

Study on Future Floating Cities

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Abstract: Floating structures can create a solution to the expansion of urban areas by exploiting the sea surface while leaving the suburban green intact. The floating cities can be constructed of lightweight new technology materials, mounted on a platform and utilizing Renewable Sources of Energy. To the architects, these cities are expected to be smart, liveable, sustainable and resilient. The establishment of secure bases put forward to counter the risks arising from natural disasters, e.g.: flooding, earthquakes, tsunamis.

KEYWORDS: Floating structures, Suburban, Renewable sources of energy, disasters



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1.INTRODUCTION

The necessity to protect the natural environment becomes more important in the present and even more in future if there is to be any hope for our planet .As our cities struggle with overcrowding and undesirable living situations, the ocean remains a potential boundary for sophisticated water based communities.

Due to their buoyant design, floating cities would provide safe, climate-resilient housing for flood-stricken communities. Additionally, the positioning of the platforms in a floating city could cast shadows on the surface of the water, helping to lower ocean temperatures that have risen as a result of climate change.

2 .HISTORICAL BACKGROUND

Nearly a decade ago, billionaire Peter their cofounded a nonprofit called Seasteading Institute and contributed seed funding toward what could be the world’s first floating city.

Oceanix City is the first sustainable floating city ,it would essentially be groups of hexagonal platforms-anchored to the seabed ,that could each house around 300 people ,effectively creating a community for 10,000 residents.

In the face of the reality of climate change , Maldives is getting the world’s first truly floating island city .Approximately called ,Maldives Floating city(MFC),according to the press release.

TABLE CURRENT FLOATING STRUCTURES

Name of the structure	Picture	Location		
Under water floating train		Dubai	Floating highway	Norway
			VLFS	China
			Floating airport	Japan
			Nordhordland floating bridge	norway
			Floating oil platform	Gulf of Mexico
			Costal highway	china
			Kamigoto floating oil storage base	japan

3. FLOATING CITY DEFINITION AND TYPES

Floating city: Ocean colonization, the theory and practice of building structures to allow humans to live permanently in areas of earth covered in water.

Types of floating structures: Types of floating structures: supported structures, totally floating structures are divided into 2 teams.

A) Semi floating structure: Semi floating structures are unbroken at the highest of water surface by victimization pipe-form columns. This sort of structures is employed for conditions of ocean with radio emission.

B) Full floating structure: These types of structure stay as an oversized plate on water surface. Full floating structures are principally appropriate for pacific waters like lakes, gulfs, coastal lines.

4. FUTURESTIC FLOATING CITIES AND THEIR PRINCIPLES

The trendy idea of a property, climate-resistant floating town has origins within the seasteading movement, a vision headed by the seasteading institute that seeks to form autonomous nation-states on water. Seasteaders' hope is to form a human-made scheme of communities that are designed to grow, adapt, and rework over time. A number of the principles that anchor floating town are:

1. **Modular construction:** Town would be prefabbing offshore and towed to the ocean to scale back prices.
2. **Net zero energy:** town would be designed to harness star and wave power to self-generate the maximum amount energy because it consumes.
3. **Zero waste:** All waste would be changed into energy, recycled materials, or feedstock.
4. **Habitat regeneration:** town would use marine building materials that grow, heal, and strengthen over time.
5. **Locally sourced materials:** Builders would rate materials with a negative carbon footprint.
6. **Sharing culture:** town would embrace communal farming and sharing of used materials.
7. **Shared mobility:** Transportation modes would be integrated to scale back transportation demand.
8. **Freshwater autonomy:** Water would be perpetually harvested and recycled while not water .

5. DESIGN FOR FUTURE FLOATING CITIES

Town ought to accommodate a group of connected platforms with variable styles, each of which might serve a job in sustaining the floating tube. One platform would house submerged gardens for growing food whereas another would hold chemical action instrumentality for creating salt water drinkable. Inner platforms would house communal facilities for programs like education, culture, exercise, and attention.

The same as standard construction seen onto land, the infrastructure of those floating cities would be able to be disassembled and reconfigured by architects for continued development. All buildings within the town would even be made at a coffee height to attenuate harm from climate events.

6. PROTECTION FROM NATURAL DISASTER

Because they might be designed on the water, floating town structures would maintain a lower center of gravity, protective them from robust waves, floods, tsunamis, and even hurricanes. The utilization of locally-sourced innovative building materials would enable the structures to self-repair over time and stand up to natural harsh atmospheric condition.

7. RENEWABLE RESOURCES

Floating cities would use resources from native solar power, recirculating water, and food production to be totally self-directed. The open ocean would supply associate rife, untapped supply of each water and solar power, that can be controlled to be used with new technologies like sophisticated aquifers and purifiers.

Floating communities would even be able to generate their own turn out and food from on-land farms and underwater gardens. this might enable these communities to scale back waste and transport by manufacturing the food necessary to feed their inhabitants.

8. LOW ENVIRONMENTAL IMPACT

Floating buildings would play a key role in reducing CO2 emissions within the designed setting. The Oceanix town construct includes restrictions prohibition high carbon-emitting cars or trucks — even garbage trucks. Instead, gas trash tubes would be accustomed transport

trash to a sorting facility, wherever they might be recycled or repurposed.

The closely knit style of those floating settlements would create it potential to use driverless vehicles and drones to create deliveries, likewise as a shared route for traveller travel exploitation solely property modes of transportation.

9. HOUSING ALTERNATIVE FOR CROWDED CITIES

By 2030, it's anticipated that 60 % of the world's population can inhabit cities. As cities become overcrowded and living conditions more and more undesirable, urban planner's are investigation new housing solutions like 3D written homes. A new ability to make homes on the ocean's surface may increase offered housing house and facilitate de-populate overcrowded cities.

As cities become additional packed, housing also will become more and more troublesome to afford. Floating cities would supply a respite from the housing crunch, notably in cities with native governments that are willing to speculate in offshore housing. Manufacture paired with the low value of leasing house on the ocean would produce an inexpensive model of living.

10. ADVANTAGES OF FLOATING CITIES

- Protection from natural disasters..
- Climate change solutions.
- Housing different for packed cities.
- Renewable resources.
- Low Environmental Impact.
- Protecting from robust waves ,floods, tsunamis.
- Floating town maintains lower centre of gravity.
- The structure established simply and quickly.

THE APPLICATION OF THE INTEGRATED CITY PRINCIPLES ON FLOATING CITIES

1) Lilypad Floating city:

Principle: To produce harmonious being of human and nature.

Application: Housing of future climatically refugees of the submerged radical marine territories.



Lilypad floating city

2) Green float:

Principle: To form property society .

Application: To serve food, water and reduction of garbage and pollution.



Green Float

3) Floating island :

Principle: Satisfying social desires and supporting historical preservation and cities aesthetics.

Application: To form associate degree business that has floating islands to those who are vulnerable by rising ocean levels.

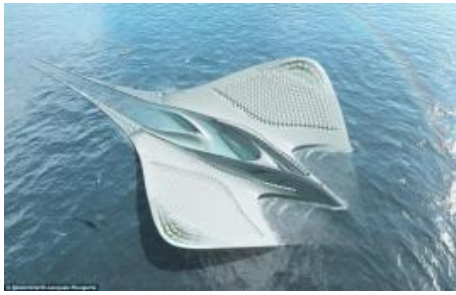


Floating island

4) Manta Ray:

Principle: 100% self sustaining project.

Application: Up to 7,000 ocean loving humans can live.



Manta Ray

5) At Design Office:

Principle: To help relieve the population congestion

Application: Possibility to underwater roads, parks, stadiums and everything a city needs.



At Design Office

6) Harvest City:

Principle: To help Haiti after their Devastating Earthquake.

Application: The outer parts of the floating island would be dedicated to farming and agriculture, while in city centre with office, industry.



Harvest city

7) Silt lake city:

Principle: Instead of building dams or walls ,silt lake city would divide the water body and sit modular cities on top.

Application: The cities would have homes, offices, agriculture, and energy generators to stay things functioning.



Silt lake city

8) Oeanix :

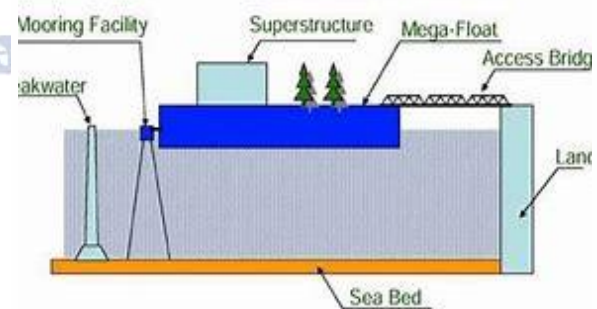
Principle: It will facilitate ten, 000 those that might facilitate populations vulnerable by extreme weather events and rising ocean levels.

Application: Humans will survive floating cities harmonic with life below water.



Oceanix

11. Components of mega floating system



Components of a VLFS (Mega-Float) system.

➤ Mega floating city will be preservation of the marine surroundings (Not heavy ocean bottom materials or the recurrent event power).

- Use of natural weight supporting force (use of buoyancy).
- Creation of additional area for material usage society (easy to expand , cutback or reconfigure ;recyclable materials).

12.Safety measures for floating cities

Securing the peoples, properties is that the most vital side and it'll have monumental influence on the planning choices .property injury could occur thanks to major structural failures like inverted ,sinking, world structural failure. These disasters square measure in the main a results of environmental hazards like massive waves , storms ,etc. thus it's vital for town to be able to move quick enough to avoid the disaster , with a study of the wind and climate.

CONCLUSION

As mentioned before, floating constructions have a protracted history within the human kind and even if the open water could be a dangerous surroundings, we have a tendency to don't need to be petrified of living thereon. After all , hr of the physique is water and other people have forever had associate degree attraction towards this part.

The floating town could be a project that several say is not possible. Advance in material science , natural style construction couldn't solely create the floating town potential however it should even be a necessary side within the future.

It is laborious to mention building on water can become a major trend ,but it's been tested that it's potential and it's commencing to become widespread.

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