Public Facilities Assessment Methodology

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Abstract: The paper presents the results of several substantiation studies concerning public facilities assessment for various Romanian municipalities, made in order to substantiate urban development plans. The study outlines main methodological steps for public amenities assessment emphasizing the importance of the territorial context, socio-economical context, as well the necessity of development of a compulsory legal frame at national level. The studies conducted by the authors tried to develop specific methodologies designated to assess public facilities provision at city level in order to propose their enhancement if case. The study compares different public facilities assessment conclusions for several cities in Romania and outlines that the average offer and need (public request) is generated by different elements (built and natural), not only the perceived urban barriers but also the unseen elements (as perceived neighbor hoods, sense of belonging of different urban areas). Also, one of the conclusions of this survey is that public amenities (green areas, education facilities, leisure, cultural health and transportation facilities) are one of the main features of urban structure that has to be addressed when planning development at urban or zone level. This focus on public amenities approach can substantiate development decisions at urban level, despite that it is the most disregarded element due to urban development pressures, especially within the new urban development areas. Assessment of public facilities provision at urban level should be subject of the urban development plans in terms of sustainable urban development.

Keywords: *public amenities; public facilities; urban policies; masterplan; development.*

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1. Introduction

The paper presents the results of several substantiation studies concerning public facilities assessment for various Romanian municipalities, made in order to substantiate urban development plans. The study outlines main methodological steps for public amenities assessment emphasizing the importance of the territorial context, socio-economical context, as well the necessity of development of a compulsory legal frame at national level. The studies conducted by the authors tried to develop specific methodologies designated to assess public facilities provision at city level in order to propose their enhancement if case.

The study compares different public facilities assessment conclusions for several cities in Romania and outlines that the average offer and need (public request) is generated by different elements (built and natural), not only the perceived urban barriers but also the unseen elements (as perceived neighbor hoods, sense of belonging of different urban areas). Also, one of the conclusions of this survey is that public amenities (green areas, education facilities, leisure, cultural health and transportation facilities) are one of the main features of urban structure that has to be addressed when planning development at urban or zone level. This focus on public amenities approach can substantiate development decisions at urban level, despite that it is the most disregarded element due to urban development pressures, especially within the new urban development areas. Also, another problem is lack of regulations concerning this aspect, as well maximal indicators (number of people attended by public equipment as well quality indicators), that fact is making almost impossible the sustainable development and long term regulations for these type of public services. Assessment of public facilities provision at urban level should be subject of the urban development plans in terms of sustainable urban development.

The article aims to emphasize the importance of introducing a number of fixed provisions and regulations regarding the minimum level of endowment with public facilities in urban planning documents, this being possible only to the extent of broadening the existing national legislative framework.

Existing literature refers to public facilities segregated, without an existing comprehensive methodology for public facilities (Lou & Wang, 2003; Wang & Wei, 2005). Studies include evaluations of the geographic distribution of services (Cox, 1973; Hodge, 1988; Kirby et al., 1984; Pacione, 1989) or the assessments of fiscal equalization (Lucy, 1981). New

approaches are taking into account also spatial equity, meaning how to access the closest facility (gravity model) (Talen & Anselin, 1998). Due to different legal frame at national and international level, in many Western European countries the legal framework for provision of minimum required of public facilities already exists; due to new decentralized development models in former communists' countries, for eastern European countries this approach is new and is not implemented within the legal framework. Also, growing population within a city puts pressure on existing public facilities and requires development of new public facilities in order to minimize disparities between central areas and peripheries as stated by Rahaman and Salauddin (2009). In accordance with Gar-On and Hong Chow (1996) "*public facilities planning normally applies a planning standard, such as how many hectares of open space are required for a certain number of people in a district. But planning standards only specify the area required and seldom specify where the public facility should be located*" (Gar-On & Hong Chow, p. 339). The article is outlining the necessity of developing this framework at national level, by proposing a comprehensive methodology of assessment of public facilities referring to public facilities requirements as well service areas in accordance to new accessibility and movement trends at city level (Song, et al., 2014; Chang & Liao, 2011; Taleai et al., 2014).

In accordance with Tsou et al. (2005), "*the achievement of equity in the distribution of urban public facilities is a goal of paramount importance to urban planners, who must analyze whether and to what degree their distribution is equitable. Recent efforts have probed into the equity of one type of facility, leaving an overall examination unconsidered*" (Tsou et al., 2005, p. 424). From the authors' point of view, it is necessary to re-discuss the methodologies used to evaluate public facilities servicing by taking into consideration two issues: the change of the urban structure (caused by the evolution of mobility and accessibility at an urban level) and the concept of the residential neighborhood/periphery in terms of decentralized development, a defining feature in recent decades in Eastern Europe. The study discusses the potential to evaluate the level of endowment with public facilities as well as the possibilities of creating neighborhood centers, complementary to the central areas of cities, along with the possibility of implementing these urban development policies into the legislative framework.

The approached subject is important for ensuring the conditions for urban development, at the same time allowing for the correlation of new technological advances (GIS mapping and correlating mobility trends) with public facilities endowment. At the same time, the article addresses the

development trends in the post-industrial society, with emphasis on the ability to provide public facilities in the age of information and mobility.

2. Methodology

The problem of reduced servicing with public facilities is encountered during each update of the general urban plans. In most cases, this problem is caused by uncoordinated urban expansions / developments that are not coordinated with a global development vision, initiated mainly through zonal and detailed urban plans. This tends to be specific to the peripheries of urban developments after 1989.

Starting with the statement that housing is the dominant function of urban settlements, and taking into account the socialist housing construction stages (1950-1980), which included access to public facilities as early as their design phase - the fall of communism was a sudden interruption of the urbanization process, thus many of the cities in Romania have an unfinished urban structure. This translates into a lack of coherence in guiding the construction activities during the last decades - real estate development freedom. Irrespective of the nature of this freedom, it must be replaced by the responsibility to provide access to public facilities in all newly established areas.

The excessive real estate developments that took place in recent decades have created dysfunctions in the urban structure, which, in the absence of sustainable development models and dedicated legislative regulations, could not be solved by the General Urban Plans.

This article highlights the need to complete the legislative apparatus with clear norms/rules regarding the organization, location and sizing of public facilities in an urban settlement.

Although regulations for the correct location of public facilities are in effect in Romania, in most cases the particularities of the already established urban areas present both errors regarding the initial location of these facilities as well as the impossibility to correct these errors through future developments.

In other words, urban development by ensuring access to public facilities cannot be performed/handled according to the textbook, instead it is part of a continuous process of adjustment to each particular case.

Taking into account that in the initial design of an urban settlement the territorial distribution of public facilities was planned in a manner in which the areas of influence would also cover the residential districts, in most cases, there are problems in the peripheral areas. These areas are

developed in an unplanned manner, often occurring after several micro-residential development projects, and this particularity has created a dense urban fabric that does not allow for the insertion of facilities such as schools or high schools, hospitals, parks or others.

Generally, two out of three masterplan projects generate solutions that propose new centers (secondary at a city level but of high importance in peripheral residential areas) that include no more than two of the usual public facilities (in most cases, a church, and a small commercial facility).

Naturally, in this case we are outlining the urban peripheries resulted from an uncoordinated process of urban sprawl - new urban fabric segments based on five morphological patterns, according to the study *Morphological patterns of urban sprawl territories* by Stan (2013). *"They are related to the driving forces that globally lead to the outbreak phenomenon of sprawl - as economic growth, behavior changing towards living comfort (increased demand for individual homes with garden), real estate speculation (and all associated financial systems), increased motorization, weakness of control in urban and regional planning"* (Stan, 2013, p. 13). In order to preserve the urban and metropolitan cohesion, increasing the polarization and interest in these areas is, from the point of view of the developers of this study, a key element in the evolution of the city.

The synthesis section of the analysis performed on the public service facilities that exist in the studied cities also includes the areas/subareas that appear to be central ones or are in the process of being established. An analysis of their development potential is included in our study and it takes into account various scenarios for the spatial distribution of facilities in the territory. The main problems and opportunities are listed therein, as well as an account of the serviced level as per the structure of the city. Other aspects are also included, such as those related to the functional diversification level and human density in certain locations in the city that essentially contribute to maintaining urban quality.

The main concepts used in the article, which relate to the national practice and the methodological approaches, are the following:

Public Facilities - (in context of this article with reference to national legislation and practice) means -any public land, square, public swimming bath, public resort, public recreation site, zoological, botanical or other public garden, park or hiking trail, including any portion thereof and any facility or apparatus therein or thereon, as well as any Public Road, road reserve, reserve street, lake, dam, or river; any public building, structure, hall, room or office including any part thereof and any facility or apparatus therein, which is the Property of, or possessed, controlled or leased by the Municipality and to which the general public has access, whether on

payment of admission fees or not; any community use facility with public access (agro- market, general store, school, etc.)

General Urban Plan - *The general urban plan has managerial and operational regulatory purposes. Each locality must draw up the General Urban Plan, update it every 5-10 years and approve it, the plan serving as the legal basis for the implementation of development programs and actions.* (Law no. 350/2001, article 46)

The territory analyses explore the urban territory's equipment level and the persistence of the city center as a centralizing element, one that contributes to the city's stability. The analysis of the various types of facilities and, most notably, of the areas serviced by these, highlights the urban areas that are either advantaged or disadvantaged by their position in relation to the center of the city and by their relation to the range of public interest facilities that are specific to the central area.

In the paper titled *The architecture of the communist project. Romania 1944-1989*, Zahariade (2011) mentions that *the programmatic idea of the socialist city is opposed to the capitalist city, presented as the repellent result of the chaotic development of a society based on exploration, with scandalous differences between center and periphery - the most obvious expression of social inequality.* - an advancement trend characteristic of the real estate developments that took place within the last two decades and that contradicts the idea of sustainable development. From this perspective, it becomes important to introduce a set of minimum regulations dedicated to ensuring minimal public facilities in all areas of the city, especially in the residential suburbs. This would contribute to the decongestion of the central areas, in addition to increasing the quality of life.

Also, in accordance with Song et al (2010, p. 1217) *Spatial accessibility measurement can be applied to assess the rationality of public service facilities distribution, and can be used to compare the merits and drawbacks of related planning schemes.*

One of the main variables encountered in the preparation of the masterplan proposals for the studied cities is the delimitation of the areas that are already served or those that will be served by public facilities (residential neighborhoods).

Usually, the delimitation is made in accordance to the morphological characteristics of the urban fabric (see the example of Vaslui).

In any of these cases the study of public services is performed in 5 steps:

- The first step when analyzing the existing public facilities in a newly studied city is to list them according to their category: education, health, culture, cult, commerce, leisure, and sports.

- The second step is to interspace the facilities, both by relying on official sources (from the City Hall) and by field work.
- The third step is the demarcation of the area calculated as per the serviced radius - an isochronous graph (general hospital 3000m, polyclinic 1500m, pharmacy 500m, sports field 500 m, high school or school 1000m, kindergarten 500 m etc)
- The fourth step is to determine the degrees of service (low, medium, high) applicable to the residential areas under the influence of isochronous.
- The fifth step (a very important step for establishing urban development objectives that involve supplementing the city's network of urban facilities) is to identify the urban areas that are not serviced by at least two of the facilities listed above. In our proposals section, which includes masterplan-specific regulations, these areas will receive development solutions/scenarios that will mandatorily include the missing public facilities.

The serviced radius was reported to the most appropriate Romanian situation, at international level there are several referenced service radius according to each national framework. For example, the service radius varies between 800m for parks/ playgrounds, 800-1600m for clinics and primary health care centers and 800 m for primary schools (ASCE, 1986; Keeble, 1969) and 8000m for healthcare facilities and 400 m for education facilities (Qatar National Master Plan, 2017). Other methodologies and standards are taking also into account the served population and population density (Humphreys & Zhou, 2015).

3. Case studies

In order to exemplify the aforementioned issues, we chose to present two projects that took place within the Ion Mincu University of Architecture and Urbanism Bucharest that involved the authors of this article. The projects helped develop /study specific methodologies for evaluating the public facilities' servicing level. The two projects targeted urban settlements with different densities (the city of Ploiesti with an area of approximately 58 km² and 250,000 inhabitants and the city of Vaslui with an area of 8.55 km² and approximately 130,000 inhabitants), both cities being characterized by identical urban development problems.

Figure 1. Extract from the masterplan project of the city of Ploiesti – Author: Center for Research, Design, Building Evaluation and Consulting - “Ion Mincu” University of Architecture and Urban Planning, Bucharest (2014), Project Coordinator: prof. arch. Florin Machedon, PhD., Urban Project Coordinator: assoc. prof. urb. Andreea Necsulescu (Popa), PhD.

Within the city of Ploiesti, the new central areas of the city, with one exception, have an attitude of indifference towards the historical center per se, but also towards its placement. The two new, different types of identified central areas (the commercial area type with large spaces and the micro-center type) are located according to accessibility criteria, posing the risk of city decentralization in the west and northwest areas. Virtually every entrance to the city from the north and west is an area where commercial and central zones arise and polarize an important part of city life.

Ploiesti is a city where the western and northern residential areas are the densest ones and their connections with the city center are weak - both in terms of accessibility and in terms of their function. Many of the neighborhoods already have their own micro-centers, suggesting the possibility of a slight decenter of the city in relation to its metropolitan area by shifting the focus to the west area.

The field urbanism projects relate to two sets of rules: the first set contains location requirements provided in the Government Decision no. 525/1996 for the approval of the General Regulation of Urbanism for constructions related to public facilities. The second set of recommendations is derived from a sizing guide proposed in 2014 by the Romanian Register of Urban Planners (an apolitical body that administers the right to practice urbanism).

The second set of rules serves as a rough guide and is addressed to public administration authorities, as well as specialists in the field of urban planning and spatial planning. It is used throughout the development phase, for the advisory phase and for the approval of the urban planning

documents as well as in the authorization process for the execution of construction works.

This second set of rules brings into question clearly quantifiable factors such as the maximum number of people that can be serviced by a certain type of facility or the maximum distances or travel times from an individual's home to a certain facility. However, the main issue with working with this set of rules is that it is a suggestive one, it is non-binding, meaning that these guidelines are used at random or not at all (if they do not match the interests of the territory).

Satellite peripheries include urban areas that present accessibility issues regarding public facilities. These were identified by tracing and overlapping the service areas (the mono-functional areas), which are mostly residential ones and entirely dependent on the central body of the city. The city itself presents the risk of physical and social population segregation. Such is the case of the city of Vaslui, which today has four additional neighboring villages within its built-up area.

Prioritizing the interventions to the urban regulations (RU) and the local urban regulation (RLU) within the General Urban Plan (GUP) for the Municipality of Vaslui will take into account the need to develop neighborhood centers that include public facilities – in order to answer the need for improved accessibility to these local facilities.

Another aspect that will be taken into account will be the access infrastructure for public facilities such as health and education related ones, presuming that the city will continue to depend on areas that are adjacent to the central body. This brings into discussion functional considerations in the urban structure (the relationship with the neighborhood centers, the insertion pattern into the structure of the city, etc.) as well financial debates, in accordance with Berliant et al. (2006, p. 207) *the optimal public facility configuration could be either concentrated (single site) or dispersed (multiple sites), depending crucially on the degree of congestability and the household valuation of the local public good as well as the commuting cost.*

Most often upon analyzing their development potential, and the dynamics of the magnetic power of congestions within public service areas, we can approximate two scenarios for the future spatial distribution of the public service areas within the territory:

- the creation of secondary centers for the benefit of peripheral residential areas;
- the extension of the central area by positioning public service areas along the main arteries.

Figure 2. A synthesis of the schemes pertaining to the degree of service for each type of facility. Extract from the masterplan project of the city of Vaslui – Author: Center for Research, Design, Building Evaluation and Consulting - “Ion Mincu” University of Architecture and Urban Planning, Bucharest (2019), Project Coordinator: prof. arch. Florin Machedon, PhD., Urban Project Coordinator: assoc. prof. urb. Andreea Necsulescu (Popa), PhD, Public Facilities Study Coordinator Lect.urb. Ana Opris, PhD.

A simple overlap of the areas with a high degree of service requirements for all types of facilities highlights the following:

- the downtown (**A**) - with a significant density of representative public facilities/functions;
- the pericentral area (tangent to the city center) (**B**) - with an average density of facilities;
- the predominantly residential areas (**C**) - where facility density is decreased or access to these is rapid although only partial (examples include access to health or commercial facilities or education and commercial facilities);
- peripheral areas (**D**) - not serviced/with reduced accessibility to any type of public service areas.

4. Implementation process and national legal framework

Taking into account that the current legislation does not allow expropriations for the purpose of creating public facilities (which are most often provided at a private property level), one of the current urban

challenges is to find a manner in which public facilities can be provided in already established residential areas.

One of the most common causes of the development of large residential areas (located on the outskirts of cities) is the postponement of the renewal of the urban planning documents for the city's masterplan.

According to the Romanian legislation, the local public administration authority authorized to approve the documentation determines the validity period of the landscaping and urban planning documents. This is done per the documents' degree of complexity and their provisions.

The general urban chain is subject to analysis for updates after no more than ten years. The validity term of the General Urban Plan is extended only once, based on a decision of the Local Council / General Council of the Municipality of Bucharest, until the entry into force of the new general urban plan, but not for more than 10 years after its expiry date.

Thus, we are looking at peripheral areas that are developing and functioning in an area delimited by an urban limit proposed by the regulations included in the last masterplan project. Although this built-up area limit is designed to offer land reserves according to the city's development tendency, in most cases, this line/limit changes during the masterplan's 10 to 20 years of validity. Talking about sprawl as a process and the changes of the urban limit, according to Stan (2013). *These new areas of the recent urban expansion limit cannot be classically conceived as border or as a founding element* (Stan, 2013, p. 15).

The absence of a legislative framework (that can ensure minimum public facilities for any new residential development project and the necessary mechanisms to provide for / create minimum public facilities, as needed, in existing, poorly serviced neighborhoods), combined with all of the aforementioned aspects, makes mandatory to compulsory include these minimum required facilities in the General Urban Plan, in addition to developing a set of methodologies for evaluating the level of public endowments at a national level.

5. Conclusions

The long-term restructuring of the precarious housing fabric on the outskirts of cities that allows for the creation of new residential/ district centers can reach a balance or it can work together as an amplified central area. However, this depends on a sustained intervention from the municipality, in the sense of leading a longer-term development policy in

which the area inbetween will have to be carefully developed and land areas will have to be reserved in the secondary centers to accommodate groups of at least 2 or 3 public facilities.

The degree of diversification, the level of urban density, the connectivity, the degree of available facilities, as well as the parameters related to the flows that characterize certain places in the city contribute to the definition of secondary centers that should be encouraged to become neighborhood centers, especially in dense neighborhoods.

Neighborhood centers can be endorsed by associating different functions that are closely related to green leisure spaces, meeting spaces and agri-food markets – which are important micro-center elements. They can also be supported through an affiliation with certain public functions and good public transport services in direct connection with areas of interest within the town. This can enhance the urban quality of the centers and at the same time their complementarity with other areas of interest in the city.

Notwithstanding, the previously mentioned ideas remain theoretical solutions for the real problem of distributing public facilities on a territorial level - in practice, however, their implementation is not a legislative priority.

When asked how to make sure that public interest is observed when engaging in urban (or territorial) planning, Ianasi (2010) mentions, in the article *Ten observations on public interest and urban planning*, that *it is fundamental to produce a legal framework that will identify how public interests are defined as well as the ways to reconcile and stabilize priorities*.

Unfortunately, in the absence of legislation dedicated to equipping developing cities with public facilities, construction based on a set of good practices remains in force. This is not enough to guarantee compliance with the norms/regulations set forth by urban specialists. Their contribution to the development of the city (in its planned form) for the next 10-20 years does not have legal coverage and is directly dependent on the collaboration with the local government (which, in Romania, is influenced by political changes, respectively the 4-year terms of the mayors - their long-term promises and short-term interests).

References

- Alexandru, M., & Machedon, F. (2015). Plan urbanistic general municipiul Ploiesti [Urban Masterplan of Ploiesti city]. Center for Research, Design, Building Evaluation and Consulting - "Ion Mincu" University of Architecture and Urban Planning, Bucharest. <http://www.ploiesti.ro/18.02.2015.php>

- American Society of Civil Engineers (ASCE). (1986). *Urban planning guide, American society of civil engineers*. American Society of Civil Engineers.
- Berliant, M., Peng, S., & Wang, P. (2006). Welfare analysis of the number and locations of local public facilities. *Regional Science and Urban Economics*, 36, 207-226. <https://doi.org/10.1016/j.regsciurbeco.2005.06.006>
- Chang, H. S., & Liao, C. H. (2011). Exploring an integrated method for measuring the relative spatial equity in public facilities in the context of urban parks. *Cities*, 28(5), 361–371. <https://doi.org/10.1016/j.cities.2011.04.002>
- Cox, K. R. (1973). *Conflict, power and politics in the city: A geographic view*. McGraw-Hill.
- Gar-On, A., & Hong Chow, Y. M. (1996). An integrated GIS and location-allocation approach to public facilities planning - An example of open space planning. *Computers, Environment and Urban Systems*, 20(4–5), 339-350. [https://doi.org/10.1016/S0198-9715\(97\)00010-0](https://doi.org/10.1016/S0198-9715(97)00010-0)
- Government of Romania. (1996). Hotărârea de Guvern nr. 525 din 27 iunie 1996 pentru aprobarea Regulamentului general de urbanism [Government Decision No. 525 of June 27, 1996 for the approval of the General Masterplan Regulation]. *Monitorul Oficial al României*, 149, 1996, July 16.
- Hodge, D. C. (1988). Fiscal equity in urban mass transit systems: A geographic analysis. *Annals of the Association of American Geographers*, 78, 288 – 306. <https://www.jstor.org/stable/2563809>
- Humphreys, B. R., & Zhou, L. (2015). Sports facilities, agglomeration, and public subsidies. *Regional Science and Urban Economics*, 54, 60-73. <https://doi.org/10.1016/j.regsciurbeco.2015.07.004>
- Ianasi, L. (2010). Zece observatii privind interesul public si planificarea urbana [Ten Observations on public interest and urban planning]. *Urbanismul*, 4, 13-15.
- Jia, P., Xierali, I. M., & Wang, F. (2015). Evaluating and re-demarcating the hospital service areas in Florida. *Applied Geography*, 60, 248–253. <https://doi.org/10.1016/j.apgeog.2014.10.008>
- Keeble, L. (1969). Principles and practice of town and country planning, *The Estates Gazette Limited*. <https://doi.org/10.1177/146642406108100154>
- Kirby A., Knox P., & Pinch S. (Eds.). (1984). *Public service provision and urban development*. Taylor & Francis.
- Lucy, W. (1981). Equity and planning for local services. *Journal of the American Planning Association*, 47, 447-457. <https://doi.org/10.1080/01944368108976526>
- Luo, W., & Wang, F. (2003). Measures of spatial accessibility to health care in a GIS environment: Synthesis and a case study in the Chicago region. *Environment and Planning B Urban Analytics and City Science*, 30, 865–884. <https://doi.org/10.1068/b29120>

- Machedon, F. (2006). *Metode de analiză morfologică a Țesuturilor urbane* [Methods for morphological analysis of urban patterns]. Editura Universitară "Ion Mincu".
- Ministry for Municipality and Environment. (2017). Qatar National Master Plan. Community Facility Standards and Provision Guidelines. http://www.mme.gov.qa/QatarMasterPlan/Downloads-qnmp/Regulation/English/Group3-Guideline/032_Community%20Facilities%20Standards%20%20Provision%20Guidelines%2012-12-2017.pdf
- Necșulescu, A., Machedon, F., & Opris, A. (2020). *Plan Urbanistic General Municipiul Vaslui* [Urban masterplan of Vaslui city]. Center for Research, Design, Building Evaluation and Consulting - "Ion Mincu" University of Architecture and Urban Planning, Bucharest.
- Pacione, M. (1989). Access to urban services - The case of secondary schools in Glasgow. *Scottish Geographical Magazine*, 105, 12 -18. <https://doi.org/10.1080/00369228918736746>
- Petrișor, A. (2006). Dezvoltarea durabilă a orașelor: noi concepte europene [Sustainable development of cities: New European concepts]. *Amenajarea Teritoriului și Urbanismul*, 3-4, 8-10. https://www.researchgate.net/publication/265406163_Dezvoltarea_durabila_a_oraselor_noi_concepte_europene
- Rahaman, K. R., & Salauddin, R., (2009). A spatial analysis on the provision of urban public services and their deficiencies: a study of some selected blocks in Khulna city, Bangladesh. *Theoretical and Empirical Researches in Urban Management*, 4(1S), 120-132. https://www.researchgate.net/publication/46567788_A_SPATIAL_ANALYSIS_ON_THE_PROVISION_OF_URBAN_PUBLIC_SERVICES_AND_THEIR_DEFICIENCIES_A_STUDY_OF_SOME_SELECTED_BLOCKS_IN_KHULNA_CITY_BANGLADESH
- Romanian Parliament. (2001). Legea nr. 350/2001 privind amenajarea teritoriului și urbanismul [Law no. 350/2001 on spatial planning and urbanism]. *Monitorul Oficial al României*, 373, 2001, July 10.
- Romanian Register of Urban Planners. (2014). Recomandări rezultate în urma analizării unor bune practici pentru dimensionarea dotărilor necesare în echiparea teritoriului urban [Recommendations based on the analysis of best practices in planning of the public amenities necessary for urban territory fitting]. <file:///C:/Users/RADUPA~1/AppData/Local/Temp/ghid%20dimensionare%20dotari%20august%202014-1.pdf>
- Song, Z., Chen, W., Zhang, G., & Zhang, L. (2010). Spatial accessibility to public service facilities and its measurement approaches. *Progress in Geography*, 29(10), 1217–1224. <https://doi.org/10.11820/dlkxjz.2010.10.009>
- Stan, A. (2013). Morphological patterns of urban sprawl territories. *Urbanism. Architecture. Constructions*, 4(4), 11-24. <https://www.researchgate.net/>

[publication/303287450](https://doi.org/10.1016/j.cities.2014.04.006) Morphological patterns of urban sprawl territories

- Taleai, M., Sliuzas, R., & Flacke, J. (2014). An integrated framework to evaluate the equity of urban public facilities using spatial multi-criteria analysis. *Cities*, 40, 56–69. <https://doi.org/10.1016/j.cities.2014.04.006>
- Talen, E., & Anselin, L. (1998). Assessing spatial equity: an evaluation of measures of accessibility to public playgrounds. *Environment and Planning A: Economy and Space*, 30(4), 595–613. <https://doi.org/10.1068/a300595>
- Tsou K. W., Hung Y. T., & Chang Y. L. (2005). An accessibility-based integrated measure of relative spatial equity in urban public facilities. *Cities*, 22(6), 424–435. <https://doi.org/10.1016/j.cities.2005.07.004>
- Wang, F., & Wei, L. (2005). Assessing spatial and nonspatial factors for healthcare access: Towards an integrated approach to defining health professional shortage areas. *Health and Place*, 11(2), 131–146. <https://doi.org/10.1016/j.healthplace.2004.02.003>
- Zahariade, A. M. (2011). *Arbitectura in proiectul comunist. Romania 1944-1989* [Architecture in the Communist Project. Romania 1944-1989]. Simetria.