRDV



Project Brief Introduction

1. It is located in eastern Tainan, between the city and the mountains, close to Highway 3 and public transportation connections.
2. MVRDV and LLJ Architects completed the design of the Tainan Xinhua Fruit and Vegetable Market. Construction is progressing orderly and is expected to be finished by the end of 2020.

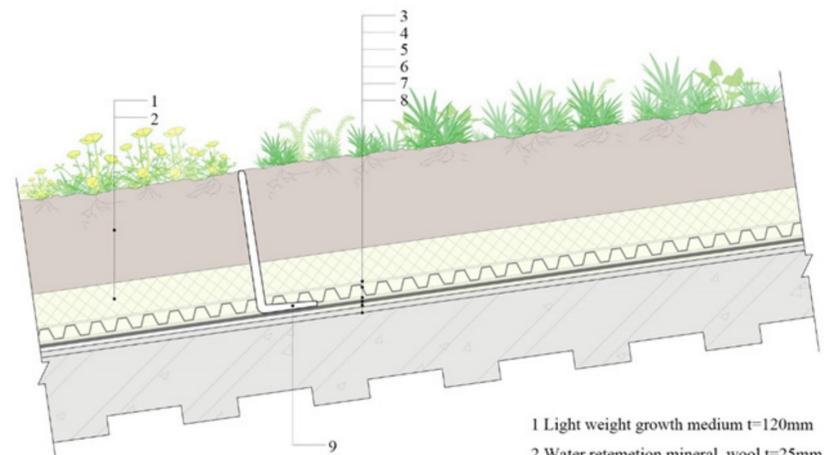
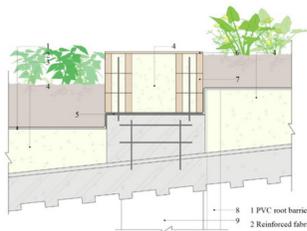
Urban Agriculture

A simple four-story structure contains the market's administrative offices, restaurants, and an exhibition centre showcasing the region's produce.

Grow a variety of crops on the retreat roof. Sheltered spaces, benches and picnic tables are set up on the roof.

Sustainable measures

The roof structure adopts a lightweight growth medium, water retention mineral, filter membrane, plastic water drainage panel, protection membrane, PVC root barrier with insulation, and reinforced fabric. The floor finish is an L-shape perforated profile.



- 1 Light weight growth medium t=120mm
- 2 Water retention mineral wool t=25mm
- 3 Filter membrane 105g/m²
- 4 Plastic water drainage panel
- 5 Protection membrane
- 6 PVC root barrier(with insulation)
- 7 Reinforced fabric 200g/m²
- 8 Floor finish
- 9 L-shape perforated profile

- 1 PVC root barrier(with insulation)
- 2 Reinforced fabric 200g/m²
- 3 Floor finish
- 4 Light weight concrete infill
- 5 PVC water barrier with structural adhesive
- 6 Mortar finish
- 7 Hollow brick
- 8 Column
- 9 Drainage

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INDEPENDENT FARMS WERE ESTABLISHED AROUND THE CITY

Lafayette Green , Farmington Hills, MI, The Unite State by Kenneth Weikal Landscape Architecture

Skyfarm, Farmington Hills, MI, The Unite State by Kenneth Weikal Landscape Architecture



Stormwater Management
Water Use
Material Reuse Organic
Efficient Farming Methods
Urban Biodiversity

Project Brief Introduction

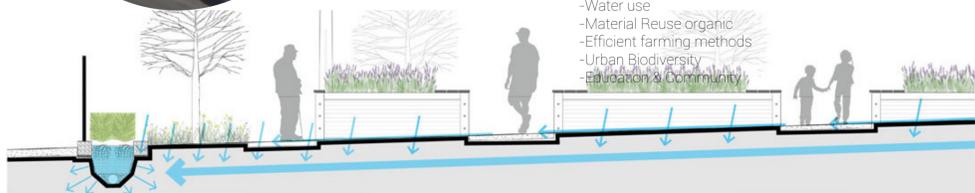
1. City Farm appeared in a plaza somewhere in downtown Detroit. The 0.425-acre garden fills the depressing vacancy of the Lafayette Building, which was demolished in 2010.
2. To accommodate the 4-foot grade change across the site, vegetable beds rise from the ground along 70-foot-long planters, with bed heights ranging from 8 to 40 inches.

Urban Agriculture

Tangible and functional vegetable gardens effectively express their charm in public spaces. The demolished places of the city were re-established as urban agriculture.

Sustainable measures

- Stormwater Management
- Water use
- Material Reuse organic
- Efficient farming methods
- Urban Biodiversity
- Education & Community



stormwater management



sustainable materials and methods



PVC material
Side net -agricultural land
climbing net
Top net- bird-proof net
"Aquaponics" cultivate method
Mobile farm

Project Brief Introduction

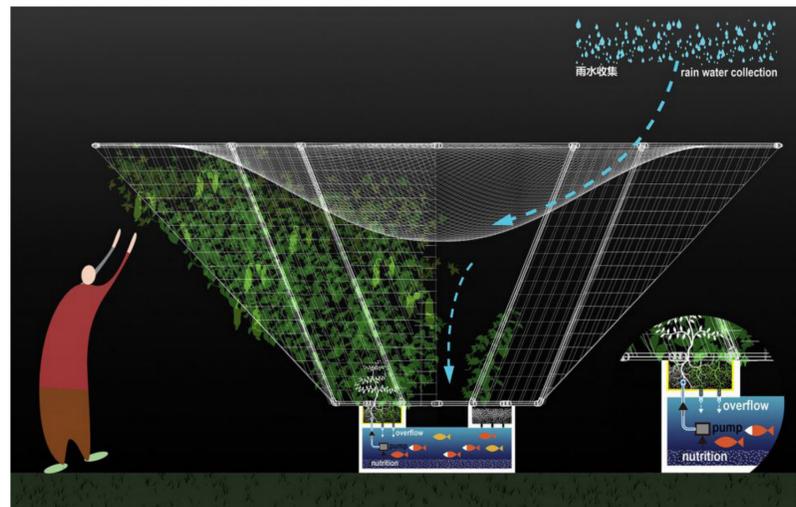
1. A 400-square-meter sky farm with the same amount was built in Nantou Village, Shenzhen. About 10% of Shenzhen is an urban village, home to nearly 50% of the urban population. Shenzhen's urban villages are another form of urban space.
2. Since the end of 2015, VRAP has been applying the concept of "Agricultural Construction" to micro-projects, namely "Agricultural Inclusive Urbanization", as a means of urban renewal. The sky farm is an iterative product of the new urban village economy.

Urban Agriculture

It is built on a 400-square-meter sky farm in Nantou Village, Shenzhen. Sky Farm is an "agricultural installation" integrating rainwater harvesting, urban agriculture, and community building.

Sustainable measures

- Aquaponics
- Mobile farm
- Common building materials PVC
- Urban Biodiversity



Nature Urbain, Paris France, by Agripolis



Pioneering techniques
Aeroponics and hydroponics
Reduce "food miles"
Market gardening

Project Brief Introduction

1. The organic farm will have 30 different species of plants, tended by 20 gardeners, and should produce 1,000 kilograms of fruits and vegetables per day during the summer.
2. Nature Urbaine occupies the roof of Pavilion 6 of the Expo Porte de Versailles in Paris, ultimately occupying 14,000 square meters (the equivalent of two football pitches).

Urban Agriculture

The farm has more than 4,500 square meters of operating production area, with 696 columns and 1,428 cultivation troughs.

Sustainable measures

- Use cutting-edge vertical growing methods, including hydroponics and aeroponics.
- Circulates water and nutrients in a completely closed loop.
- Reduced water consumption and no urban pollution.
- At the same time, a restaurant will be established to realise the direct cash flow of agricultural products.



Greenhouse House "Encourage Good Room", Taoyuan Taiwan Province China by BIAS Architect



Climatic Conditions
Shading System
Reduce "food miles"
Market Gardening

Project Brief Introduction

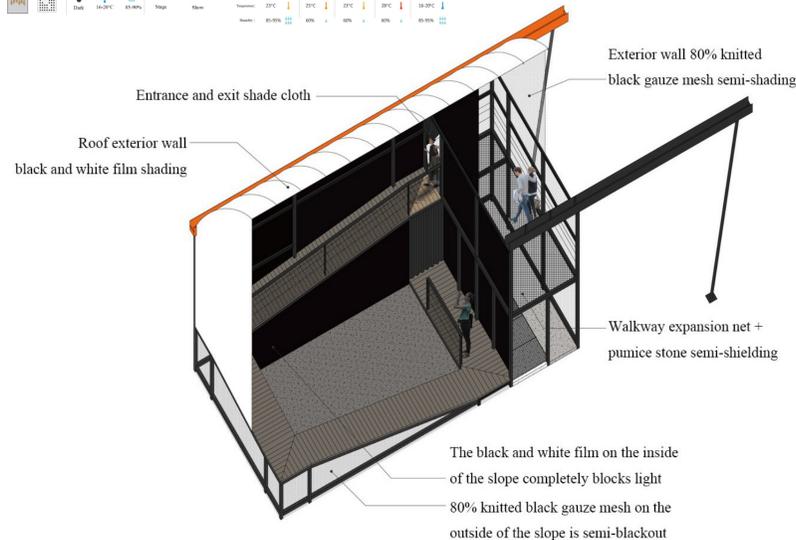
1. People and spaces are organised according to climate zones, and greenhouse building materials and structures are arranged to separate climate zones. At the same time, the distribution of water and energy flows is technically managed. The roof is covered with various combinations of agricultural gauze and plastic film to control lighting and solar radiation.

Urban Agriculture

The experimental urban farm of "Greenhouse as Home" builds ferns, fungi, agricultural planting areas, sun gardens, and farm restaurants according to climate zones, achieving zero distance from farm products to the table.

Sustainable measures

- Distribute plants and plant species according to climate zone.
- Different combinations of plastic films and agricultural gauze are draped on the roof to regulate lighting and solar radiation.
- The context of rural agricultural development and contemporary lifestyles. It boldly integrates a high-power greenhouse environment with urban life through space design and event planning.



Coro Field, Suan Phueng Ratchaburi Thailand, by Integrated Field Co.Ltd.



Project Brief Introduction

The project's first phase naturally occupies the edge of the land bordering the city. Vegetables, fruits, and various crops are scattered in the neat and orderly park, creating an idyllic scenery. In the adjoining building, home-grown produce from the land is displayed.

Urban Agriculture

Vegetables, melons, fruits, and various crops are planted on the edges of the land adjacent to the city. The adjoining buildings display agricultural products produced and sold on the land.

Sustainable measures

- Using wood modular and modular furniture.
- Removable membrane sheets.
- Creates plantation drainage visual approach.

Land edge bordering the city
Home-produced agricultural products
Different measures and agricultural products in winter and summer
Removable frame



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URBAN AGRICULTURE COMBINES ECO-CITIES AND SUSTAINABLE DEVELOPMENT

Pasona 02, Chiyoda, Japan Tokyo, by Konodesigns



An automated Irrigation System
HEFL
Fluorescent Lights
LED Lighting
Complete Indoor Ecosystem



Project Brief Introduction

1. Pasona 02, led by Tokyo-based Japanese recruitment firm Pasona, showcases a new innovative urban farming concept in a 1,000-square-meter underground farmland space at Otemachi's headquarters.
2. The farm building has approximately 4,000 square meters of green space with more than 200 different types of plants, vegetables, and fruits, including lemons, broccoli, salad greens, berries, squash, eggplant and passion fruit.

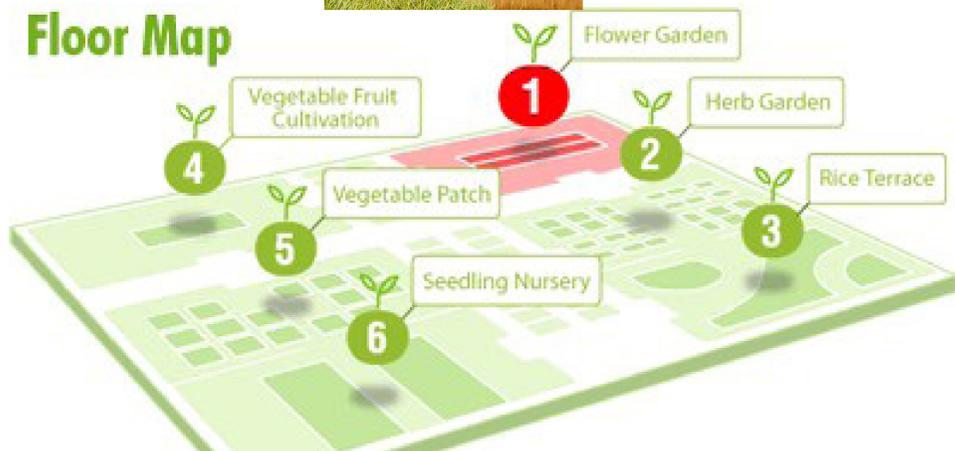
Urban Agriculture

Tomatoes hang from the conference room ceilings, rice fields are planted in the lobby, and flowers and orange trees cover the building's vast exterior.
Employees contribute to the Farm to Office Table program. They work with the management team to maintain, collect and prepare produce for the on-site cafeteria.

Sustainable measures

- Artificial light from computer-controlled diodes, light-emitting diodes, metal halide lamps, and sodium vapour lamps.
- Hydroponics
- The office area is a complete indoor ecosystem.
- Automatic irrigation system, HEFL, fluorescent and LED lighting.

Floor Map



The Farmhouse by Studio Precht



Conceptual

Vertical Farm
Different Climate Conditions and Different Ecological Environments
Water Treatment System
Food Waste Collected into Fertilizer

Project Brief Introduction

1. A-frame housing modules composed of cross-laminated timber (CLT) and prefabricated will be stacked throughout the structure to create flexible living areas. Prefabricated.
2. By re-establishing the connection between architecture and agriculture and transforming it.

Urban Agriculture

Vertical farms can increase crop yields per unit of planting area. The indoor climate of the greenhouse protects the food from different weather conditions, and a large amount of heat already generated by the building can be reused to grow plants such as potatoes, nuts or beans. A water treatment system filters rainwater and greywater and replenishes and recycles them in the greenhouse. Food waste can be collected on-site in the building's basement, turned into compost, and reused to grow more food.

Sustainable measures

- The farmhouse operates on an organic life cycle. The heat generated during the growing process provides the heat needed for the next crop.
- A water treatment system filters rainwater and greywater, replenishes and recycles them into the greenhouse.
- Food waste can be collected on-site in the building's basement, turned into compost, and reused to grow more food.
- Using CLT materials, the greenhouse gases produced during the manufacturing process are low, and its overall environmental footprint is lighter.
- Consisting of a fully modular building system.



Amazon Arlington, Virginia, USA-New headquarters by NBBJ.



Guiding Industry Towards Net Zero Emissions
Committed to LEED Certification
High-performance Glass
Integrated Sun
Over 125 Electric Vehicle Charging Stations Available
Small Flow Devices
Recycled Water Use



Project Brief Introduction

This development is part of PenPlace's plan to think and innovate sustainable technologies when building HQ2 to help guide the industry towards net zero emissions Aligned with Amazon's commitment to achieve net zero carbon across its operations by 2040.

Urban Agriculture

Set within indoor gardens and greenery in nearby areas, the spiral "climb" will allow employees and visitors to ascend the building's exterior.

Sustainable measures

- Committed to providing 100% renewable energy for HQ2 operations through off-site and on-site solar projects.
- Work towards achieving LEED Platinum certification.
- Designed climate-responsive elements.
- More than 125 electric vehicle charging stations available.
- Using small flow devices and using recycled water.
- Opportunity to design a warm, friendly and well-connected community.

Socio-Technical City, Netherlands, by UNStudio



Research programme

Social Science and Technology City
Covers Current Train Track infrastructure
Green Area
Self-sufficient Residential Area

Project Brief Introduction

1. Sociotechnical cities bridge the gap between infrastructure and technology on the one hand, and quality of life and social well-being on the other. The gateway model is based on the idea that interaction is a necessary condition for innovation. Portals form catalysts for meetings; they connect communities and people, thereby forming a hotbed of innovation.

Sustainable measures

- Biopolus water treatment.
- Recycling-climate adaptation

