International Journal of Innovative Technologies in Social Science

e-ISSN: 2544-9435

Scholarly Publisher
RS Global Sp. z O.O.
ISNI: 0000 0004 8495 2390

Dolna 17, Warsaw,
Poland 00-773
+48 226 0 227 03
editorial_office@rsglobal.pl

ARTICLE TITLE	PARTICIPATORY APPROACH FOR THE EVALUATION OF THE TYPE OF PROTECTION OF MARITIME HERITAGE IN URBAN REGENERATION PROJECTS OF WATERFRONTS - CASE OF THE PORT OF ALGIERS
ARTICLE INFO	Nour El Houda Bouchefirat, Djamel Dekoumi. (2024) Participatory Approach for The Evaluation of The Type of Protection of Maritime Heritage in Urban Regeneration Projects of Waterfronts - Case of The Port of Algiers. *International Journal of Innovative Technologies in Social Science*. 4(44). doi: 10.31435/ijitss.4(44).2024.3039
DOI	https://doi.org/10.31435/ijitss.4(44).2024.3039
RECEIVED	14 October 2024
ACCEPTED	29 November 2024
PUBLISHED	13 December 2024
LICENSE	The article is licensed under a **Creative Commons Attribution 4.0 International License.**

PARTICIPATORY APPROACH FOR THE EVALUATION OF THE TYPE OF PROTECTION OF MARITIME HERITAGE IN URBAN REGENERATION PROJECTS OF WATERFRONTS - CASE OF THE PORT OF ALGIERS

Nour El Houda Bouchefirat
Département of Architecture, University Abderrahmane-Mira, 22 Targa ouzemour, Béjaïa Algeria

Djamel Dekoumi
Institute of Urban Technology Management University salah boubnider · Ali Mendjeli, El Khroub, Constantine, Algeria

ABSTRACT

Coastlines are closely linked to the development of civilizations, as essential places for anchoring commercial and military activities, and for innovation in the forms and techniques of appropriation of the sea, which has produced throughout history a stratification of maritime heritage in the coastal area, today threatened with degradation and disappearance mainly due to natural and climatic conditions and the accelerated urbanization of the coastline, at a time when this heritage can constitute a powerful lever for revitalizing the waterfronts. The historic port of Algiers, the subject of this research, bears witness to a great historical and typological wealth in terms of maritime heritage. Being an integral part of the major regeneration project of the Bay of Algiers, major socio-cultural and economic issues are linked to the choice of the degree of protection of the site's buildings. The objective of this research is to propose a participatory and sustainable approach for the classification of maritime legacies according to their type of protection in the urban regeneration process of the waterfront of the Bay of Algiers, in order to identify development strategies that respect both the spirit of the place and allow the social and economic development of the urban space. To achieve the objective, the Delphi method. This made it possible to structure the evaluation tool and weight the criteria. The established tool is composed of 24 criteria classified according to 5 aspects; architectural quality, historical interest, social role, economic impact and state of conservation. The approach chosen in this study has the advantage of being global, transferable and adaptable to similar decision-making contexts.

KEYWORDS

Maritime Heritage, Delphi Method, Type of Protection, Regeneration, Waterfront, Port of Algiers

CITATION

Nour El Houda Bouchefirat, Djamel Dekoumi. (2024) Participatory Approach for The Evaluation of The Type of Protection of Maritime Heritage in Urban Regeneration Projects of Waterfronts - Case of The Port of Algiers. *International Journal of Innovative Technologies in Social Science*. 4(44). doi: 10.31435/ijitss.4(44).2024.3039

1. Introduction

The sea has always influenced the practices, customs and culture of maritime populations. This has produced original forms of occupation and land use planning specific to the coastal environment such as harbors, quays, shipyards, or lighthouses and coastal fortifications. The relationship with the sea has thus materialized mainly through developments that have made it possible to exploit these assets and defend against its dangers, and which today constitute what is commonly called "maritime and port heritage". According to (Ozenfant, 2020). Built maritime heritage is mainly concentrated in back-coast towns, retro-coastal villages, port fronts, craft areas and seaside and resort districts. They mark the urban space and provide information on the forms of appropriation of coastal and maritime sites by man. In this study, we will focus on the maritime heritage contained in the Urbano port interfaces; these spaces located in the contact zones between the port and the city, which have been the subject

of numerous scientific research and reflections (for example Chaline, Rodriguez-Malta, 1994, Collin, 1995; 2003; Prélorenzo, 1999,2010). This follows the tensions that have been experienced in the relationship between the port and the city, producing a demaritimization and a relocation of port activity outside the urban space. According to Brownhill, 2013 for the last fifty years, we have witnessed the brutal disappearance of traditional port and maritime functions in the context of a globalized economy while a strong residential and tourist attraction is focused on the urban spaces of coastal cities. The relocation of port activities mainly linked to technological changes in transport, navigation or maritime defense has led to the decline of maritime activities and professions, and the abandonment of old port facilities in the urban core, which has rapidly led to their degradation and the disappearance of some of their components. In particular with the land pressure experienced by coastal cities in the context of the demand for expansion of city centers. This situation has raised awareness of the heritage interest of these maritime and port legacies and their great added value in the urban reconquest of waterfronts. According to (Keyvanfar et al., 2018) in the context of urban regeneration projects on waterfronts, the preservation and reconversion of the most significant elements of port legacies is a particularly relevant strategy to ensure social and economic sustainability and a cultural and urban anchoring of the project. That said, the selection of built heritage to be preserved and enhanced is a complex task and requires a multi-criteria decision, as it involves several stakeholders whose objectives and expectations are divergent. The aim of this research is to propose a participatory approach that makes it possible to determine, according to the heritage interest, the degree of protection of port and maritime heritage in order to guide development decisions in the regeneration of waterfronts. To contextualize our research problem, the port of Algiers was chosen as a case study because of the richness of the maritime heritage that it integrates and its representativeness of Algerian historic ports in terms of typological and chronological characteristics, the port is also an integral part of the major regeneration project of the Bay of Algiers. Identifying the degrees of protection of buildings is therefore a necessary step in the project planning process. To achieve our objective, we proceeded by an integrated approach using the Delphi survey method. The article is organized into 5 sections. The first section analyzes of Literature on the emergence of the concept of maritime heritage and its impact on urban redevelopment strategies for waterfronts. The second section develops the methodological approach used, then section 3 deals with the contextualization of the research on the case study which is the historic port of Algiers. In section 5 we discussed the criteria and the evaluation method in order to identify the type of protection of the buildings. Finally, section 6 explains the results of the research.

2. Literature Review

2.1. Maritime heritage; from decline to recognition

The notion of maritime heritage has its origins in the changes that maritime and port activity has undergone since the 1970s (Péron, 2012), it includes all the developments that govern port and maritime functions, and which testify to the diversity in time and space of the connections between Man and the sea (Tommarchi, 2020). This has produced original forms of land use specific to the coastal environment, which reflect the diversity of maritime activities (military, economic, industrial, leisure and maritime signaling). A rich architectural typology with different compositional characteristics has been derived. (Ozenfant,2020, Shen et al , 2023), the main categories of maritime heritage and their morphological characteristics are summarized in Table 1.

Table 1. Classification of maritime heritage and their morphological characteristics.

Building typology	**Composition characteristics**
Coastal fortifications	Linear shape, load-bearing wall structure, stone or concrete, not very spacious, massive consistency.
Storage and transformation buildings	Generally rectangular shape, regular grid, large span, built in brick masonry, metal frame structures. Or reinforced concrete. Considerable surface and height spaces.
Arsenals, Shipbuilding workshops	Clarity and simplicity of composition, large surface areas and heights, generally rectangular shape, pilaster frame connected with arcades.
Lighthouses and harbor lights	Towers, circular. Tapered. Square, hexagonal or octagonal with a lantern. Generally rectangular base, limited span frame, posts, beams and load-bearing wall.

The sudden disappearance of traditional forms of maritime legacies was the trigger for the recognition of the heritage interest of maritime heritage (Barron, 2021), initially, a significant number of war ports as part of strategic redeployment will be stripped of all or part of their functions, coastal fortifications associated with ports or other locations on the coast will lose their original vocations with the change in navy practices. (Vigarié,

1992; Hayuth, 1988; Gay, 1986). The reduction in the role of maritime signaling elements has also contributed to the decline of traditional forms of maritime status; lighthouses have undergone a major change that began in the 1990s, following developments in navigation systems, particularly with the advent of satellite positioning techniques, and have gradually lost their usefulness on the coastline; as a result, their operational number has decreased considerably (Braccini, 2022). On the other hand, the disappearance of the port-warehouse function with the evolution of maritime transport technologies and the generalization of container ship traffic, has led to the abandonment of existing facilities in favor of more appropriate equipment, generally located on new sites" (Chaline & Rodriguez-Malta, 1994).

The abandonment of old maritime facilities, particularly those in urban centers, has led to their degradation quite quickly. The ports areas have been frozen in time. This decline in professions and activities specifically related to maritime context was accompanied by the transformation of the coastal system with urbanization and the expansion of leisure areas. At this time. Maritime heritage that has lost its original function is located in a space where land pressure is particularly intense, because it occupies highly valuable places in the contemporary logic of market forces (Péron ,2012). The heritage interest was born mainly from the awareness of the fact that these buildings that bear witness to different types of maritime activities, and which participated in the construction of a socio-cultural and spatial identity of coastal societies risk disappearing definitively and with them the historical, architectural, technical and cultural values that they convey (Ozenfant, 2020). This triggered the movement of heritage creation of maritime and port heritage and a desire for reappropriation through reconversions and adaptive reuses. The process of recognition and patrimonialization of maritime heritage can be summarized in 4 stages, as shown in Figure.1.

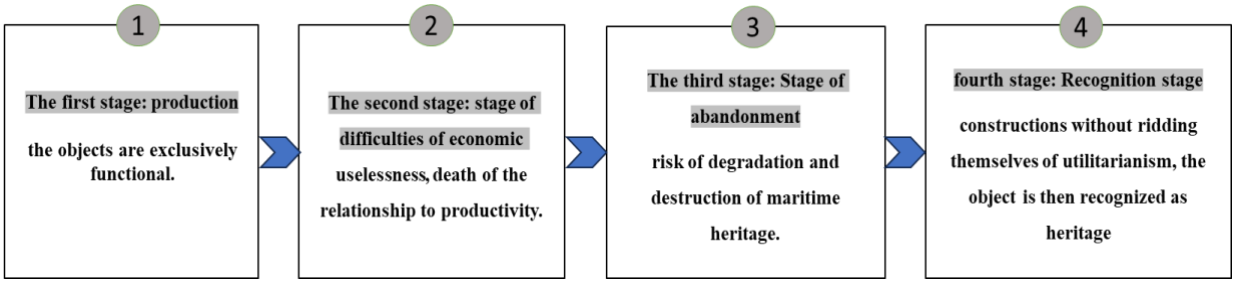


Fig. 1. Time of patrimonialization of maritime heritage

2.2. Potential of maritime heritage in the redevelopment of waterfronts

With the growth of the concept of built heritage, its management can no longer be subject to specific procedures. It must be integrated into the daily practice of urban planning (Choay, 1992). Today, the heritage designation of historic buildings and their integration into urban regeneration projects is a growing phenomenon and constitutes a fundamental movement in which port cities are also part. It is precisely from the 1980s that forms of urban redevelopment focused on culture and heritage have been undertaken in waterfront redevelopment programs (Schubert, 2008; Brownhill, 2013). In this context, two approaches based on two contradictory visions of urban development stand out: a market-oriented or neoliberal model and a territorial model or one based on the place and its sociocultural composition. The market-oriented approach has its origins in the urban neoliberalism of the 1980s. It refers to the model of the "city as a growth machine" (Molotoch, 1976) and the entrepreneurial city. The main instruments to materialize this vision in the reconquest of the waterfronts have been the creation of cultural attractions, the organization of events and the development of ambitious urban renewal plans whose primary objective is to optimize the commercialization of urban spaces. This development model, despite its capacity to generate a commercial revitalization of the waterfronts, has been widely criticized. In the majority of culture-based regeneration programs carried out within the framework of market-oriented planning strategies, culture and heritage are only an accessory, instrumentalized and used to justify the integration of large projects aimed at cultural consumption, where the success of the initiative is reduced only to the market value of the land, with significant effects of gentrification and associated phenomena of social exclusion (Zukin, 1996). this approach raises the problem of the promotion of an inauthentic maritime culture, and the production of a standardized and sanitized urban environment. The second approach is that of cultural planning (Bianchini & Bloomfield, 2012; Evans & Shaw, 2004, Bianchini & Parkinson, 2003), where a great deal of space is given to the notion of culture which includes all its forms of expression, heritage, values, traditions and customs that characterize the socio-cultural life of a community

and strengthen its territorial identity. According to Evans & Shaw (2004), the cultural planning approach uses culture as a driver of a more global sustainable development strategy: social, economic and environmental with a largely participatory process. It is about adopting a dynamic vision of conservation, which ensures the adaptation of port and maritime heritage to the needs of the local community. This approach has developed particularly in European port cities rich in heritage. According to (Tomarchi, 2020) the new redeveloped spaces are explored as places of sociability where a range of actors; including residents and tourists, cultural institutions, heritage experts, urban planners, and city and port policy makers, generate collective values and meanings related to local maritime cultures, identities and relationships between the city, the port and the sea. Consequently, the major challenge for the success of these projects is a good management of maritime and port heritages, which is conditioned by a multitude of factors, namely aesthetic, cultural, social and economic. The literature review allowed us to measure the importance of adopting a sustainable planning strategy for the integration of maritime culture and heritage in urban regeneration projects on waterfronts as well as the identity, social and economic issues that govern the recognition of their heritage interest, and the selection of elements to be preserved totally, partially, or conversely to be eradicated.

3. Research methodology

The objective of this study is to propose a tool for assessing the type of protection to be adopted for maritime heritage and thus to allow a redevelopment of port areas that respects the existing built environment. To proceed, we followed 3 steps:

1st step: Development of the criteria grid

We carried out a literature review; a critical analysis of the knowledge that exists to date on the subject, in order to first identify the evaluation criteria. Content analysis was used as the main data processing technique. In its simplest form, this approach is used to extract and categorize information from scientific documents (Krippendorff, 1980). To contextualize our decision-making tool and proceed with precision and relevance to the final choice of criteria, we conducted a survey using the Delphi method, a technique born in the United States in the 1960s. Which aims to obtain a consensus from the collection of expert opinions, and this, through a series of anonymous and structured questionnaires. (Kin et al, 2021), Among its characteristics are the large number of participants and the feedback provided to them during successive stages, fueled by the results obtained during the previous stages (Clémenta & Madecb, 2006), the survey was conducted among managers, researchers and civil society in the study context and made it possible to select the decision criteria classified according to six different aspects. (See section 4.2).

2nd step: weighting of the criteria

The weighting of the criteria consists of assigning a numerical coefficient to the indicators to show their importance compared to others (Cambridge dictionary, 2020). In our evaluation grid, not all criteria have the same influence on the decision. Therefore, we proceeded to weight them. The experts involved in the survey are asked to prioritize the criteria. The method chosen for determining the weightings is inspired by the hierarchical analytical process (HAP), developed in the 1980s by Thomas Saaty. The method is based on binary comparisons of the criteria organized into different hierarchical levels.

3rd step: Evaluation and choice of the type of protection

For the evaluation, the performance of the criteria is translated into a quantitative value score representing the degree to which each criterion is achieved. We started by assigning numerical values to the qualitative data using the "scaling" approach (Beinat, 1997). Each option of the scale represents a distinct assessment of the criterion evaluated, and a numerical value ,to assign scores to the criteria, we based ourselves on an analysis of historical and architectural data, and the opinion of professionals and decision-makers, as well as that of the population. The final score is calculated according to the additive model of (Belton & Stewart, 2002) presented in eq1. These final scores of the objects of analysis make it possible to define the type of protection; singular element, integral protection, structural protection, landscape protection or without protection. A more detailed explanation of the evaluation step is given in section 4.3. Figure. 2 summarizes the methodology process followed.

Eq1: $v(b) = \sum w_c \times v_{cn}(x_{cn})$

V(b): Final value of the patrimonial interest
$w_{c:}$ weight of the criterion
$v_{cn}(x_{cn})$: values attributed to the criteria

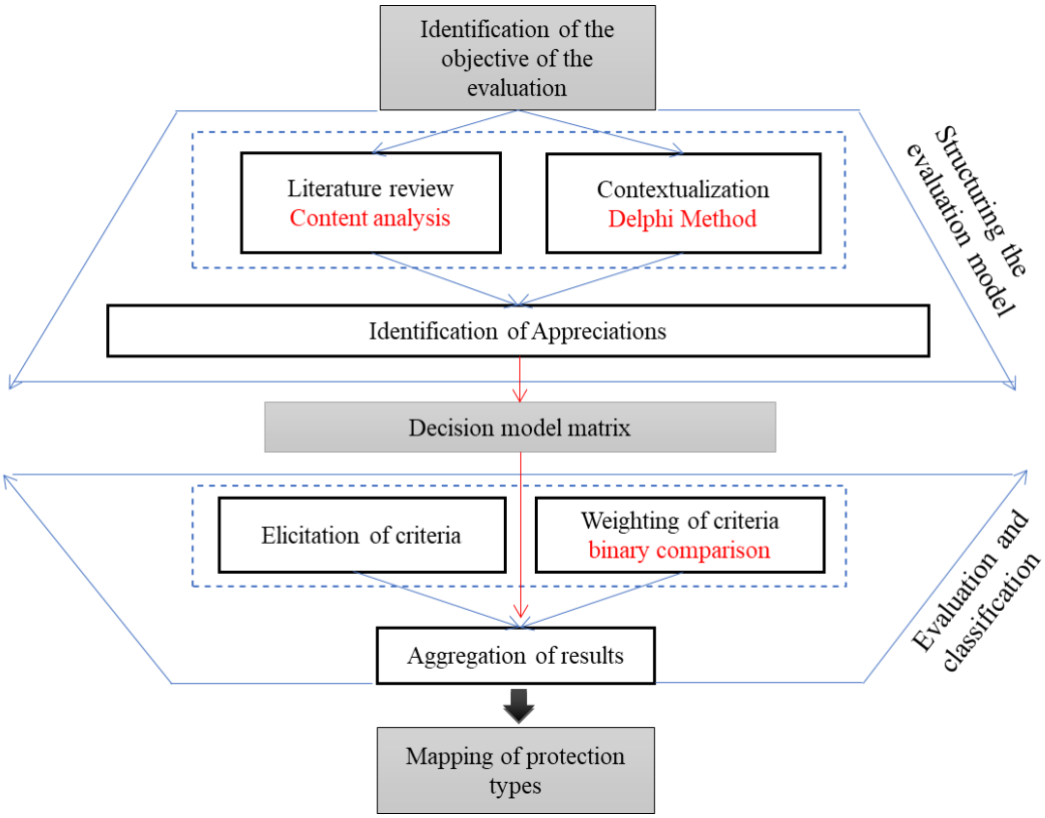


Fig. 2: Search process

4. Case study

4.1. Contextualization

Algeria is a country with a rich maritime history. Its 1,200 km long coastline has been particularly coveted since Antiquity, due to its openness to the Mediterranean, which constitutes a place of commercial and cultural exchange, and which has favored the establishment of human settlements and activities. An aptitude that was reinforced during the French occupation by the extroverted nature of the colonial economy. Consequently, Algerian coastal cities have seen the construction, over the centuries, of numerous buildings, monuments and port infrastructure. Today, they represent a rich and complex stratification, of which the coastal area is the scene. Thus, there are multiple and diverse maritime and port buildings in Algeria that date mainly back to the Spanish, Ottoman or French period.

We chose to test the operability of our study approach on the old port of Algiers, located in the north of Algeria on the Mediterranean Sea, in the municipality of Algiers-Centre. It occupies the far west of the port area. See figure. 3, this choice is explained by the richness of the site, composed of maritime and port legacies from several historical periods, Spanish (1510), Ottoman (1518), and French (1830) and of diversified typology; forts, arsenals, lighthouses, batteries, jetties, etc. which are endowed with tourist, cultural, landscape values and potential, etc. See figure. 4. The site is also an integral part of the major project of the redevelopment of the Bay of Algiers. In this perspective, an evaluation tool will guide decisions on the type of protection of the different buildings within the framework of the urban regeneration of the Bay of Algiers.

Fig. 3. Situation of the historic port of Algiers

Fig. 4. Heritage of the historic port of Algiers

4.2. Application of the Delphi Method

At the beginning of the emergence of the concept of heritage, the preservation of legacies was decided from the top down following a top-down model, where government authorities were the initiators and leaders of the conservation process. Today, the preservation of cultural assets is also a matter of civil society. Historical heritages are preserved through a bottom-up approach, several interest groups influence the decision in the conservation of cultural assets. Thus, to have a realistic representation of the decision-making environment, we conducted the survey with 26 people spread over 3 groups of actors, managers, experts, civil society (see Table. 2)

A first questionnaire was presented to the survey participants (September 2022) where they had listed the factors that influence the type of protection of maritime and port heritage, 73 different factors were collected or Some proposals were very general, and others were more specific, the factors that deal with the same subjects were grouped together via the QSR Nvivo software which allowed efficient and rapid management of the survey data and the literature review, then a list of 25 criteria was constructed from these factors. The second questionnaire (March 2023) provides the respondents with the results of the first questionnaire and asked them to participate in the prioritization of the criteria by pairwise comparison, to assign a weight to each criterion according to its impact on the decision. figure. 5 represents the final structure of the decision tool.

Table 2. Actors participating in the survey using the Delphi method

Groups	Field of activity	Number
Managers	Direction of culture -Algiers- Direction of architecture and urban planning -Algiers- Wilaya of Algiers Direction of regional planning -Algiers- Direction of tourism and crafts -Algiers-	07
Experts	Curators of the maritime museum of Algiers Researchers in urban planning Researchers in heritage conservation Architects Sociologists	10
Civil Society	Sociocultural associations of the city Associations of the city's neighborhoods Artisans	09

4.3. Evaluation

To evaluate the criteria defined in our dashboard, we proceeded by analyzing different documents; graphic elements (maps, plans, monographs), historical data, available official statistics, as well as semi-directed interviews with different urban stakeholders, as well as users for socio-cultural criteria, subsequently, we carried out a comparison with recognized standards or national reference examples that constitute benchmarks for us. Following this assessment, we assigned a score according to a rating scale composed of 5 assessments that correspond to 5 distinct numerical values. Excel software was used to automate the calculation of the final values that determine the type of protection. Each analysis criterion is associated with a question with 5 answer choices, which are linked to an assessment. For each assessment, the Excel code assigns a numerical score; (1) for excellent performance, (3/4) for good performance, (1/2) for average performance, (1/4) for poor performance and (0) for very poor performance. Table 3 shows the questions and the 5 levels of performance for each aspect and each criterion. To calculate the final score, the Excel code adds up the scores of the criteria according to the 6 aspects and brings the result to 100. The final value makes it possible to identify the type of protection for each building in the study area. Table 4 explains the degrees of protection and the score limits to which they correspond.

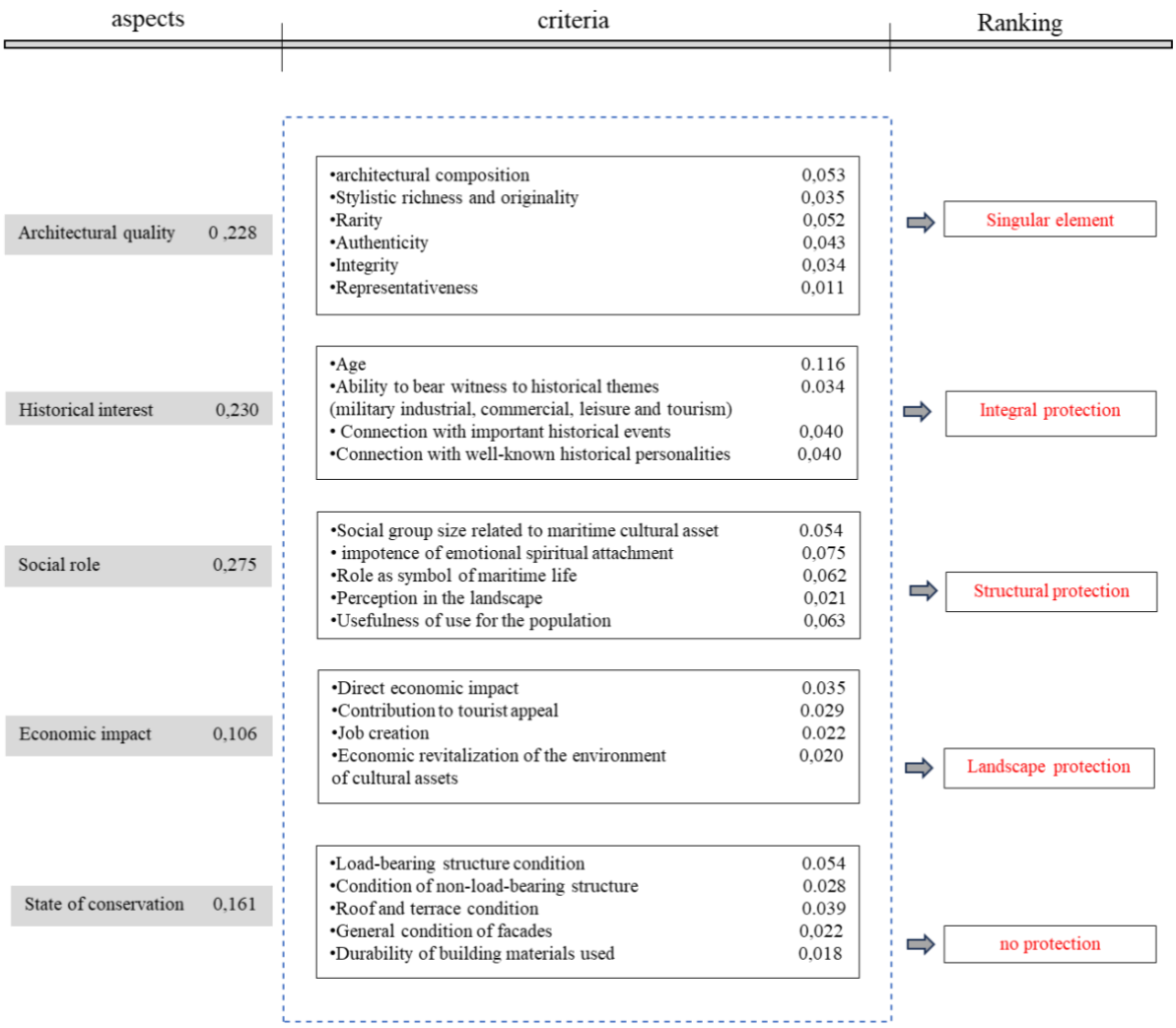


Fig.5. Final structure of the decision-making tool

Table 3. Questions and performance levels for aspects and criteria

Appearance	**Questioning by criterion**	**Performance**
A1. Architectural quality Exceptional quality Good quality Average quality Low quality Very poor quality	C1. To what extent does the building respect the rules of architectural composition; unity, variety, rhythm, balance, scale and proportions?	Fully respected Good respect Respect Moderately respected Little respected Not respected
	C2. Does the building present an architectural richness and a stylistic originality that is?	Exceptional High Average Low None
	C3. At what scale does the building represent a unique, rare or exceptional testimony in relation to its various architectural characteristics?	Internationally Nationally Regionally Locally None
	C4. Does the building retain its original character and authenticity?	Totally To a great extent Partially Not very authentic None

	C5. To what extent is the building integrated, and does it present homogeneity, readability and coherence in its architectural composition?	Totally To a great extent Partially Not very honest None
	C6. At what scale is the building representative in its architectural typology, thematic, or in its chronological stratification?	Internationally Nationally Regionally Locally None
A2. Historical interest Exceptional interest Great interest Average interest Low interest No interest	C7. How old is the building?	Pre-Ottoman period. Before 1518 Ottoman period (1518-1830) Colonial period (1830-1962) Post-colonial period (1962-1980) Current period
	C8. To what extent does the building Testimony to a maritime historical theme (industrial military commercial, leisure and tourism)?	An exceptional testimony A strong testimony A medium testimony A weak testimony None
	C9. What is the extent of the historical events that have marked the history of the building?	Of international significance Of national significance Of regional significance Of local significance None
	C10. What is the importance of the historical figures who have influenced the history of the building?	Of international importance Of national importance Of regional importance Of local importance None
A3. Social role Exceptional interest Great social Average interest Low interest Very low interest	C11. What is the extent of the social group with which the building is associated?	International in scope National in scope Regional in scope Local in scope None
	C12. What is the degree of attachment of the population to monuments?	Very large Large Medium Low None
	C13. To what extent is the building perceived as a symbol and an element that represents the maritime identity of the population?	Very Strong Strong Moderately Low None
	C14. According to the perception of the population, to what extent does the building structure the character of the maritime landscape?	It is the basis of the character Reinforces the character Compatible with the character Negatively influences the character Totally alters the character of the landscape
	C15. To what extent are the services and functions currently housed by the building useful and important for the population	Indispensable Important Moderately important Low importance None

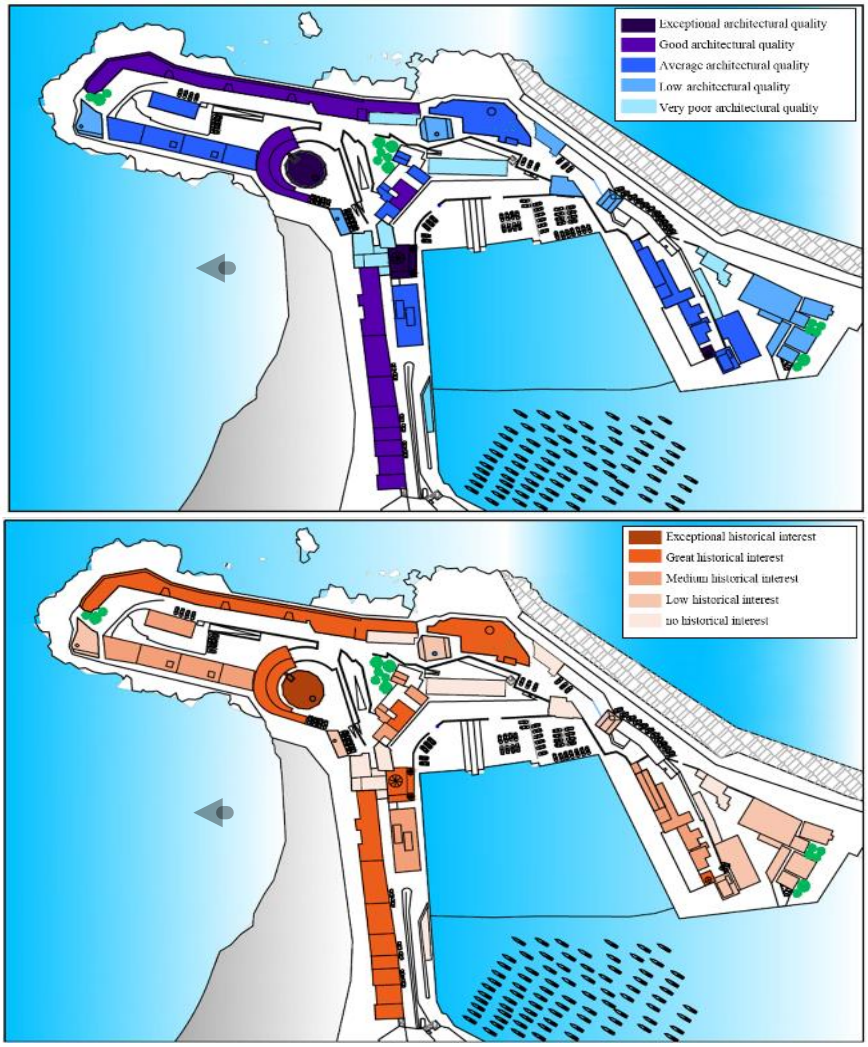
A4. Economic impact Very positive impact Positive impact Average impact Low impact Very low impact	C16. The estimates of the direct economic benefits of the use of the building are considered as?	Very high Good Average Low None
	C17. The tourist attractiveness of the building, estimated by the number of visitors per day is considered as?	Very high Good Average Low None
	C18. The number of jobs generated by the operation of the building is considered as?	Very important Important Low None Negative
	C19.The influence of the building on the attendance and market value of its environment is?	Excellent Good Average Poor Total alteration
A5. State of conservation Excellent condition Good condition Average condition Poor condition Total deterioration	C20. What is the condition of the load-bearing structure (posts, beams, load-bearing wall, staircase)	Excellent Good Average Poor Total alteration
	C21. What is the condition of the non-load-bearing structure (non-load-bearing wall)	Excellent Good Average Poor Total alteration
	C22. What is the condition of the roof and terrace?	Excellent Good Average Poor Total alteration
	C23. What is the general condition of the facades?	Excellent Good Average Poor Total alteration
	C24. According to their resistance and environmental impact, what is the durability of the construction materials used?	Excellent Good Average Poor Total alteration

Table 4. Degrees of protection and the scores to which they correspond

Scores (S)	**Type of protection**	**Meaning**
$S > 80$	**Singular**	element Exceptional heritage value, total conservation of all the architectural entities of the building, and urgency in carrying out the necessary restoration, rehabilitation and maintenance interventions.
$60 < S \leq 80$	**Integral**	Great heritage value. Protection of the façade, structural elements, architectural elements and conservation of the interior distribution of the building.
$40 < S \leq 60$	**Structural**	Protection of the façade, elements of the load-bearing structure, floors, roofs and stairs, with the freedom to review the plans and internal distributions.
$20 < S \leq 40$	**Landscaped**	Protraction of the exterior envelope and facades, possibility of reviewing the structure and interior layout.
$0 < S \leq 20$	**Without protection**	Building without heritage value, possibility of demolition.

4.4. Results

The values relating to the types of protection of each building in the study area were calculated according to equation 1. Taking into account the weightings of the criteria and the evaluation values. The states of the six criteria; architectural quality, historical interest, social role, economic impact, state of conservation, were mapped according to their 5 levels of performance. The buildings whose intrinsic values are the most important have the best levels of performance on the criteria of architectural quality and historical interest, and the buildings whose extrinsic values are the most important have the best performances on the criteria of social role and economic impact, some buildings presented very good performances on all the evaluation criteria such as Bordj al F'nar. A majority of buildings present a good state of conservation due to the dominance of the construction system in massive stone load-bearing walls. The performance of the five aspects is presented in Figure. 6. Finally, the level of protection of the buildings in the study corpus is represented in Figure. .7, the ranking was carried out by comparing the final score of the evaluation of each building with the values prescribed in Table 4. 5% of the buildings are considered singular, 8.5%, 38.3% requiring full protection, 27% requiring structural protection, 11.3% requiring landscape protection, and 14.9% without protection. (See Figure. 8).



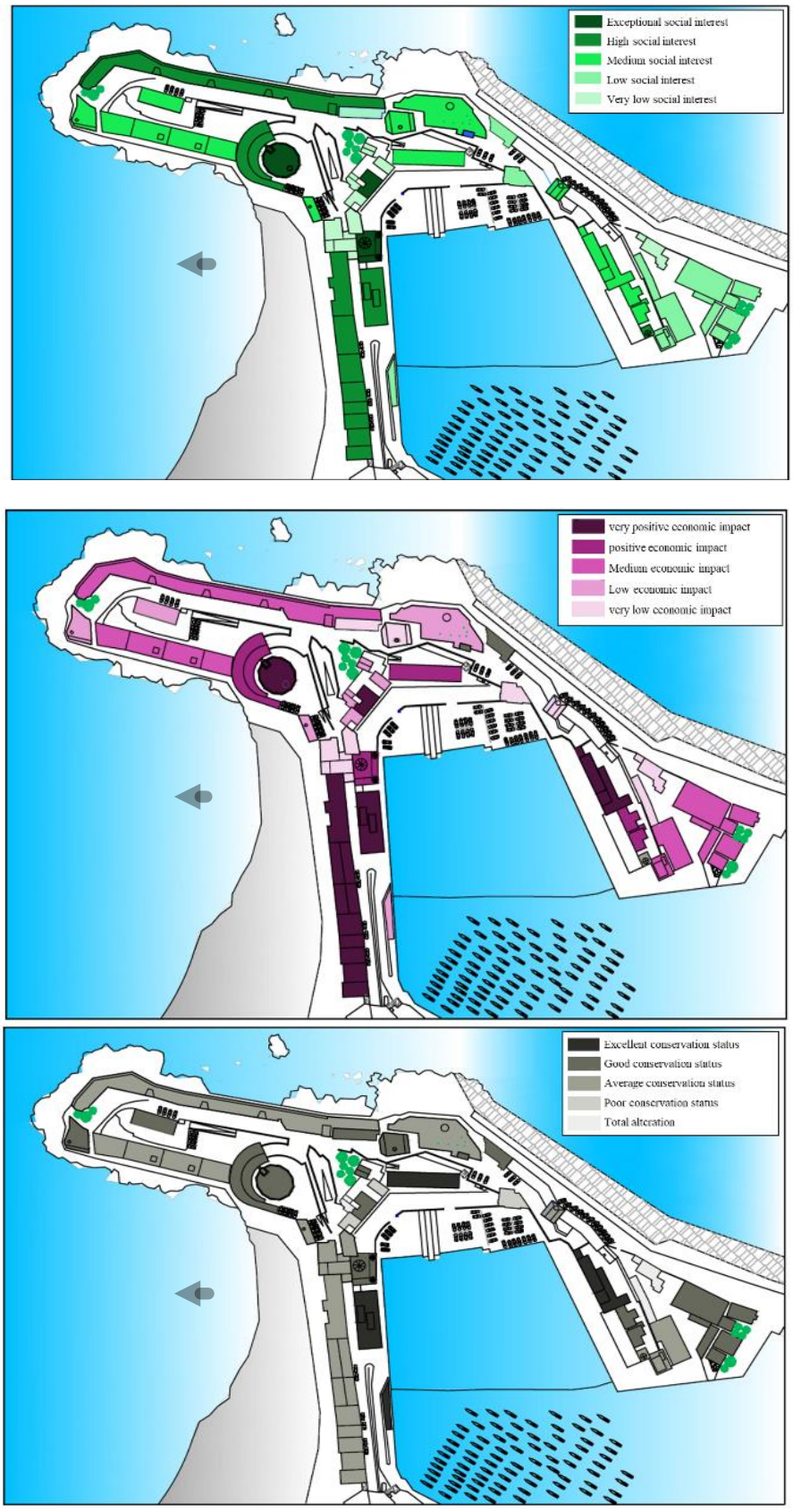


Fig.6. Performance of the five aspects

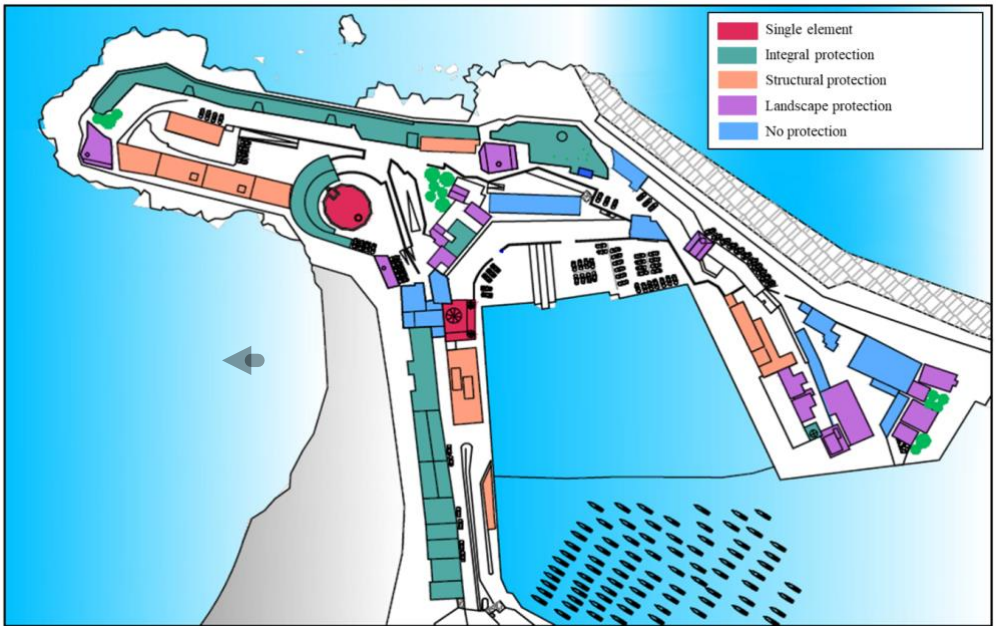


Fig. 7. Level of protection of the buildings

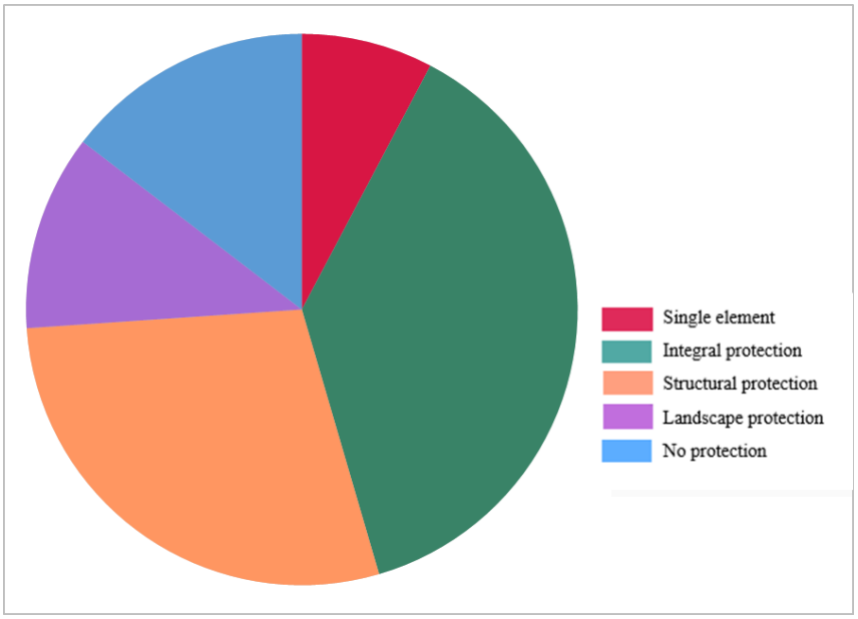


Fig. 8. Distribution of protection types in %

5. Discussions and Conclusions

Maritime heritage is a powerful lever for revitalizing waterfronts. It allows for the preservation of the history of the site, supports economic development, and promotes community engagement and environmental protection. That said, maritime and port heritage elements are threatened by various factors both natural such as coastal erosion, climate change, as well as corrosion and degradation caused by marine conditions. And human factors that mainly include urbanization accelerated by the growing attractiveness of coastal areas, and the abandonment with the dispersion of traditional forms of maritime. The historic port of Algiers, the subject of our research, contains maritime and port legacies of great wealth and is the subject of an urban regeneration project. The aim of this research was to propose a participatory approach for identifying the type of protection of maritime heritage within the framework of the urban regeneration project of the waterfront, in order to allow the establishment of a development strategy that respects both the history of the site and allows its scalability by modernizing the existing. To achieve this objective, we conducted a literature review to contextualize the

research problem, subsequently, the Delphi method made it possible to solicit stakeholders concerned by the protection of maritime heritage and urban planning in the context studied in order to structure the tool for evaluating the degree of protection and for the weighting of the criteria, the proposed tool is composed of 24 criteria divided into 5 aspects; architectural quality, historical interest, social role, economic impact, and state of conservation. The results after the evaluation showed that 43.3% of the buildings have a singular character or with full protection and involve only light interventions. In the case of reuse, it is the function that will adapt to the morphological composition of the building. For buildings in structural protection, greater freedom is allowed in interventions, particularly for the integration of new developments or uses while maintaining structural elements, buildings in landscape protection require the maintenance of facades only, ultimately only 14.9% of listed buildings without protection are doomed to demolition in the short or medium term and replacement by new developments. The approach chosen in this study is easily adaptable to similar decision-making contexts. Therefore, the authors suggest that decision-makers in urban regeneration projects on waterfronts that intervene on historic sites proceed with a participatory and sustainable approach that involves all stakeholders in the project, giving priority to social, cultural and economic factors.

REFERENCES

1. Ali, K., Arezou, S., Sapura, M., Mu'azu, A., Hamidah, A., Nurul, M.D. & Majid, K. (2018). A sustainable historic waterfrontrevitalization decision support tool for attracting tourists.Sustainability 10(2): 215.
2. Barron , **G . (**2021). Revealing maritimity in 19th century France, Available at : http://journals.openedition.org/artefact/10175 ; DOI : https://doi.org/10.4000/artefact.10175
3. Beinat, E. (1997). Value functions for environmental management. Dordrecht: Kluwer Academic Publishers.
4. Belton, V., & Stewart, T. J. (2002). Multiple criteria decision analysis: An integrated approach. Boston: Kluwer Academic Publishers.
5. Bianchini, F., Bloomfield, J. (2012) Porous Cities. On Four European Cities, Eurozine, 3rd July, Available at: https://www.eurozine.com/porous-cities/.
6. Bianchini, F., Parkinson, M. (eds) (1993) Cultural policy and urban regeneration: The west European experience, Manchester, Manchester Press.
7. Braccini,S. (2022) .Design strategies for the recovery and enhancement of lighthouse: some case studies of the Ligurian Sea in TEMA, Technologies Engineering Materials Architecture, volume 8 (1) ,Available at: https://rivistatema.com/design-strategies-for-the-recovery-and-enhancement-of-lighthouse-some-case-studies-of-the-ligurian-sea/
8. Brownhill, S. (2011) Just Add Water. Waterfront Regeneration as a Global Phenomenon, in Leary, M. E., Mccarthy, J. (eds) The Routledge Companion to Urban Regeneration, London, Routledge, pp 45-55.
9. Cambridge dictionary, 2020,Available at :https://dictionary.cambridge.org/dictionary/english/
10. Chaline, C., Rodrigues-Malta, R. (1994). Ces ports qui créèrent des villes. Editions l'Harmattan, 300 p.
11. Choay, F. L'Allégorie du patrimoine, Paris, Éd. Du Seuil, 1992, 273 p.
12. Clémenta, O., Madecb .P .(2006).Un outil pour la construction d'indicateurs de développement durable : la méthode Delphi in Natures Sciences Sociétés. Volume 14, (3).
13. Collin ,M . (1995). Ville et port XVIIIème-XXème siècles. Collection maritime. Ed. L'Harmattant. Paris. 292 p.
14. Collin M. (2003). Ville portuaire, acteur du développement durable. Collection maritime. Ed. L'Harmattant. Paris. 200. p.
15. Evans, G., SHAW, P. (2004) The contribution of Culture to Regeneration in the UK: a review of evidence, London.
16. Keyvanfar. A., Shafaghat, A., Sapura, M,. Mu'azu ,M., Hamidah A .,Nurul., Mohd ,D .,& Majid, K, A. (2018). Sustainable Historic Waterfront Revitalization Decision Support Tool for Attracting Tourists. Sustainability, Volume 10 (2).
17. Kin ,V. Rollet .A Senkel P & Jan F. (2021). Génération et sélection d'idées dans le processus d'innovation : cas de la méthodologie Delphi dans la logistique 4.0, In Innovations, De Boeck Université, volume 10(3), pages 109-138.
18. Krippendorff, K. (2013) .Content Analysis. An Introduction to Its Methodology ,3rd edition, CA Sage Publications, California.
19. Molotch, Harvey L. (1976). Toward a More Human Ecology. Land Economics 43 (August),pp 41-336.
20. Ozenfant, L.(2020). Le patrimoine maritime bâti comme levier de développement durable des villes portuaires de taille petite et moyenne : mise en œuvre d'une recherche appliquée au territoire breton. Doctoral thesis, University of bretagne occidentale.
21. Péron F., Marie G. (2012) – Les logiques de construction du patrimoine maritime culturel : de l'émergence du concept à sa prise en compte dans les politiques territoriales. Proceedings of the International Conference Patrimoine culturel et désirs de territoires : vers quels développements ? Nîmes, 25-27 févier 2010, L'Harmattan, pp. 103-116.
22. Prelorenzo C., 1999. Les édifices et espaces portuaires ou l'invitation à la grande dimension Les Annales de la Recherche Urbaine n° 82, 0180-930-III-99/82/p. 101-108 379

23. Prelorenzo C., 2010. Le retour des villes portuaires in dynamiques des ports méditerranéens. N°80. Les cahiers de Méditerranée. pp. 157-167
24. Schubert, D. (2008) Transformation Processes on Waterfronts in Seaport Cities – Causes and Trends between Divergence and Convergence. Ed. Port Cities as Areas of Transition: Ethnographic Perspectives, Bielefeld, Transcript Verlag.pp.25-46.
25. Shen ,L .,Mohd Sarman ,A., & Bin, M .,Wei ,G & Jiang, M .(2023), Adaptive Reuse of Port Heritage Leads to Urban Waterfront Regeneration: A Proposed Case Study in Zh zhou City China . Jurnal Kejuruteraan, volume 35(2), Available at: https://doi.org/10.17576/jkukm-2023-35(2)-22.
26. Tommarchi,E. (2020). Port Cities, Heritage Cities. A comparative perspective on maritime cultural quarters . Journal of RETE volume 9.
27. Vigarie .A., (1992). La mer omniprésente. 330 km de côtes. Études Normandes, 41e année, n°2. La Manche à la veille de l'an 2000. pp. 72-88.
28. Zukin, S. (2006). The Cultures of Cities, Cambridge and Oxford, Blackwell.