

THE SOCIAL SIGNIFICANCE OF SUSTAINABLE URBAN MOBILITY PLANS AND THE DEVELOPMENT OF CONSULTATIVE DEMOCRACY IN CITIES

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ABSTRACT

The strategy of a city that aims at promoting sustainable mobility policies is usually related to the global objective for environmental protection and the aesthetic objective for regeneration of the local urban environment. However, there is an extremely important dimension regarding the policies for sustainable mobility that has not yet been given the emphasis it deserves. This is the stimulation of the citizens' interest in the community and the increase of their participation in local decisions, hence the strengthening of the local democracy in decision making. Dewey had pointed out, from 1927, that invasion and gradual destruction of local collectives and face-to-face communication was the immediate source of instability and indifference that (already) characterized the democratic American society. The inhabitants now choose areas that are away from the old dense and multifunctional neighborhoods, no longer accessible on foot from the city center and with no other land use than residences. Local stores within the neighborhood or the city center created a sense of unity and community to the citizens, by representing their own shops, they felt familiar and also created a daily social gathering, a component of their local identity. The big scale of urban development limits the person's ability to participate, because the person is unable to get to know the whole of the urban space, while also she/ he is mostly unable to follow its evolution. Most cities that have achieved a high level participation in decision making regarding urban issues were small-sized cities. The topic of this paper is related to the specific research question on how sustainable mobility could contribute towards the building of a consultative democracy in cities.

1. INTRODUCTION

Traveling from one part of a city to another is a time-consuming and fatiguing process (Beria and Grimaldi, 2014). But most importantly, it is energy-consuming and expensive (Vlastos and Birbili, 1999; Bakogiannis, et.al., 2014; Tomanek, 2017), since the cities are expanding spatially and the distances are getting longer. As a result, urban diffusion phenomena are increasing which makes it more difficult for citizens to organize their day-to-day movements and commutes, and consequently the variety of activities recorded in the public neighborhood areas and their urbanity tend to decrease, while the same is also true when it comes to the quality of life of residents (Vlastos, 2004). Internet penetration into the citizens' lives contributes further to this direction as people are increasingly seeking virtual contact, utilizing a range of social media tools (Wellman, 2008), in comparison with direct communication, which was traditionally taking place in the public domain of the cities. The upsurge in the use of social media in recent years, however, must not detract from the high importance of the most critical factor, that of the domination of private motor vehicles in the urban streets. Indeed, people, while moving in the public domain, they are surrounded by motor vehicles (Kyriakidis, et.al., 2017; Kyriakidis and Bakogiannis, 2018), without having the opportunity to interact with others (Vlastos, et.al., 2003). Somehow, antisocial behavior arises and anxiety is developed around travelling (Kenworthy and Laube, 1996). Traffic planning, subconsciously, has become

a key parameter regarding the social organization of cities (Vlastos, 1993), in which the human presence is no longer visible, contrary to the presence of cars. Political decisions of an older era were those that contributed to the change of parts of European cities. Some neighborhoods and their suburbs were not planned according to their centers following a functional urban morphology but with the emphasis on serving motorized traffic.

On the contrary, Sustainable Urban Mobility Plans (SUMPs) aspire to change the current reality and create an environment that favors social contact as the foundation of democracy. According to Rupprecht Consult - Forschung & Beratung GmbH (2016), SUMPs are Strategic Plans, based on existing planning practices, and taking into account the principles of integration, participation and evaluation in order to meet the needs of mobility for people, today and in the future, for a better quality of life in cities and their surroundings. According to Jan Gehl's (2010) book entitled "Cities for people", modern urban design principles require the integration of the human dimension as a prerequisite that SUMPs attempt to achieve and they aim not only to adjust the city's profile in landscaping terms, but also to influence citizens' attitudes in a way that promotes more responsible mobility behaviors and diminishes car-dependency. The four principles outlined in Gehl's 2010 book ensure that human activities are concentrated in developed structures while the fifth principle relates to improving the quality of the urban area to extend the time that people spend outdoors.

In this context, a number of organizations, internationally, promote the idea of switching to cities more independent from the car and more compact, since compact city is considered to be more sustainable (Barbopoulos, et.al., 2005; Portokalidis and Zygoris, 2011; Lim and Kain, 2016; Mouratidis, 2017; Kyriakidis and Iliadis, 2018). The European Union, in particular, promotes the implementation of SUMPs through a series of guidelines, such as the 2007 Green Paper "Towards a New Culture for Urban Mobility", the 2011 White Paper "Roadmap to a Single European Transport Area - Towards a Competitive and the Resource Efficient Transport System, and the 2014 Draft Report on Sustainable Urban Mobility, while they are still remaining high on its agenda through new financing mechanisms (e.g. the new Financial Framework of EU about Research and Innovation "Horizon 2014-2020", which finances both SUMP actions and sustainable mobility measures). Indeed, an announcement of the European Commission (913 / 17.12.2013) signalled the mandatory enactment of SUMPs to small and medium-sized cities in the Member States, while they are considered to be a requirement for the disbursement of urban transport resources and funding (e.g. infrastructure projects, clean buses, ITS systems, etc.) and their implementation should therefore be addressed as an opportunity to acquire more sociable cities.

Taking all the above into consideration, this research paper focuses on exploring a way in which SUMPs can contribute to enhancing the consultative democracy in cities. In order to gain this specific goal, a literature review regarding the concept of consultative democracy and the SUMPs process is conducting, in the beginning (Chapters 2 and 3). Through this review, the integration of innovative tools, such as crowdsourcing techniques, in planning process is also examined, as it consists of the main link between SUMPs and consultation processes. Through examining some on-going Greek SUMPs case studies (Chapter 4), the main objective of the research is identify specific conclusions about the potential correlation between SUMPs and the promotion of consultative democracy. Finally, some conclusions (Chapter 5) are presented in order to justify why the implementation of SUMPs can contribute to the promotion of consultation processes in cities across Greece, as well as in Europe.

2. DESIGN OF URBAN MOVEMENTS BY CITIZENS FOR CITIZENS. IS THIS POSSIBLE?

Democracy is a political system aiming at a society that considers each person's individual views to be of equal importance for political decisions. It requires people to appreciate the view of their neighbor, to know him and understand him. There are two key considerations about democracy: the first regards democracy as a field of confrontation of ideologies and views with the aim to identify the most correct and accepted ideology and the other regards it as a synthesis of ideologies and views with the aim of creating the right policy. The second approach, also known as consultative democracy, is clearly more difficult to be achieved in modern cities, however it is the form that can mobilize citizens who feel distant from decision making, giving them a real opportunity in policy-making and allowing them to stop being just proverbial interlocutors and validating premeditated and forecasted decisions. At the same time, this form gives them an incentive to devote time for developing a collective urban conscience among citizens and enables them to arrogate the final decisions and claim their realization.

This research paper deals with the way in which SUMPs can contribute for developing a consultative democracy in cities. Although this assertion could be strongly criticized, on the one hand because SUMPs are a spatial strategic planning tool and on the other as such a form of democracy is considered not possible, it is necessary to investigate this issue for two main reasons:

(a) SUMPs are not just typical spatial plans but strategic and holistic policy plans where the citizen is formally invited to participate actively in their implementation throughout the whole procedure.

(b) In the history of the European city, cases of consultative democracy with the public space or some "third places" have been recorded as areas of social and political expression. The cases of "The Speaker's Corner" in Nottingham, UK (Kyriakidis, 2016) and the political cafés in France (Berenson, 1984; Rigogne, 2014), where the exchange of views was a key issue for human interaction, are characteristic.

3. HOW CITIZENS CAN BE ACTIVATED THROUGH SUMPs?

As previously discussed, a key issue addresses the way in which planning tools like SUMP can activate the public, promoting the development of consultative democracy. The question was approached through literature review focusing on how to organize and implement them.

Assessing SUMP objectives leads to the narrative that they aim to produce a new urban environment (Diez, et.al., 2013) and thus, citizens should have the opportunity to participate in it. The parallel linking of the urban environment with a number of issues such as health and air quality, which are key points that are expected to be improved following the implementation of a SUMP through interventions such as the promotion of physical exercise and cycling for commuting, is an issue that enhances social participation in the planning process (Shokoohi and Nikitas, 2017; Skagiannis, et.al., 2017).

The spatial reference of these projects at the municipal or other functional unit level is another parameter that enhances the possibility for citizens participation as, according to Vlastos (2004), in order to engage and involve residents in specific projects in their city, they must know their city, while the reference scale should keep their interest alive. In the new approach that comes to the forefront of SUMP implementation, the scale of planning approaches the scale of the citizen. There is a shift from all the cities or metropolitan areas that have been studied by a group of transport engineers, assisted by a team of city planners with the aim of facilitating the flow of traffic, and currently the focus is on upgrading the public space by creating green routes, pedestrian paths, united public areas, cycling routes and many infrastructure projects for mild movements with a centre on the neighborhood. Planning based on the policy of integrated urban regeneration, is based on the collaboration of teams composed of both transport and urban planners as well as architects, surveyors, social psychologists and geographers. Already the scientific “opening” of new specialties reflects the tendency of the SUMP inspirers to integrate citizens into the design process. Indeed, it is the city’s inhabitants and visitors who are called upon to approach the above issues, identify the problems and suggest their potential solutions. Specialized analysis tends to be more comprehensible to the public, by illustrating images, indicators and statistical analysis where necessary, and by removing one-dimensional approaches based on mathematical models, load numbers and motor vehicle flows.

Strengthening the role of neighborhoods is in the same direction. In fact, through the SUMP, integrated programs are being promoted. Through the urban regeneration of road axes or the addition of new public transport links, the spontaneous development of local centers is possible, by attracting leisure and commercial land uses and stimulating the social character of neighboring public spaces (Nobis, 2010). The neighborhood acquires a collective identity, enhancing human contact. All means of sustainable mobility (pedestrian, bicycle, collective means of transport) enhance social contact between people in the same neighborhood (Saelens, et.al., 2003).

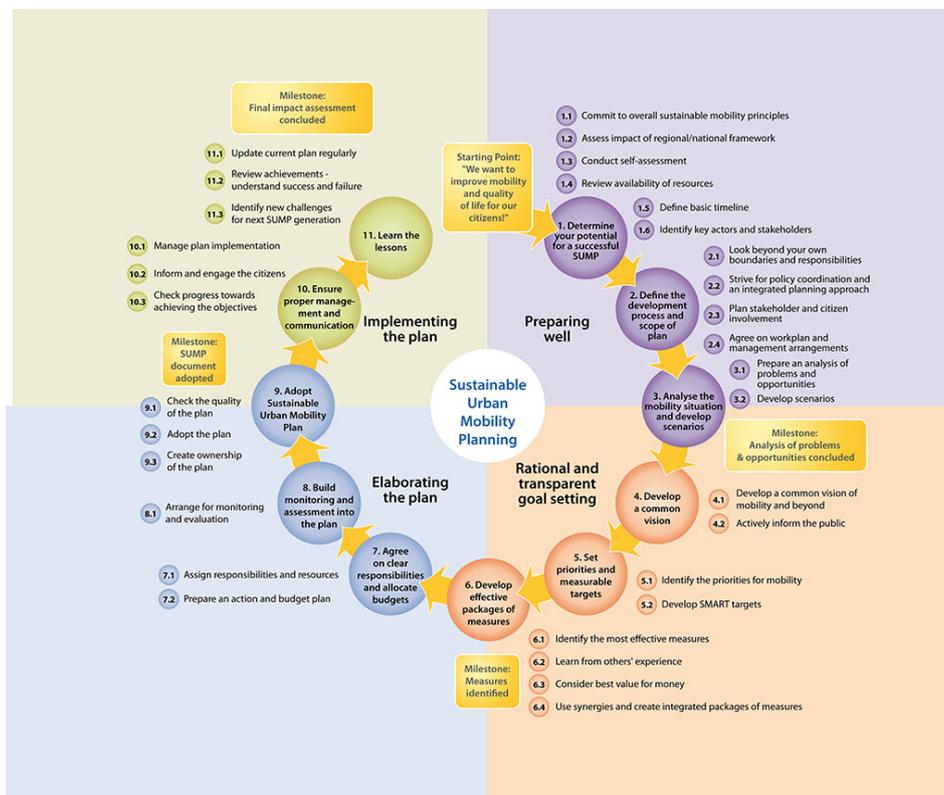


Figure 1. The SUMP planning cycle. Source: ELTIS, 2013.

These issues raise, from the outset, the importance of public participation in the process of implementing a SUMP. However, this is made even more apparent by observing the stages of a SUMP implementation, which are presented in Figure 1. It is necessary for the team of experts to communicate with the stakeholders even for the

early stages of a SUMP (Step 1.6), in order to identify conflicts and identify how they may affect the planning process. In this context, the study group is invited to organize the way of community engagement (Step 2.3), which can be based on a set of traditional and innovative methodological tools. The first results of this active participation are already evident from the second planning phase, where the team of experts and citizens develop a common vision as well as planning scenarios (Steps 4.1 and 4.2). In the third stage of a SUMP, residents are called upon to reflect on ideas that will generate effective and ideal measures for the SUMP (Step 6.2). Securing high quality interventions is, in the fourth part of the project (Step 9.1), the key demand for practical public participation in the planning process. Indeed, engaging the people is a requirement for local authorities to be assured about the acceptance of proposed measures (Step 10.2). Finally, people participate as an active indicator on the progress and monitoring of SUMP objectives.

The above points highlight the importance of establishing an open procedure where all residents are eligible to participate. However, in order to better coordinate planning, it is necessary to identify key stakeholders and primary stakeholders in order to know possible conflicts or alliances that can make a significant contribution to the progress of the SUMP. Typically, such examples may relate to the diversification of the scope of the design and the type of interventions related to the availability of resources. The procedures that are used to implement this action include:

- Identification of stakeholders as well as their dynamics and goals,
- Determination of vulnerabilities and factors that may be required to be strengthened in the course of the process,
- Attempts to develop alliances in planning with the aim of avoiding potential conflicts with local entities that may affect a large part of the public to overturn the SUMP forecasts,
- Development of strategic participation and coordination between stakeholders. Such a strategy should be developed after studying the profile of the population groups involved, so that the tools to be used and the way the coordination is done will meet the best results. In order to obtain the profile of the groups it is necessary to study their demographic, social and economic characteristics.

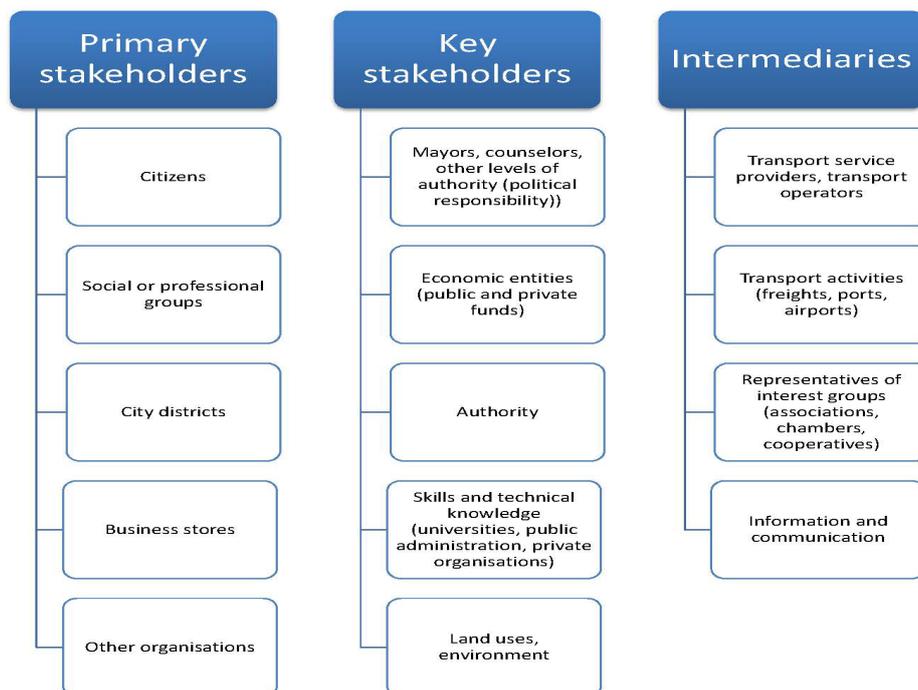


Figure 2. Diagrammatic process of stakeholders' participation in SUMP Implementation Source: Lever Consulting 2018

Figure 2 shows diagrammatically the stakeholders involved in the process of implementing a SUMP. To promote

consultative democracy, however, the focus is on the citizen as an individual and the way in which she/ he can participate in the planning process through the above groups and identities. The next section presents two different tools, which have already been used in cases of SUMP for Greek cities, which contributed to the promotion of consultative democracy.

4. CROWDSOURCING AND CONSULTATIVE DEMOCRACY

In recent years, the European Commission has established a series of projects that are based on crowdsourcing techniques. In these projects, citizens have been used as “sensors” (Pödör, et al., 2015). Indeed, in many recent projects across Europe, people contribute to the provision of geospatial information (Stojanovic, et.al., 2016), through the use of mobile devices such as smartphones (Ganti, et.al., 2011; Xiao, et.al., 2013; Bizjak, 2012 in Papadopoulou and Stratigea, 2014; Pödör, et al., 2015), without bearing any costs to the institutions that evaluate and analyze it (Schweizer, et al., 2011). These projects are mainly associated with the collection of environmental data as a result of the ratification of the Aarhus Convention (UNECE, 1998); and its integration to the European legislation (Directive 2003/35/EC), where the need for access and participation of citizens in decision-making processes with an environmental footprint, is stressed (Bakogiannis, et.al., 2018).

In this model, citizens can participate in the process of analyzing the current situation in a given study area by collecting data using their smartphones. These data may vary. Typically, the use of such techniques focuses on collecting environmental data, such as noise levels and air quality. In four cases of Greek municipalities implementing SUMP (Municipalities of Zografou, Kallithea, Kozani and Drama), direct data collection process by volunteers took place for these two types of data, in order to both understand the current situation and further use the dataset as indicators before and after intervention. In the case of noise data recording, the Sound Meter app was used, while in the case of air quality data recording, the free HackAir app was used (Bakogiannis, et.al., 2018). The number of volunteers participating in each city varied according to the specific characteristics of the city and the time constraints for the implementation of the projects. However, given the fact that the degree of reliability of collected crowdsourced data is of great significance, as there is a lot of discussion in terms of crowd sourced data quality (Apostolopoulos, et.al., 2016), the number of volunteers is suggested to be larger. Thus, data will be more reliable and public participation will take place to a greater extent. For this reason, a range of tools can be used to attract volunteers, such as social media campaigns, which, according to Dimitriadis and Tzortzakis (2010), are essential tools for the successful completion of modern information campaigns.

Another method that can enhance the direct and active participation of citizens in the development of a SUMP is the development of a crowdsourcing web-platform. This action is yet another crowdsourcing practice. Citizens are not required to collect data, but to provide ideas on the plans to be implemented in their city (Bakogiannis, et.al., 2018). In this way, residents are invited to contribute to the analysis of the existing situation after providing ideas, identifying specific problems, or suggesting good practices to be replicated in their city. Such applications have been implemented in many countries, with good examples being the CityMakers platform in Paris and the Nexthamburg platform in Hamburg. In the four Greek municipalities mentioned above, 264 users participated in overall, in the platforms that were constructed, and presented a total of 166 ideas organized under specific thematic categories, like: walking, cycling, public transportation, urban green spaces, fleet management, e-mobility, urban planning, etc. Table 1 presents the number of ideas submitted in the four studied municipalities (Zografou, Kallithea, Kozani and Drama). It should be noted that most of the proposals were quite specific and in many cases, a picture was also submitted to depict the key dimension of each idea. We realize in these cases that citizens were aware about this action and believed that through this process (uploading their idea in a platform) they can change their cities in a better way. Although the number of the participants was small concerning the population size of these municipalities, however, it is close to the number of people taking place in the various traditional consultations (i.e. charrettes). In any case, it is important to increase the number of participants but even in such numbers it's considered important in activating the public through the provision of an official innovative tool of expressing their opinion, which will be later evaluated after the completion of the SUMP in all the studied municipalities. Until now, many of the proposed ideas have been integrated in the relevant SUMP, something quite important as through this platform it was feasible for citizens to communicate with planners and decision makers.

	Zografou	Kallithea	Kozani	Drama	Total
Users	80	93	78	19	270
Interactions	130	221	121	20	492
Ideas	61	41	42	22	166
Ratio (Ideas/Users)	76%	44%	54%	115%	62%

Table 1: Statistics regarding the use of Crowdsourcing Platforms in the studied cities. Source: Own Elaboration.

Similar actions have been designed for the municipality of Rethymnon in Crete, where the SUMP implementation

process has begun through the CIVITAS DESTINATION project. The results of this case, combined with the relevant results of other cities when the participatory processes will be completed, are expected to give a clear picture of how and how far consultative democracy has been promoted in local communities through such innovative crowdsourcing platforms. Results so far show a clear interest from local communities in participating in the decision-making process with their activation through SUMP's playing an important role in this. It seems that the new design model can work effectively that future practices can also be applied to urban planning and design so that the projects proposed are fully responsive to the needs and attitudes of the inhabitants.

5. CONCLUSIONS

SUMP's consist of planning tools for the cities' public spaces with an emphasis on transportation choices, which has been significantly promoted in recent years in the framework of the European Union's policies for a compact and sustainable city. In Greek cities, SUMP's are another challenging new concept that, although accepted in theoretical terms, in practice they have not yet been implemented through organized and holistic interventions. For that reason, the current timing is the most appropriate for exploring a series of issues related to how citizens should be involved in the planning process.

Taking all the above into consideration, as well as the low level of active participation of the citizens in the planning processes, the studied question in this research paper is whether it is possible to promote active community engagement in the implementation of projects through SUMP's and how we can cultivate consultative democracy through this concept. This question is particularly important in case of Greece and several Southern European countries, where citizen engagement is limited to accepting or rejecting already made design solutions through formal consultations.

In order to investigate this question, literature review and a research in good practices for Greek cities implementing SUMP's took place. The most important conclusions emerged can be summarized as follows:

- Consultative democracy is based on the synthesis of ideologies and opinions in order to formulate an appropriate policy. Although traditionally it is customary to be implemented through live discussions and interactions, however, there are many countries and communities across Europe that tend to integrate innovative tools in order to enhance citizen participation in the decision-making process. Estonia, Sweden and Iceland are typical examples of countries in which e-government and e-participation is high and thus, procedures like planning are simplified as planners have access on big databases and on citizens' opinion. Although this is not easy, the implementation of Sustainable Urban Mobility Plans can assist in changing the traditional planning approach as people can express their personal views through such web-platforms. This is an initial step in order for people to get familiarized with e-consultations.
- In democratic establishments, each member has the right to say, design and participate in the planning that is made for him. This can also be done through procedures of direct collection of data from volunteers. As a volunteer, any citizen may express his/ her interest and the process can be very simple, if planners have pre-developed the basis for such participation. In this way, the citizen is actively involved in the planning, design and implementation, while before he was just an observer of what was proposed for his/ her city. Thus, it is easier for him/ herself and his/ her social environment to understand specific design solutions that may be suggested by the team of experts or co-developed by citizens ideas and planners' expertise.
- In addition to the above points, which demonstrate two ways of strengthening consultative democracy through SUMP's, the objectives and the object of these projects are the central elements in proving this case. The emphasis on the human scale, the neighborhood and travel behavior, and the implementation of proposals through projects that are readily perceived by every citizen as a commuter is a key parameter that makes SUMP's an opportunity to strengthen the active role of citizens in the day-to-day life of the city. Indeed, through the four case studies examined, emphasis of the initial proposals has been given in local interventions for improving the quality of life in the city centers as well as in the neighborhoods. Moreover, it was realized that people understood well the role of SUMP's through their participation in the web-platform as their proposals focused on intervention of a small or medium scale, mainly in their neighborhoods' surroundings and city centers, the areas that citizens' felt more familiar with. Most of the proposed ideas are easily or moderately applicable as they concerned interventions that mainly affect the social life and livability of urban spaces. In case that such methodology was similarly applied in another type of plan (i.e. a common urban or land use plan) results could not give such immediate results, due to the fact that special topics demand higher expertise and extensive knowledge on the related impacts.
- As a result, SUMP's are an opportunity to capitalize the knowledge of promoting active social engagement. Although the number of participants in the examined case was not high, the web-platform consultation procedure was an important step in activating citizens by using an innovative tool of expressing their personal views that gives to local authorities and planners an easy readable image of what people want for their cities and their daily commuting elements. The use of a range of innovative tools, combined with traditional tools, can help in maintaining the sense of participation in the SUMP development process and enable citizens to participate in collective and voluntary actions.

The above proves that the issue of traffic and urban planning, as proposed to be combined through SUMPs, can have positive effects on the social aspects of local communities as well. Although, as a first step, the objective of public participation is to accept interventions and to promote successful planning measures, it is found that the result may be wider for the involved collectives. Therefore, the key conclusion that emerges from this overview of the issue is that consultative democracy can be promoted through the implementation of a SUMP; however, there should be a proper coordination of clear and understandable actions in order to activate the public and diffuse knowledge and information.

REFERENCES

- Apostolopoulos, K., Geli, M., Petrelli, P. et al., 2016. A new model for cadastral surveying using crowdsourcing. *Survey Review*, 10, pp. 1-12.
- Bakogiannis, E., Kyriakidis, C., Siti, M., Eleftheriou, V. and Siolas, A., 2014. Urban planning VS environment. Reconciling the conflicts. *4th Pan-hellenic Conference in Rural and Surveying Engineering: The role of surveyors in reconstructing Greece*. Thessaloniki, Greece, 26-27 September 2014.
- Bakogiannis, E., Kyriakidis, C., Siti, M., Christopoulos, K. and Karolemeas, C. 2018. Issues on social and technical transition concerning the participatory planning process in the context of Sustainable Urban Mobility Plans. *11th International Conference of the Hellenic Geographical Society*. Laurio, Greece, 12-15 April 2018.
- Barbopoulos, N., Milakis, D. and Vlastos, Th., 2005. Seeking the form of a sustainable city: A critical approach to the compact urban model. *Aeichoros*, 4(1), pp. 20-45.
- Berenson, E., 1984. *Populist religion and left-wing politics in France, 1830-1852*. Princeton, USA: Princeton University Press.
- Beria, P. and Grimaldi, R., 2014. Cost Benefit Analysis to assess urban mobility plans. Consumers' surplus calculation and integration with transport models. *Munich Personal RePEc Archive*. [online] https://mpra.ub.uni-muenchen.de/59590/1/MPra_paper_59590.pdf [Accessed 03 June 2016].
- Dewey, J., 1927. *The public and its problems*. Athens, OH: Swallow Press.
- Diez, J.M., Gonzalo Orden, H., Velasco, L. And Lopez-Lambas, M.E., 2013. Situation of the sustainable mobility plans in Spain. *DYN@MO Summer University in Plama Conference*, Palma de Mallorca, Spain, June 2013.
- Dimitriadis, S., Tzortzaki, A., 2010. *Marketing: Principles-Strategies-Applications*. Athens: Rosili Editions.
- ELTIS, 2013. Guidelines. *Developing and implementing sustainable urban mobility plans. European Platform on Sustainable Urban Mobility Plans and European Commission Directorate-General for Mobility and Transport* © European Union.
- European Commission, 2007. *Green Paper "Towards a new culture for urban mobility"* (COM 2007).
- European Commission, 2011. *White Paper "Roadmap to a Single European Transport Area – Towards a Competitive and Resource Efficient Transport System"* (COM 2011).
- European Commission, 2013. *"Together towards competitive and resource-efficient urban mobility"* (COM 2013).
- European Parliament, Committee on Transport and Tourism (2014). *Draft Report on Sustainable Urban Mobility* (2014/2242 (INI)).
- Ganti, R., Ye, F. and Lei, H., 2011. Mobile crowdsensing: Current state and future challenges. *IEEE Communications Magazine*, 49(11), pp. 32-39
- Gehl, J., 2010. *Cities for people*. Washington, Covelo and London: Island Press.
- Kenworthy, J. and Laube, F., 1996. Automobile dependence in cities: An international comparison of urban transport and land use patterns with implications for sustainability. *Environmental Impact Assessment Review*, 16(4-6), pp. 279-308.
- Kyriakidis, C., 2016. The function of urban public space in relation to local parameters: Comparative study between Larisa and Nottingham. *Aeichoros*, 24, pp. 67-85.
- Kyriakidis, C., Bakogiannis, E. and Siolas, A., 2017. Identifying environmental affordances in Kypseli Square in Athens, Greece. *International Conference on Social Sciences (ICONSOS) 2018*, New York, USA, 17-19 September 2017.
- Kyriakidis, C. and Bakogiannis, E., 2018. How the physical characteristics may affect the social life of streets in Athens, Greece? *14th International Conference on Social Sciences*, f
- Kyriakidis, C. and Iliadis, F., 2018. Compactness evaluation of the Athens metropolitan area. *11th International Conference of the Hellenic Geographical Society*. Laurio, Greece, 12-15 April 2018.
- Lim, H. K. and Kain, J. H., 2016. Compact cities are complex, intense and diverse but: can we design such emergent urban properties? *Urban Planning*, 1(1), pp. 95-113.
- Mouratidis, K., 2017. Is compact city livable? The impact of compact versus sprawled neighbourhoods on neighbourhood satisfaction, *Urban Studies*, 1-23.
- Nobis, C., 2010. Multimodality: Facets and causes of Sustainable Mobility Behavior. *Transportation Research Record: Journal of the Transportation Research Board*, 1, pp. 35-44.
- Official Journal of the European Union, 2003. *Directive 2003/35/EC of the European Parliament and of the Council*. [online] Available at: <http://eur-lex.europa.eu/resource.html?uri=cellar:4a80a6c9-cdb3-4e27-a721->

d5df1a0535bc.0004.02/DOC_1&format=PDF [Retrieved 26th March 2018].

Papadopoulou, Ch. and Stratigea, A., 2014. Traditional VS Web-based participatory tools in support of spatial planning in 'lagging-behind' peripheral regions, In: *Proceedings of International Conference on 'Socio-economic sustainability, Regional Development and Spatial Planning: European and International Dimensions and Perspectives'*. pp. 165-170.

Pödör, A. Révész, A., Oscal, A., et al., 2015. Testing some Aspects of Usability of Crowdsourced Smartphone Generated Noise Maps. *Journal for Geographic Information Science* 1(2015), pp. 354-358.

Portokalidis, K. and Zygouris, F., 2011. The peculiar "Compact Diffusion" of Greek cities. In: *Proceedings of the 9th National Conference of ERSA-GR*, Athens, 6-7 May 2011.

Rigogne, T., 2014. The café as information exchange: Coffeehouses at the heart of the communication system in eighteenth-century Paris. *128th Annual Meeting American Historical Association*, Washington, USA, January 2014.

Rupprecht Consult - Forschung & Beratung GmbH (2016). *Sustainable Urban Mobility Plans – Planning for the people*. [online] Available at: http://www.rupprecht-consult.eu/uploads/tx_rupprecht/SUMP_Brochure_GR_web.pdf [Accessed 03 June 2016].

Saelens, B.E., Sallis, J.F. and Frank, L.D., 2003. Environmental correlates of walking and cycling: findings from the transportation, urban design and planning literatures. *Annals of behavioral medicines*, 25(2), pp. 80-91.

Schweizer, I., Bärtil, R., Schulz, A. et al., 2011. NoiseMap-real-time participatory noise maps. *Second International Workshop on Sensing Applications on Mobile Phones*. [online] Available at: <https://pdfs.semanticscholar.org/8b8d/76765357bd6f82936d25d05512f2b76ac0b6.pdf> [Retrieved 27 Aug 2017].

Shokoohi, R. and Nikitas, A., 2017. Urban growth and transportation in Kuala Lumpur: Can cycling be incorporated into Kuala Lumpur's transportation system? *Case studies on Transport Policy*, 5(4), pp. 615-626.

Skagiannis, P., Goudas, M. and Rodakinias, P., 2017. Sustainable mobility and physical activity: A meaningful marriage. *Transportation Research Procedia*, 24C, pp. 81-88.

Stojanovic, D., Predic, B., Stojanovic, N., 2016. Mobile crowd sensing for smart urban mobility. In: Capineri, C., Haklay, M., Huang, H. et al. (eds). *European Handbook of Crowdsourced Geographic Information*. Ubiquity Press. London, UK, pp. 371-382.

Tomanek, R., 2017. Free-fare public transport in the concept of sustainable urban mobility. *Transport Problems*, 12, pp. 95-105.

UNECE, 1998. *Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters*. <https://www.unece.org/fileadmin/DAM/env/pp/documents/cep43e.pdf> [Retrieved 23 Mar 2008].

Vlastos, Th., 1993. Transport and social environment. *4 Wheels*, 273, pp. 186-190.

Vlastos, Th., 2004. The human scale in traffic planning at the time of the globalization of transport. *Ecotopia*, 29, pp. 30-33.

Vlastos, Th., Barbopoulos, N. and Milakis, N., 2003. The "spatial capacity" approach for a sustainable urban transport planning. The case of Kallithea, Athes. *Proceedings of the Congress "Urban Transport and the Environment for the 21st Century IV"*, Wessex Institute of Technology Press, pp. 133-143.

Vlastos, Th. and Birbili, T., 1999. Towards a new economic policy for sustainable mobility. *Proceedings of the International Conference of TCG: «Technology and Environment» - HELECO '99*, Thessaloniki, Greece, June 1999, Vol II, pp. 499-504.

Wellman, B., 2008. Physical place and cyberspace: The rise of personalized networking. *International Journal of Urban and Regional Research*, 25(2), pp. 227-252.

Xiao, Y., Simoens, P., Pillai, P., Ha, K. and Satyanarayanan, S., 2013. Lowering the barriers to large-scale mobile crowdsensing. *14th Workshop on Mobile Computing Systems and Applications*. Jekyll Island, Georgia, 26-27 February.

CAPTIONS OF VISUAL MATERIALS

Figure 1. The SUMP planning cycle. Source: ELTIS, 2013.

Figure 2. Schematic representation of participants involved in the process of implementing a SUMP. Source: Lever Consulting 2018

SYMBOLS AND ABBREVIATIONS

SUMP: Sustainable Urban Mobility Plan

EC: European Commission