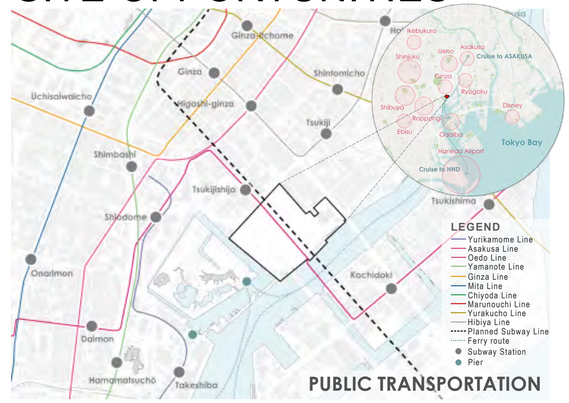
The BioChem Frontier

SITE OPPORTUNITIES

2024-15042



Public transportation is convenient. The new Subway is expected to open in 2040. Therefore, there is potential to create a pedestrian-oriented city with Hamarikyu Garden.

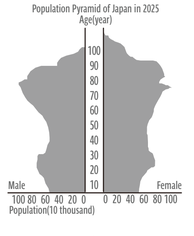
Adjacent to the National Cancer Institute and big residential area to the south, demand for shared office space is expected.

TMG's Visions and Requirements

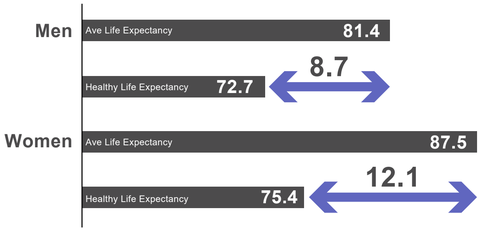
- Transportation Hub Including Ferry
- Hub for International Interaction
- Model City of Innovations
- Mechanisms for Sustainable Innovation
- Environmental Friendness

Issue1: Gap between Life Expectancy and Healthy Life Expectancy

AGING SOCIETY



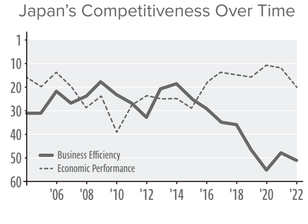
Healthy Life Expectancy



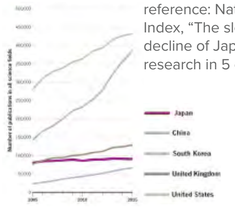
Japan is famous for having the longest life expectancy in the world, but due to the declining birthrate, the amount of social insurance premiums borne by the younger generation is increasing. In addition, there is a gap between life expectancy and healthy life expectancy, and urban planning is required to bridge this gap.

Issue2: Japan is Losing International Competitiveness

ECONOMY

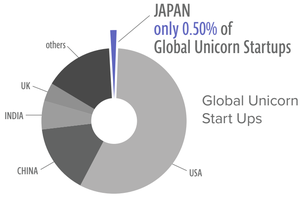


RESEARCH



reference: Nature Index, "The slow decline of Japanese research in 5 charts"

of START-UPS



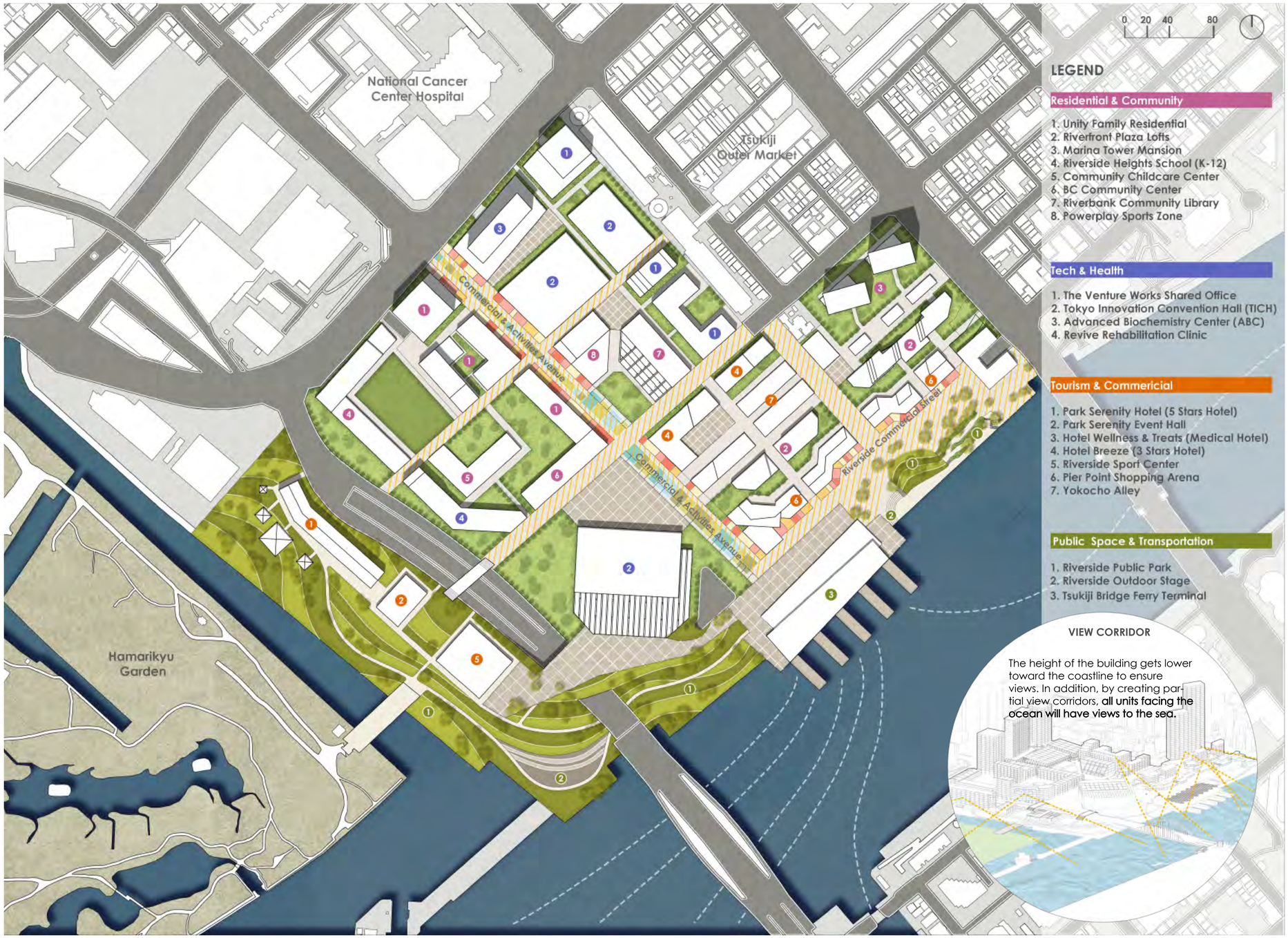
Japan's economy is stagnant, and the impact of this stagnation has led to a decline in competitiveness in R&D. The cause of this is the low number of unicorns. Given the strength of Japan's scientific research and its longevity, the creation of a unicorn in health tech could solve both problems simultaneously.

"BIOCHEM FRONTIER"

Sub Goal#1: Extend Healthy Life Expectancy
Sub Goal#2: Create BioChem Tech Unicorn

4 strategies to take

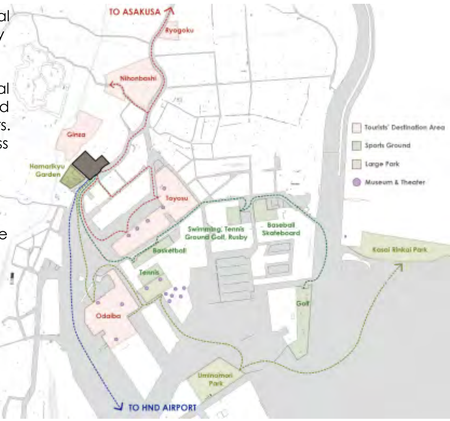
- Extend the life expectancy and health span of Japanese by promoting medical research with collaboration with the National Cancer Institute
- Create unicorns by creating medical and biotech startups and giving them opportunities for international recognition
- Increase productivity and create opportunities for new ventures by providing good and stimulating shared office space for neighborhood residents
- Provide exciting life in the Tokyo Bay Area full of sports and entertainment facilities by adopting ferry transportation network



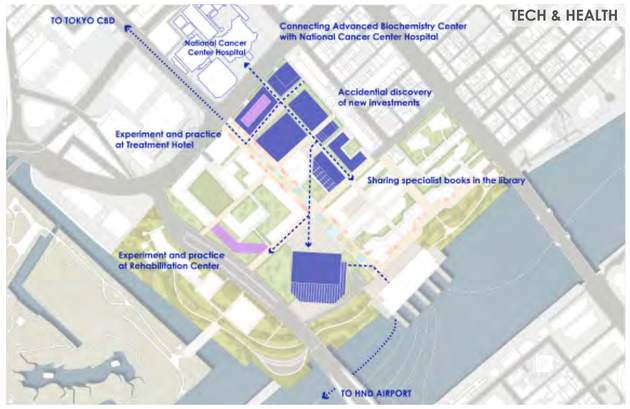
FERRY ROUTE DESIGN

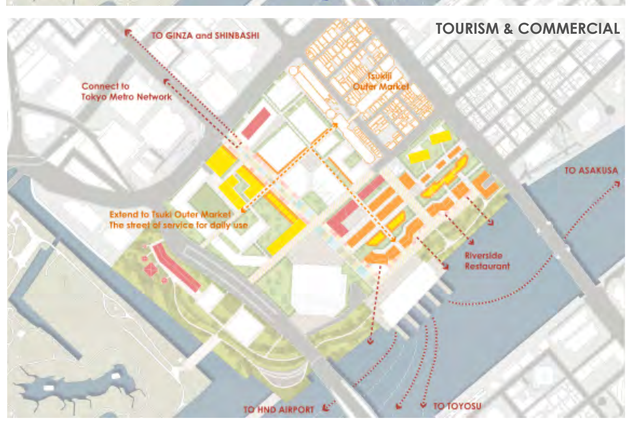
2024-15042

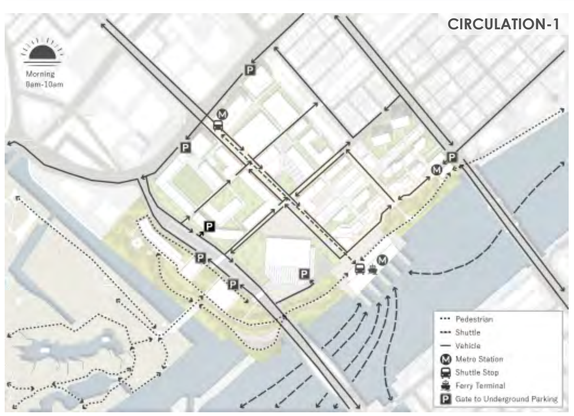
We build a ferry terminal to increase accessibility to residential area. Direct ferries from Haneda Airport Terminal 3 will also be developed to attract foreign visitors. Also, we provide access to entertainment facilities on southern parts that this site cannot provide, and enhance the nightlife in the entire bay area.

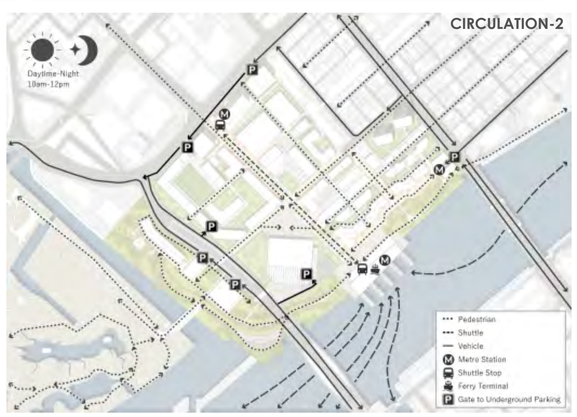


NETWORK

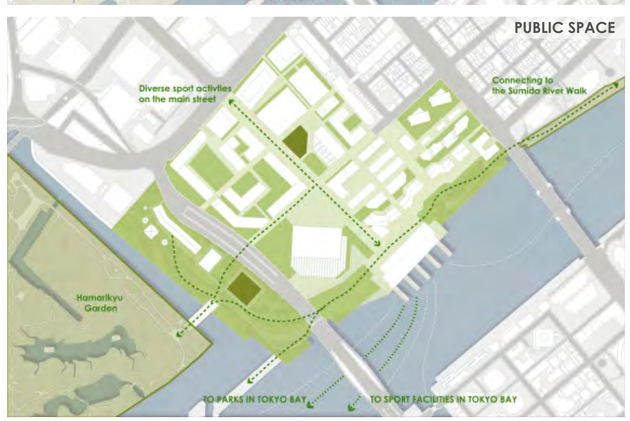








After 10:00 a.m., vehicles are not allowed to enter except for shuttles and cabs. This way, patients, the elderly, and children can stay safe and comfortable. Cars can park in the underground garage. Meanwhile, cars can enter the building in the morning and transport people and cargo to retail, hotels, research facilities, etc.



SUPER PEDESTRIAN FRIENDLY - Both for HEALTH & INNOVATION

ROAD SECTION

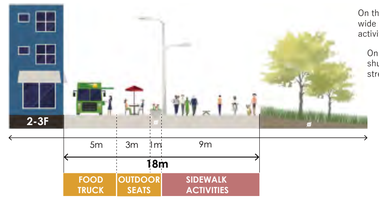
2024-15042

A-A' Section

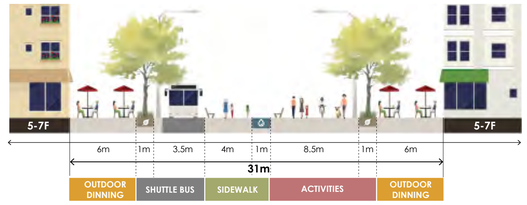
PEDESTRIAN-FRIENDLY STREETS

On the Riverside Commercial Street, the wide path serves as a space for diverse activities, connecting to the riverside park

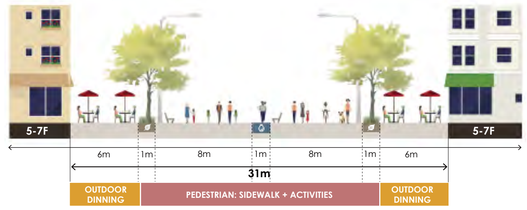
On the Commercial & Activities Avenue, shuttle bus is provided but sharing the street with pedestrians without division



B-B' Section (With shuttle bus)



B-B' Section (Without shuttle bus)



OPEN SPACE DESIGN PRINCIPLES

1. To prevent traffic accidents
Roads are distinguished by pavements but not separated
2. To ensure ample sunlight exposure
The width of the path should be more than the height of the building
3. To reduce the risk of falling
We minimize unevenness as much as possible
4. For air purification and relaxation
We plant a lot of greenery
5. For the development of bio-research and quick first-aid
We install cameras and sensors that collect biological information
6. For people with lower physical levels
We place movable benches in the shade

Life in the BIOCHEM FRONTIER; DIVERSE, HEALTHY, AND INCLUSIVE

FOREIGN TOURIST

Lee is a college student born into a wealthy family in South Korea. He visited Tokyo for luxurious tourism during his break. Today, he arrived at Haneda Airport, and took the ferrie for check in. Let's take a look at his plans for tomorrow.

- **10AM** Walking around the **Japanese Garden** in front of the hotel
- **1PM** Lunch at the **Park Serenity Event Hall buffet**
- **2PM** Takes the ferry to Tokyo Bay Islands for Golfing
- **6PM** Dinner at the **Riverside Terrace Restaurant**
- **8PM** Nightlife in Ginza and Shinbashi area

REHAB CENTER PATIENT

Ichiro suffered a stroke two years ago, and he is undergoing therapy at the Revive Rehabilitation Clinic. He enjoys sitting on the terrace of the rehab-center, sipping tea while watching children running around at the childcare center.

- **10AM** Goes to the **Revive Rehabilitation Clinic** for weekly checkup
- **1PM** Meet his community friends at the restaurant at **Commercial & Activities Avenue**
- **4PM** Takes Demetia Training Class at the **BC Community Center**
- **6PM** Dinner with his son's family at the **Pier Point Shopping Arena**
- **8PM** Walks around the **Riverside Public Park** with his family

FAMILY OF BC FRONTIER

Yoshida's family is a multicultural family, with his Canadian wife and one daughter. Yoshida works at the R&D center, and his wife teaches English at the Riverside Heights School. Let's take a look at their weekend!

- **10AM** Goes to the **PowerPlay Sports Zone** for family swimming class
- **1PM** Lunch at the **Pier Point Shopping Arena**
- **4PM** Visits Art Exhibition at the **TICH**
- **6PM** Dinner at home
- **8PM** Enjoy fireworks at the **Waterfront**

START UP FOUNDER

Mako established a startup with her PhD lab colleagues to develop an AI-based diet program. Her team gathers at the Venture Works Shared Office, preparing to present their new program at the BC Start-up Fair at the convention center.

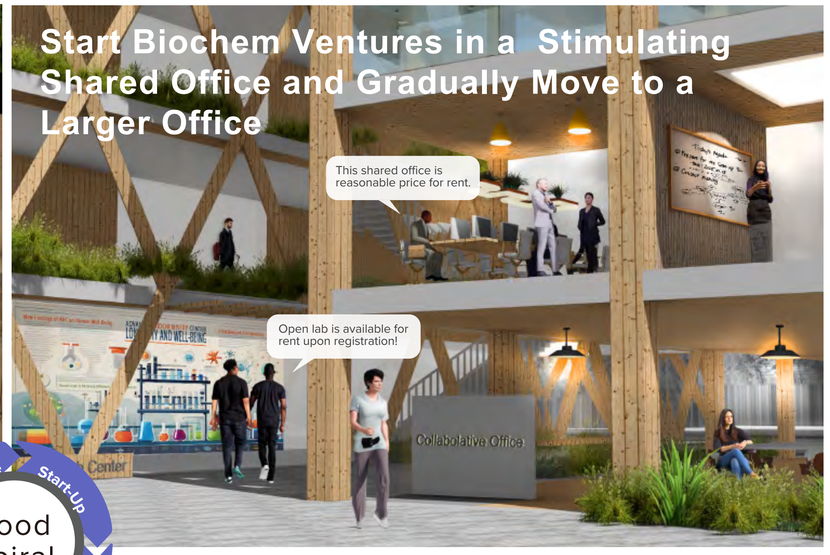
- **7AM** Morning work out at the **PowerPlay Sports Zone**
- **10AM** Team meeting at the **Venture Works Shared Office**
- **2PM** Visits **R&D Center** for health datasets
- **4PM** Rehearsal for the **BC Start-up Fair**
- **7PM** Drink together with her team at the Yokocho Alley

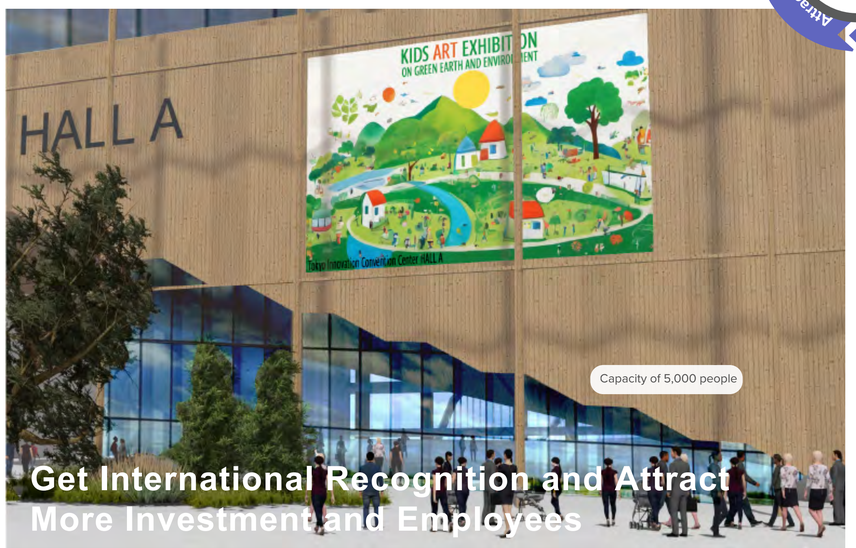
BUSINESS VISITOR

Ben, who works at an investment bank in Singapore, visited Tokyo for a long business trip to evaluate the values of new start-up ventures in Japan. He booked a hotel in BC Frontier for convenient access to the Tokyo CBD.

- **10AM** Goes to Work at the Tokyo CBD
- **12PM** Lunch at the Tsukiji Outer Market
- **2PM** Conference with shareholders at the **Tokyo Innovation Convention Hall (TICH)**
- **4PM** Visits **Venture Works Share Office** for private meeting
- **6PM** Dinner at the **Yokocho Alley**
- **8PM** Work out at the **Riverside Sports Center**

How to Facilitate Innovation: Life-changing Circulation

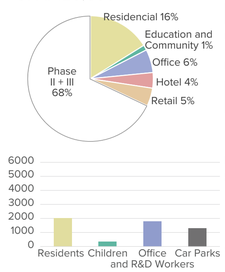




Construction Phases

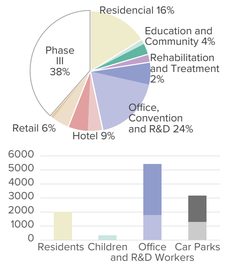
2024-15042

Phase I
GFA: 120,650 m²



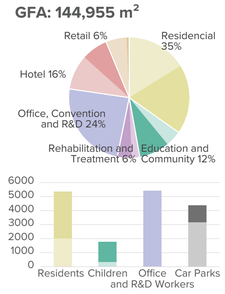
With a main underground car park entrance and the Ferry Wharf as a transport hub, develop SINGLE and DINKs main residential units and their workplaces and stores.

Phase II
GFA: 110,987 m²

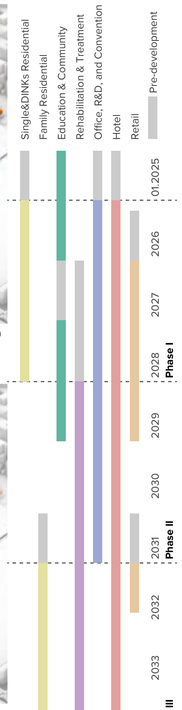


Enhance its business centre functionality by developing research centres, offices, a convention centre, a library and a treatment hotel for biotechnological practices.

Phase III
GFA: 144,955 m²



Family main residential units, a school, a rehabilitation centre and a five-star hotel will be built last, taking into account construction noise.



Leveraged IRR

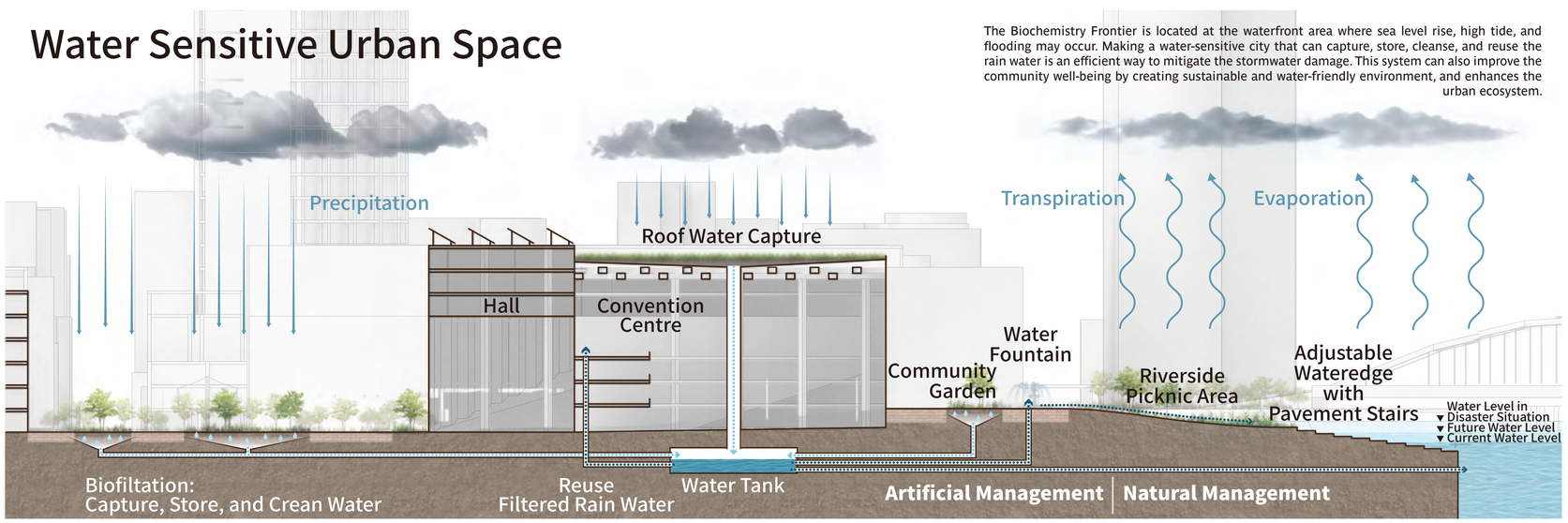
74.25%

Unleveraged IRR

89.71%

Water Sensitive Urban Space

The Biochemistry Frontier is located at the waterfront area where sea level rise, high tide, and flooding may occur. Making a water-sensitive city that can capture, store, cleanse, and reuse the rain water is an efficient way to mitigate the stormwater damage. This system can also improve the community well-being by creating sustainable and water-friendly environment, and enhances the urban ecosystem.



The Carbon Footprint Estimation

REDUCED RATE

27.3%

of TMG's average

CONTRIBUTING FACTORS

- LAND DISTRIBUTION **12.5%**
- CAR FREE **5.6%**
- SOLAR PANEL **3.8%**
- TIMBER STRUCTURE WATER CIRCULATION **5.4%**

ESTIMATION METHOD

$$CF = \sum_{i=1}^{n} \left(\sum_{j=1}^{k} (m_{ij} \times E_{ij}) \right) \times (1 + \sum_{d=1}^{g} CF_d)$$

CF = total carbon footprint (tons per year)

i = land use type (residential, commercial, open space, civic/institutional, industrial, and transportation)
n = total number of land use categories

j = sub-land use type
Residential: Family, Single, Luxury
Commercial: Hotel, Retail
Open Space: Grassland, Streets, Park
Civic/Institutional: Public Facilities
Transportation: Parking, Roads

k = total number of sub-land use categories

m_{ij} = the floor area of each sub land use type in hectare

E_{ij} = the carbon footprint of each sub-land use type (the equivalence factor of cross site comparison adapted from published average carbon foot print)

CF value can be increased/decreased based on the external adjustment factor of carbon footprint, such as solar panel usages:
d= type the adjustment factor
g=the number of adjustment factor
CF_d = the carbon footprint adjustment factor associated with external factor *d*