Downscaling Strategic EU Policy Directions in Mediterranean Cities: Participatory Assessment of Critical Issues and Barriers

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Abstract. The future of the European Union (EU) is today drafted by the 2050 climate-neutral vision, as this is expressed by the European Green Deal (EGD), i.e. a strategy/investment package for climate/environmental action, economic growth/jobs, and social inclusion; and a policy direction, displaying a strong focus on people/communities and providing incentives for impact-minded partnerships across sectors/geographies. In support of the EGD's priorities, the Mission on "Climate-neutral and Smart Cities" is deemed to accomplish a deep and systemic transformation of European cities and bring on board concrete solutions to contemporary challenges. 100 EU cities are, at first, taking over as vivid laboratories for achieving climate-neutrality by 2030 and steering efforts of all European cities towards the 2050 vision. The focus of this paper is on stimulating a dialogue among the scientific, policy making and practitioners' communities on the above strategic policy directions; and exploring key issues as well as barriers applying to the downscaling of the EGD and particularly the Cities' Mission to the Mediterranean context. Towards this end, a blended participatory methodology is utilized, consisting of: a questionnaire addressed to the aforementioned communities that gathers distributed knowledge as to the key issues and barriers for successfully downscaling EU policy priorities to Mediterranean cities; and a Focus Group exercise, engaging stakeholders of diverse expertise for further delving into critical questionnaire results. Out of this exercise, prevailing barriers seem to be the lack of governance/collaboration and synergies' creation as well as the distinct structural and behavioural/cultural peculiarities of Mediterranean population.

Keywords: Mediterranean cities · European Green Deal · Mission for "Climate-neutral and smart cities" · Participatory assessment · Focus Group discussion

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1 Introduction

Cities and regions around the globe are currently confronted with severe climate, environmental, energy, social, cultural, health, and economic crises that can radically affect their future pathways to sustainability. Such crises, as Yigitcanlar et al. [1] notice, are mainly due to the rapid population increase and the adoption of an excessively wasteful, beyond earth limits, consumption-driven way of living; while they are further deteriorating by the industrialization, the intense urbanization and mobility pattern, and the intensification of agricultural production for serving food sufficiency. Outcomes of such crises may result in life-threatening natural disasters, biodiversity loss, degradation of natural ecosystems, as well as regional disparities and socioeconomic inequalities, all placing an unbearable burden on national/regional economic, societal and natural ecosystems [2]. Attempts to reverse or mediate the impacts of those ominous outcomes are currently strongly based on global policy initiatives but also European/national ones, both grounded in nature-based and technology-enabled solutions as well as community awareness raising endeavours [3, 4], aiming to reduce the human footprint on earth.

Along the aforementioned *glocal* (global/local) efforts, Europe has placed itself in a protagonist position. In fact, Europe nowadays is perceived as a world leader in advocating environmental, social and governance (ESG) principles, properly adjusting its regulatory landscape in order for the European policies to be in alignment with these principles [5].

In this respect, a groundbreaking, strategic and long term policy initiative of the European Union (EU) is the 2019 *European Green Deal* [6], which constitutes an EU attempt to align with the United Nation's 2030 Agenda and achieve the SDGs; and formulates a new growth strategy and an investment package for climate and environmental action, economic growth/jobs and social inclusion. At the heart of this strategy lie more sustainable future pathways, enabling the EU transition into: a fair and prosperous society; a resource-efficient and competitive economy, marked by the decoupling of economic growth from resource use; and a continent seeking to achieve climate neutrality by 2050 [6]. Concurrently, the EGD: constitutes a huge and of long term *participatory planning* and *governance* challenge for the European continent, blending a strong focus on people and communities; provides incentives for impact-minded partnerships across sectors and geographies; steps up alignment with the UN Agenda 2030 and the SDGs; and shapes international cooperation, with the EU taking up global leadership via Green Deal diplomacy [7].

In order for climate neutrality to be reached, the EU has committed itself to reducing net GHG emissions by at least 55% by 2030, compared with 1990 levels; and has set up a clear and concrete *long term vision* towards climate neutrality by 2050. Strategic objectives of the EGD are downscaled to the member states' level by enforcing legislation updates and policy reforms as well as monitoring their implementation [7]. Furthermore, an ambitious Climate Change (CC) adaptation strategy is also incorporated in the EGD, while emphasis is placed on getting access to: spatial data and instruments in support of integrating CC into risk management practices; smart energy infrastructure; and digital transformation, all three perceived as critical means for reaching the EGD objectives [6].

Furthermore, the EU has put forward five *Missions* for effectively coping with the current overwhelming challenges and serving its policy priorities, the EGD included [7]. The goals set in these Missions are quite ambitious, seeking to bring concrete results by 2030. Towards this end, tight bridges are predicted among the research, policy and entrepreneurial communities, including European citizens. This, in turn, implies that the goals of each Mission will be cooperatively accomplished by a portfolio of actions, including research projects, policy and legislative initiatives.

Among the five EU Missions falls the one seeking to achieve *"Climate neutral and smart cities"* (henceforth Cities' Mission), justified by the critical role cities play in achieving climate neutrality by 2050, as also predicted by the EGD. In fact cities account for more than 70% of global CO_2 emissions [8], grasped thus as major contributors to climate mitigation efforts and accelerators of the green and digital transformation. As a starting point, Cities' Mission is predicted to deliver 100 climate-neutral and smart cities by 2030. These are perceived as the frontrunners of the Cities' Mission endeavour, as well as pilots and vivid laboratories of innovative actions and social experimentation to be spread to the rest European urban contexts that will follow till 2050.

The aforementioned EU strategic directions constitute a major challenge for *Mediterranean cities and communities*, i.e. a 'hot spot' region in many respects, namely environmental, CC, biodiversity, water scarcity, natural disasters, volume of solid waste generation [9]; and a vital and timely discussion in this particular region that exhibits a 20% faster rate of warming, compared to the rest of the world [10]. The latter is confirmed on the ground of estimations of the general warming and drying future trend that goes faster than the global one in the Mediterranean region, rendering thus Mediterranean a Climate Change (CC) hotspot [9, 11, 12]. Furthermore, CC impacts are expected to further exacerbate in the Mediterranean scenery due to other environmental challenges [13], emanating from changes in land use and land degradation, intense urbanization and overtourism, intensification of agricultural production, overfishing and pollution (air, land, rivers and ocean) [12]. These, in turn, imply a range of severe socioeconomic consequences and pressure on human and habitat health, energy demand and water stress, food safety and sufficiency, biodiversity health, drought incidents and fire risk, etc. [12, 14]. In fact, CC is the flagship and eventually the most warning challenge for the future of cities and territories in the Mediterranean Region, affecting both the natural and the human livelihoods; while CC pace and magnitude as well as its impacts are perceived as defining factors of stability risks in Mediterranean territories.

Speaking of the urban environments in the Mediterranean (henceforth MED), it should be noted that urbanization displays fast-escalating patterns [2, 15, 16], with almost 70% of the MED population residing in urban areas that are disproportionately affected by CC (i.e., heat waves, extreme weather events, air pollution). In fact the rate of urbanization in the eastern and southern MED is the highest in the world [17]. Rapid urbanization rate in the MED, in turn, entails that CC is expected to exacerbate challenges related to economic growth, environmental degradation, urban risks, protection/preservation of cultural heritage, and migration, to name but a few. In this respect, identifying peculiarities or bottlenecks that may impede downscaling of the aforementioned EU strategic directions to the MED Region and especially the MED cities becomes a major policy concern in order for the respective territories that are in front of extreme

CC and other risks [12] to move towards more sustainable, resilient and climate-neutral pathways. Such a transition can, among others, be hampered by the specific attributes of MED cities, namely their size – small and medium cities – that renders them rather weak and lagging behind in terms of technology-enabled solutions to urban sustainability, especially cities in the southern and eastern less developed MED rim [1]. In addition, MED cities are sharing some distinct attributes compared to other European ones in: *economic terms* (nodes of tourism, culture, sea trade, etc. that are largely defining the economic wealth of MED societies); *geopolitical terms* (coastal and port cities at the cross roads of MED Sea, constituting avenues of trade and cultural exchange through centuries); and *cultural terms*, reflecting the mutual influence of its surrounding eastern and western civilizations through historically-deployed important commercial routes, all highly affected by but also contributing to the exaggeration of current CC challenges.

Based on the above discussion, the *focus* of this work is on the identification of *critical issues and barriers* that stem from the specific MED cities' context; and need to be overcome for successfully implementing the EGD and especially the Cities' Mission objectives in cities of both MED shores. This goal is accomplished by means of a two-step participatory framework that delves into specific, MED region-based topics and is composed of: i) a Web-based questionnaire aiming to gather distributed knowledge as to the key issues and the fundamental barriers for downscaling the EU strategies to MED urban environments; and ii) a Focus Group (FG) discussion that engages an interdisciplinary group of experts (practitioners, academia and policymakers) and aims at further delving into the most critical issues/barriers identified in the previous step. Results obtained illuminate *gaps* that need to be bridged in order for the benefits of the strategic EU directions in this transition era to be reaped by MED urban territories. The structure of the paper has as follows: in Sect. 2 the methodological framework and the context of the two participatory stages for gathering qualitative data as to the research topics of this work are sketched; Sect. 3 presents and discuss the results obtained by the two consecutive participatory stages; while, finally, in Sect. 4 key conclusions are drawn.

2 Data and Methodology

Qualitative data, collected and used in this work, emanate from a *two-stage participatory approach.* More specifically, in *Stage I*, a web-based questionnaire is utilised for gathering distributed knowledge from a number of respondents [audience and Members of the Scientific Committee of the 4th Smart MED Conference, conducted in Athens, October, 2020; and Members of the International Geographical Union (IGU) Commission for the MED Basin], mostly originating from MED countries. In *Stage II*, a Focus Group discussion is planned and organized during the aforementioned Conference, structured around the most critical issues raising in Stage I; and engaging a number of mainly MED-related stakeholders (7 persons), owing diverse expertise with respect to the topics concerned in the MED cities.

This two-step participatory approach is embedded in the methodological framework of this work that is sketched in Fig. 1. More specifically:

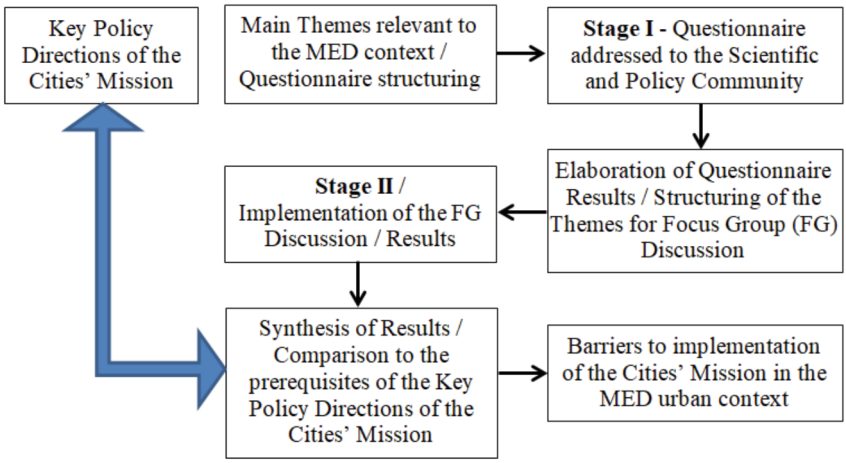

Fig. 1. Steps of the methodological approach, embedding participatory Stages I and II, Source: Own elaboration

- At first, a critical consideration of the European Green Deal and particularly the Cities' Mission is carried out, leading to the identification of core components for their successful implementation, as these are sketched in the introductory section.
- Then a number of main themes, related to the Mediterranean cities, are identified, justified by a literature review and authors' own experience. These have formed the ground for structuring and distributing a web-based questionnaire as a first step of the participatory approach, conducted in this work (Stage I in Fig. 1).
- Results obtained from this questionnaire are further elaborated and critical issues for the MED cities are identified and prioritized out of this participatory, distributed knowledge gathering, exercise. These have fed the structuring of a second participatory step – Stage II in Fig. 1 – organized by use of the Focus Group (FG) participatory method in a dedicated workshop, conducted during the Smart MED Conference (Athens, October 2020) [18].
- Next follows a synthesis of results of Stages I and II and their consideration against the core components for the successful implementation of objectives of the Cities' Mission. Such a consideration highlights the critical *barriers* that need to be overcome, thus guiding proper policy reaction for their alleviation.

2.1 Stage I - Structure and Audience of the Questionnaire

The questionnaire is structured in four main parts (Parts A to D), coupled with two complementary ones (Parts E and F) (Fig. 2). Within each main part, a number of key issues are listed for further prioritization, based on respondents' views.

More specifically, Part A is entitled "Resilience of Urban Environments". Resilience and smooth shocks' absorption seems to be critical in a globalized and rapidly changing world. This holds especially true for the MED, a place that is highly affected by CC impacts, but also the impacts of other unexpected incidences [migration surge, (geo)political tensions, natural disasters, economic recession, etc.], rendering it a "hotspot" in many respects [9].

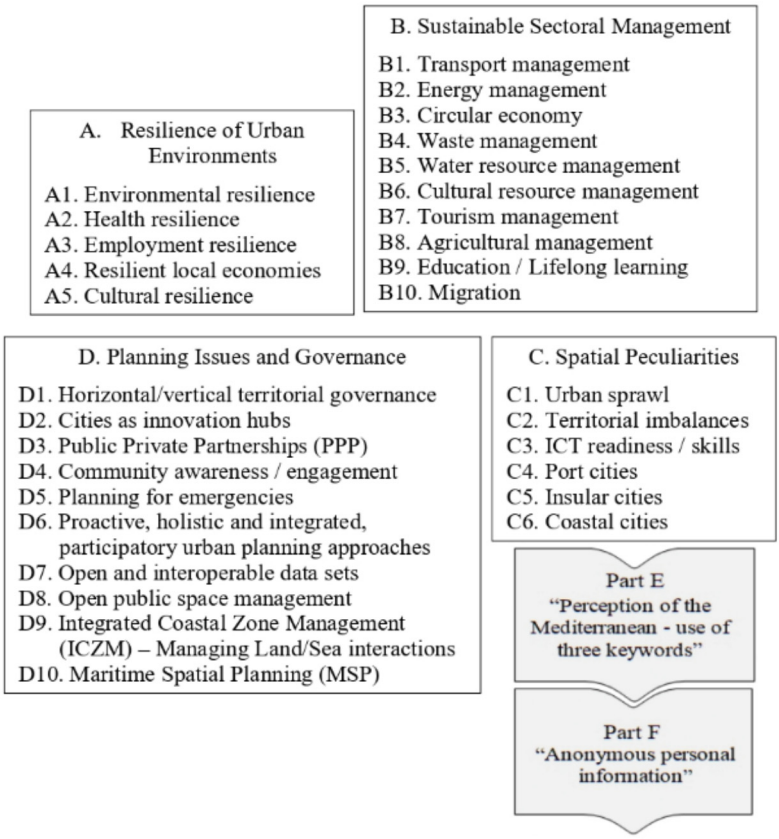

Fig. 2. Main and complementary parts of the questionnaire - Key issues explored in the main questionnaire parts A to D, Source: Own elaboration

Part B relates to the "Sustainable Sectoral Management". It attempts to shed light on a number of resource-intensive sectors, prevailing in the Mediterranean productive system; and raises key issues related to the sustainable management of these sectors in the urban context. Related challenges need to be cooperatively dealt with by the scientific, industry, civic and policy community.

Part C makes an effort to identify important "Spatial Peculiarities" of the MED Region that need to be properly addressed when seeking to fulfill sustainability objectives in urban environments and implement the aforementioned mainstream EU strategies. A number of key issues are identified that are closely related to the very peculiar attributes of the MED urban contexts. These can be perceived as both opportunities and obstacles in terms of implementing the EGD and particularly the Cities' Mission strategic policy directions.

Part D attempts to illustrate emerging "Planning Issues and Governance". It takes for granted that emerging challenges, demarcating the future of urban communities in general and those located in the MED region in particular, bring to the forefront: i) new

planning issues/problems, e.g. CC and sea level rise and their impacts, Blue Growth Economy and sustainable management of maritime resources, intense coastalization and Integrated Coastal Zone Management; and ii) approaches such as multi-level governance, bottom-up planning trails, Maritime Spatial Planning and Integrated Coastal Zone Management, to name but a few, for reaching the newly emerging policy targets. An indicative number of key issues that need to be highlighted and handled for achieving targets of the new urban agendas in MED cities as well as the barriers applying to their implementation are illuminated in this part for further commenting/prioritization by respondents.

Part E consists of a complementary questionnaire part, in which respondents are requested to express their perception of Mediterranean cities by using three keywords. These keywords are used for preparing a cloud word map, largely reflecting both positive and negative challenges currently faced or expected to affect future urban developmental trails in the MED in the medium to long term. This cloud word map can be used as a means for increasing awareness and communicating the key drivers of cities' change in this particular region of the world.

Finally, Part F contains certain (anonymous) personal information.

Table 1. Barriers explored as to the implementation of the strategic EU policy directions in the MED cities

a/a	Type of barrier
Bar-1	Limited funding
Bar-2	Lack of governance
Bar-3	Behavioural/cultural issues
Bar-4	Knowledge gaps
Bar-5	Lack of collaboration and synergies' creation
Bar-n	Other (please specify)

The *key barriers* to the implementation of the strategic EU policy directions, explored in this work, are listed in Table 1. In addition, each respondent could also add issues that he/she perceived as important, and are missing from the questionnaire and the barriers' list.

The questionnaire was circulated through the Web in the time span August 9 to September 10, 2020 (one month). It addressed *284 persons* in total, representing members of the academic community, young researchers, practitioners, and policymakers who were engaged in the Smart MED Conference [18]; and has led to a crop of *81 questionnaires* (28% of sample recipients).

With respect to the *region of origin*, the majority of respondents (68 persons or 84%) comes from MED EU countries. On the contrary, MED non-EU and non-Mediterranean respondents are underrepresented in the sample (7 persons or 9% and 6 persons or 7% respectively). Despite the low representation of these two groups, especially of the MED non-EU one, respective responses have been taken into consideration in this work. Such

a decision reflects the shared view of co-authors that sustainability objectives in the MED neighborhood call for a cooperative spirit and efforts of both the EU and non-EU states; and orchestrated endeavors are needed for dealing with shared challenges and shaping a common, worth-living destiny for their population. In addition, Mediterranean non-EU respondents can potentially raise diversified concerns or barriers towards the sustainable future of MED cities, grounded in the different decision environments they represent (cultural, technological, political, economic, etc.).

With regard to the *age group distribution*, 67.81% of respondents fall into the age group 36–55; while responses are also gathered from the age groups of 18–25 (4.5%), 26–35 (10.12%), 56–65 (14.17%) and 65 + (3.4%). From a *professional point of view*, more than half of respondents (53.65%) come from the academia. Young researchers – (post)graduate students – are also incorporated in the sample (13.16%). Furthermore, the sample includes practitioners (12.15%) and a small number of policy makers (3.4%). Finally, as far as *gender* is concerned, a rather balanced share between males and females is displayed in the respondents' sample.

It should be noticed here that the results obtained in Stage I are indicative, since the respondents' sample is rather small and unevenly spatially-balanced in terms of respondents' origin. However, as these originate from people working out a variety of Mediterranean themes, they are useful as a first attempt to highlight critical issues for further elaboration in the context of the FG endeavour (participatory Stage II).

Questionnaire respondents are invited to assess and prioritize the three most important *key issues* of each main theme (A-D in Fig. 2) and the three most important *barriers* (Table 1) inherent in the MED urban context in order for: effective management of these issues to be achieved; and current European mainstream strategies to be effectively integrated into respective MED urban ones. Towards this end, they are requested to rate them as follows: 1- important, 2 - very important, and 3 - highly important.

2.2 Stage II – Focus Group Discussion

Stage II of the participatory framework aims at delving into the most challenging key issues outlined in Stage I and related barriers that can impede implementation of the European strategic directions – EGD and especially the Cities' Mission – in MED cities. The selection of FG participants is guided by expertise, availability and willingness to engage in further highlighting the major issues of the MED urban environments with regard to the implementation of these directions. Taking into consideration that this FG workshop took place in the context of the 4thSmart MED Conference (Athens, October 2020 – [18]), the prevalence of Greek participants (Table 2) is justified.

A FG discussion took place on October 9, 2020, by chance of the 4th Smart MED Conference [18]. The duration of this discussion was approximately two hours and was structured as follows: at first, the key results of Stage I were presented to the FG participants; then discussion was structured around the main barriers to the implementation of the EU policy directions, appearing in MED cities.

Table 2. Origin institution and country of the FG members.

a/a	Origin Institution	Origin Country
FG Moderator	Rapporteur of the Cities' Mission Board	Belgium
Participant 1	Senior Researcher, Hellenic Center for Marine Research (HCMR)	Greece
Participant 2	Officer of Ministry of Energy and Environment	Greece
Participant 3	Senior Researcher, Hellenic Institute of Transport (HIT)/Center for Research and Technology (CERTH)	Greece
Participant 4	Prof., National Technical Univ. of Athens	Greece
Participant 5	Prof., Arab Academy for Science, Technology and Maritime	Egypt
Participant 6	Former Mayor, Member of the Mission Board	Belgium
Participant 7	Researcher, representative of Union for the Mediterranean (UfM)	Spain

3 Qualitative Results

3.1 Stage I – Gathering Distributed Knowledge Through the Questionnaire

In this section, key results obtained through the participatory process of Stage I are discussed. More specifically, with regard to the prioritization of the *key issues* explored, these can be summarized as follows (Fig. 3):

- Part A. "Environmental and health resilience" lay high in respondents' ratings, followed by "Employment resilience". These reflect concerns as to the environmental deterioration and severe CC repercussions, appearing in MED cities; coupled with the impacts of CC and the long austerity/economic recession period on employment, experienced by MED urban contexts.
- Part B. "Energy and transport management", coupled with "Circular Economy" and "Waste management" are key issues (sectors) in the MED city context. This is largely justified, among others, by the insufficiently implemented local spatial plans; the dominance of the private transportation behavioural pattern; the escalating urban sprawl and related informal buildings; and the pressure exerted by the large number of tourists in a short time span, taking into account the highly rated tourism destination profile of most MED cities, especially the coastal and insular ones.
- Part C. When considering the spatial peculiarities of the Mediterranean urban context, urban sprawl rates first and is coupled with coastalization, i.e. the high pressure on coastal cities/areas. This result is justified by the coastal cities' position as globally acknowledged tourist destinations. This, in turn, brings to the forefront a range of spatial challenges met mainly in coastal cities; while results in certain territorial imbalances/inequalities that need to be handled, both within a city context (coastal part and the rest of the city) as well as among different cities (developed coastal vs lagging behind inland urban environments). In addition, a hot issue for the Mediterranean refers to the way insular cities, fraught with a number of inefficiencies due

to "insularity", can become equal players and have an even chance of reaping the benefits of the Cities' Mission strategy.

- Part D. "Community awareness and engagement" rates quite high in the respondents' view. This is also a crucial issue in terms of implementing the EGD and especially the Cities' Mission, claiming, among others, wide coalitions among all actors in urban ecosystems. A certain deficit in civic engagement in the decision-making processes is noticed in the MED and a lack of relative culture. The same holds for "Territorial governance both horizontally and vertically", i.e. the interaction among diverse decision-making bodies and stakeholders either within a specific urban entity (urban spatial level) or among hierarchically different spatial levels. Missing is also a place-based approach as a key component for strengthening the effectiveness of policy formulation and successful implementation. The notion of "Cities as Innovation Hubs" lays also high in respondents' views, stressing the importance of the ICTs' adoption/use in a variety of fields and cities' functions for reaping the benefits of the Knowledge Society and strengthening cities' competitiveness, effectiveness, inclusiveness, and quality of service provision. Of importance is also the "Planning for emergencies" as well as the 'Open public space management', with the latter being grasped in terms of both emergencies' confrontation and improvements in quality of life in the saturated MED urban contexts.

With respect to the *barriers* that need to be overcome for successfully handling the key issues raised in Parts A to D, it seems that "Lack of governance" is the prevailing one, rating first in all four main Parts (Fig. 3). Highly important is also the issue of "Limited funding", reflecting the scarcity of financial resources for serving medium to long-term urban developmental perspectives. It seems that the economic recession and austerity of the last decade in MED countries have strongly affected entrepreneurship as well as private and public investments in a range of fields, while also leading to an increasing bankruptcy rate for small and medium-sized enterprises and a growing unemployment rate. "Lack of collaboration and synergies' creation", although a bit lower rated, compared to the previously mentioned barriers, seems to be a crucial deficit for creating economies of scale and sharing efforts for handling important, and of common interest, key issues in the MED region. Things are even more complicated when taking into consideration "Behavioural/cultural issues", highlighting the lack of participation culture in decision-making processes. This is mainly the outcome of the lack of citizens' trust in the political system, coupled with the reluctance of the latter to shift from traditional to more cooperative and transparent decision-making schemes.

3.2 Stage II – Results of the Focus Group Workshop

At the heart of the Focus Group discussion were placed the two most critical barriers to the implementation of the European strategic directions, emanating out of Stage I. These are the "Scarcity of financial resources" and the "Lack of governance". The latter is perceived at both the horizontal and the vertical level (i.e., decision makers and stakeholders at the city context and the different spatial contexts respectively).



Fig. 3. Respondents' views in the questionnaire research as to the prioritization of key issues and barriers, Source: Own elaboration

Following the views of the FG participants, the first – "Scarcity of financial resources" – was likened to the *"elephant in the room"*, implying the huge investments and the radically diversified business models needed towards the transition of MED cities to climate neutrality. The second – "Lack of governance" – was likened to a *"giraffe"* which, however, is as big as the "elephant", though less visible and evident, while also less seriously taken by the majority of Mediterranean cities. According to the FG views, this is justified by the fact that the transition to climate neutrality implies a city's systemic change that needs to be approached in an integrated, far from silo-thinking, way; and, most importantly, an inclusive one, embedding all actors of the urban ecosystem in a sincere, fair, transparent, creative and consensus-seeking way. In fact, the European Commission has emphasized the importance of citizens' engagement in planning and implementing the quite ambitious Cities' Mission initiative, considering this issue as the *flagship* of the Mission's endeavour.

However, as FG participants claimed, participatory decision-making processes are not really embedded in the culture of the majority of MED cities nor citizens are *"… accustomed, educated and aware of their role and power"* in such a context. As a result, speaking of governance at the horizontal level – i.e. the city context itself – tight bonds between the local decision-making bodies and the rest of urban actors are loose or even missing; while citizens in Mediterranean cities do not really trust local administration and are not confident that their opinions are truly heard. Furthermore, according to the FG participants, *"… citizens are not really aware of the ambitions and goals of the EU with respect to the Cities' Mission"*, meaning the absence of an effective and well-established communication plan for widely spreading current urban challenges and risks as well as the ambitious Cities' Mission objectives, ensuring thus their understanding and ownership by all cities' stakeholders and citizens. Of relevance to such a communication plan, according to FG participants, are *"impacting images"* that can support awareness raising; and can affect willingness to engage and commit to the Cities' Mission objectives. As noticed in the FG discussion, *"… citizens need to feel that they can really play a role"*. It was also stressed the need for putting forward a bundle of incentives that can improve citizens' engagement and commitment in accomplishing Cities' Mission objectives. However, FG participants considered also as necessary the investment in more time-consuming and of longer term processes that are capable of: educating people; raising their awareness as to the current cities' challenges and risks as well as the citizens' critical role in reversing ominous trends; establishing trust and loyalty among various groups; and consolidating a *"spirit of belonging and a mind of change"*. *"What I do has an impact, it counts and it is heard"* should be the conviction for every city actor for achieving the Cities' Mission goals.

With respect to governance at the *horizontal level*, FG participants also supported the *"No one fits all"* principle or, stated differently, they claimed that *"… every city has its own DNA"*; recognizing also the *"distinct features of MED cities compared to the ones of the northern Europe"*. In addition, they noticed that despite the fact that MED cities have very much in common, e.g. civilization, urban sprawl, crowded cities, CC risks, etc., their study in the context of the Cities' Mission needs to adopt a *place-based approach*, having at its heart each single community's value systems and culture,

behavioural patterns and spatial/developmental peculiarities. As examples, FG participants stressed the prevalence of private transportation in the mobility pattern of MED citizens as well as the production of informal housing stock, both leading to deterioration of the urban landscape, land degradation and air pollution due to rising traffic. These are further worsening due to the tourism overload during the summer season. Community awareness, political will, and the articulation and implementation of collaboratively-designed policy measures are critical aspects for reversing these patterns and improving the quality of life in MED communities. Furthermore, although the role of citizens is placed at the heart of the Cities' Mission discourse, FG participants consider the role of decision-makers in the MED also a problematic one. In fact, they claimed that not only citizens but also politicians need to change the way they act and make decisions, shifting from traditional government to ICT-enabled, city- and citizen-specific as well as data-driven governance schemes. In doing so, FG participants stressed the need for: steady monitoring and progress assessment; use of crowdsourcing in support of data collection and updating; deployment of participatory platforms for facilitating community engagement and interaction; and adoption of ICT-enabled spatial data management, as relevant for ending up with more informed decisions. Finally, FG participants stressed the importance of cities' extroversion and networking for gathering evidence-based results and good practices from frontrunner cities in the Mission's endeavour.

As far as the *vertical level* is considered, the absence of bonds between decision-making bodies at the various spatial levels and their interaction for ensuring coordination of related policies – from the national to the regional/local level – is stressed. In fact, FG participants claimed that a certain fragmentation and a lack of steady and institutionally-defined interaction channels exist among decision-making bodies at various governmental layers. Innovative governance schemes are needed in this respect that can ensure the effective feeding of national policies by regional and local peculiarities; and, vice versa, the effective and consistent downscaling of national strategic policies to the regional/local level. Specific coordination schemes and related resources in order for the Mission's objectives to be spread to as many cities as possible can be used in this respect. A good example of such a scheme is established in Greece as a national initiative, networking a number of Greek cities and providing a leading role to cities that are perceived as nationwide champions with regard to the Cities' Mission goals, falling among the 100 frontrunners of the Mission.

3.3 Summarizing Results of Stage I and II

Implementing the strategic objectives of the EGD and particularly the Cities' Mission in coping with CC impacts and urban sustainability is a tremendous challenge for European cities in general and the MED ones in particular. It presupposes a clear focus on territorial governance, i.e. place-based and multilevel interaction that properly adapts to the various MED urban contexts. In addition, an essential prerequisite for successful implementation is community engagement in order for a broad ownership of the pathway to climate neutrality and sustainability to be achieved and dedicated efforts from all actors in each city's local ecosystem to be properly orchestrated. A long-term view seems to be also indispensable that expands beyond the narrow time constraints of elected local administrations; and suggests political consensus and consistency in planning and

implementing dedicated, long term policy paths. In more detail, the core components for the implementation of the Cities' Mission [19] are shown in Table 3; and are juxtaposed with the barriers or weaknesses inherent in MED urban environments that can hamper climate neutrality and sustainability achievements. Those barriers emanate from the questionnaire responses and the Focus Group discussion, while also being noticeable in current literature [9, 12, 20–22].

In Fig. 4, a cloud word map is produced for the MED urban territories, illuminating the strong points but also the vulnerabilities of these territorial entities, as these are grasped by the questionnaire research respondents and experts engaged in the Focus Group discussion.

Table 3. Barriers to implementing strategic directions of the Cities' Mission in the MED urban context, Source: Own elaboration

Core components for implementing the Cities' Mission	Barriers
Cities' administrative, technical and financing capacity	– Lack of administrative, technical and financing capacity/Inadequate competencies of local administrations to plan and implement the ambitious transition to climate neutrality – Lack of collaborative culture and tight bonds with the academia, civic society and entrepreneurial community for gathering distributed knowledge and co-designing local policies – Deficit in new business models engaging the public and private sector – Local administrations are still anchored in traditional financing schemes
Long term view	– Lack of a long-term, data-enabled and consensus-based vision and related plans – Focus on everyday community problems than on long term visionary goals – Short term viewpoint, closely linked to Mayors' administrative lifetime and driven by re-election motives
City governance models	– Lack of a governance culture – Focus rather on government and management of everyday problems than governance – Silo-based administrative schemes and organization culture – Lack of a more integrated and strategic planning perception – Lack of wider collaborations and creation of synergies both among cities as well as within each single city

(*continued*)

Table 3. (*continued*)

Core components for implementing the Cities' Mission	Barriers
'By and for the citizens' way of thinking/working – 'Citizens as agents of change'	– Lack of participation culture in decision-making processes – Participation more as an institutional "must" than as a real social/political innovation, producing added value for all – Limited use of ICT means for citizens/stakeholders' engagement and openness/transparency of decision-making processes – Lack of citizens' awareness-raising endeavours as prerequisites for addressing climate emergency and urban sustainability priorities
'Cities as innovation hubs' – Embedding powerful technologies in governance, trans-port, energy, waste management, etc	– Low level of transformation of governmental structures and processes towards a smart governance model – Use for ICTs in a fragmented way, focusing on distinct smart city projects – Lack of ICT-enabled innovation, data infrastructure and data-driven decision-making processes
'No one left behind' principle	Drawbacks of MED cities impeding realization of this principle: – Size of Mediterranean cities – i.e. small and medium-sized cities –disadvantage in terms of private funding attractiveness – Insular cities – Insularity repercussions e.g. constrained accessibility, technological immaturity – Coastal cities – huge efforts needed to overcome the high vulnerability to CC impacts, high pressure due to rapid coastalization and tourism pressure, lack of integrated approach of land/sea and their interaction
Multi-level & co-creative process	– Lack of governance culture at the horizontal/vertical level – Lack of synergies' creation
More strategic and integrated urban planning models	– Local plans mostly lack a strategic, integrated, participatory and long-term flavour



Fig. 4. Cloud word map based on data collected through the questionnaire and the FG discussion, Source: Own elaboration

4 Discussion and Conclusions

Cities nowadays are confronted with unprecedented challenges, associated with the rapidly changing climate, economic, social, cultural, technological and geopolitical scenery and related risks emerging out of them. On top of these challenges lies CC, constituting the flagship of European policies in the new millennium in seeking to achieve climate neutrality by 2050. In fulfilling this quite ambitious and tricky goal, cities are placed at the forefront as the main contributors to CC and a source of innovative solutions towards CC mitigation/adaptation [23]. Such a position is, among others, justified by the intensifying urbanization trends in the European continent. Particularly in the MED cities, intense urbanization, especially in coastal areas [24, 25]), has led to the increase of human pressure in the neighborhood of major cities and along the seacoast [9, 26], taking the form of population concentration, major expansion of construction activity and infrastructures, urban sprawl due to secondary housing and tourism facilities [15, 16], to name but a few.

As a means to cope with the severe impacts of CC on city contexts, the Cities' Mission of the EU [19] attempts to promote a new paradigm that is mostly grounded in innovation as well as empowerment and engagement of all actors of a city's ecosystem – citizens, businesses and other stakeholders – in shaping the way forward. Or stated differently, the challenge is to plan and implement dedicated structural changes in alignment with the visions and expectations of people, thus promoting a step-wise and consensus-building approach as to the way the transition to climate-neutral and smarter cities, ensuring quality of life of their population, will be attained. In such an effort, it is evident that each single city constitutes a distinct example, displaying its own attributes and culture; different levels of embedded smartness; diversifying natural and cultural attributes; discrete geographical and morphological peculiarities; and a diverse starting point for climate neutrality, all defining the *gap* that needs to be filled towards the desired

end state. Integrating data and distributed knowledge from a variety of stakeholders as well as members of the scientific community seem to be an effective blend for providing advice with regard to the obstacles that need to be overcome in order to achieve alignment and effective implementation of the Cities' Mission objectives to both urban and national/ regional policy makers.

In such a context, support to political leaders is crucial in order for weaknesses to be identified and ways to work them out to be established so that a fruitful, creative and inclusive environment for such an ambitious goal – climate neutrality – to be activated. Along these lines, the present work attempted to highlight barriers or obstacles in MED cities that can hamper them to embark on the Cities' Mission initiative. This perspective seems to be crucial for their future state, taking into consideration the intense CC impacts in the MED compared to other parts of the world. Research conducted in this work, based on gathering/interpreting distributed knowledge from a variety of stakeholders, unveils the important key issues that are potentially shaping the future of MED cities as well as the most prevailing barriers to meeting the Cities' Mission objectives. Several MED cities are now in the float of the Cities' Mission; and whether and how they will manage to overcome these obstacles and create a climate-neutral thus more human and qualitative future for their population, within the Cities' Mission context, remains to be proven. Repetition of such a participatory methodology in 2030 (target year for the pilot cities to achieve the Mission's goals) could unveil barriers that were relieved and those still in place, hindering potential of cities' endeavors to fully attain Cities' Mission goals.

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References

1. Yigitcanlar, T., Xia, B., Tucunduva Philippi Cortese, T., Sabatini-Marques, J. (eds.): City 4.0: digital transformation of urban settlements. Sustainability **16**(671), 1–3 (2024). https://doi.org/10.3390/su16020671
2. Stratigea, A., Kyriakides, E., Nicolaides, Ch. (eds.): Smart Cities in the Mediterranean - Coping with Sustainability Objectives in Small and Medium-Sized Cities and Island Communities. Springer Cham (2017a). https://doi.org/10.1007/978-3-319-54558-5. ISBN 987-3-319-54557-8
3. UNEP– United Nations Environmental Program: Raising Awareness of Climate Change - A Handbook for Government Focal Points. United Nations Office at Nairobi/Publishing Services Section/Nairobi, Kenya (2006)
4. Adhikari, B., Taylor, K.: Vulnerability and adaptation to climate change: a review of local actions and national policy response. Climate Dev. **4**(1), 54–65 (2012). https://doi.org/10.1080/17565529.2012.664958
5. Theodora, Y., Stratigea, A.: Climate change and strategic adaptation planning in Mediterranean insular territories: gathering methodological insights from Greek experiences. In: Gervasi, O., et al. (eds.) ICCSA 2021. LNCS, vol. 12958, pp. 100–115. Springer, Cham (2021). https://doi.org/10.1007/978-3-030-87016-4_8.2021
6. COM(2019) 640 final: The European Green Deal. Communication from the Commission to the European Parliament, the European Council, the European Economic and Social Committee and the Committee of the Regions, European Commission, Brussels (2019)

7. Panagiotopoulou, M., Agalioti, M., Stratigea, A.: EU Mission on 'Climate-Neutral and Smart Cities' – Assessing readiness to join of 12 Greek cities. In: Gervasi, O., et al. (eds.) ICCSA 2023. LNCS, vol. 14105, pp. 657–675. Springer Cham (2023). https://doi.org/10.1007/978-3-031-37108-0
8. Dasgupta, S., Lall, S., Wheeler, D.: Cutting global carbon emissions: Where do cities stand? (2022). https://blogs.worldbank.org/sustainablecities/cutting-global-carbon-emissions-where-do-cities-stand. Accessed 05 Jan 2024
9. Stratigea, A., Leka, A., Nicolaides, Ch.: Small and medium-sized cities and insular communities in the Mediterranean: coping with sustainability challenges in the smart city context. In: Stratigea, A., Kyriakides, E., Nicolaides, Ch. (eds.) Smart Cities in the Mediterranean - Coping with Sustainability Objectives in Small and Medium-Sized Cities and Island Communities, pp. 3–29. Springer Cham (2017b). https://doi.org/10.1007/978-3-319-54558-5_1. ISBN 987-3-319-54557-8
10. WWF: The climate change effect in the Mediterranean - Six stories from an Overheating Sea: WWF Mediterranean Marine Initiative, Rome, Italy (2021). https://www.wwf.fr/sites/default/files/doc-2021-06/20210607_Rapport_The-Climate-Change-Effect-In-The-Mediterranean-Six-stories-from-an-overheating-sea_WWF-min.pdf. Accessed 02 Jan 2024
11. EEA - European Environment Agency: The European environment - State and outlook 2015. Publications Office of the European Union, Luxembourg (2015)
12. Cramer, W., Guiot, J., Marini, K. (eds.): Climate and environmental change in the Mediterranean Basin – Current situation and risks for the future. First Mediterranean Assessment Report. MedECC, Union for the Mediterranean, Plan Bleu, UNEP/MAP, Marseille, France (2020). https://doi.org/10.5281/zenodo.7224821. ISBN 978-2-9577416-0-1
13. García-Nieto, A.P., Geijzendorffer, R.I., Baró, F., Roche, K.P., Bondeau, A., Cramer, W.: Impacts of urbanization around Mediterranean cities: changes in ecosystem service supply. Ecol. Ind. **91**, 589–606 (2018). https://doi.org/10.1016/j.ecolind.2018.03.082
14. El-Askary, H., Li, W.: Mediterranean Basin case study. United Nations Office for Disaster Risk Reduction (2021). https://www.preventionweb.net/files/78472_cs13.heshamelaskarycasestudydrought.pdf. Accessed 14 Jan 2024
15. Lagarias, A., Stratigea, A.: Coastalization patterns in the Mediterranean: a spatiotemporal analysis of coastal urban sprawl in tourism destination areas. GeoJournal **88**, 2529–2552 (2022). https://doi.org/10.1007/s10708-022-10756-8
16. Lagarias, A., Stratigea, A., Theodora, Y.: Overtourism as an emerging threat for sustainable island communities – exploring indicative examples from the South Aegean Region, Greece. In: Gervasi, O., et al. (eds.): ICCSA 2023, Part VII. LNCS, vol. 14110, pp. 404–421. Springer, Cham (2023). https://doi.org/10.1007/978-3-031-37123-3_29
17. GRID Arendal: Urban population in the Mediterranean countries (n.d.). https://www.grida.no/resources/5932. Accessed 22 Dec 2024
18. 4th SnartBlueCity Euro-Mediterranean Conference - Exhibition: https://www.smartbluecity.com/. Accessed 26 Apr 2024
19. Dinges, M., Borsboom, J., Gualdi, M., Haindlmaier, J., Heinonen, S.: Mission area: climate-neutral and smart cities. European Commission (2021)
20. Woertz, E. (ed.): "Wise Cities" in the Mediterranean? Challenges of urban sustainability. CIDOB Editions, Barcelona (2018). https://www.cidob.org/en/publications/publication_series/monographs/monographs/wise_cities_in_the_mediterranean_challenges_of_urban_sustainability. Accessed 29 Dec 2023
21. MedECC Network (2019). https://ufmsecretariat.org/wp-content/uploads/2019/10/MedECC-Booklet_EN_WEB.pdf. Accessed 02 Jan 2024

22. Marava, N., Alexopoulos, A., Stratigea, A.: Tracking paths to smart governance: the case of Korydallos Municipality—Greece. In: Stratigea, A., Kavroudakis, D. (eds.) Mediterranean Cities and Island Communities. PI, pp. 81–112. Springer, Cham (2019). https://doi.org/10.1007/978-3-319-99444-4_4
23. Stratigea, A., Leka, A., Panagiotopoulou, M.: In search of indicators for assessing smart and sustainable cities and communities' performance. Int. J. e-Plann. Res. **6**(1), 43–73 (2017). https://doi.org/10.4018/IJEPR.2017010103
24. Imbrenda, V., Coluzzi, R., Lanfredi, M., Loperte, A., Satriani, A., Simoniello, T.: Analysis of landscape evolution in a vulnerable coastal area under natural and human pressure. Geomat. Nat. Hazards Risk **9**, 1249–1279 (2018). https://doi.org/10.1080/19475705.2018.1508076
25. Sutriadi, R.: Smart sustainable coastal areas. BIO Web Conf. **89**, 04004 (2024). https://doi.org/10.1051/bioconf/20248904004
26. Smiraglia, D., Cavalli, A., Giuliani, C., Assennato, F.: The increasing coastal urbanization in the Mediterranean environment: the state of the art in Italy. Land **12**(5), 1017 (2023). https://doi.org/10.3390/land12051017