

## Waterfront Development Project Pattern Analysis of the Coastal Zone Management of the Osaka Bay

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**Abstract** : Study of the background and state of Osaka's waterfront space development and analysis of the functions of 22 chosen major facilities of development project reveals the following four types: amenity-oriented development, large-scale synthesis type development, renewal compound area type development, exchange communication promotion type development. Osaka bay area has served primarily as the base of harbors, industry and energy, while analysis of the ongoing project has found that the city has been making a functional transition to a type of development to live up to the needs of the times, suggesting that it is wise that Korea's future direction of waterfront development be oriented toward environmental-friendly development by taking advantage of low-density area's natural resources. Given the plurality and complexity of the law of coastal zone, what is needed is a legal maintenance for coastal zone's clear-cut coordinating function and for environmental-friendly development with the limitations of seaside and coastal functions in mind.

**Key words** : Osaka-bay area, waterfront development, Coastal Zone Management

### 1. Introduction

Japan has seen an active waterfront development since the 1980s, having a lot of influence on local invigoration and change in city structure. Along with the removal of heavy industrial factories, waterfronts neighboring metropolitan cities have performed active renewal with their characteristics in mind. Internationalization and the overall social spread of information have led them to a more concern about coastal development to solve their inveterate lack of lands and leisure space and Osaka bay area's development plan with different backgrounds are under review. However, with a difference in the ongoing waterfront development projects between the area's development needs and its expected function and characteristics, there has been a need for mutual discussion and coordination. In connection to today's trend toward waterfront-encompassing coastal zone development, this project have explored the backgrounds and the state of Osaka Bay development by selecting as a subject of study the city surrounding a high population area such as Osaka, Kobe and industrial areas such as Hanshin, Sakai, Senbuku in order to draw by classification of their features the functional patterns of 22 selected major facilities of waterfront development project. By doing so, we are bound to propose policy in relation to this country's future direction of coastal zone development including waterfront.

### 2. the background and state of Osaka bay waterfront development

2.1 the background of Osaka bay waterfront development  
With Osaka with a coastline of 436Km, its inland area ranging from Kobe to Hannan has acted as a place of production and distribution, specialized as harbors and industrial complex, while a drastic change in industrial structure following the 1970s oilshock has put the area's industry in jeopardy due to a slowdown in the production of core businesses including petrochemistry, steel and shipping that have been the existing key industries. Moreover its next-generation core businesses has been left unused at large scale because of a relatively decreased need for the location of coastal area and decreased the quantity of good transported: the increasingly larger size of ships; the enlargement of containers that has caused the existing harbor facilities unused has resulted in the inevitability of its functional transition. Also, there has been more and more need for renewal in a situation requiring the slimming of the coastal zone's existing businesses following raised need among businesses for reasonable logistics and decreased needs for warehouse. Therefore, a shift is underway from harbor and seaside industry-oriented development to complex development equipped with urban facilities including house, park, hotel, convention center. However, the separate progress of the development project has prevented systematic management and control including

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the comprehensive land use planning of bay as a whole; equipment and facilities; environmental care, producing side-effects such as overheated competition among cities and the doubling of facilities investment.

2.2 The state of Osaka bay waterfront development

1) Osaka prefecture

Refer to table 1 for the state of Osaka prefecture development. Ongoing facilities functioning as the position of international commerce and logistics are sports facilities such as marina and international stadium in North Sakai and rinku town's support of and complement to Kansai international airport (rinku town in Izamisano).

Table 1 Introduction of Osaka prefecture

district	sakai, kishiwata, izuotu, kaizuka, izumisano, takaishi, kumatori-cho, tarizi-cho, misaki-cho
area	572.99km <sup>2</sup>
urban target	world city leading the age of communication and creation
development target	<ul style="list-style-type: none"> <li>• global networking of the Asia · Pacific regions</li> <li>• pivotal zone of the grouped cities located in the bay area</li> <li>• prefecture building with a better environment</li> </ul>

2) Hyogo prefecture

Note table 2 for the state of Hyogo area. Under development are Shinn Nishinomiya area's sports facilities including marina; Izamisano area's research and exchange facilities; Awazi Island's sports, recreation and exchange facilities.

Table 2 Introduction of Hyogo prefecture

district	amagasaki, akashi, nishinomiya, sumoto, ashiya, tami, kakokawa, miki, inami-cho, harima-cho, tuna-cho, awazi-cho, hokudan-cho, higashiyura-cho
area	946.5km <sup>2</sup>
urban target	world city with communication and symbiotic relationship
development target	<ul style="list-style-type: none"> <li>• building the international communication · culture-centered urban zone</li> <li>• building the industrial growth-pole harmonized with the industrial technology and culture</li> <li>• building better living conditions in symbiosis with nature</li> <li>• building the urban society with environmental preservation · creative society</li> <li>• disaster-proven multinuclear communication network city zone building</li> </ul>

3) Wakayama prefecture

See table 3 for Wakayama area. Underway are Osaka bay functioning as international trade and efforts at insuring of better living conditions.

Table 3 Introduction of Wakayama prefecture

district	wakayama, kainan, arida, koubo, oritai-cho, yuasha-cho, hirokawa-cho
area	565.43km <sup>2</sup>
urban target	the region responsible for the function as a world city
development target	<ul style="list-style-type: none"> <li>• a disaster-proven community building</li> <li>• a sustainable developed community building</li> <li>• a community building guaranteed with safety</li> </ul>

3. Analysis of the state of the Osaka Bay development

We have selected 24 major facilities of development project that are underway in Osaka Bay, classifying development patterns by kind and function (with the use of the data originated from the Osaka Bay Area Development Organization, as of 1998.10)

3.1 Osaka bay waterfront development plan

1) Amenity-oriented development

Amenity-oriented development is featured by the themes of seaside park and marin leisure, designed to create an environment cherishing the accessibility of residents and city dwellers to waterfront and allowing them closeness to nature.(See table 4)

Table 4 Amenity-oriented development

	Location	Facilities	Kind	Scale	Function
1	Osaka pre.	International Marina	sport & recreation	Plottage 40,000m <sup>2</sup>	growth-pole for the international level yacht race mooring and maintaining a mega-class yacht
2	Osaka pre.	Domestic Marina	sport & recreation	Plottage 60,000m <sup>2</sup>	operation and maintenance of club houses, marine school, marina, collecting and providing the marine-related information
3	Hyogo Pre.	Shin-Nishinomiya Harbor	sport & recreation	Plottage 80,000m <sup>2</sup>	sport, communication, maintenance, yacht-mooring
4	Hyogo Pre.	National Awazi strait Park	sport & recreation	Plottage 1,000,000m <sup>2</sup>	coastal recreation, cultural support, scenic viewpoint
5	Hyogo Pre.	Awazi communication facilities	communication	Plottage 33,700m <sup>2</sup> Total floor area 33,700m <sup>2</sup>	lodging and scenic viewpoint

2) Large-scale synthesis type development

This pattern holds in many large-scale development such as Rinku town project. With this type of development leading to spacious land use planning, it is designed to improve cities' scant business facilities, open space and infrastructure.(See Table 5)

Table 5 Large-scale synthesis type development

N	Location	Facilities	Kind	Scale	Function
6	Osaka pre.	Rinku Gate tower Building	convention	Plottage 17,000m <sup>2</sup> Total floor area 103,000m <sup>2</sup>	convention center, office, information center, hotels
7	Osaka pre.	Rinku international logistics center	transportation	Plottage 19,000m <sup>2</sup> Total floor area 53,000m <sup>2</sup>	provisional joint building or center for the imports and exports, international logistics complex for used for multi-purposes
8	Osaka pre.	Rinku U-elga Building	business, information, telecommunication	Plottage 15,000m <sup>2</sup> Total floor area 42,000m <sup>2</sup>	regional air-conditioning and heating supply facilities, CATV-information center, intelligent offices
9	Osaka pre.	meeting-conference center	exhibition	Plottage 6,000m <sup>2</sup>	international and domestic business conference center, multi-purpose hall, hotels
10	Osaka pre.	international exchange fund, Kansai international center	convention	Plottage 20,000m <sup>2</sup> Total floor area 12,000m <sup>2</sup>	high-levelled Japanese training, Nihongo Proficiency Test(NPT) business
11	Osaka pre.	travel bureau	transportation	Plottage 6,000m <sup>2</sup>	chartered tourists reception facilities, bus lounge and large-scale parking lot

Table 6 Renewal compound city type development

	Location	Facilities	Kind	Scale	Function
12	Osaka pre.	medical study and training center(health medical complex)	research facilities, convention center	Plottage 15,000m <sup>2</sup>	growth-pole for international yacht race, mega-yacht mooring
13	Osaka pre.	environmental research-education center	research facilities	Plottage 50,000m <sup>2</sup>	club house, marine school management, marine sports-related information collection and control
14	Osaka pre.	Tenpozan Harbor Vilige	culture & recreation	Plottage 100,200m <sup>2</sup>	aquarium, museum, market
15	Hyogo Pre.	Amagasaki research core, research incubator center	research facilities, business facilities, multi-functional industry facilities	Plottage 5,200m <sup>2</sup> Total floor area 12,400m <sup>2</sup>	coastal recreation, cultural support, scenic viewpoint
16	Hyogo Pre.	national disaster protection center	research facilities, information and telecommunication	Plottage 100,000m <sup>2</sup>	disaster protection growth pole, disaster-related materials display and learning

3) Renewal compound area type development

This type of development are seen in many of consolidated city-typed development with emphasis on the functions of research, business and recreation. It serves as a means to renew the city structure of little variability and the function of harbors.

4) Exchange communication promotion type development

This is the development of house and greens to create an environment with a focus on the amenity of waterfront that will promote the interaction between residents and city dwellers

3.2 Characteristics of development type

Analysis of tables 4 through 7 has shown the rare presence in waterfront development of renewal-typed development.

It is that with factories, warehouse, harbors relating to industries vulnerable to the conditions of location the land has progressed toward synthesis-typed city development due to revolution in industrial structure following transition to information society. Figure 1 below shows the near-absence of development project in Osaka Prefecture's Hanshin, Sakai, Senbuku industrial areas since it is no longer wise to deploy in urban space the development of industrial complex requiring the energy supply that is needed for metropolitan management and technology intensiveness.

Table 7 Exchange communication promotion type development

N	Location	Facilities	Kind	Scale	Function
17	Osaka pre.	international culture-business facilities	communication and exchange facilities	Plottage 10,000m <sup>2</sup>	international culture and commerce for racial arts and entertainments
18	Hyogo Pre	Amagasaki Children world	communication and exchange facilities	Plottage 190,000m <sup>2</sup>	communication and exchange, liberal arts-culture
19	Hyogo Pre.	Awazi-convention center, greenhouse, outdoor theatre and scenic terrace	convention facilities, liberal arts and culture facilities	Plottage 98,500m <sup>2</sup> Total floor area 44,000m <sup>2</sup>	conference, culture-recreation, park-viewpoint
20	Hyogo Pre.	monument for the friendship between Japan-France	communication and exchange facilities	Plottage 500,000m <sup>2</sup>	international exchange, receiving and sending station for information,
21	Wakayama Pre.	Wakayama big whale	communication and exchange facilities	Plottage 36,300m <sup>2</sup> Total floor area 17,200m <sup>2</sup>	communication and exchange
22	Wakayama Pre.	Wakayama Big love	convention, facilities, communication and exchange facilities	Plottage 31,700m <sup>2</sup> Total floor area 20,800m <sup>2</sup>	convention communication and exchange

Amenity-oriented development has formed a zone with a tendency toward concentration on the seaside reclaimed lands of Osaka city and Kobe city, that are metropolitan cities, which reflect the city-dwellers' desire to contact good natural environment.

Also, large-scale synthesis type development has arranged big-sized facilities functioning as the location of international commerce and business, office and logistics. Areas concentrating former residents and harbors and the urban centers show many of renewal compound city type development, which areas are required to be renewed with a slowdown in their functions as city following a mixing of cities and with many obsolete harbor facilities due to distribution revolution.

Exchange communication promotion type development is manifest in relatively less urbanized areas located far away from the downtown of Osaka City, holding in 'Proximity of residence and office' with its focus on the amenity of waterfront and local characteristics.

Analysis of the preceding development types and characteristics (Osaka Bay Area Development Organization, 1998, 2000) suggests that any future waterfront development be oriented toward large-scale synthesis type development and renewal compound area type development with their protecting skyline from skyscrapers and preventing reappearance of obsolete city view

Therefore, Korea's future waterfront development requires development in Osaka Bay seaside area environmental-friendly type development with particular focus on natural environment, taking into account the emotional well-being on city users of city view.

#### 4. Conclusion

Osaka Bay area has raised questions to multiple ecological change caused by scientific investigations into or the impact of development of the Coastal Zone of pre-developmental times; environmental change following the restoration efforts of natural environment; laws regarding Coastal Zone management for a systematic post-developmental Coastal Zone management; the ambiguity of its managerial entity.

Analysis shows that Osaka Bay area that used to serve mainly as the outpost of energy has accelerated a functional shift to a type of development living up to the needs of the times. Areas of Renewal compound city type development and of large-scale synthesis type development have been making a process toward functional changes and multiple use including business, commerce, culture and research and development (R & D), housing and recreation. Also the development of a reclaimed or natural area appears in amenity-oriented development and Exchange communication promotion type development, making a progress toward international exchange, trade, business, commerce, R & D, housing, and recreation to meet the new needs of internationalization and information.

The analysis of Osaka Bay area's waterfront development patterns is expected to make a contribution to this nation's direction of Coastal Zone development. But this country's too many and complex ordinance of Coastal Zone management is needed to be simplified and revised to improve unclear maintenance and control system of Coastal Zone law. Secondly, there should be consensus building taking into great consideration the local area's economy; social, demographic situation; its characteristics; the local people's consciousness. On the basis of them, there should be decision-making not from Manichaen perspective of 'development' or 'preservation' but through coordination of their relations so as to consider a 'wise use' of environmental-friendly approach.

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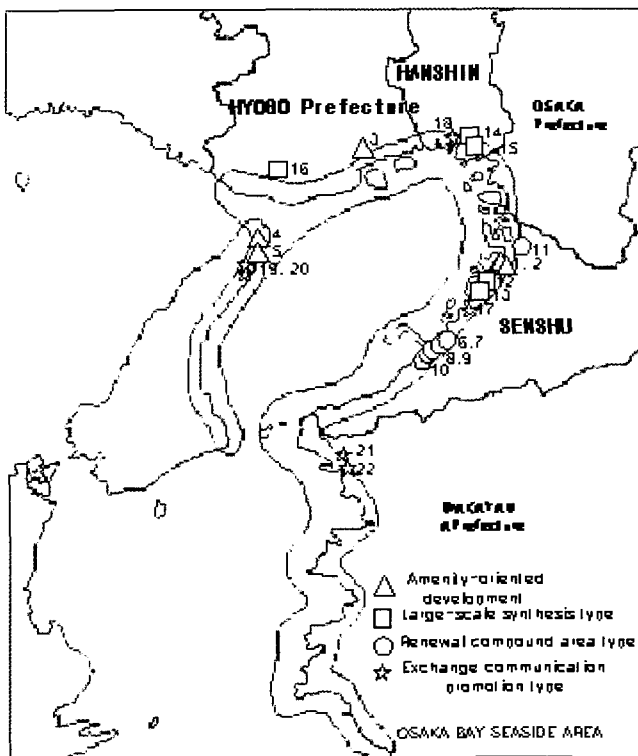


Fig. 1 Current condition and pattern of Osaka Bay

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