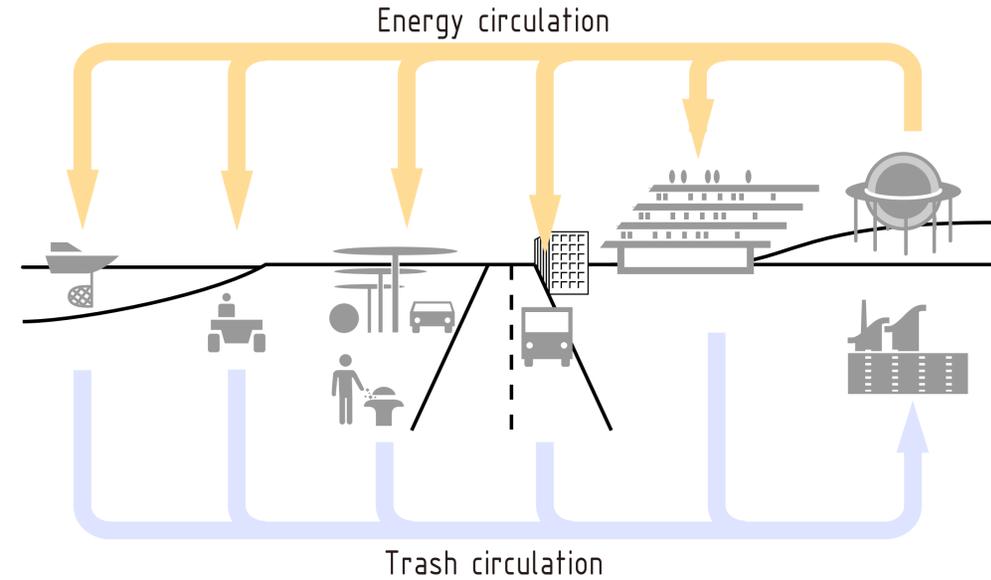


# Energy Circulation City



## Introduce

The Energy circulation city is located in Patong Beach, Phuket Island. The city converts collected plastic waste into hydrogen energy and food waste into thermal energy, which can be used for various city functions. The sludge obtained as a by-product is used as fertilizer to grow forests. As a result, forests and oceans will become cleaner, and the number of tourists will increase. The increase in the number of tourists will have an economic effect, and at the same time, the amount of waste will increase, and more energy can be produced. In this way, this city will create a cycle of waste and energy, enhancing both environmental issues and the economy.



## Desing concept

The city is designed so that energy flow and waste flow appear. This design implies that the energy flow and the waste flow are connected by a single line, thus creating a cycle.

## Facilities Planning



### Trash disposal plant :

This treatment center is used for both the conversion of plastic waste into hydrogen energy and the conversion of food waste into thermal energy. When food waste is incinerated, sludge is generated along with heat energy. This sludge is then reused as fertilizer. At the treatment center, plastic waste is efficiently transported to the landfill via underground pipes.



### Hydrogen tank :

This is a tank for storing the hydrogen energy obtained from the Trash disposal plant. This amount of energy is used to power the city's hotel lights, streetlights, hydrogen stations, and beach buggy. The shape of the tank is spherical so that the pressure is evenly distributed.



### Eco hotel :

It is a ship-shaped hotel built near hydrogen tanks. It is operated by using hydrogen energy and thermal energy. In addition, the thermal energy melts ice, which generates cold air and wind power. This cold air and wind power can be used to obtain the room cooling function. At night, the building is lit up and becomes a landmark symbolizing hydrogen energy.



### Trash cans with underground system :

A trash can equipment is compress garbage and blow to trash disposal center in the underground tube. This system will be possible to carry trash without using a trash truck. Normally, the lid can be closed to suppress the odor. The shape inside the lid makes it easy to dispose of trash from anywhere.



### Blow ship :

Microplastics are an environmental problem. This ship is able to collect them at sea. This ship can generate ocean currents and net the soaring microplastics. The mesh of the net is 2 mm, and it has a structure that does not collect sea sand. The power source for this ship is hydrogen energy.



### Beach buggy :

It is a vehicle that runs along the coast and collects garbage washed up on the beach or discarded. Based on the big data of tourist routes, it collects garbage around the points where garbage tends to gather. Normally, the vehicle runs unmanned. It can also be operated by humans. The power source is hydrogen energy.



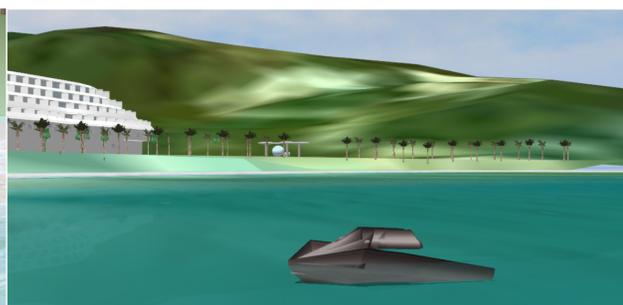
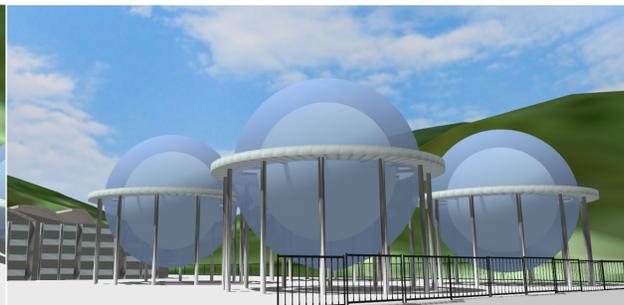
### Hydrogen station :

It is operated by hydrogen energy supplied from hydrogen tanks. The hydrogen energy is stored in a sphere placed in the center. By pressing a button, hydrogen energy is injected into the car. The above makes it possible to operate the system unmanned.



### Hydrogen-powered car :

It is a car that runs on hydrogen energy. Since it does not use gasoline, it emits no exhaust gas. Not only rental cars, but also cabs, buses, and other vehicles for tourists run on hydrogen.



## Software used

