LEE LI MING
PROGRAMME IN
AGEING URBANISM

Taipei EcoGym

An Integrated Approach to Urban Health and Active Ageing[1]

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Introduction

Today, urban governments increasingly face overlapping challenges related to population ageing, public health, and environmental sustainability. In cities such as Taipei, demographic ageing coincides with high population density and limited green space, intensifying the need for innovative public interventions that promote health while enhancing urban environments. [2] Rather than addressing these challenges in isolation, some cities have begun experimenting with integrated solutions that generate multiple social, environmental, and health benefits simultaneously.[3]

The Taipei EcoGym represents one such initiative. Installed in public parks—most notably Daan Forest Park—the EcoGym combines outdoor exercise equipment with ecological infrastructure. Human-powered stationary bicycles enable users to engage in physical activity while simultaneously circulating and oxygenating pond water. This initiative

[1] This is an evolving database. We will be adding more examples and cases over time.

[2] Taipei City Government. (2020). *Age-friendly city policy and demographic ageing in Taipei*. https://www.taipei.gov.tw/

[3] World Health Organization. (2007). *Global age friendly cities: A guide*. WHO Press.

exemplifies an approach to recreation that aligns physical activity with environmental stewardship and inclusive urban design.[4]

Inception

The Taipei EcoGym was introduced as a pilot project in Daan Forest Park around 2018–2019, initiated by the Friends of Daan Forest Park Foundation in collaboration with designers, engineers, and park management authorities.[5] The project was conceived as part of a broader ecological revitalisation strategy that sought to combine environmental management with public participation through everyday physical activity and cross-sectoral collaboration.

The EcoGym consists of purpose-built outdoor exercise equipment integrated directly into park water systems. The system's signature feature is a series of stationary "water-cycling" bicycles positioned adjacent to park ponds (Photo 1). When users pedal, their kinetic energy is mechanically transferred to pumps that circulate and oxygenate water. Digital displays provide real-time feedback, showing users the volume of water circulated through their activity.[6]



Photo 1: EcoGym, Daan Forest Park, Taipei. Image source: Author.

Its design emphasises simplicity, inclusiveness, and minimal physical barriers, making it suitable for users with varied physical abilities, including older adults. Importantly, older adults are not treated as a separate or specialised population but are included through universal design principles that support intergenerational use. This approach aligns with age-friendly city frameworks that prioritise inclusivity and interaction rather than age-based segregation.[7] By situating the intervention within a familiar public park, participation becomes part of everyday outdoor recreation rather than a specialised or institutional activity.[8]

As of the early 2020s, the Daan Forest Park EcoGym includes approximately 20 water-cycling bicycles, operates 24 hours a day, and is freely accessible to all park visitors.[9] Participation is registered through a voluntary QR-code system,

[4] EcoGym Taipei. (n.d.). *Taipei EcoGym: Utilize one city's energy to conserve a forest*. https://ecogym.taipei/en/

[5] *米蘭營銷. (2019). 世界首創生態共好設施「台北健森房—活水飛輪」獲獎連連 已活化 6 千萬公升的水 [World's first eco-friendly facility "Taipei Eco-Gym - Water-Living Flywheel" wins multiple awards, revitalizing 60 million liters of water]. 動腦 Brain.com.tw. https://www.brain.com.tw/news/articlecontent?ID=48433*

[6] EcoGym Taipei. (n.d.). *Taipei EcoGym: Utilize one city's energy to conserve a forest*. https://ecogym.taipei/en/

[7] World Health Organization. (2007). Global age friendly cities: A guide. WHO Press.

[8] World Health Organization. (2007). Global age friendly cities: A guide. WHO Press.

[9] *劉頤. (2019). 去台北健森房踩活水飛輪 邊玩邊活化水質 [Ride the water-living flywheel at Taipei Eco-Gym: Purifying water while playing]. Yahoo! 新聞. https://tw.news.yahoo.com/去台北健森房踩活水飛輪-邊玩邊活化水質-100315646.html*

which has recorded 76 000 of users by 2021, with particularly strong repeat usage by older adults and organised community groups.[10]

Cumulatively, EcoGym users have contributed to the circulation of approximately 60 million litres of pond water, equivalent to 31.27 standard swimming pools, demonstrating that sustained, small-scale human participation can produce measurable environmental outcomes in urban public space.[11]

Over time, the project has refined its digital feedback systems and improved communication of environmental impacts to users. Although the EcoGym has not expanded into a citywide network, its continued operation suggests public acceptance and institutional support. Its relative design stability reflects the durability of its core concept rather than a lack of innovation.[12]

Why the EcoGym Was Introduced

First, physical inactivity is a growing public health concern, particularly among older adults. Although regular physical activity reduces chronic disease risk and supports functional ability, participation often declines with age due to cost, accessibility, and motivational barriers.[13]

Second, urban ecological management—especially of artificial ponds and water features—requires continuous intervention to prevent stagnation and environmental degradation. Conventional solutions rely heavily on energy-intensive infrastructure, increasing operational costs and carbon emissions.[14]

Third, Taipei—like many East Asian cities—is experiencing rapid population ageing, increasing the need for public spaces that support active, independent, and socially engaged ageing.[15]

By linking physical activity with environmental stewardship, the EcoGym addresses these challenges simultaneously, aligning with contemporary healthy ageing frameworks that emphasise supportive environments rather than age-specific or segregated programmes.[16]

Strengths and Limitations

[10] 程淇, & 黃玟綺. (2021). *都市裡的「健森房」 活水飛輪環保又健康* [The "Eco-Gym" in the city: Water-living flywheel is eco-friendly and healthy] [Video]. PeoPo 公民新聞. https://www.peopo.org/news/533900

[11] *米蘭營銷. (2019). 世界首創生態共好設施「台北健森房—活水飛輪」獲獎連連 已活化 6 千萬公升的水 [World's first eco-friendly facility "Taipei Eco-Gym - Water-Living Flywheel" wins multiple awards, revitalizing 60 million liters of water]. 動腦 Brain.com.tw.* https://www.brain.com.tw/news/articlecontent?ID=48433

[12] *米蘭營銷. (2019). 世界首創生態共好設施「台北健森房—活水飛輪」獲獎連連 已活化 6 千萬公升的水 [World's first eco-friendly facility "Taipei Eco-Gym - Water-Living Flywheel" wins multiple awards, revitalizing 60 million liters of water]. 動腦 Brain.com.tw.* https://www.brain.com.tw/news/articlecontent?ID=48433

[13] World Health Organization. (2015). *World report on ageing and health*. WHO Press.

[14] Staff Reporters. (2020). *How a public park in Taipei harnessed pedal power to avoid stagnation*. Campaign Asia. https://www.campaignasia.com/article/how-a-public-park-in-taipei-harnessed-pedal-power-to-avoid-stagnation/tt8ht6wb0zevec8lmabmlpaik5

[15] Taipei City Government. (2020). *Age-friendly city policy and demographic ageing in Taipei*. https://www.taipei.gov.tw/

[16] World Health Organization. (2007). Global age friendly cities: A guide. WHO Press.

The EcoGym demonstrates several strengths:

- **Visible environmental outcomes**, which enhance motivation by linking effort to ecological benefit.[17]
- **Low-impact exercise**, suitable for a wide age range and particularly appropriate for older adults.
- **Free and accessible location**, reducing economic barriers to participation.
- **Alignment with active ageing principles** without labelling the space as "for older people".[18]

Despite its strengths, the EcoGym faces several limitations:

- **Ongoing maintenance** requirements for outdoor mechanical systems.
- **Dependence** on consistent user participation for maximum environmental benefit.
- Potential **novelty effects** that may reduce long-term use.
- **Limited applicability** to parks without water features.

Nonetheless, strong integration with park life and alignment with municipal sustainability and health priorities have supported the EcoGym's continued operation and relevance.[19]

Impacts

The EcoGym produces outcomes across environmental, health, and social dimensions.

From an environmental perspective, the system improves water circulation and oxygen levels in park ponds, reducing stagnation and supporting aquatic ecosystems. By relying on human power rather than electricity, the EcoGym contributes to low-carbon park maintenance practices while embedding sustainability awareness directly into public participation.[20]

In terms of health and physical activity, the EcoGym encourages moderate, low-impact exercise, particularly cycling. Such activities are strongly associated with cardiovascular health, muscular endurance, balance, and joint mobility, and are especially appropriate for older adults due to their low injury risk. Studies in Taiwan have shown that access to attractive, nearby outdoor recreational spaces is associated with higher physical activity levels among older urban residents.[21]

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[17] Staff Reporters. (2020). *How a public park in Taipei harnessed pedal power to avoid stagnation*. Campaign Asia. https://www.campaignasia.com/article/how-a-public-park-in-taipei-harnessed-pedal-power-to-avoid-stagnation/tt8ht6wb0zevec8lmabmlpaik5

[18] World Health Organization. (2015). *World report on ageing and health*. WHO Press.

[19] *米蘭營銷. (2019). 世界首創生態共好設施「台北健森房—活水飛輪」獲獎連連 已活化 6 千萬公升的水 [World's first eco-friendly facility "Taipei Eco-Gym - Water-Living Flywheel" wins multiple awards, revitalizing 60 million liters of water]. 動腦 Brain.com.tw.* https://www.brain.com.tw/news/articlecontent?ID=48433

[20] Staff Reporters. (2020). *How a public park in Taipei harnessed pedal power to avoid stagnation*. Campaign Asia. https://www.campaignasia.com/article/how-a-public-park-in-taipei-harnessed-pedal-power-to-avoid-stagnation/tt8ht6wb0zevec8lmabmlpaik5

[21] Huang, N. C., Kung, S. F., & Hu, S. C. (2018). The Relationship between Urbanization, the Built Environment, and Physical Activity among Older Adults in Taiwan. *International journal of environmental research and public health*, *15*(5), 836. https://doi.org/10.3390/ijerph15050836

From a social perspective, the EcoGym reframes exercise as a collective and meaningful activity. Users not only exercise for personal benefit but also contribute to the upkeep of shared public space. For older adults, this sense of contribution is closely linked to motivation, self-efficacy, and social connectedness—key components of wellbeing in later life.[22]

Cost and Benefits

The EcoGym required a substantially higher upfront investment than conventional outdoor fitness installations due to its integration of landscape works, water systems, and customised mechanical equipment. The total construction cost of the EcoGym and its associated ecological water environment in Daan Forest Park was approximately NTD 12.6 million (about USD 400,000 at the time of construction).[23]

These costs included:

- Civil and landscape works.
- Water-cycling, mechanical installations.
- Water and electrical systems.
- Lighting systems.
- Planting and ecological landscaping.

In addition to initial capital costs, ongoing expenditure is required for mechanical maintenance, water management, and outdoor equipment upkeep due to exposure to weather and intensive public use. While annual maintenance costs are not publicly itemised, these obligations exceed those of standard outdoor gym equipment that does not interact with water or ecological systems.[24]

Despite higher upfront costs, the EcoGym generates value beyond its role as exercise equipment, combining recreation, environmental management, ecological education, and public health promotion within a single public investment (photo 2). More than 40,000 registered users have participated in the initiative, demonstrating sustained public engagement and community uptake.[25]



Photo 2: Kensen Facility. EcoGym.
Image source: Author.

Additional benefits include:

[22] World Health Organization. (2015). *World report on ageing and health*. WHO Press.
[23] 環藝工程顧問有限公司. (2020). *大安生態二部曲／生態棲地與生態健身房* [Daan Eco-Trilogy Part II: Eco-habitat and Eco-gym]. 台灣建築報導雜誌社. https://www.ta-mag.net/ta/News.php?id=1726
[24] 環藝工程顧問有限公司. (2020). *大安生態二部曲／生態棲地與生態健身房* [Daan Eco-Trilogy Part II: Eco-habitat and Eco-gym]. 台灣建築報導雜誌社. https://www.ta-mag.net/ta/News.php?id=1726
[25] *米蘭營銷. (2019). 世界首創生態共好設施「台北健森房—活水飛輪」獲獎連連 已活化 6 千萬公升的水 [World's first eco-friendly facility "Taipei Eco-Gym - Water-Living Flywheel" wins multiple awards, revitalizing 60 million liters of water]. 動腦 Brain.com.tw.* https://www.brain.com.tw/news/articlecontent?ID=48433

- Increased utilisation and visibility of Daan Forest Park.
- Public education regarding sustainability and water management.
- International recognition through landscape, design, and innovation awards.
- A multifunctional use of public space that combines recreation and ecological infrastructure.[26]

Overall, while the EcoGym represents a higher initial investment than conventional outdoor fitness equipment, it demonstrates how a single public intervention can simultaneously support recreation, environmental education, ecological management, and community participation. For older adults in particular, it provides accessible opportunities for physical activity and engagement in public space without segregation or stigma.

Conclusion

The Taipei EcoGym demonstrates how thoughtfully designed outdoor recreational infrastructure can address public health, environmental sustainability, and demographic ageing within a single intervention. By transforming physical activity into a meaningful contribution to environmental maintenance, the EcoGym enhances motivation and participation across age groups.

For an ageing population, the EcoGym supports key dimensions of active ageing—physical activity, social participation, and supportive environments—without isolating older adults or framing ageing as a problem. While modest in scale, the initiative offers valuable lessons for cities seeking inclusive, low-carbon, and health-promoting outdoor spaces.

Sources:

EcoGym Taipei. (n.d.). *Taipei EcoGym: Utilize one city's energy to conserve a forest*. https://ecogym.taipei/en/

Taipei City Government. (2020). *Age-friendly city policy and demographic ageing in Taipei*. https://www.taipei.gov.tw/

World Health Organization. (2015). *World report on ageing and health*. WHO Press.

米蘭營銷. (2019). 世界首創生態共好設施「台北健森房—活水飛輪」獲獎連連 已活化 6 千萬公升的水 [World's first eco-friendly facility "Taipei Eco-Gym - Water-Living Flywheel" wins multiple awards, revitalizing 60 million liters of water]. 動腦 Brain.com.tw. https://www.brain.com.tw/news/articlecontent?ID=48433

Staff Reporters. (2020). *How a public park in Taipei harnessed pedal power to avoid stagnation*. Campaign Asia. https://www.campaignasia.com/article/how-a-public-park-in-taipei-harnessed-pedal-power-to-avoid-stagnation/tt8ht6wb0zevec8lmabmlpaik5

程淇, & 黃玟綺. (2021). *都市裡的「健森房」 活水飛輪環保又健康* [The "Eco-Gym" in the city: Water-living flywheel is eco-friendly and healthy] [Video]. PeoPo 公民新聞. https://www.peopo.org/news/533900

[26] 環藝工程顧問有限公司. (2020). *大安生態二部曲／生態棲地與生態健身房* [Daan Eco-Trilogy Part II: Eco-habitat and Eco-gym]. 台灣建築報導雜誌社. https://www.ta-mag.net/ta/News.php?id=1726