Future Prospects of Artificial Islands Futuristic Urbanism

Ar. Umair Ali
(Asst.Professor): Faculty of Architecture and Planning,
Integral University.
Lucknow, Uttar Pradesh, India.

Ar. Abu Saleh (Asst. Professor): Faculty of Architecture and Planning, Integral University. Lucknow, Uttar Pradesh, India.

Abstract:- Due to rise in sea level and rapid growth in population, it is expected that there will be an area shortage in the coastal areas in upcoming years. Many countries had solved their land shortage issues by either reclaiming lands or creating new islands. Changing scenarios and needs have shaped the today's requirement of the creating of artificial islands. If we take a look at the practices in historic times, early artificial islands included factors of security and culture as main factors (such as the Tenochtitlan, Mexico and Nan Madol). Later comes era of sea trades in which the construction of harbors to provide an isolated site for sea trade route [Dejima]. In 17th century, islands were built for defense purpose in Portugal and Spain. In modern times, Shortage of area for particularly development or growing needs of the country to provide new areas for habitat or recreational activities have increase the pace of developing new islands via Land Reclamation. More recently, they have been built to reduce urban areas congestion, promote tourism and accommodate airports. Also, there are proposals been made to build new islands to reduce the severity of coastal erosion or generate electric power from renewable energy sources. Such projects could bring new opportunities and activities to an area which had lesser scope for further development or area shortage which is likely to be seen in future. The effects on environment of design of such a project may give rise to many other problems. It is necessary to examine its aspects. This paper will be about how the objectives of the making of new islands or land reclamation had changed from past to the modern times, pros and cons and also, how it will be in the future when there will expected to have new issues or objectives to create the new land.

1. INTRODUCTION

Today we live in the world where the population growth [1.1% per year] 1 and global warming are two major issues which causes two other issues that is shortage of new areas and sea level rising [at a rate of 3.2 [2.8 to 3.6] mm per year] 2 due to which the density becomes high in the areas and leaving less space for further development or new development in the areas. Such a level of rising, directly effects affect low lying areas, such as islands and river deltas, worldwide, on serious scale despite looking small. The areas that are expected to be more heavily affected are islands and coastal zones. The Rise in sea levels will lead to several other issues to the local populations like economic instability, natural disasters and further population displacement. The higher amount of resources for civil protection, the unavoidable loss of land areas to the sea and possibility of conflicts with other states are other major problems. Presently preservation and land reclamation has been seen as the solution to the land loss of coastal zones. Despite their high

cost (Japan's cost of preservation works in the Okinotorishima islets is evaluated to be at 29.3 billion yen so far and the expected cost of major preservation projects in small states like the Maldives is expected to be far beyond their capacity3) and their positive potency, as well as their short term status, these methods seem to be the way that may provide a solution to the land loss or land shortage. These changes have led to the demand of new interventions or adjustments which may provide new opportunities to the development. For tackling the problem related to gradual sinking of lands, especially in case of Small Island and Low-lying states, various techniques, including the applying of Artificial Islands and Structures (A.I.S.), are proposed or already in practice. Adversely, environmental and safety concerns have been much more thoroughly elaborated on national and regional level, but only for investigation and utilization platforms. The formatter will need to create these components, incorporating the applicable criteria that follow.

2. EARLIER TIMES

In earlier times when there were no issues like rise in the sea level or population of the cities, the formation of artificial islands had been in practice. There are several examples from the different parts of the world. The intent of construction of these islands vary from countries to countries. For example, from the Aztec times, an island named Tenochtitlan was constructed in present Mexico, Artificial Island founded on piles of canes covered by dirt and held in place bystakes. 250,000 people were living in the city of Tenochtitlan, the Aztec predecessor of Mexico City surrounded by many small artificial chinamitl islands was built on a small natural island in Lake Texcoco. The main purpose of making of that island was the security and religious purpose of the Aztecs as guided by their priest for location. Another example of the historical artificial islands is Uros Island, Peru which are Supported by layers of floating reed anchored with ropes and sticks driven to bottom of lake. The Uro Indians are still living on the artificial islands nowadays. A floating islands life is usually between 15-18 years. Artificial islands have been used since the seventeenth century for coastal defence, economy and as increasing of the land areas. During Seventeenth century, artificial islands had been seen as a base of coastal defense [Spain, Portugal], trade and economy as well as extension of their land base. Japan had constructed artificial islands for making new harbors to increase the trade capacity of the

Vol. 8 Issue 04, April-2019

These islands which were made in the earlier times serve any special purposes like cultural, religious purpose like Tenochtitlan and uros to economic purpose like we had seen in Japan and Portugal which created new islands with the purpose of harboring to create new opportunities to make trade routes.

3. MODERN TIMES

In modern times the construction of the islands comes with the purpose of creating new landmass or tackling the issues which comes due to increase in population, land shortage or rise in sea level. Earlier in modern times, the land reclamation had been seen as a solution for these issues. For example, the country Netherlands had the largest area of the reclaimed lands. The shortage of land had led to the taking of new measures by the government to found new lands for farming and residential purposes. Reclamation of Flevopolder was finished in 1969. Total land surface area of 970 sqkm and is largest artificial Island in the world. In South and South East Asian seas, the use of artificial islands and structures is a popular method for land preservation and reclamation. There, the small size of island states makes spatial necessities that are hard to fulfill in an unexpected way. Recovery ventures of Artificial Islands in light of smaller islands is the standard case particularly for real development works, for example, airplane terminals or harbors. Examples of such practices are in Hong Kong, Singapore and the Maldives. The Hong Kong International Airport lies on a simulated island made on two littler islands (which made up 25% of the surface territory of the airplane terminal's stage). In Singapore, in light of various little islands of under 10sqkm, Jurong Island (recovered land territory of 32sqkm) was framed to home real petrochemical establishments and a power plant. At long last in Maldives, by the capital of Male, the nearby government made on the Kaafu Atoll the manufactured island of Hulhurmale, to cover future needs on terms of lodging, modern and business advancement8. The island additionally has the Male air terminal, and as opposed to the characteristic island of Male (which remains at most extreme tallness at 1m above ocean level) remains at 2m above ocean level, so as to face a possible ocean level ascent.

Sea colonization is practice of lasting human settlement of seas. Such settlements might be sea steads skimming on the surface of the water, or exist as submerged living spaces secured to the sea floor, or in a middle of the road position. One basic role of sea colonization is the development of decent region. Other conceivable advantages incorporate extended access to undersea assets, novel types of administration and recreational exercises.

Quickly creating utilization of Artificial islands in the course of the most recent decades, is the utilization of it as human living spacesIf we look back in the 50's, when seaward Artificial islands utilized as radio stations initially showed up in the North Sea and further created amid the 1970's with the presence of celebrated private possessed "states, for example, Sealand.

Minerva or Atlantis, the residence of the seas on Artificial islands now begins to discover more worthy and, in this way, down to earth applications. Later, new islands were built to provide habitat, for example the fake island of Hulhurmale

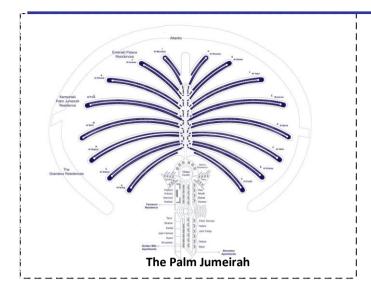
which was intended to house the expanding population of the Maldives capital of Male and was purposefully worked at 2m above ocean level10. The comparable routine of building Artificial islands on Persian Gulf to host visitor establishments (The World, The Palm Islands, the Burj al-Arab in Dubai and the Lulu Island in Abu Dhabi are the most renowned11) likewise must be noted, particularly considering the size of the built establishments. It's actual that their present utilize is to encourage travelers however these are tests of AIS utilized as human natural surroundings. In India, Mumbai was 7 islands, which was recovered to build the range of the city because of increment in populace at quick rate and lack of space for further improvement.

4. CASE STUDY 1:

The Palm Islands are a manufactured archipelago in Dubai, United Arab Emirates on which real business and private frameworks are built. The islands are:

- (1) The Palm Jumeirah,
- (2) The Palm Jebel Ali and
- (3) The Palm Deira.

Orchestrated domain of 50 km2 was Constructed by rainbowing process with sand burrowed from Persian Gulf surrounded by far reaching shake sea wall. The Risk of liquefaction discarded in the midst of advancement by vibrocompaction. Dubai is one of the richest places in world with oil industry as major source of income. It is believed that the oil in Dubai will be finish by 2016, thrashing its economy to ground. Making of Dubai into a luxurious holiday resort to attract tourists to increase country's economy had been seen as a solution. Dubai have sunny days throughout the year and around 5million tourists visit Dubai annually, but the Sheikh wanted to more than 15 million but the Coastline of Dubai is 72kms which is not enough for 15million tourist. So, there was a need to improves the cost-line of Dubai. The Shiekh Muhammad planned to start make an Artificial palm tree shaped island that is expected to expand the coastline by 56kms. It had helped in increasing the tourism for the country which increased the economy. The structure of the island is free from concrete construction which is ecofriendly. It (is expected) solved the problem of land for the construction near sea shore. The construction was done by sand and stones, mainly so its construction effects on the environment will be lesser. The construction can provide extra land for the construction of habitat and recreational facilities and it improves an aesthetic look to the sea line of the country.



5. NEGATIVE IMPACTS

Although the construction of the artificial islands or the reclamation of land project had been somehow successful in making of new areas for habitat or other purpose in current era of rising sea level, fast growing population and land shortage challenges, it had somehow ignored the cons of the construction on marine environment. These practices had been criticized by the environmental researchers and planners. Sea laws had been made for activities related to sea but there had been ignorance of these laws to achieve certain objectives. If we look at the example of palm islands, The Palm Jumeirah has covered and suffocated natural life, expanded turbidity, and changed the alongshore dregs transport. It has likewise made environment along its rough jetty what's more, inside its tidal ponds. The engineer has actualized a few natural alleviation measures, and has for the most part clung to the Equator Principles. Be that as it may, the engineer missed a couple of essential chances to alleviate. Likewise, because of political weight and lawful escape clauses the engineer has been permitted to disregard important natural laws. In the future, designers ought to hold fast to nearby ecological laws, abstain from building islands on coral reefs, and hold fast to the Equator Principles fastidiously.

There had been loss of marine life if any island is constructed.16 Also the construction of new island is expensive and risky. Some construction of islands had been a failure in the past, which led to great economic loss. For example, Isola di Lolando is an incomplete counterfeit island in Biscayne Bay, Florida. Storm harm and monetary crumple made the venture be relinquished not long after the beginning of development, yet pilings stay obvious in the sound and are a hazardous to sea route.17

6. FUTURE OF ARTIFICIAL ISLANDS

Apparently with growing population and rise in sea level, the artificial islands are expected to be more in practices in near future. Due to rise in sea level because of global warming, land reclamation could be most effective tool for creating new spaces for habitat or recreational needs. There have been several proposals of land reclamation in Asian countries, for example Hong Kong, keeping in mind the end goal to build

arrive supply for the city, the legislature recorded 25 conceivable destinations for land recovery. Public counsel has been propelled in 2011. Five seaward recovery destinations incorporate man-made islands close to Cheung Chau, Lamma and Hei Ling Chau islands and in addition part of the ocean between Po Toi Island, and Beaufort Island toward the south.

In India, the coastal areas are not as heavily crowded as compared to areas in the plains. But coastal cities like Mumbai, which have limited area, there had been a consistent migration towards the city from whole country. The city was reclaimed from 7 islands. Similar possibilities can be seen in other coastal areas similar to Mumbai in the future, to increase space for habitat or recreational activities. There will be shortage of lands in the coastal areas, especially for habitat in the future. Floating Islands as future of artificial islands Due to environmental damage caused by AIS and reclamation projects, and criticism worldwide there is higher possibility of looking into alternates of providing future habitat or recreational spaces. With changing and upgrading technology, floating Islands concept can be seen as a suitable solution to provide lesser damage to the environment and higher expansion to the cities. There are several proposals for creating new floating islands, but due to cost of construction and risk, it is not in practice now. Although, in future there will be higher need of new areas, such constructions will be more seriously consider, either with cheaper and efficient technologies, or will be forced to create with high construction costs due to the demand.

7. CONCLUSIONS

The requirement of building of artificial islands had changed since the ancient to current modern times. In the earliest of times, they were constructed for cultural or religious purposes, also some reasons of safety too. But after 16th century, there had been construction of these islands for the purpose of defense and economy. Now in modern times, the need of new spaces for habitat and recreational activities had triggered a new era of artificial islands. Almost every country with coastal boundaries had taken such measures.

The land reclamation so far had been seen as a successful practice for tackling issues like rise in sea level, space shortage, and high population to provide new spaces for habitat and recreational activities.

The Construction of new island brings many new opportunities, but the laws of the sea shouldn't be ignored by the governments. Making of these projects is very risky and any failure of such projects may lead to high loss of economy and humans.

Before taking measures to start constructions, there should be considerations of marine life at the selected site and site should be constructed where damage to marine life should be low and the risk of failure of the project should also be low.

In case of failures of artificial islands, there should be some measures or actions plans to make things back to normal in the site of construction, if we see at the examples of Lolando Island, its remaining piles still stand in the sea route that keeps the chance of accidents for the ships or boats that travel nearby.

ACKNOWLEDGEMENT

I would like to express my unrestrained appreciation to my Co-Author **Ar. Abu Saleh**, for his constant help. He has been helping me out and supported throughout the course of work and several other occasions with his attention, cooperation, comments and constructive criticism for me. **Ar. Umair Ali**

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