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SUPPORTING STAKEHOLDER ANALYSIS WITHIN ICZM PROCESS IN SMALL AND MEDIUM-SIZED MEDITERRANEAN COASTAL CITIES WITH THE USE OF Q-METHOD

Spyros NIAVIS
Research Unit of Environment and Spatial Planning, University of Thessaly
Pedion Areos, 38334, Volos, Greece
spniavis@uth.gr

Theodora PAPATHEOCHARI
Research Unit of Environment and Spatial Planning, University of Thessaly
Pedion Areos, 38334, Volos, Greece
thpapath@uth.gr

Harry COCCOSSIS
Professor of Environment and Spatial Planning University of Thessaly
Pedion Areos, 38334, Volos, Greece
hkok@prd.uth.gr

Abstract
Stakeholder engagement is considered essential in Integrated Coastal Zone Management. In this context, detailed stakeholder analysis can provide a useful support for decision-making. Such an analysis can be particularly useful when there may be capacity limits in terms of stakeholders and loose institutional structures, such as in the case of small and medium-sized coastal cities.
This analysis utilizes the Q-method as a basic tool for stakeholder analysis within the context of ICZM in small and medium sized cities. The method is applied in Kavala and Heraklion (a small and a medium-size city) in Greece, where local stakeholders involved in waterfront activities and related decision making were asked to sort statements evaluating the socio-economic, spatial and environmental role of urban waterfront in their city.
The results of the analysis were useful in the sense of identifying potential complementarities and synergies among groups of stakeholders on the basis of their perceptions towards the waterfront by using Q-method. This approach provides o more than a typical mapping of the cooperation channels among stakeholders and institutions. Finally, the method proved to be notably effective in small samples of stakeholders that usually participate in the decision-making process in small and medium sized cities.
Keywords: waterfront; Q-method; small and medium sized cities; integrated coastal zone management; stakeholder analysis.

1. INTRODUCTION

1.1. Stakeholders' engagement in Integrated Coastal Zone Management

Very often, the general perception for the management and development of the urban waterfront is in conflict with the local interests of a coastal city because, on the one hand, the actors participating in planning and decision-making processes aim at the development of the city as a whole and have the difficult task to incorporate in their planning policies the particularities of the waterfront, while, on the other hand, the stakeholders activated on the waterfront (who often participate also in decision-making) aim at protecting their interests (Bassett, Griffiths & Smith 2004; Frantzeskaki, Wittmayer & Loorbach 2014). Moreover, these challenges are amplified in the case of waterfront management in small and medium-sized cities where the complexity of the waterfront lies at the different and -often- conflicting activities, which incorporate the particularities of the urban fabric (e.g. density of population and lack of space), and its role as a boundary and space for land-sea interactions. Thus, planning the urban waterfront in small and medium-sized cities incorporates the difficult task of limiting extensive conflicts among the stakeholders' interests and objectives (Petrilo 1987). In this context, the incorporation of participatory methods is necessary for coastal management processes that consider the waterfront as part of the urban fabric and approach the waterfront as a separate zone and part of the entire urban context (Brody 2003) while –at the same time- they take into account its characteristics as a part of the coastal ecosystem.

Towards this direction, in 2002, the European Parliament and Council (2002) prepared a recommendation (2002/413/EC) on the implementation of Integrated Coastal Zone Management (ICZM) in Europe. Part of the recommendation was to identify measures and initiatives for ensuring a 'bottom-up' public participation for the implementation of ICZM. Additionally, Article 14 of the Protocol on ICZM (Barcelona Convention) refers to the necessity of participatory processes, which can be implemented extensively as part of management, either in the form of a consultative process and dialogue or in the form of feedback to specific questions through expert knowledge. Moreover, the engagement of stakeholders is expressed through the steps of the ICZM process proposed by UNESCO (Belfiore et al., 2006) and further developed by PAP/RAC (2012) (Figure 1).

More specifically, through the first stage of the ICZM process (Establishment) groups of coordination mechanisms should be established which should include representatives of organizations/institutes with expert knowledge of the issues at stake and areas under examination, as well as key stakeholders through consultative assistance. In addition, the governance context should be defined through a

'mapping' of the relevant institutions, which will be informed on the development of the ICZM strategy, plan or programme, provide feedback and identify gaps. In this context, according to PAP/RAC (2012), a stakeholder analysis should be performed in order to identify and assess the importance of key people, groups of people, or institutions that may have significant influence on the success of the ICZM Process. It is an act of identifying the individuals or groups that are likely to affect or be affected by the actions proposed in the ICZM Process, and sorting them according to their impact on the action and the impact the action will have on them. It is also used to anticipate the kind of influence, positive or negative, these groups will have in the process. It is important to identify their real competencies/roles and capacities they have related to the management of the coastal zone. It should also identify the relationships (e.g. cross-cutting responsibilities, missing and overlapping responsibilities, rights, levels of conflict) within and among different stakeholders. Based on this stakeholder analysis, a communication strategy should be prepared that would define stakeholder engagement and support the ICZM vision and objectives. Furthermore, when setting the vision (third stage), the stakeholders identified during the Establishment stage, contribute to the confirmation of the issues analyzed during the second stage of the ICZM process, in order to prioritize and build a common consensus, which will be further reviewed during the final stage of the process.

As it evident, during the entire ICZM process, stakeholder engagement is important in order to effectively address the complex issues of the coastal built and natural environment. Through participation in ICZM it is easier to achieve legitimacy and improve decision-making, strengthen democracy and broaden civic participation. To achieve these objectives, it is necessary to increase the capacity (capacity building) during the ICZM implementation, and to strengthen the sense of belonging among society and stakeholders coming from different backgrounds and interests in terms of types of sectors (public, private), financial sectors (e.g. fishing, port activities), geographical areas of implementation etc (Christie 2005; Le Tissier and Hills 2010).

The implementation of ICZM in practice has shown that participation is facing particular challenges related mainly to the cost, time and effort for the effective coordination of the process, the lack of actors' capacity, the unequal representation of stakeholders and the existence of different views and the lack of a common understanding of problems which may lead to delayed implementation of actions (Berghofer, Wittmer & Rauschmayer 2008; Billé and Rochette 2015; Ibrahim and Hegazy 2015; Soriani et al. 2015). Therefore, a critical parameter for the successful implementation of ICZM is the development of an effective stakeholders' engagement strategy. In this vein, stakeholder analysis acquires an extremely important role during the ICZM process.

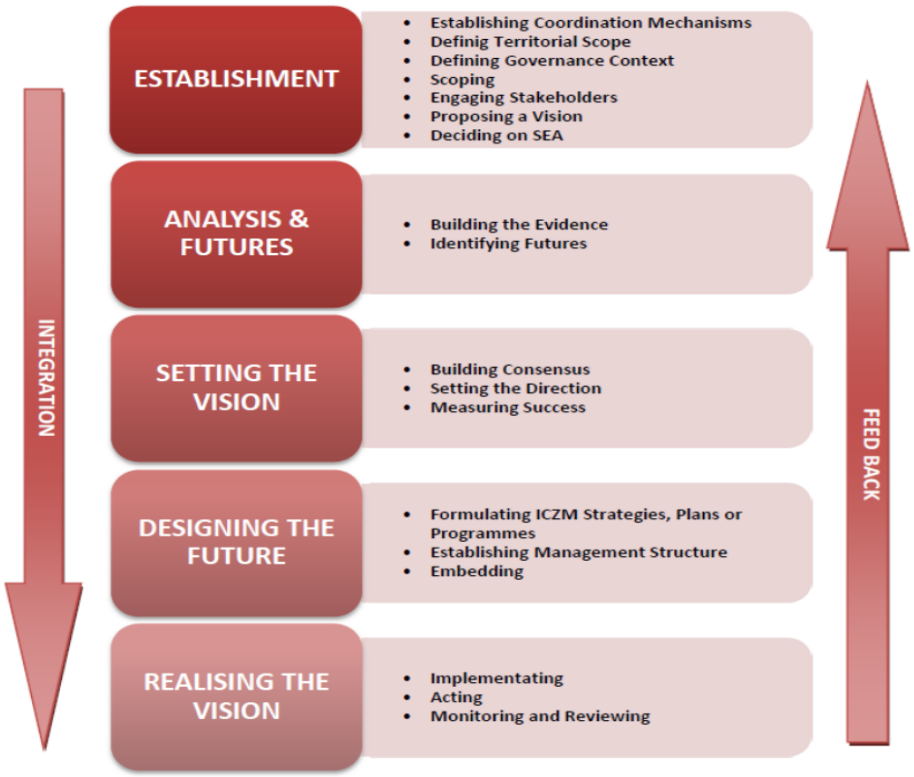

FIGURE 1 - THE ICZM PROCESS
Source: PAP/RAC, 2012

1.2. Methods of stakeholders' analysis within ICZM

The key issue defining the usefulness of the stakeholders' analysis for ICZM is the way that it is being integrated into the whole ICZM process and how its outcomes are taped in order to feed the management process with valuable information and data which will result in the minimization of stakeholders' conflicts. On this matter many approaches have been used. In the Estonian ICZM process developed for the management of Emajõgi River, the Focus Groups approach was selected in order to extract sufficient information for the different perceptions of various stakeholders (European Union 2010). In addition, the Focus Group approach was also used in ICZM implementation for water quality in Ceredigion and coastal retreat in Essex UK (Stojanovic and Ballinger 2008). Focus Groups are composed by a relatively small number of participants (6-8) and through a discussion process the commonalities of stakeholders against a particular management issue are extracted. The iterative character of the method provides the ability for gaps to be bridged and more widely accepted management plans to be composed (Stojanovic and Ballinger 2008).

Moreover, stakeholders mapping and network analysis have also been used as the basis of stakeholders' analysis within the ICZM process. As far as the mapping of the stakeholders is concerned,

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this could be based on spatial, thematic and institutional criteria. SPICOSA project (Vanderlinder et al. 2010) provides a range of different mapping methods according to such criteria. Rockloff and Lockie (2004) applied a social mapping in order to define the relationships among stakeholders of Central Queensland, Australia, and capture the conflicts which were categorized taking into account socioeconomic, spatial and institutional criteria. Meliadou et al. (2012) employed Fuzzy Cognitive Mapping in order to reveal the knowledge and perceptions of different stakeholders as a means for promoting the ICZM process in North Lebanon, while Fuzzy Cognitive Mapping has also been used by Gray et al. (2014) in order to build and assess the complexity of ICZM objectives in participatory management processes in Ireland and Scotland.

Furthermore, in terms of network analysis, the relationships among stakeholders are recorded and different network metrics, such as density, cohesion and centrality are used as a means of understanding the structure and the hierarchy of the stakeholders' network as well as the influential power of each actor against the other actors of the network (Coffey and O'Toole 2012). Ernoul and Wardell-Johnson (2013) applied a social network analysis and estimated network centrality measures such as closeness, degree and betweeness in order to depict the stakeholders' relationships engaged in ICZM initiatives in two Mediterranean deltas, the Camargue in France and the Gediz Delta in Turkey. Moreover, Coffey and O'Toole (2012) employed a social network analysis in order to simulate the forms of knowledge developed through stakeholders' relationships, in order to facilitate an ICZM process of Marine Protected Areas in Victoria, Australia. In addition, another tool which combines mapping and network analysis for identifying the way that different stakeholders understand the casual relationships arising from a given problem is Quasta. The tool combines two different methodologies, namely Cognitive Mapping and Qualitative Probabilistic Network and was tested in two case studies in Chile and the Netherlands (Kouwen et al. 2007). The method builds on stakeholders' casual relationships and uses this information for scenario building and the common evaluation of these scenarios.

Focusing on coastal small and medium-sized cities, the methods described above could provide critical information towards the successful implementation of ICZM but also may prove to be ineffective when focusing on small and medium-sized cities mainly due to their institutional and spatial particularities. More precisely, the effective implementation of focus groups is subjected to the capability of moderators to guide the consultation procedure and extract all the needed information as well as by the capacity of stakeholders to contribute to this kind of procedures (Welp, Kasemir & Jaeger 2009). Nevertheless, institutional and human resources' capacity in small and medium-sized cities is often lower than these of larger cities which in general have more adequate pools of institutions and actors (Giffinger et al. 2007) and, thus, this lack may impede the extraction of scientifically robust and concrete results. Moreover,

although both social mapping and network analysis are providing a solid quantitative background for understanding and evaluating the institutional relationships and structures in a coastal area, the successful use of these methods in small and medium-sized cities is debatable for two main reasons. The first refers to the general rather limited sample of stakeholders participating in the management of the coastal area which could add a question mark to the validity of results as the statistical accuracy of the results is enhanced when estimations are conducted on relatively large samples (Jang 1993; Cole and Persichitte 2000). Secondly, mapping local stakeholders in small and medium-sized cities is a difficult task due to looser institutional structures and lack of organized planning procedures (Petrillo 1987; Coccossis, Delladetsimas & Niavis 2017).

Taking into account the aforementioned issues, stakeholders' analysis, within the framework of coastal management in small and medium-sized coastal cities, should rely on flexible methods which will confront the lack of institutional capacity and the possible absence of stakeholders with expert knowledge in coastal management issues. Towards this direction, Q-method could prove to be extremely effective as a means of analyzing the perceptions and priorities of stakeholders towards effective coastal management (Raadgever, Mostert & Van De Giesen 2008). As the analysis in section 2.1 that follows will show, the use of the method as a means for directly supporting ICZM is still limited despite its strengths. The present paper evaluates the applicability of the method as an alternative stakeholders' analysis method for informing ICZM process in small and medium-sized cities. More precisely, two Mediterranean small and medium-sized cities (of a size of 50.000-250.000 according to Dijkstra and Poelman, 2012), namely the Greek cities of Kavala and Heraklion, are selected as case studies for the application of the method. The analysis is targeted at Greek small and medium-sized coastal cities which are facing common challenges, such as the limited qualified human capital and lack of financial resources (Petrillo 1987; Gospodini 2001) further amplified by general the lack of knowledge regarding ICZM issues (Koutrakis et al. 2010) and the existence of a rather complex policy framework often accompanied with a lot of exceptions introduced by further decrees, ministerial decisions etc (Lalenis, 2014).

As the attention of the present paper is given to the urban waterfront of small and medium-sized cities, it is believed that the contribution of the paper to the scientific debate around coastal management is twofold. Firstly, the paper seeks to adapt the ICZM notion in the urban fabric of small and medium-sized cities and secondly it employs a method that has been rarely used under the ICZM framework in a global context. The remainder of the paper is as follows. In section 2 the rationale of Q-method and its previous applications to similar issues are presented whilst the proposed methodological framework to be implemented in the present case studies is also analyzed. In section 3 the results of the empirical

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analysis in the two small and medium-sized cities are discussed. A further discussion regarding the applicability of the method and its potential contribution in coastal management of small and medium-sized cities is conducted in Section 4. Finally, the paper ends up with the main conclusions and some proposals for further research on coastal management in small and medium-sized cities.

2. MATERIALS AND METHODS

2.1. Basic concept of Q-Method and Adaptation in the Coastal Management Context

Q-method is based on factor analysis in order to capture the commonalities among different stakeholders regarding their point of view on a given subject. The extraction of common patterns across individuals against a particular issue is its basic difference against the R factor analysis which highlights the common patterns among characteristics of the individuals such as gender, income, education level etc (Hagan and Williams 2016; Simpson et al. 2016).

The implementation of the method implies four basic steps:

1. **Identification of the Stakeholders (P Set).** This step requires the extended analysis of the area under examination in order to identify the stakeholders who could be engaged in the procedure including those participating in decision making and those activated in coastal areas.
2. **Composition of the statements set to be completed by the stakeholders (Q Set).** This is a crucial step, as the selected statements should cover in a comprehensive way the issue under which the commonalities among stakeholders are going to be extracted.
3. **Sorting the statements according to the responses of each stakeholder (Q Sort).** This procedure requires the realization of semi-structured interviews with the selected stakeholders. Each stakeholder is provided with the set of statements and asked to sort them using a Likert scale corresponding to the different levels of agreement against the statements.
4. **Application of factor analysis on Q Sorts in order for the factors to be extracted.** In this final step, the Q sorts are factor analyzed in order for the groups of stakeholders to be derived. On this, different extraction and rotation techniques could be used. A representative q-sort of all stakeholders is allocated to the same factor and this forms the basis for cross-comparisons among the extracted factors (Bacher, Gordoa & Mikkelsen 2014; Chapman, Tonts & Plummer 2015; Simpson et al. 2016).

The method is effective in creating groups of stakeholders according to their subjective judgement on given issues (Lee, Kim & Kwon 2017). Thus, when management decisions are put into the core of analysis, planners are already aware about the possible conflicts that may arise due to the different perspectives of stakeholders' groups. Additionally, although quantitative in terms of extracting factors, the method also allows for the provision of qualitative data through the semi-structured interviews which could prove to be valuable in bridging the gaps among stakeholders (Chapman, Tonts & Plummer 2015). In addition, a distinctive characteristic of Q-method which renders it as most suitable for the stakeholder analysis in the case of small and medium-sized cities, is the fact that it can integrate qualitative and quantitative data whilst providing reliable and statistically significant results even when it is applied on relatively smaller samples (Brown 1993; Bacher, Gordoa & Mikkelsen 2014; Hagan and Williams 2016). Although useful, the method also presents some limitations. Even when statistically valid results are extracted from the application of Q method, their generalization to the whole population cannot be considered straightforward, as these concern only the case study for which Q-Method is applied (Kindermann and Gormally 2013; Bacher, Gordoa & Mikkelsen 2014). Moreover, compared to the standard factor analyses, Q method could be considered as more time demanding as a lot of preparatory work is required for the development of the Q sets and the selection of the P sets while, furthermore, all the primary data for the estimations can only be provided through considerably long interviews with all the involved stakeholders (Kindermann and Gormally 2013).

The indisputable strengths of Q-Method have rendered it popular within the academia particularly for research issues for which stakeholders' and decision makers' opinion is important (Steelman and Maguire 1999; Cuppen et al. 2010). As far as coastal management issues are concerned, Q-method application is gaining the interest of researchers, as a constantly increasing number of authors, with a focus on coastal uses, rely on Q-Method to implement their research. To illustrate this, Guimaraes (2011) applied Q method in order to reveal any potential local stakeholders' discourses (in terms of value and interests) regarding the definition and policy issues of the Praia da Vitória Coastal System in Acores Archipelago. In total, 28 statements were provided to 40 stakeholders, and the factor analysis returned three factors. The first factor is composed by the stakeholders that put a priority on extraction activities of natural resources. The second is composed by those who put emphasis on water quality and the third by the stakeholders who support conservation issues as a means of sustainable development. Kindermann and Gormally (2013) used Q-Method to assess stakeholders' perceptions towards the management of coastal dune systems in Germany, Ireland and Scotland. The authors provided 63 statements to 31 stakeholders and found significant cross-country differences but also cross-stakeholders' perceptions' convergence.

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Bacher, Gordoa & Mikkelsen (2014) applied Q-Method in order to capture the diverse stakeholders' perceptions against the value of aquaculture activities in Catalonia, Spain. Based on the extracted factors, the authors concluded that stakeholders could be categorized in four distinct groups. The first refers to the stakeholders that view aquaculture as an activity of high socioeconomic impact and low environmental pressures, the second consists of actors that are heavily concerned about the environmental externalities of the activity, the third includes the stakeholders that are aware of both the benefits and weaknesses of the activity for the society and environment and the fourth includes actors that are only aware of the economic impact of aquaculture. Moreover, Hagan and Williams (2016) focused on the Kogelberg Biosphere Reserve in South Africa, attempting to capture any different points of view regarding the concept of marine biodiversity conservation. The authors provided 23 statements to 15 stakeholders and extracted two distinct points of view, namely scientific and social-livelihood discourse. Furthermore, Simpson et al. (2016) focused their research on south-east Queensland in order to examine different perceptions regarding the value of the mangrove coastal ecosystem services. Using the inputs from 43 respondents, four distinctive categories were extracted, namely Green Infrastructure, Recreational Opportunity and Well-being, Sustaining Regional Industries and Communities and Coastal Living. Lee, Kim & Kwon (2017), focusing on coastal ecotourism planning in Seocheon-Gun, Korea, identified four different groups according to the different stakeholders' views on where local tourism development should focus on.

2.2. Proposed Methodological Framework

As it has been stated in the preceding analysis, the present paper focuses on small and medium-sized cities in order to analyze the priorities being set by the local stakeholders regarding future management of the waterfront. Four Greek cities, namely Kavala, Volos, Patra and Heraklion have been selected as case studies in order to reveal the potential of local stakeholders in engaging in an ICZM practice. To this end, 60 semi-structured interviews with local stakeholders, based on predefined closed and open-ended questions were conducted from March 2015 to February 2016. Part of the interviews was used as a means of implementing a Q-method. The knowledge of the stakeholders about coastal management issues and their willingness to contribute to the procedure were the two main factors defining the sample of the Q-Method application. Bearing this in mind, Q-method was finally applied in two cities, namely Kavala and Heraklion, for which the number of respondents allowed for the development of an appropriate sample. A brief description of the two Greek case studies and the basic steps of the Q-Method application are described below.

In Figure 2 the location of the case studies is presented. City of Kavala is situated in Northern Greece within the Region of Eastern Macedonia and Thrace. According to the 2011 census, the city has a population of 70 thousand residents (Hellenic Statistical Authority 2018) with a GDP per capita at 14,148€ (2002 figures) (Enterprise Greece 2017). The structure of economy is mainly directed to the services sector as the it provides employment to 76% of the local workforce but presents also a strong industrial specialization as about 18.5% of the workforce is employed by local factories (Hellenic Statistical Authority 2018). According to 2015 figures, the port of Kavala handles about 1.7 million tonnes of cargo and 440 thousand of passengers on an annual basis (Eurostat 2018a; 2018b). Finally, the port provides shelter to 218 fishing vessels (European Commission 2018).

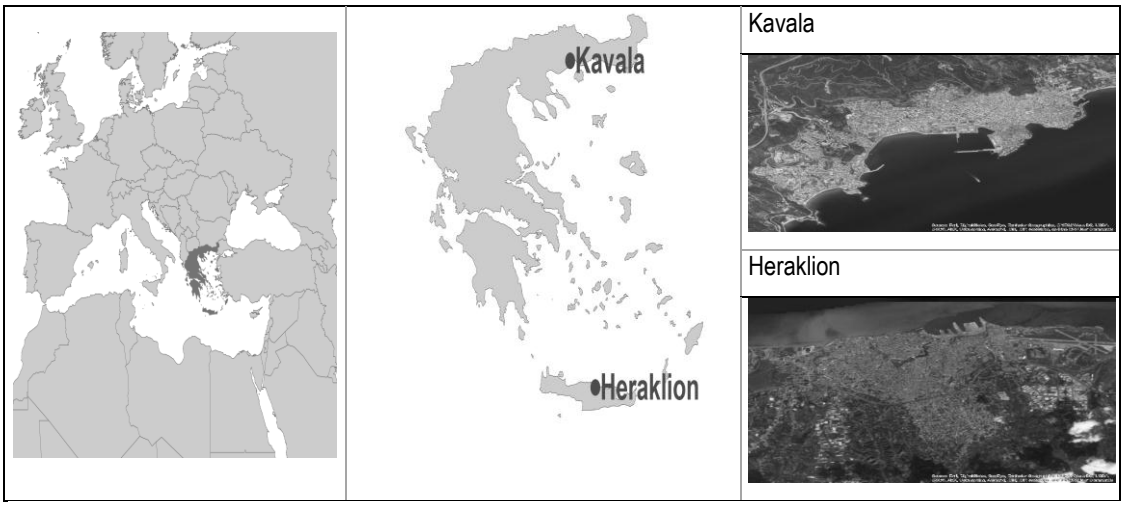

FIGURE 2 - THE GEOGRAPHICAL POSITION OF KAVALA AND HERAKLION
Source: Authors' elaboration

Heraklion is the administrative center of the Region of Crete and the fourth largest municipality in Greece with a population of 173.933 and per capita GDP at 14,180€ (Enterprise Greece 2017). The city is the administrative and economic center of the region managing large international tourist flows and all the economic activities of the Island of Crete. The tertiary sector is dominant in the area providing jobs to over 80% of the workforce (Hellenic Statistical Authority 2018). The city accumulates most of the industrial activity of the region and Heraklion port is ranked amongst the most active ports in Greece both in passenger and cargo flows. During 2015 the port accommodated about 1.4 million of passenger flows and handled over 3 million tons of goods (Eurostat 2018a; 2018b). The port is very active in cruise tourism accommodating, in 2017, 131 ships carrying over 181 thousand of passengers (Greek Cruise 2018). Finally, the city has a fishing port providing shelter to 218 fishing vessels as on 1st January 2017 (European Commission 2018).

The implementation of the Q-Method required the execution of the following steps.

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Step 1: Identification of the Stakeholders (P Set). The list of stakeholders included the most relevant actors identified not only through the analysis but also through the validation of the list of stakeholders during the interviews. Representatives from municipalities, regional authorities, port authorities, research centres, chambers and associations and in general actors that are directly or indirectly involved in activities taking place at the coastal space were approached during the field research. The stakeholders selected to form the P-Set for the application of Q-Method in the two Greek cities are presented in Table 1.

TABLE 1 - LIST OF STAKEHOLDERS SELECTED FOR THE APPLICATION OF Q-METHOD

Kavala		Heraklion	
Stakeholder	**Role**	**Stakeholder**	**Role**
1	Environmental Agency	1	Municipality
2	Water Management agency	2	Yachting Club
3	Association of leisure activities (coffee and food)	3	Environmental Agency
4	Fishermen community	4	Port Authority
5	Municipality (Technical Department)	5	Chamber of Commerce
6	Municipality (General Administration)	6	University
7	University		

Source: Authors' elaboration

Step 2. Composition of the statements set to be completed by the stakeholders (Q Set).

The compilation of the proposed statements, assessing the different dimensions of the urban waterfront, entails an implicit prioritization of the various possible interventions for future waterfront development. Thus, when alternative sets of interventions are entered in an open decision-making process, the stakeholders' prioritization convergence against the alternatives could be enhanced by taping the a-priori knowledge regarding the different dimensions and priorities of each stakeholder. In other words, the commonalities among stakeholders' perceptions may prove to be extremely useful for the decision-making process, in the sense of promoting a dialogue among stakeholders, limiting the gaps among opposite interest groups and making the management process more time efficient.

In this context, stakeholders were asked to provide their evaluation of the state and intensity of key environmental and socioeconomic parameters of the waterfront. Through their evaluation, the priorities of each stakeholder could be derived. Thus, the basic question-statement used in the present paper is "how do you evaluate the waterfront in terms of":

1. Pressure generated by increasing land prices
2. Accessibility of the waterfront

3. Connectivity within the waterfront and with the rest of the city
4. Quality of the urban environment
5. Co-existence/mixture of land uses
6. Spatial adaptability
7. Temporal adaptability
8. Contribution to the city image
9. Promotion of new entrepreneurial activity
10. Management and protection of natural and built environment
11. Sense of community and participation
12. Pressure generated by urban sprawl
13. Intensity of port activity
14. Intensity of marinas activities
15. Pressure of tourist activities

Step 3. Sorting the statements according to the responses of each stakeholder (Q Sort). Through the interviews, respondents were asked to evaluate the significance of each factor (statement) for the development of the waterfront. These evaluations were used as a means of filling the Q-Sorts whose structure is presented in Figure 3. In total 7 Q-sorts were collected for Heraklion and six Q-sorts for Kavala.

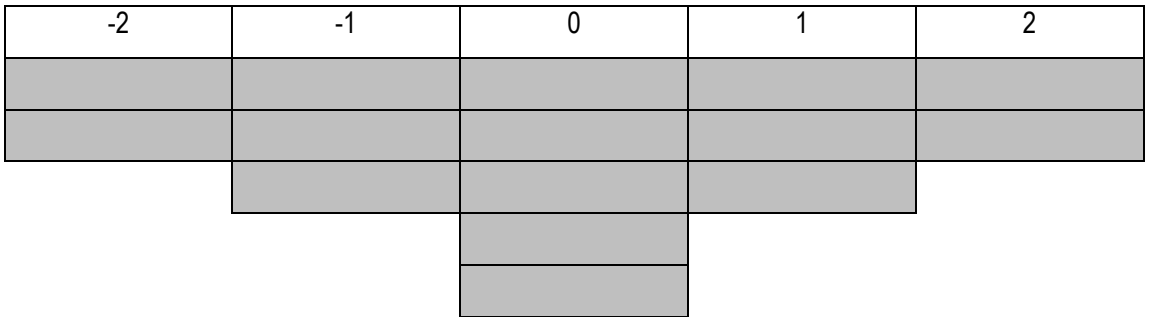

FIGURE 3 - STRUCTURE OF Q-SORTS FOR THE EMPIRICAL APPLICATION IN KAVALA AND HERAKLION
Source: Authors' elaboration

Step 4. Application of factor analysis on Q Sorts in order for the factors to be extracted. The data analysis of the sample described above was performed with the use of the software PQMethod v. 2.35

(Schmolck, 2014). The Q-Sorts were factor analyzed using Principal Components Analysis in order for the Q-sorts, showing the highest correlation, to be allocated to a single factor. In a next step, the constructed factors were rotated using the Varimax criterion (Abdi and Williams 2010). The results of the Q-method application regarding the two case studies are presented in Section 3.

3. RESULTS

3.1. The case of Kavala

The application of Q-Method in Kavala's waterfront has returned two factors. The final number of returned factors is subject to their eigenvalues for which the minimum price threshold has been set to one (1) (Herrington and Coogan, 2011). Factor 1 is formed by four q-sorts and factor 2 by three. The diagnostic measures regarding the reliability of the respondents are quite satisfactory as the composite reliability for factor 1 is 94% and for factor 2 is 92%. This provides hints that reliability within the factors is high, whilst the reliability coefficient for each of the respondents is estimated at 80% which, according to Brown (1980), constitutes a reliability threshold for Q-method analysis. The respondents' factor loadings, the factors' eigenvalues and their respective variance explanation proportion are presented in Table 2. As can be seen, the two factors are explaining 63% of the total variance which could be considered as satisfactory. The first factor is composed by the stakeholders representing the local water management company, the association of leisure activities (coffee and food), the municipality and the university, whilst the second is composed by the representatives of the local environmental agency, the fishermen community and the municipality's technical department. As can be seen from the results, the perceptions of the stakeholders in Kavala is not necessarily defined by their role in the decision-making process or their interests. For instance, stakeholders of the same institution (municipality) are allocated to different factors whilst stakeholders whose interests are typically different, such as fishermen and environmentalists, can be found under the same factor.

TABLE 2 - Q-METHOD FACTORS' EXTRACTION FOR KAVALA'S WATERFRONT

No	Organization/Institute	Factor 1	Factor 2
1	Water management company	**0.6994**	-0.0711
2	Association of leisure activities (coffee and food)	**0.903**	0.0475
3	Municipality (General Administration)	**0.6745**	0.3724
4	University	**0.6322**	0.0698
5	Environmental agency	-0.1388	**0.7427**
6	Fishermen	0.2607	**0.8154**
7	Municipality (technical department)	0.1297	**0.8962**
EigenValues		2.7333	1.7006
% Variance Explained		39	24

Source: Authors' elaboration

In Table 3, the representative Q-Sort of each factor is presented. Values of 2 represent the highest evaluation of a statement, whilst values of -2 the lowest evaluation. The grey shaded cells are the statements for which the disagreement between the two factors is found as statistically significant (<0.01 level) and thus, they show the highest difference between the two factors. As it is evident from the results, the respondents of factor 1 seem to put an emphasis on priorities that are related mostly to socio-economic parameters (entrepreneurial activity, community, temporal adaptation, quality of the urban environment) as opposed to the respondents of factor 2, who have a more spatial and environmental orientation in terms of priorities related to the spatial adaptability and urban development and the activities affected by land-sea interactions (port and yachting activities, tourism). This can be easily explained by the characteristics of the group of respondents for factor 2 who are either more environmentally driven or their activities are directly affected by the sea.

TABLE 3 - Q-SORT FOR FACTOR 1 AND 2 FOR KAVALA'S WATERFRONT

No	Statement	Factor 1	Factor 2
1	Controlling Pressure generated by land prices	2	0
2	Accessibility	0	2
3	Connectivity	0	0
4	Quality of the urban environment	-1	0
5	Co-existence/mixture of land uses	1	1
6	Spatial adaptability	0	-1
7	Temporal adaptability	-1	0
8	Contribution to the city image	2	2
9	Promotion of new entrepreneurial activity	-1	1
10	Management and protection of natural and built environment	0	1
11	Sense of community and participation	-2	0
12	Controlling Pressures generated by urban sprawl	1	-2
13	Controlling Intensity of port activity	1	-1
14	Controlling Intensity of marinas activities	-2	-2
15	Controlling Pressure of tourist activities	0	-1

Source: Authors' elaboration

3.2. The case of Heraklion

The application of Q-Method in the case of Heraklion waterfront has returned three factors for which eigenvalues were exceeding the value of 1. Factor 1 is formed by three q-sorts, factor 2 by two and factor 3 by one. The diagnostic measures regarding the reliability of the respondents are quite satisfactory as the composite reliability for the first factor is 92%, for the second 89% and for the third 80%. The respondents' factor loadings, the factors' eigenvalues and their respective variance explanation proportion are presented in Table 4. As can be seen, the three factors are explaining 74% of the total variance which could be considered as satisfactory. The first factor is composed by the

stakeholders representing the yachting club, the local environmental agency and the university, the second is composed by the representatives of the port authority and the association of commercial activities, whilst the third factor is composed by the municipality' representative. The factors could be considered as expressing three different groups of interests as the first is composed by stakeholders without any economic interest regarding the use of the waterfront, the second by the stakeholders who are directly motivated by economic benefits and the third by the authority whose main concern is waterfront management.

TABLE 4 - Q-METHOD FACTORS EXTRACTION FOR HERAKLION WATERFRONT

No	Organization/Institute	Factor 1	Factor 2	Factor 3
1	Yachting club	**0.7322**	-0.2153	0.4309
2	Environmental agency	**0.6993**	-0.2448	0.4521
3	University	**0.7385**	0.0881	-0.4699
4	Port authority	0.3526	**0.7574**	-0.2946
5	Association of commercial activities	0.2378	**0.7106**	0.3014
6	Municipality	-0.414	0.4162	**0.6098**
EigenValue		1.9228	1.3658	1.1603
% Variance Explained		32	23	19

Source: Authors' elaboration

TABLE 5 - Q-SORTS FOR FACTOR 1, 2 AND 3 FOR HERAKLION WATERFRONT

No	Statement	Factor 1	Factor 2	Factor 3
1	Controlling Pressure generated by land prices	1	1	1
2	Accessibility	0	0	-1
3	Connectivity	0	2	0
4	Quality of the urban environment	-1	0	0
5	Co-existence/mixture of land uses	-1	1	2
6	Spatial adaptability	-2	-1	1
7	Temporal adaptability	-1	-1	-1
8	Contribution to the city image	2	0	0
9	Promotion of new entrepreneurial activity	-2	-2	2
10	Management and protection of natural and built environment	0	2	0
11	Sense of community and participation	0	0	-1
12	Controlling Pressures generated by urban sprawl	2	-1	0
13	Controlling Intensity of port activity	1	0	-2
14	Controlling Intensity of marinas activities	0	-2	-2
15	Controlling Pressure of tourist activities	1	1	1
	Distinguishing Statements for Factor 1			
	Distinguishing Statements for Factor 2			
	Distinguishing Statements for Factor 3			

Source: Authors' elaboration

The representative Q-sorts for Heraklion are presented in Table 5. The sorts of the factors portray a significant difference between the respondents of the first two groups with the respondents of the third

factor. The respondents of factor 1 seem to be highly concerned with issues related to the urban activities and the untapped potential of exploiting the waterfront for improving aspects, such as the quality of urban environment, the spatial adaptability and the promotion of new business opportunities. A similar concern is present in the second group of stakeholders. However, the stakeholders of factor 2 seem to be more concerned about the urban sprawl than the mixture of land uses. On the other side, the representative of the municipality (factor 3) puts a premium on the past inability of the waterfront in confronting the pressures generated by marine and coastal activities, such as ports and marinas, whereas he provides a very positive evaluation for the contribution of the waterfront in the economy by providing a fertile ground for entrepreneurship.

4. DISCUSSION

The application of Q-method in the two Greek small and medium-size coastal cities could be considered as satisfactory as, in both cases, groups of stakeholders with similar perceptions were identified whilst fulfilling the basic statistical conditions of the method (Cuppen et al. 2010). As previous applications of the method have shown, one of its notable strengths is the fact that it provides a classification of stakeholders on the basis of common perceptions of an issue under consideration, taking into account their actual cooperation levels rather than simply focusing on institutional relationships and interests. This was also testified from the present results, where expected commonalities regarding the prioritization of interventions at the coastal zone among stakeholders were not always verified by the factor analysis. To further test this finding, the results of the Q method for Heraklion city are crosschecked against the level of among the interviewees. For this purpose, all respondents were asked to rate their level of cooperation on coastal management issues with all other stakeholders using a Likert scale ranging from 0, for cases where no cooperation is established, to 5, for cases where close cooperation exists.

The pairwise evaluations are given in Table 6 where, in each row, each stakeholder states the level of cooperation with the other stakeholders. The stakeholders belonging to the same q-method factor are indicated with the same colors. As can be seen from the Table 6 figures, high levels of cooperation are not necessarily accompanied with common perceptions regarding waterfront issues. Illustrating, Q-Method results are in line with the high levels of collaboration of the University with the Yachting Club and the Environmental Agency with the University. Nevertheless, this is not the case for the Port Authority. More precisely, the Port Authority's representative has denoted that the port is tightly interacting with the Yachting club (5), University (4) and the Municipality (4). Nevertheless, Q-Method results classified the authority in a common factor with the Association of Commerce for which a modest

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cooperation level (3) has been indicated. The same stands with the Association of commerce for which Q-Method has not found significant commonalities with the Municipality which seem to be highly interacting. Finally, another remarkable finding, is the rather low or even the absence of collaboration among institutions for which Q-Method found a common ground regarding priorities for intervention at the waterfront. This is the case for the relationship between the Environmental Agency and the Yachting Club as well as the relationship of the latter with the University.

TABLE 6 - STATED LEVEL OF COOPERATION AMONG STAKEHOLDERS IN HERAKLION

Stakeholder	Municipality	Association of commerce	University	Port Authority	Environmental agency	Yachting club
Municipality		3	5	5	3	5
Association of commerce	4		0	2	0	1
University	3	1		2	3	4
Port authority	4	3	4		2	5
Environmental agency	1	1	4	3		0
Yachting club	1	1	0	2	2	

Source: Authors' elaboration

The aforementioned findings portray the complexity of stakeholders' perceptions and relationships, which in turn affect their engagement in ICZM processes. Q-Method could support the traditional approaches of stakeholder mapping in revealing any hidden common perceptions among various institutions and actors. These commonalities could prove to be of great value towards setting social dialogue and resolving conflicts within an ICZM process. As stressed in Section 1, gaining trust among the involved stakeholders and increasing their knowledge and awareness is considered beneficial for reducing conflicts and achieving a common consensus. When common perceptions are revealed among actors showing a lower previous interacting effort, then targeted actions for strengthening the communication channels among them could be implemented.

Furthermore, in order to improve the decision-making process, actions could be developed to understand local governance structures (who is participating and why) improve the stakeholders' relationships and cooperation towards an integrated approach, while adapting these actions to the different types of stakeholders (Raum, 2018; Sarmento dos Muchangos, Tokai & Hanashima 2017). In this context, the ICZM process could be enhanced by reducing oppositions among stakeholders while, at the same time, implementing the proposed methodology would not require advanced managerial skills, the lack of which is usually one of the reasons for delayed and unsuccessful ICZM procedures (Schumacher et. al, 2018). In addition, through Q-Method in comparison to an open participatory process, the balanced representation and participation of different groups of stakeholders can be

ensured, providing also a more systematic guided discussion focusing on specific aspects of the issue under examination (in this case the urban waterfront) (Schumacher et. al, 2018). Moreover, the proposed method can be easily implemented by different stakeholders, including local authorities, because it does not require the knowledge and experience in participation and engagement processes.

5. CONCLUSIONS

The present paper applied the Q-Method in two small and medium-sized Greek cities in order to support a stakeholder analysis within the triggering of an ICZM process in the urban waterfront. Taking into account the results for both case studies, the analysis among the stakeholders' perceptions shows the complexity of the issues under examination, especially in the case of the coastal zone. The various stakeholders of the two cities seem in general to have different priorities regarding the alternative options for the future waterfront development. These prioritizations could be regarded as a result of their different interests and the possible lack of information regarding coastal management issues.

Even though Q-method was applied in a small sample of stakeholders that is usually found in small and medium-sized cities, it proved to be effective in capturing the differences but also the commonalities of stakeholders' views regarding their priorities for coastal management of the urban waterfront. In addition, the variations among the level of cooperation and the classification of stakeholders through Q-method portray that alternative methods of stakeholder analysis could be used in a complementary context when coastal management is under consideration. To this end, the integration of Q-method in an ICZM process could enhance the global target of the ecosystem-based management regarding the stakeholders' perceptions convergence towards common agreed strategies and actions.

Since the present paper is an initial application of the Q-method within the ICZM context in small and medium-sized cities, there is still potential or future modifications and improvements that could render the method as an important alternative to widely used methods of stakeholder analysis in ICZM, such as mapping and network analyses. The application of the method to larger stakeholder samples could be used as a means of testing its wider application especially in small and medium-sized cities, where the risk of extracting less reliable responses exists mainly due to the less informed stakeholders regarding coastal management issues. Finally, different statements and priorities could be used in order to cover more adequately all management options for the waterfront.

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