METHODS TO OVERCOME THE BARRIERS AND THE DISINTEGRATION EFFECT OF PORT AREAS IN THE CITY CENTER AND THE FACTORS DETERMINING THEIR CHOICE

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ABSTRACT

Port warehouse complexes and transport infrastructure around them, located near the urban centers of major cities are huge barriers and buffers in urban organism. Once engines for the emergence and development of cities, in the last 40 years these areas act as restraints in the development of cities. At the same time historically formed cities also do not allow modernisation and expansion of ports. Economic dynamics and the new functional profile of the coastal towns exert asignificant pressure for change, requiring the transformation of these large areas for new features, their opening to wider user groups and their greater commitment to the historic core of the town.

What are the opportunities to reconnect the city to the coast, to extend the city center and accommodate new needs, increase pedestrian, recreational and green areas near the center and improve the overall quality of living environment?

In some cases this is achieved through the transformation of part of the port complexes in open public areas, enriched by various social-service and recreational activities. In others - through the complete removal or relocation of activities (port, warehouse, industrial) and a new design/redesign of the towns. In the yet other - through purely spatial-invasive solutions that give people access to water without changing port areas.

The report examines the factors determining the regeneration solution and the main methods of approach based on analysis of 12 realized coastal transformations and several approved but unrealized projects. Particular attention is paid to the functional profile of the renovated areas and predominant functions in the mix and the inclusion of these new parts in the functioning of the urban organism.

Key words: Regeneration, Port Areas, Urban Planning & Design, Green Areas and Open Public Spaces

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1. INTRODUCTION

The modern city is a place in which live and reside many different groups of people – considered by social, cultural, professional, ethnic and religious signs and this diversity is much greater than at any other past point in history. Clash of interests and activities is intense and this greatly increases the importance of city management, that has to balance those interests and protect public interest. Certain events and trends of the last 50-60 years, threaten the convening character of the city by creating insurmountable buffers and isolated areas, gated structures, and gated communities.
This happens because these events provoke many negative effects, one of the most important being the gradual degradation of a wide brim of these areas and loss of attractiveness of many central urban areas. Port complexes of the time of the Industrial Revolution are a kind of a city gated structure and actively participate in the described model. Today there is a great need to find a new form of relationship and interlocking between the city and the port.

2. PROBLEMS OF WATERFRONTS TODAY

2.1. Historical Development of the Port Areas

Convenient location for construction of protected ports is the key factor for the coastal cities. Ports are the main structural elements of these settlements and engine for development.
Many modern port centers in Europe formed in the Middle Ages as a result of increased trade with the Middle East. Some of them existed in Antiquity, but we can assume that in their present form, without time interruptions they have basically medieval origin. Strong political and economic development marked the centers of maritime trade on the route Middle East - Italy - Western Europe: Genoa, Venice, Amalfi, Bruges, Ghent, Hamburg, Amsterdam. Strong cash flows stimulated the development of the banking system and wealth gave their independence.
Renaissance changed the nature of trade, the main trade flows in terms of destinations, as well as type and quantity of goods. Development of overseas warships and commercial carriers lead to a rapid expansion of trade. New water routes between Europe and East Asia realized import at lower prices compared to transport by land. The discovery of America, and its tobacco, gold and silver trade opened new horizons to the Far East. Thanks to the experience gained in ocean navigation, Europeans occupied a decisive position in the Asian trade shipping. Emergence of joint stock companies in the shipping.
Since the Industrial Revolution occurred in Europe first, this continent is the center of the world trade network throughout most of the 19th century. The growth of industrial production is accompanied by a rapid expansion of trade in goods and raw materials. They in turn stimulate significant changes in transport - both vessels and ports are enlarged and modernized; railways stimulated the rise of internal trade. Strong development of production and trade concentrates huge capital in cities and generates migration from rural areas. So the early 19th century port cities inevitably

transform in large industrial centers because they have everything - raw materials, capital, labor and technology, and markets.
Three phenomena of Post-industrial times change the meaning of ports for European cities and from engines for development, they become handicaps.

- Changes in the economic profile of the cities and their transport infrastructure: dislocation and change in the heavy industry, specialization and modernization of ports, reduction of cargo processing time and increase the share of air freight
- Ports Barrier effect against typical urban areas and the effect of restricting development and degradation in the border lines between them
- Strong growth in the leisure, tourism and services, which creates "hunger" for new attractive areas; the waterfront can serve modern city various functions

2.2. Principles of Modern Urbanism

Intensive urbanization and the development of democratic social system require regulation, guaranteeing the rights of citizens for high-quality living environment and access to social services and universal benefits. Principles of modern urbanism are the product of the development of urban and social science and practice. The proposed classification based on international agreements on human rights and sustainable development include:

- Principle of pure and favourable environment for living
- Principle of openness, responsiveness and maximum accessibility of the environment
- Principle of parallel evolution of the urban areas; fairness in the distribution of wealth
- Principle of multi-functionalism and enhancement of the urban environment
- Principle of conservation of the focal character of the city and the traditional center
- Principle of maintaining diversity, uniqueness and historical memory
- Principle of effectiveness in the use of land resources and sustainable development;

Comparison between the current situation and these principles revealed the wide range of existing imperfections in the territories. They are grouped into 4 groups of problems.

2.3. Basic Problems

Socio-economic problems and Efficiency:

- Status and profile of the economy (decline of industries important to urban structure)
- Unemployment (due to closed enterprises and ports)
- Demography and dynamics (e.g. outflow of residents because of economic downturn)
- Significant social needs - housing, parks, sports facilities, servicing, culture objects

Urban problems:

- Lack of connectivity and accessibility and the presence of barriers
- Negative impact on the development of the central areas and their peripheries
- Limited visual connectivity of the city with the coast and the water

- Structural and functional dissonance - define the “tearing” of "urban fabric"

Problems with cultural heritage and architectural image:

- The existence and condition of valuable historical buildings and ensembles in the port;
- Presence of preserved historic urban ensemble in proximity and the level of relation between it and the regenerated area (compositional and visual)
- Preservation of historical memory about the functions of the area
- Monotony and lack of aesthetic qualities of the coastal skyline

Ecological problems:

- Problems of urban ecology
- Environmental problems of water area
- Problems with the Coast and dynamics of water level
- Negative impact on protected natural areas and water areas

Based on the a/m classification and for the purpose of this PhD research, an analytic matrix was developed to evaluate regeneration projects by comparing the situation before and after their implementation. The effects in each of the a/m groups bring a certain number of credit, as leading group and weight is pre-defined.

3. APPROACHES TO SOLVE THE PROBLEMS

To solve the problems are applied approaches, bearing different names - revitalization, redevelopment, regeneration, waterfront renovation, etc. We will not dwell on the specifics of the terms, but will mark the trends in the development of waterfront update. Historically several stages of regeneration practices can be defined, which are characterized by differences in the scope, objectives and value of projects, participants and results.

In the First stage (from 60-ties to the early 80-ties) the private sector has the leading role. The low price of degraded areas attracts investors who turn them into highly profitable business centers. Changes do not take into account the needs of the city and society and do not contribute to the opening of the city nor provide a coast for wide use. The scope - local.

The Second stage (80-ties and 90-ties) is characterized by the beginning of the public-private partnership. Local authorities impose stricter conditions on projects that cover the whole port area. First attempts to create mixed areas including service and recreation.

In the Third stage (from 90-ties) design is based on equal public-private partnership, the recovery task is prepared on the basis of studies on the role and functions of the coasts and linking them with the master plan of the city. It specifies the function, structure and balance of the area. Local authorities have a leading role in the preparation of the assignment and in monitoring. The scope includes the entire waterfront.

This PhD research focuses on the transformations during the second two stages, aiming to classify the different solutions in terms of the urban aspect. The functional profile, the structure and intensity of development and linking with neighbouring regions and the city are the key assessment indicators that affect the participation of green and open spaces. The analytic matrix examines in detail 10 cities famous for

their successful projects: Genoa, Naples, Bilbao, Barcelona, Amsterdam, Antwerp Hamburg, London, Liverpool and Cardiff, as we will briefly present some of them. Another 10 cities including Valencia, Toronto, New York, are also the focus of study.

3.1. Brief Analysis of the Significant and Successful Waterfront Regenerations

Amsterdam - Shortage of Housing, Excess of Water

The purpose of the transformation of the eastern docks is turning them into a residential area – the concept of the compact city and because of the great need for housing. The main requirements are: high density of occupation; good connectivity, permeability and accessibility of urban areas; broad social mix of residents

Functional profile and urban image: In the regeneration of the eastern port area functional area is divided into western multi-functional area bordering the periphery of the city center and eastern residential area which is seriously remote and isolated from the center of linear barriers. In the south-western and central parts many of notable historical buildings have been converted to shopping centers, hotels and restaurants, cultural and entertainment centers; institutes, museums and libraries and in modern buildings are located a cruise terminal and a modern music hall. The Eastern zone, consisting of 4 peninsula, was converted into a purely residential area with diverse architectural style - from luxury single-family homes to large-scale multi-storey social housing. Despite the high density everywhere were realized green and public spaces and pedestrian areas.

Specific characteristics of the decision:

- Preservation of many storage buildings and the waterways and use for new needs
- Diverse in style, structure and scale architectural style, which is distant from the typical urban environment and this requires close coordination and harmonization
- Poorly balanced functional areas with a lack of facilities and services
- Unresolved problem with linear barriers, well realized commitment to the city by public transport
- Well laid and implemented system of green and open spaces with high qualities
- Complete regeneration of the east zone; incomplete regeneration of the central zone

Analysis on key indicators:

1. Level of solving socio-economic problems and achieved efficiency in land utilisation (amount of credit: 3/10);

1.1. Functional efficiency according to the level of functional mix and effective functional balance (credits: 0/2);

1.2. Functional efficiency according to the level of satisfaction of the socio-economic needs and gaps - jobs and services for the population (credits: 2/2)

1.3. Functional efficiency according to the level of stimulation of the urban economy (cr: 0/2)

1.4. Functional efficiency according to sustainability of the loading of the area (day-

round, all-seasons, long-term) (credits: 0/2);
1.5. Functional efficiency according to the level of wide-mix of users (credits: 1/2);
2. Level of solving of urban problems (amount of credit: 8/12)
2.1. Achieved transport linkage with the region and the city (credits: 2/2);
2.2. Implemented pedestrian links (credits: 0,5/2);
2.3. Level of development of the green system and the system of open public spaces (cr.: 2/2);
2.4. Achieved visual connectivity (credits: 2/2);
2.5. Structural adequacy of the urban environment / harmonization with the typical urban structure (credits: 1/2);
2.6. Functional harmonization and consistency with the surrounding urban areas (cr.: 0,5/2);
3. Level of solving the environmental problems (amount of credit: 4/8)
3.1. Level of improvement of the urban ecology (credits: 2/2)
3.2. Level of improvement of the quality and characteristics of the water area (credits: 2/2)
3.3. Level of improvement in the management of water levels
3.4. Level of reduction of indirect negative impact on protected natural areas and water areas
4. Level of solving the problems of cultural heritage and creating a memorable architectural image (amount of credit: 5/10)
4.1. Level of alignment with the historic environment and cultural heritage (credits: 0/2)
4.2. Conservation and recovery of valuable historic buildings and ensembles in the territory (credits: 1/2)
4.3. Preservation of historical memory of the historical functions of the area (credits: 1/2)
4.4. Prominence and aesthetic qualities of architecture (credits: 1/2)
4.5. Diversification and enrichment of coastal silhouette (credits: 2/2)
Credit rating: 20/40.

Hamburg - Second City Center
Purpose of the transformation: Reviving one of the oldest harbor and storage areas, and its integration into the urban organism as a central urban area Hafencity.
Functional profile and urban image: Typical downtown area of the wide center of the European city. More than 30% of the area is occupied by residential buildings - permanent and temporary occupancy. There are many office and administrative buildings, head-offices of large international companies, a substantial share of educational, research and museum centers, places of trade and services, restaurants and cruise terminal. Appropriately situated many open public spaces, recreational areas and green spaces.
Specific characteristics of the decision:

- Comprehensive renovation of the southern coastal areas, turning them from an industrial port into a complete urban area – new residential, cultural and business center
- Structure connectivity and adequacy of the urban environment and successful

harmonization with the typical urban structure with a gradual transition from the architectural style of the existing historic buildings to the contemporary office and residential buildings; Using some of the landmark old buildings for new functions

- Well-developed system of public spaces, recreational and green areas associated with existing urban spaces and pedestrian routes; high quality design of open spaces
- high proportion of residential areas to ensure full-time occupation of services because of the remoteness from the center and large size of the area compared to the center.

Analysis on key indicators:

1. Level of solving socio-economic problems and achieved efficiency in land utilisation (amount of credit: 10/10);

1.1. Functional efficiency according to the level of functional mix and effective functional balance (credits: 2/2);

1.2. Functional efficiency according to the level of satisfaction of the socio-economic needs and gaps - jobs and services for the population (credits: 2/2)

1.3. Functional efficiency according to the level of stimulation of the urban economy (cr.: 2/2)

1.4. Functional efficiency according to sustainability of the loading of the area (day-round, all-seasons, long-term) (credits: 2/2);

1.5. Functional efficiency according to the level of wide-mix of users (credits: 2/2);

2. Level of solving of urban problems (amount of credit: 12/12)

2.1. Achieved transport linkage with the region and the city (credits: 2/2);

2.2. Implemented pedestrian links (credits: 2/2);

2.3. Level of development of the green system and the system of open public spaces (cr.: 2/2);

2.4. Achieved visual connectivity (credits: 2/2);

2.5. Structural adequacy of the urban environment / harmonization with the typical urban structure (credits: 2/2);

2.6. Functional harmonization and consistency with the surrounding urban areas (cr.: 2/2);

3. Level of solving the environmental problems (amount of credit: 4/8)

3.1. Level of improvement of the urban ecology (credits: 2/2)

3.2. Level of improvement of the quality and characteristics of the water area (credits: 2/2)

3.3. Level of improvement in the management of water levels

3.4. Level of reduction of indirect negative impact on protected natural areas and water areas

4. Level of solving the problems of cultural heritage and creating a memorable architectural image (amount of credit: 7/10)

4.1. Level of alignment with the historic environment and cultural heritage (credits: 1/2)

4.2. Conservation and recovery of valuable historic buildings and ensembles in the territory (credits: 1/2)

4.3. Preservation of historical memory of the historical functions of the area (credits: 1/2)
4.4. Prominence and aesthetic qualities of architecture (credits: 2/2)
4.5. Diversification and enrichment of coastal silhouette (credits: 2/2)
Credit rating: 33/40.

Bilbao - Cultural and Tourist Identification
The goal is a complete restructuring of the city after the decline of the metal production industry and transfer of the port to the bay, to stimulate a balanced socio-economic development of the city with a focus on the development of tourism, culture, education and services, and to restore the unity of the urban organism. Regeneration program includes 16 major transformations in the coastal regions, in infrastructure and environmental measures to restore the river ecosystem. Here we present Abandiobarra /in the central part of the city in a port and storage area/ and Barakaldo /near the district center in a port and storage area
Functional profile and urban image: mixed multifunctional zones in a park area with residential, hotels, business, concert and congress centers, large shopping centers, sports and landscape subareas, university and office buildings, museums; memorable sculpture park design and decoration; many parks, green squares and pedestrian spaces, parts of the waterfront promenade; Abandiobarra is organically linked to the Guggenheim Museum and the bridge Salve constructed earlier.
Specific characteristics of the decision:

- the urban fabric is restored - streets and squares constructed with expressive urban silhouette and while these solutions immerse buildings in green, and the density of the buildings gradually decreases towards the river and passes into a coastal park
- appropriate mix and functional structure, but different for the two zones; many green areas, well-integrated system to be adopted in the green city
- Good pedestrian and car links with neighboring territories and city in Abandiobarra were constructed; in Barakaldo linear barriers - highway and train lines - are overcome on one place on land, on a second place - through a tunnel, and on a third place - through a trestle.
- In Barakaldo the old building ILGNER is converted into an office center and mining industry facilities are exposed in a theme park, in Abandiobarra the ship museum is the only sign of historical past.

Analysis on key indicators:
1. Level of solving socio-economic problems and achieved efficiency in land utilisation (amount of credit: 10/10);
1.1. Functional efficiency according to the level of functional mix and effective functional balance (credits: 2/2);
1.2. Functional efficiency according to the level of satisfaction of the socio-economic needs and gaps - jobs and services for the population (credits: 2/2)
1.3. Functional efficiency according to the level of stimulation of the urban economy (cr: 2/2)
1.4. Functional efficiency according to sustainability of the loading of the area (day-

round, all-seasons, long-term) (credits: 2/2);
1.5. Functional efficiency according to the level of wide-mix of users (credits: 2/2);
2. Level of solving of urban problems (amount of credit: 12/12)
2.1. Achieved transport linkage with the region and the city (credits: 2/2);
2.2. Implemented pedestrian links (credits: 2/2);
2.3. Level of development of the green system and the system of open public spaces (cr.: 2/2);
2.4. Achieved visual connectivity (credits: 2/2);
2.5. Structural adequacy of the urban environment / harmonization with the typical urban structure (credits: 2/2);
2.6. Functional harmonization and consistency with the surrounding urban areas (cr.: 2/2);
3. Level of solving the environmental problems (amount of credit: 6/8)
3.1. Level of improvement of the urban ecology (credits: 2/2)
3.2. Level of improvement of the quality and characteristics of the water area (credits: 2/2)
3.3. Level of improvement in the management of water levels (credits: 2/2)
3.4. Level of reduction of indirect negative impact on protected natural areas and water areas (credits: 2/2)
4. Level of solving the problems of cultural heritage and creating a memorable architectural image (amount of credit: 7/10)
4.1. Level of alignment with the historic environment and cultural heritage (credits: 1/2)
4.2. Conservation and recovery of valuable historic buildings and ensembles in the territory (credits: 0/2)
4.3. Preservation of historical memory of the historical functions of the area (credits: 2/2)
4.4. Prominence and aesthetic qualities of architecture (credits: 2/2)
4.5. Diversification and enrichment of coastal silhouette (credits: 2/2)
Credit rating: 35/40.

Genoa - Naval History - Tradition and Modernity
The aim of coastal regeneration is to improve the physical conditions and public services, revitalize the economy and mobility and increase the attractiveness of Genoa as a cultural destination (the center is a UNESCO site). A complete regeneration of the old port is performed.
Functional profile and urban image: Mixed multifunctional zone including: Half-sheltered arena and outdoor arena; large green square, transformation of cotton warehouses into a congress center and children's attraction, aquarium and tropicarium, commercial centres, sports facilities, museums and research institutes, restaurants, cineplex, hotels. Development of marinas, travel, cruise and ferry terminals with diffusion of public functions in them.
Specific characteristics of the decision:

- An overall renovation of the area, turning it from an industrial port into a city center, busy all year round and offering many opportunities for recreation and entertainment.

- Creating an environment for cultural events and conference activities and converting the city into an international tourist center; Transformation of the old warehouses;
- Overcoming the barriers and connecting the cost with renewed city center
- Many open public spaces, but few green elements; they will increase after implementation of Ponte Parodi building with roof gardens

Analysis on key indicators:

1. Level of solving socio-economic problems and achieved efficiency in land utilisation (amount of credit: 10/10);

1.1. Functional efficiency according to the level of functional mix and effective functional balance (credits: 2/2);

1.2. Functional efficiency according to the level of satisfaction of the socio-economic needs and gaps - jobs and services for the population (credits: 2/2)

1.3. Functional efficiency according to the level of stimulation of the urban economy (cr: 2/2)

1.4. Functional efficiency according to sustainability of the loading of the area (day-round, all-seasons, long-term) (credits: 2/2);

1.5. Functional efficiency according to the level of wide-mix of users (credits: 2/2);

2. Level of solving of urban problems (amount of credit: 12/12)

2.1. Achieved transport linkage with the region and the city (credits: 2/2);

2.2. Implemented pedestrian links (credits: 2/2);

2.3. Level of development of the green system and the system of open public spaces (cr.: 1/2);

2.4. Achieved visual connectivity (credits: 2/2);

2.5. Structural adequacy of the urban environment / harmonization with the typical urban structure (credits: 2/2);

2.6. Functional harmonization and consistency with the surrounding urban areas (cr.: 2/2);

3. Level of solving the environmental problems (amount of credit: 4/8)

3.1. Level of improvement of the urban ecology (credits: 2/2)

3.2. Level of improvement of the quality and characteristics of the water area (credits: 2/2)

3.3. Level of improvement in the management of water levels (credits: 0/2)

3.4. Level of reduction of indirect negative impact on protected natural areas and water areas (credits: 0/2)

4. Level of solving the problems of cultural heritage and creating a memorable architectural image (amount of credit: 10/10)

4.1. Level of alignment with the historic environment and cultural heritage (credits: 2/2)

4.2. Conservation and recovery of valuable historic buildings and ensembles in the territory (credits: 2/2)

4.3. Preservation of historical memory of the historical functions of the area (credits: 2/2)

4.4. Prominence and aesthetic qualities of architecture (credits: 2/2)

4.5. Diversification and enrichment of coastal silhouette (credits: 2/2)

Credit rating: 36/40.

3.2. Classification of the Urban Models for Waterfront Regeneration

Main groups of regeneration models:

A. Solutions with complete removal of port complexes in suburban areas and clear the waterfront of the "core" city

B. Decisions / Solutions with transfer of handling, ship repair and military terminals and storage areas outside the "core" city and development of passenger and fishing ports with diffusion "typical urban" functions.

C. Decisions as to which ports remain in the same range (due to lack of suitable areas and unjustified expenses) and other tools are used to overcome the inaccessibility.

Complementary groups of Regeneration models:

ME. Mega-events. Conversion associated with these projects is realised by full or partial relocation of ports and they are an intermediate stage of models A and B.

LB. Linear barriers. Overcoming them through various methods is an approach that combines with each major group of regeneration models.

The following factors should be taken into account when choosing a group:

- Is the port complex a barrier and a buffer for the town itself and its center?
- Is there a practical way to move the equipment?
- Is there a need to modernize the port and service infrastructure?
- Are there potential host areas without such problems?
- Are there serious environmental problems in the sea and land?
- Are there a valuable ecosystems and areas of high nature value in the area?
- Are there areas with high cultural and historic value in the complex?
- What is the tourist and ecological potential of host territories?

Subgroups of Regeneration models:

A. Solutions with complete removal of port complexes can be developed as:

A1. Parks or predominantly park areas
- A1.1. Classical park areas
- A1.2. Parks, filled with objects of public services and attractions
- A1.3. Multifunctional areas in parks
- A1.4. Large specialized parks: zoo, botanical, sports, fun / attraction parks

A2. Wide-area exhibition complexes

A3. Mixed multifunctional central zones with predominance of services and recreational functions and restoration of urban "fabric"

A4. Business, administrative and research centers
- A4.1. Business areas with offices and hotels, richly designed with open spaces
- A4.2. Predominantly administrative complexes
- A4.3. Dominated by research and education centers

A5. Mixed residential areas with offices, hotels and services

The following factors should be taken into account when selecting the subset:

- The proximity to the city center and the district center and pedestrian accessibility
- The size of the city and the district center, population
- The ratio of the transformed area to the area of the functional center of the city
- Available or possible connection to functioning pedestrian zones and parks
- Presence of nearby stops of high capacity ecological public transport
- Tourist profile of the city and forecast tourist capacity
- Significant social lack/ need

B. Decisions with transfer of some of the terminals and the development of passenger and fishing terminals that are "open" to the city and most often become multifunctional areas saturated with marketing, attractions, museums, hotels, congress centers, open spaces and green areas. According to the functional balance they are:

B1. Multifunctional central areas dominated by service sites
B2. Park recreational areas saturated with social-service facilities
B3. Entertainment areas saturated with social-service facilities
B4. Complexes dominated by hotel-residential functions
B.ME.1. Land hosting single mega events
B.ME.P. Small permanent exhibition and trade fair complexes with administration.

C. Other measures to overcome inaccessibility to the waterfront – subgroups:

C1.Transforming part of the terminals in multi-functional zones and aesthetization or visual isolation of the other terminals, that have low permeability of urban functions

C2.Inner-port translations, followed by port transformations; the terminals that can act as multifunctional zones are transferred to the center and the others - to the periphery

C3.Space-invasive solutions and structures for public access to the waterfront ceded public spaces in restricted areas; applied when no other methods are available

C3.1.By opening public access to existing bridges, piers and docks that can be released and access to them will not interfere with the operation of the terminal

C3.2.By facilities that bridge the port area - pedestrian gangways or relief-morph buildings and structures whose roofs are used as public open spaces

Key factors in determining the structure and architectural image:

- Distance from the center and the intensely built-up urban areas
- Preservation of historic formed central-urban ensemble nearby
- Homogeneity / heterogeneity of the architectural style in the complex; ensemble
- Homogeneity / heterogeneity of buildings nearby; ensemble / diffusion

- Presence in the complex of valuable buildings for preservation; ensemble/ diffusion
- Presence in the vicinity of a structure expressed with visual and communication axes
- Presence in the complex of space to restore the urban fabric

In recent decades the dilemma for partition of preserved monuments is decided more clearly thanks to the activity of UNESCO for declaring of ensemble monuments of World cultural heritage on the coasts. Assessment of value is necessary for the start of designing.

3.3. Metodology for selection of a regeneration model

- Analysis of the territory and the city by groups of problems
- Defining of a leading group /groups/ according to the importance of issues in a particular case and distribution of weight between the groups
- Defining of the possible areas-receivers and the possible degree of transfer
- Selecting the main group of regeneration model based on the above choices
- Adding a complementary group LB or ME.
- Determining a subset regeneration model. For a group A or B this is based on ratios, functional and structural adequacy, significant social lack and possibilities for connectivity to the center.
- For a group C - based on the conditions of implementation and the type of terminals.
- Determination of structure and architectural image
- Phase separation and determination of scheme of partnership in terms of financing, implementation, monitoring and management of public-private partnership.

4. CONCLUSION
THE MOST SUCCESSFUL SOLUTIONS TO RESTORE THE URBAN FABRIC AND CONNECTIVITY OF THE WATERFRONT TO THE CITY

To select the most appropriate for each case decision all factors and conditions in the city must be taken into account, as well as the public needs and characteristics of the surrounding areas and to identify solutions for maximum of the existing problems. However, aggregated dependencies show that:

- When selecting regeneration models A and B, the more remote the port area from the city center or the district center, and the greater the ratio of its area to the area of the active center, the greater must be the share of housing and employment areas. Conversely, the closer the regeneration area is to the active center and the smaller it is compared to the center, the more easily this zone can be converted into its natural extension. This ensures a sufficient number of users of services, trade, green areas and public spaces in it. If this rule is not obeyed, these objects and spaces will be deserted, as they will not have enough users. Public transport has an important role also, since it can generate permanent and sustainable user load of the territory
- The connectivity of the city and its elements is greatest in the center and decreases towards the periphery, so in order the waterfront to be a fully functional part of the city, its zoning must provide such a distribution of functions, which can respond to this dependence
- The intensity and multi-spectrality of usage of urban areas is highest in the center and decreases towards the periphery
- A greater functional mix would ensure a sustainable daily, yearly and long-term load and economically sustainable solutions
- Maximum accessibility and maximum range of users have both a moral aspect and also ensure sustainable development.
- Because of the specific situation of the old ports (near to the city center) and the need to serve a variety of functions, pure mono functional decisions are not the best, nor most effective and sustainable.
- On the other hand the green and open spaces are a necessary component of the solutions to urban waterfront, because they provide the final link in the system of pedestrian routes and common accessibility requires it.

These statements define the range of eligible effective urban solutions:

- In city centers in small coastal zones (up to 1/2 of the area of the center) suitable park solutions saturated with services, mix areas in parks and mix areas rich in green spaces
- In more remote from the center and wider zones (more than 1/2 of the area of the center) are appropriate solutions of the "core zones" type with a strong participation of homes and services and availability of parks
- In the urban periphery and suburbs are eligible limited accessibility parks (fun and sports centers, protected natural areas, big zoo) and zones with more greenery (campuses, research centers, large exhibitions, luxury residentials) or

other gated complexes such as storage and non-polluted industrial zones.

- Classical park areas being variety of the mono-functional decisions are also a controversial decision, especially when they are monotonically conducted along the entire coast. When planning the city waterfront area we should be looking for an opportunity to lay on an uninterrupted "green" pedestrian strip along the coast that pulsing (by size and diffusivity) to "overflow" in the a/m areas and provide accessibility and connectivity of pedestrian routes. In case of shortage of green areas in the city center, the choice of a green area full of public service facilities is suitable for the central coast. It must comply with realities (structure and function) of the adjacent urban periphery and adapt appropriately. Thus the main axes of communication from the city will spill over into the main lanes of entertainment and shopping facilities, and the load of the side of the park areas will gradually decline and will respond to the quiet residential areas. Rhythmic pulsation of the workload with visitors and sites along the coast is appropriate. An important aspect is the promotion of the usage whole park area through adequate service by public and private transport. An important condition for successful implementation is the limitation of motor traffic in these areas – it must be either underground or be strictly limited and controlled in order to prevent "falling apart" of parks.

4.1. Figures, Graphics, Photographs and Tables

HAMBURG

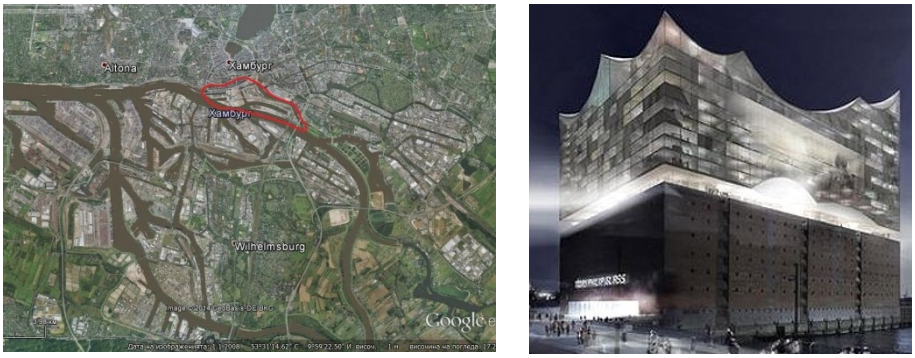

Fig.1 Left: Hamburg and new Hafencity on Google Earth; right: New concert hall Elbphilharmonie and 5-star Hotel in old cocoa warehouse, Architects: Herzog & de Meuron, from: www.formwaende.de/single/article/elbphilharmonie-hamburg-1.html

Fig.2 Hafencity from bird eye – structural harmony between new and historic structures, from:www.hafencity.com/

Fig.3 Hafencity, functional and structural analysis

BILBAO

Fig.4 Left: District Barakaldo and area Galindo in Bilbao;
/from www.bilbaoria2000.org, www.barakaldo.org/.;
Right: functional and structural analysis of the same area;

Fig. 5 Left: District Abandiobarra next to the cetre of Bilbao
/from www.bilbaoria2000.org/.;
Right: functional and structural analysis of the same area;

Fig. 6 Landscape design of Abandiobarra (left)
Barakaldo-Galindo regenerations (right)
/from www.bilbaoria2000.org/

GENOA

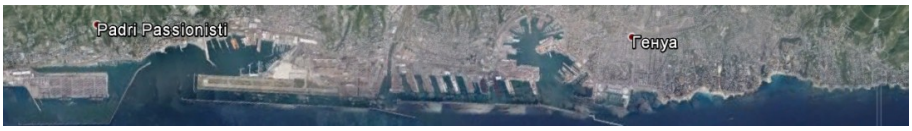

Fig. 7 Genoa metropolitan waterfront on Google Earth

Fig. 8 Functional and structural analysis of the Old port /Potro Antico/;

Fig. 9 Potro Antico from bird eye /from: www.portoantico.eu/

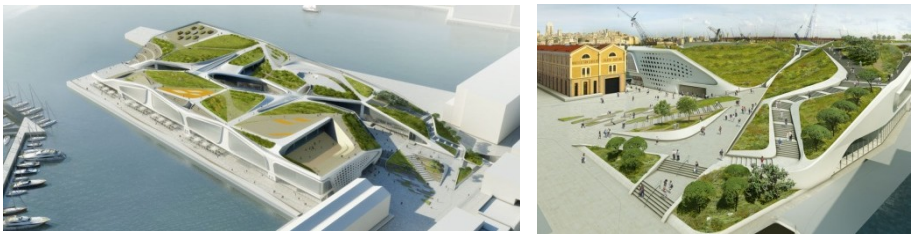

Fig. 10 Design of new Relief-morph building on Ponte Parodi, Architects: UNStudio, /from:www10.aeccafe.com/blogs/arch-showcase/2011/12/06/ponte-parodi-in-genoa-italy-by-unstudio/

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