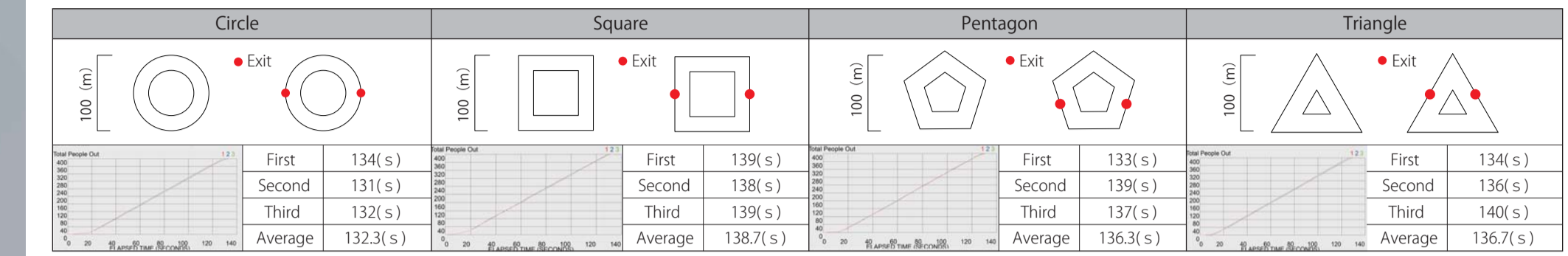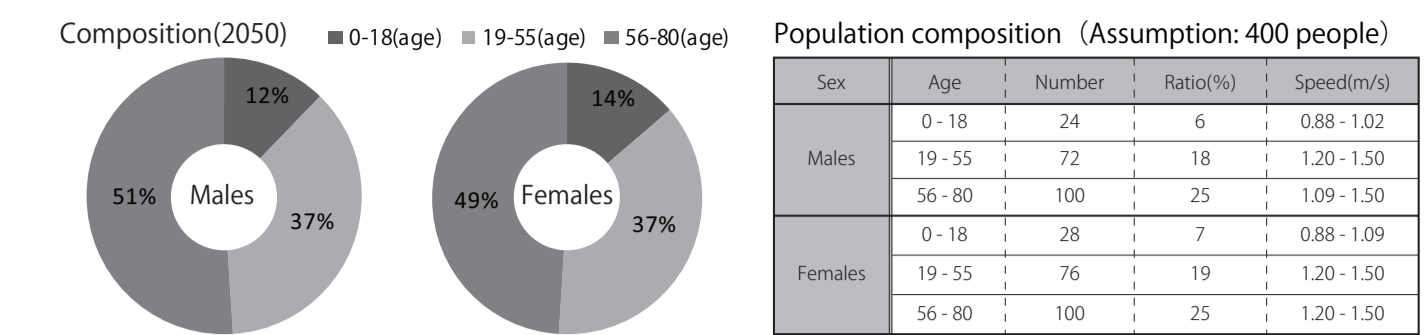# Noah's Ark   - Tokyo 2050 -

8．Form generation using analysis tools

Various factors which affect NA are analyzed. An analysis result is used as a parameter which forms a city. By this proposal, the simulation of the motion of a wind, light, and a person is carried out using analysis tools.
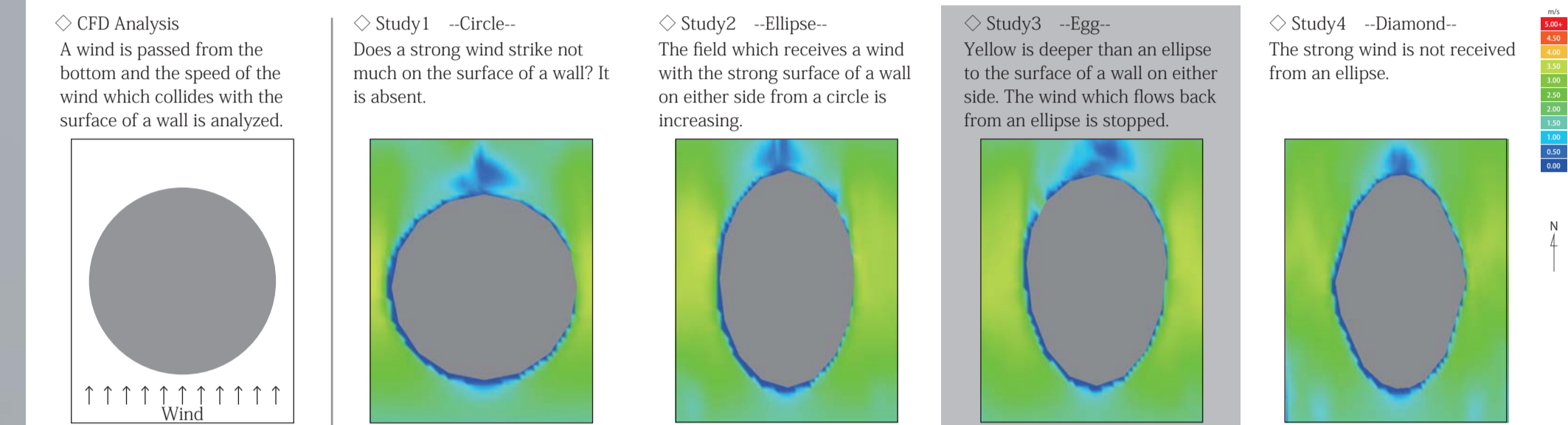
> Human activity (Refuge)

We assumed 2050 and thought about constitution of the population. In composition, we become a right figure supposing a population of 400.
In addition, I analyzed the refuge of the person for various forms at an initial stage.

Composition(2050) ■0-18(age) ■19-55(age) ■56-80(age)

Population composition（Assumption: 400 people）

Sex	Age	Number	Ratio(%)	Speed(m/s)
Males	0 - 18	24	6	0.88 - 1.02
	19 - 55	72	18	1.20 - 1.50
	56 - 80	100	25	1.09 - 1.50
Females	0 - 18	28	7	0.88 - 1.09
	19 - 55	76	19	1.20 - 1.50
	56 - 80	100	25	1.20 - 1.50

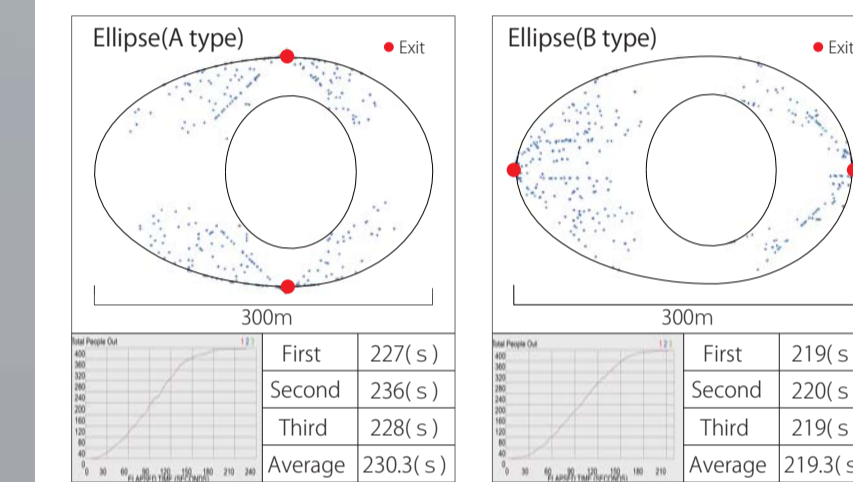|	Circle		Square		Pentagon		Triangle	
First	134(s)		139(s)		133(s)		134(s)	
Second	131(s)		138(s)		139(s)		136(s)	
Third	132(s)		139(s)		137(s)		140(s)	
Average	132.3(s)		138.7(s)		136.3(s)		136.7(s)	

> Wind direction

To visualize the flow of the wind. Consider the optimal round from various cases.

◇ CFD Analysis
A wind is passed from the bottom and the speed of the wind which collides with the surface of a wall is analyzed.

◇ Study1 --Circle--
Does a strong wind strike not much on the surface of a wall? It is absent.

◇ Study2 --Ellipse--
The field which receives a wind with the strong surface of a wall on either side from a circle is increasing.

◇ Study3 --Egg--
Yellow is deeper than an ellipse to the surface of a wall on either side. The wind which flows back from an ellipse is stopped.

◇ Study4 --Diamond--
The strong wind is not received from an ellipse.

Wind

> Human activity(Refuge)

We performed the refuge analysis of the type of A and B. As a result, B is faster than A for 11 seconds. Therefore We adopt B plan.

Ellipse(A type)

First	227(s)
Second	236(s)
Third	228(s)
Average	230.3(s)

Ellipse(B type)

First	219(s)
Second	220(s)
Third	219(s)
Average	219.3(s)

> Sunlight

Change of the amount of insolation on the lens by the inclination of a wall was analyzed.

CONDITION : CUMULATIVE   DATE : 8/1-8/31   TIME : 8:00-18:00   Optimum solution

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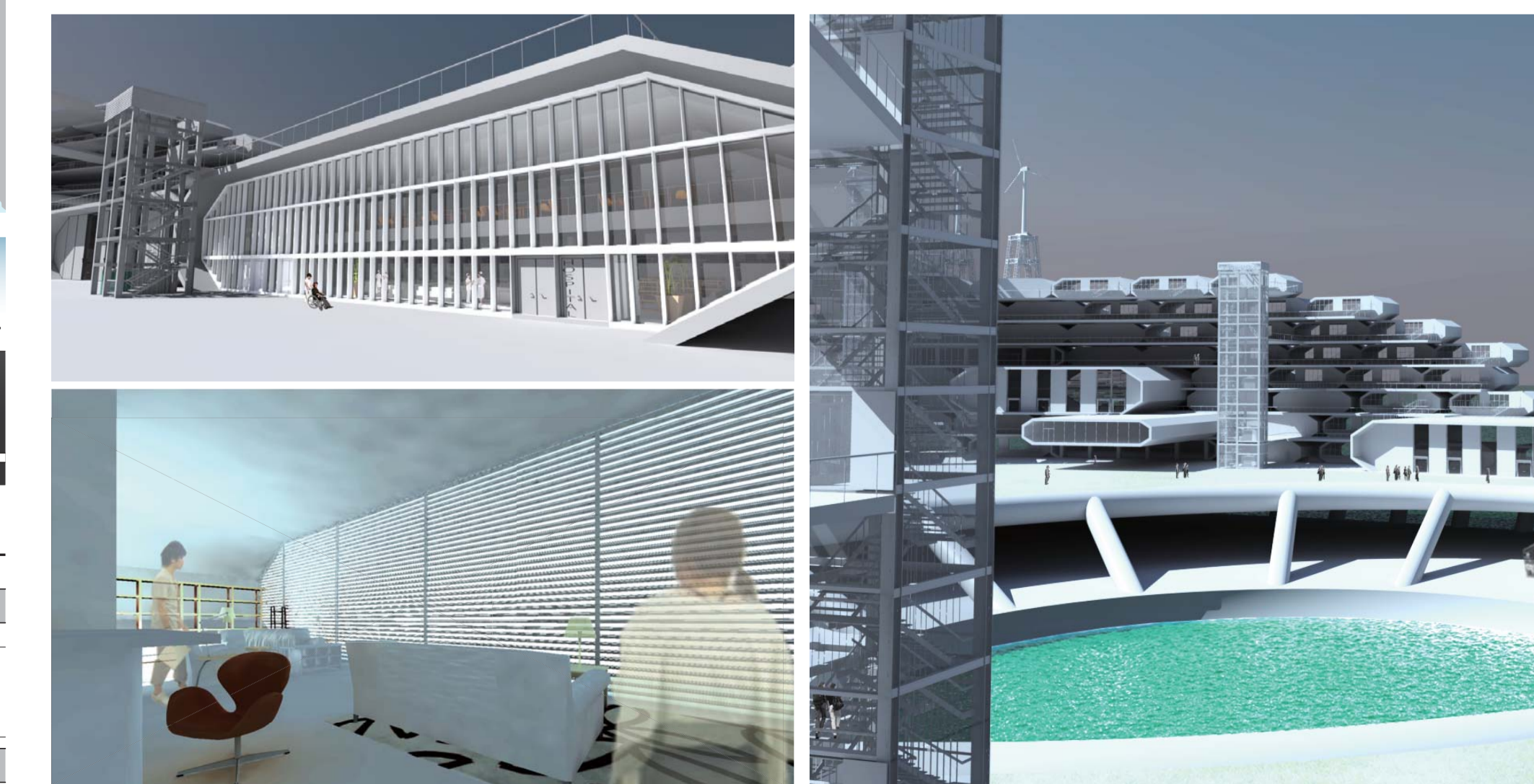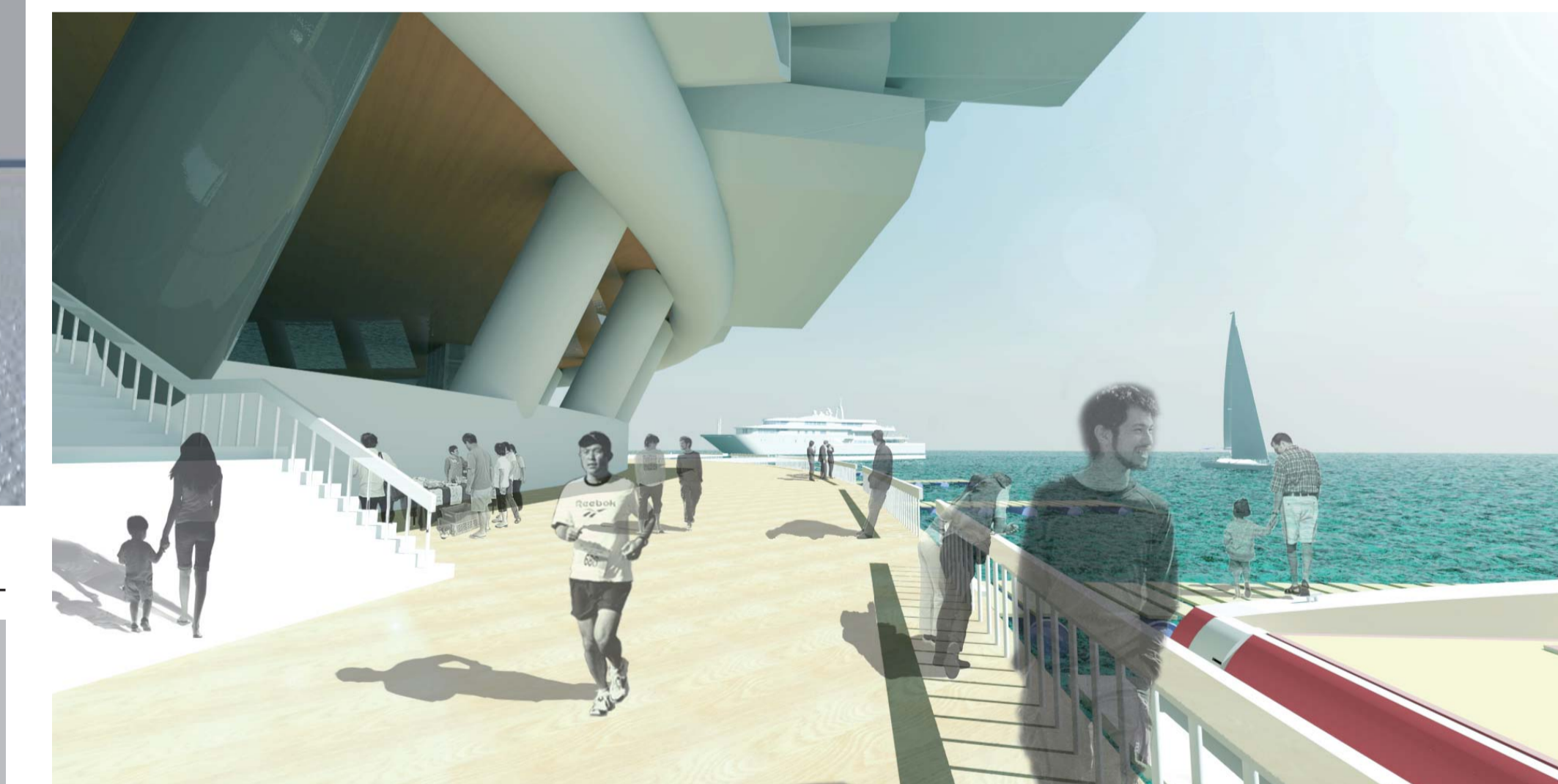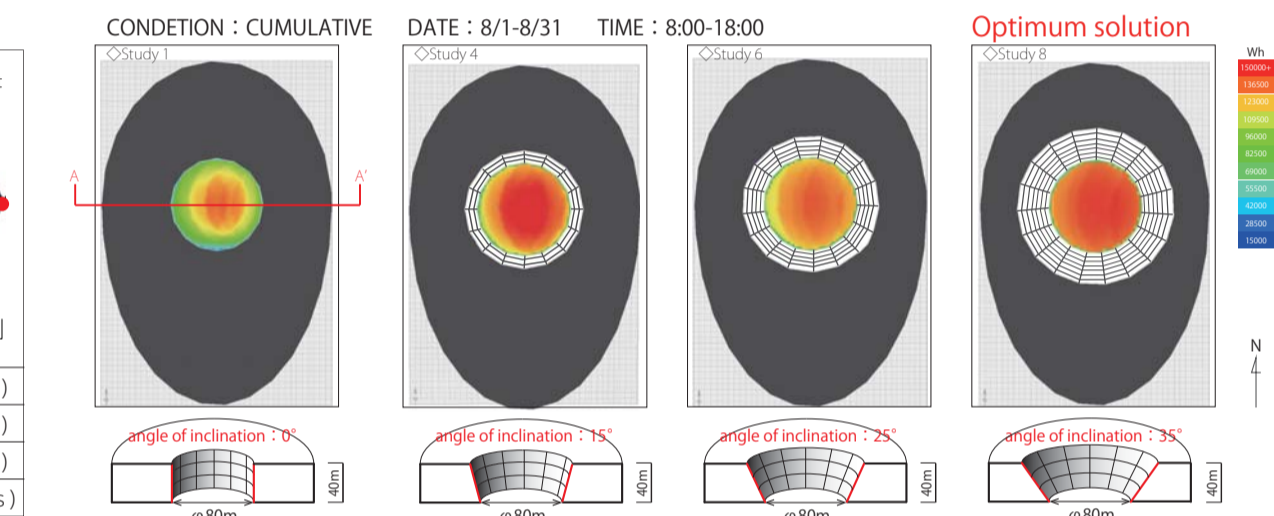
1．Purification of the sea water by sunlight

> phase1
By the sludge collected on the seabed, sea water has become muddy. Tokyo Bay serves as environment unsuitable to habitation of a marine living thing.
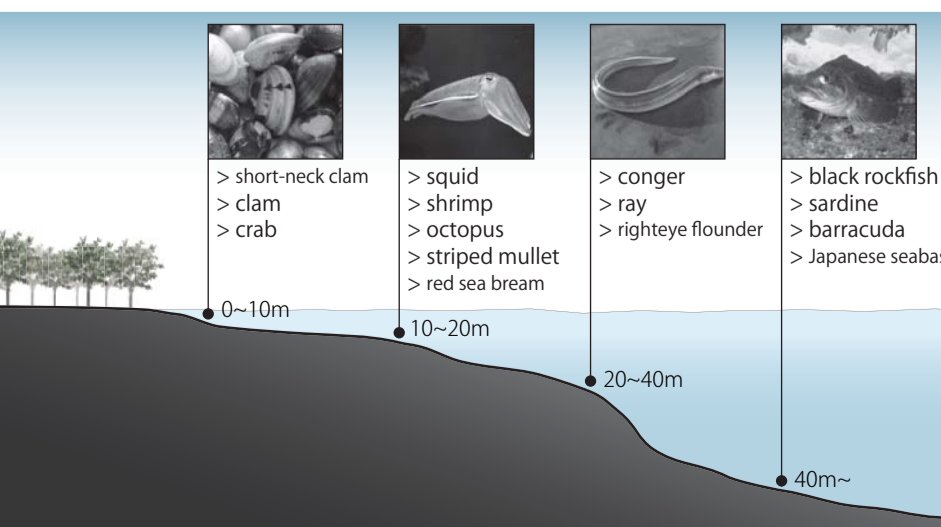
> phase2
A central lens carries sunlight to the seabed covered with sludge. Phytoplankton begins photosynthesis and supplies oxygen.

> phase3
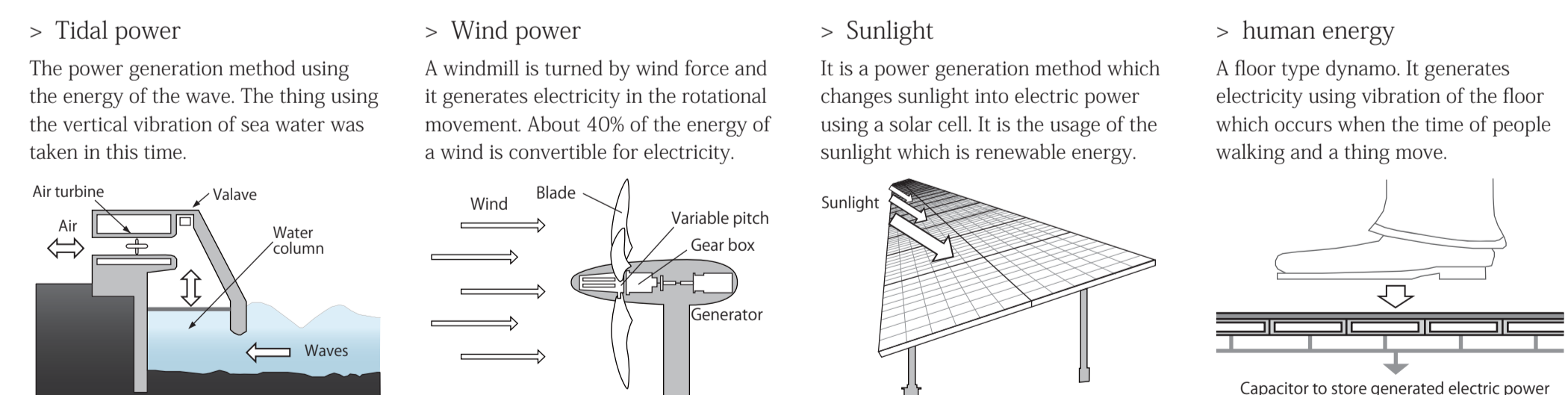A microbe is activated and sludge is decomposed. Marine living things flock in quest of the purified sea water..
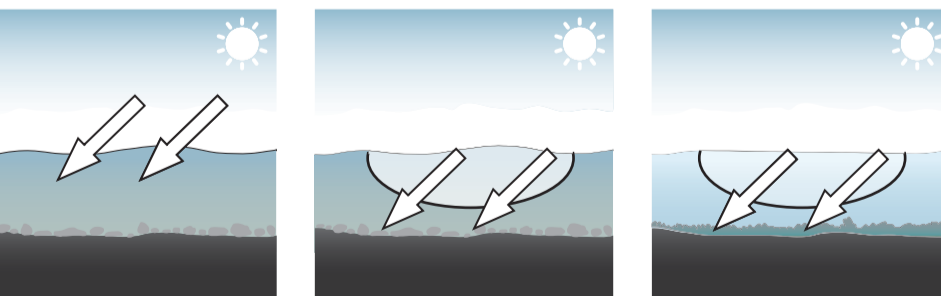
2．Fertile sea - various ecosystems -

The ecosystem currently formed originally revives all over the sea purified by the NA. A different ecosystem for every depth from a sea surface is formed.


0~10m	> short-neck clam > clam > crab
10~20m	> squid > shrimp > octopus > striped mullet > red sea bream
20~40m	> conger > ray > righteye flounder
40m~	> black rockfish > sardine > barracuda > Japanese seabass

3．Practical use of natural power sources

The sea is surrounded by nature in north, south, east and west. That is a treasury of natural power sources. This place is a maintainable city which forms the power generation system on the whole. Actual technology is utilized in order to generate electricity from natural power.
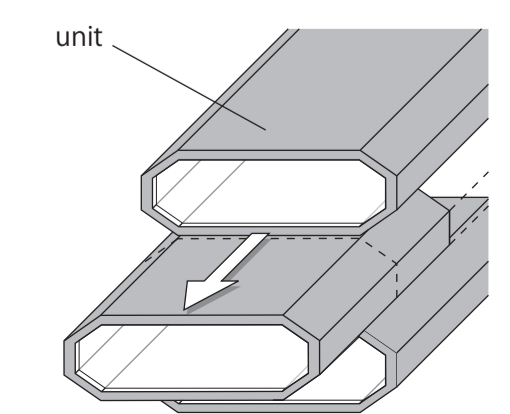
> Tidal power
The power generation method using the energy of the wave. The thing using the vertical vibration of sea water was taken in this time.

> Wind power
A windmill is turned by wind force and it generates electricity in the rotational movement. About 40% of the energy of a wind is convertible for electricity.

> Sunlight
It is a power generation method which changes sunlight into electric power using a solar cell. It is the usage of the sunlight which is renewable energy.

> human energy
A floor type dynamo. It generates electricity using vibration of the floor which occurs when the time of people walking and a thing move.

4．Circulation system of energy

NA which consists of various power generation systems forms the outstanding energy cycle system, and supports the life of people who live at sea. Various living things flock all over the sea purified with the lens. After further being purified by the filter, sea water is stored in a water tank and used also as domestic non-commercial water.
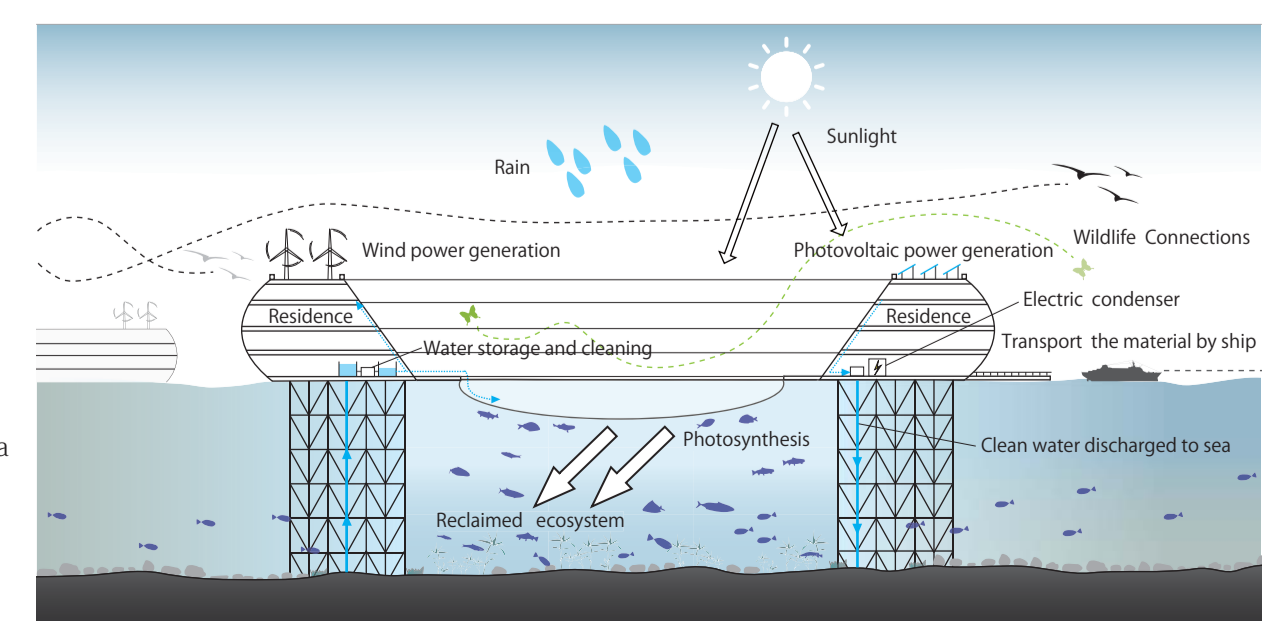

5．Aggregate of a unit

NA is formed because the units of various sizes gather.
Each is able to be realized even when a unit is independent, and to drift the sea like a boat in an emergency.

unit

6．A network with the existing city

NA forms metropolitan area every place and various networks.
NA is playing a role of a new energy supply center to the metropolitan area.
A part of energy generated by tidal power, wind force, sunlight, etc. is carried to the metropolitan area through a submarine pipe.
The daily commodity of people who live in NA is carried by vessel from metropolitan area every place.
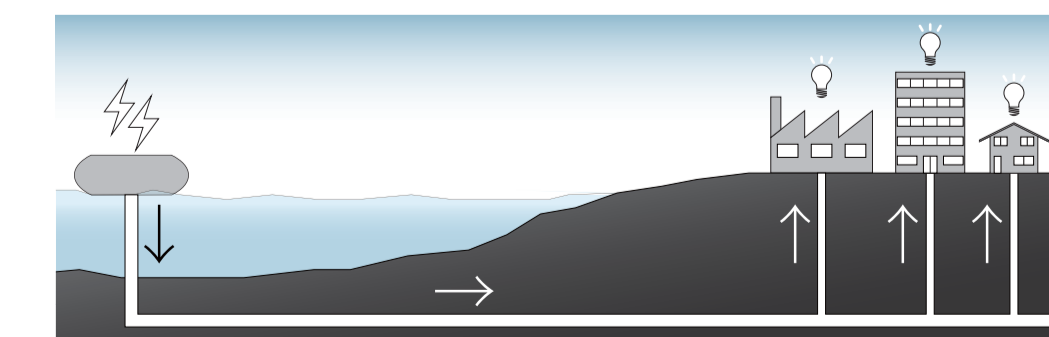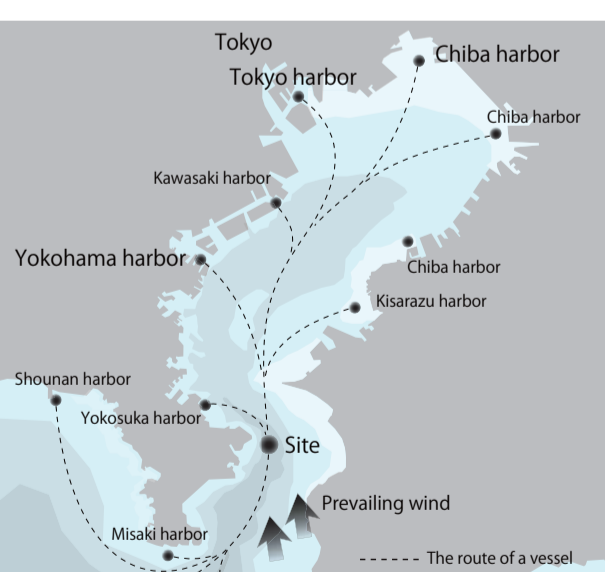
7．Facade which breathes

Briny air is transmitted to the surface of a wall.
Change of atmospheric pressure arises and natural ventilation is performed by indoor air being taken out on the outdoors.