The concept of the smart sustainable city in Hungarian planning practice

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Abstract:
Over the past decade, the one-sided technology-centric understanding of the smart city has increasingly been replaced by the concept of the so-called smart sustainable city. Digitalisation is becoming less of an end in itself and more of a tool for sustainable urban development. There is a parallel shift visible from the digital city to the broader concept of the management-oriented innovative city, i.e. the concept of innovation - not necessarily in the technological sense - is becoming more important within the smart city concept.

In Hungary, the concept of sustainable city entered the mainstream of development policy discourse in 2021. Government Decree No. 256/2021 (18 May 2021) called on the most important Hungarian cities and urban agglomerations to prepare sustainable urban development strategies (hereafter: SDS documents). Concrete guidelines for the preparation of sustainable urban development strategies are given in the Methodological Handbook for Sustainable Urban Development Strategies 2021-2027.

Using the methodological tool of discourse analysis, my paper attempts answer the question of how the shift towards the EU-inspired concept of the smart sustainable city is reflected in the local (municipal) level of Hungarian urban development. It is shown that the process of institutionalisating of the concept of the "smart sustainable city" cannot be fully described by either a contextual or a critical discourse analysis. The uncertainties in the definition of the concept of the smart sustainable city, both at EU and national level, could in principle provide sufficient scope for the local level to become an active shaper of the discourse. However, an analysis of the main sources of empirical research, the SDS documents, shows that Hungarian cities are rather (if not exclusively) characterised by an adaptation to the technology-centric smart city concept formulated at the national level, which is considered outdated in many respects.

Keywords:
discourse analysis, smart city, sustainable city, urban development, Hungary

Points for practitioners:
My paper can provide guidance to actors preparing or revising sustainable urban development strategies - and other similar development policy documents - on how to formulate and implement development policy goals related to the concept of a smart sustainable city in line with scientific standards and local specificities, in addition to higher-level policy expectations.

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1. Introduction

In a recent paper of mine, I have already referred to the tendency that "the concepts of the sustainable/resilient city and the smart city (...) ultimately converge in the concept of the smart sustainable city" (Buskó, 2023a, p. 210). (Buskó, 2023a, p. 210) However, the interpretation of the smart sustainable city - and thus of the above-mentioned trend - is not without problems. What is undeniable is the growing interest in the concept of the smart city - and other similar concepts - on the one hand, and the similarly growing attention to so-called sustainable urban development on the other. As far as the concept of the smart city is concerned, according to the results published by Ayyoob Sharifi and his co-authors in 2021, the number of academic publications on this topic in the English-language literature from 2018 until the publication of the study has already exceeded the total output from 1991 to 2018. (Sharifi et al., 2021), A similar exponential trend can be observed for the sustainable city, with the difference that the number of publications explicitly using the term “sustainable city” - probably because the concept of the smart city is obviously more prominent in the technological works - is significantly lower, based on the research of Agnieszka Janik and her co-authors. The recent rise of the theme of the smart sustainable city is remarkable even at this level, at the level of frequency of the term. As the authors point out, the number of publications explicitly using the term “smart sustainable city(s)” in 2019 is not far behind those containing the term “sustainable city(s)”. (Janik et al., 2020, Figure 2).

However, to better understand the smart sustainable city, we need to go beyond the explicit references and broaden our horizon of investigation towards the semantics of the concept. Let us start from the premise that although the concept of the smart city is inherently rooted in a more technological approach and the concept of the sustainable city in a more ecological approach, there is a growing convergence between the two concepts over time. As Honnele Ahvenniemi et al. put it, although “*in recent years, there has been a shift in cities striving for smart city targets instead of sustainability goals, (...) these are interconnected and often smart cities share similar goals as sustainable cities”*. (Ahvenniemi 2017) For example, Simon Elias Bibri and John Krogstie, who conducted a systematic literature review on the concept of smart sustainable cities, point to such convergence in both the smart city and sustainable city concepts. In the case of the smart city, for example, they distinguish between two mainstream interpretations - one technology and ICT oriented and one people oriented - but in the context of the “*smarter city*”, which the authors introduce to illustrate the direction of development of the smart city concept, they also write that “*the word ‘smarter' implies the use of advanced ICT in order to improve efficiency, sustainability, equity, and the quality of life*”. (Bibri & Krogstie, 2017, p. 192) On the other hand, the specific goals of achieving sustainable urban development aspirations that contribute to the long-term improvement and protection of the environment, social equity and well-being increasingly require the use of ICT solutions linked to a technology-oriented understanding of the smart city. (Bibri & Krogstie, 2017, p. 193)

Apart from the undeniable convergence between the concepts of the smart city and the sustainable city, the essence of the concept is somewhat difficult to grasp, precisely because of the diversity of sustainable urban development goals. The most frequently cited attempt to do so is the 2014 definition of the International Telecommunication Union (ITU), which developed its own proposal based on 116 previous definitions related to

the concept of the smart sustainable city. According to this definition, "*a smart sustainable city is an innovative city that use ICTs and other means to improve quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects*". (ITU, 2014, p. 1) The high number of definitions used is somewhat deceptive, as only 23 of the 116 texts used - 4 of which are previous ITU materials - explicitly refer to "*smart sustainable city(s)*", the rest being publications with more of a smart city theme. Nevertheless, the ITU collection shows that the convergence between the concepts of smart and sustainable cities, while perhaps accelerating recently, is not a new phenomenon. In this context, the trends in the convergence process are as follows:

a) With regard to the "*sustainability*" dimension: the approach of financial sustainability of projects will be replaced by an ecological approach that emphasises the interaction between the natural and human spheres (Heymans et al., 2019), and then by an even more complex concept of sustainability that takes into account economic, social and environmental perspectives.[2] Within this conceptual framework, the implementation of smart solutions for a smart sustainable city will no longer be seen as an end in itself, in terms of efficiency alone, but as a means to a complex sustainable urban development.

b) With regard to the "*smart*" dimension, the notion of innovation in a broader sense, not necessarily in a technological sense, is becoming increasingly important. The dominance of individual services - and the specific smart technologies associated with them - is being replaced by the efficiency of service management in general, which may lead to a shift towards various management-oriented approaches. It could be said that, within the concept of the smart sustainable city, there is a shift from the digital city to the broadly innovative city and, in parallel, from a service-oriented to a management-oriented approach.

Such a shift has also recently become more apparent in the policies of the European Union. It is well known that the focus of EU territorial policy has long been on the (NUTS 2) regions, the regional level, but since the turn of the millennium it has become increasingly clear that in the 21st century - "the age of fusions and networks" - the city as a network hub can become the real centre of power. (Csizmadia, 2016, pp. 292-343) It is precisely the fact that, in the post-Fordist spatial order, cities - whether metropolises on a global scale or elements of a national urban system - will increasingly only be able to play their role in conjunction with their surrounding areas, and only in this way will they be able to become part of the global urban hierarchy. On this basis, the policy document European Spatial Development Perspective, adopted at the informal Council of Ministers responsible for spatial planning in Potsdam in May 1999, clearly went beyond the dichotomy of regional and urban policy and stressed the importance of urban-rural partnerships "*to develop sustainable innovative spatial development strategies for the cities and their surrounding countryside.*" (European Commission, 1999, p. 44)

The vision of sustainable innovative spatial development strategies for cities and their surrounding areas could be seen as paving the way for a smart sustainable city, but the breakthrough was at least a decade away. The Leipzig Charter of 2007 (EU Ministers, 2007), which interpreted sustainability in terms of economic prosperity and social balance, already referred to technology and innovation in a broader sense, but neither was

[2] For more on the three (economic, social, environmental) pillars of sustainability, see Fleischer (2014, 13).

sufficiently integrated into the concept of sustainable cities. The Europe 2020 Strategy adopted on 3 March 2010 (European Commission, 2010) marked the beginning of a change of direction, with a clear endorsement of the importance of smart growth. Moreover, this intelligent growth, identified as "*building an economy based on knowledge and innovation*", is the first of the three priorities (smart, sustainable and inclusive growth) of the Europe 2020 strategy. Subsequently, and perhaps too much in the spirit of the times,[3] the technology-centric approach to smart growth and urban development has come to the fore. A good example of this is the smart city approach of the 2011 Smart Cities and Communities initiative, which, according to Maschio (n.d.), "*initially only covered energy and had a budget of € 81 Million, which grew to € 365 Million and extended to include the transport and ICT sector with the launch of the Partnership in July 2012*.". The next major step, the 2013 European Innovation Partnership for Smart Cities and Communities (EIP-SCC), could be seen as a continuation of the 2011 initiative, but still did not represent a fundamental change in approach: it still proposed that EIPs address their economic, social and health challenges through the development of physical infrastructure (ICT technologies, energy and transport management).

The financial basis for moving towards a broader smart approach was provided by Article 7 of Chapter II of Regulation (EU) No 1301/2013 of the European Parliament and of the Council, which earmarked at least 5% of the ERDF funding allocated at Member State level for sustainable urban development under the "Investing for growth and jobs" objective. And to ensure that the 2014-2020 allocation - now increased to 8% for the 2021-27 period - supports projects that meet the definition of a smart sustainable city, the guidelines of the EU-level urban development documents that have since been adopted have also helped. The preamble of the 2016 Amsterdam Pact, the founding document of the changing urban agenda, reaffirmed the focus on sustainable urban development with the ultimate goal of economic, social and territorial cohesion in the EU and the quality of life of citizens. Finally, the New Leipzig Charter adopted in 2020 clearly states that "*digitalisation is major transformative, cross-sectoral trend affecting all dimensions of sustainable urban development*". (European Commission, 2020, p. 5) In other words, despite its undoubted importance, it is only a tool. In essence, the following study seeks to answer the question of how the results of this EU paradigm shift have been reflected to the planning practices of an EU country (Hungary) that is not yet in the best position to adapt to ongoing technological changes. (Csath et al., 2018, p. 41)

2. Methodology

In the past, I have made several attempts to interpret the process of institutionalisation of the Hungarian smart development policy using the methodological tool of discourse analysis. Accordingly, within the contextual approaches, which extend the concept of discourse to a broader social practice (Hyland et al., 2021, p. 1), two subtypes can be distinguished. The so-called constructivist approaches are concerned with the regularities of the production of meanings (the socially produced ideas and objects that populate the world) that can be seen as the result of discourse, while the critical approaches at the other end of the spectrum focus more on the power relations that underlie the construction processes just mentioned. (Philips & Hardy, 2002) In the context of the institutionalisation of the Smart Village discourse in Hungary - if only because of the inherently bottom-up

[3] Wheler (2016) only puts the "critical" phase in the run-up to the transition beyond a technology-based approach to the smart city between 2012 and 2015.

nature of rural development - I have drawn attention to the construction process and its consensual components. (Buskó, 2023b) However, I have described and evaluated the process of the institutionalisation of the smart city discourse (Buskó, 2023a) with the help of a more critical discourse analysis, because due to the greater economic, social and territorial importance of urban areas, the central level in Hungary has intervened much more directly in the definition of the smart city concept, as well as in the determination and implementation of related development directions, than in the case of peripheral rural settlements and areas.

It is difficult to place the concept of the smart sustainable city we have just presented clearly at either end of the constructivist-critical spectrum. On the one hand, we could opt for a critical interpretation. This would suggest that the EU level would play the leading role in defining the smart sustainable city and that the subordinate actors in the discourse - the national and even more the local level - would rather passively adapt to the expectations of the higher level(s) in the hope of receiving ERDF funding for sustainable urban development. On the other hand, it cannot be excluded that the lower levels themselves become active participants in the process of constructing meaning. Which of these interpretations is closer to the truth can, of course, only be determined through a description/interpretation of the functioning of the discourse, with the help of policy documents at EU, national and local level, which are central in this respect.

In Hungary, the concept of the smart sustainable city entered the mainstream of development policy discourse in 2021. In order to be eligible for sustainable urban development funding under the 2021-27 EU budget cycle, Article 69(1) of Government Decree 256/2021 (18 May 2021) called for the preparation of sustainable urban development strategies (hereafter: SDS documents) by the cities or urban agglomerations designated for this purpose in the integrated territorial programmes prepared by the county governments. The analysis focuses on these SDS documents as primary sources, taking into account two difficulties:

a) Specific guidelines for the preparation of the SDS documents are set out in the Methodological Handbook for the Sustainable Urban Development Strategy 2021-2027 (Pénzügyminisztérium, 2021; hereafter referred to as the "MF Handbook") issued by the Managing Authority for Regional Development Programmes of the Ministry of Finance in July 2021, but as the Executive Summary shows, this pays attention to compliance with both the existing national and EU policy frameworks. Therefore, in order to correctly interpret the place/role of the local level in the definition and implementation of the smart sustainable city concept, it is necessary to first clarify the above mentioned national and EU policy context. The starting point will of course be the analysis of the smart sustainable city concept in the MF Handbook, which sets out the main orientations for the local level, complemented by other national and EU policy documents mentioned therein.

b) It is also important to mention that, contrary to the approach suggested by the ITU, national and EU level policies do not explicitly speak of "smart sustainable cities", but rather implicitly try to include the smart dimension in the concept of sustainable urban development. In the following, therefore, I will use the adjective "smart" in brackets to refer to the concept of the smart sustainable city in EU - and thus Hungarian - development policy discourse. Of course, this does not mean that the smart dimension is marginalised in the sustainable urban development discourse at both national and EU level, but only that the place/role of the smart dimension within the concept of the (smart) sustainable city needs to be further clarified. In clarifying the national and EU policy frameworks that fundamentally determine the scope of the local level, we will therefore focus on how the higher levels interpret this smart dimension, and then examine the extent to which these

interpretations are reflected in the smart city definitions and related concrete urban development objectives of the SDS documents.

3. Clarifying the policy framework

3.1. The EU context

The MF Handbook, which plays a key role in the institutionalisation of the (smart) sustainable city in Hungary, clearly points to the proactive role of the European Union. For example, the Executive Summary states that "*the Managing Authority has prepared its Methodological Handbook on the basis of Regulation (EU) 2021/1060 of the European Parliament and of the Council and Regulation (EU) 2021/1058 of the European Parliament and of the Council, the European Green Deal, the Leipzig Charter, the Urban Partnerships and the Commission's Handbook on Sustainable Urban Strategies*". (Pénzügyminisztérium, 2021, p. 12) In reality, however, it would be rather difficult to identify an EU-level guideline that would provide a clear direction for action at Member State level. More specifically, the shift towards the concept of the (smart) sustainable city has opened the way for two EU policy directions. On the one hand, governance (as the main custodian of smart solutions) can come to the fore, but the focus can remain on smart solutions, which are no longer an end in themselves. The former has essentially been in place since the turn of the millennium, as the example of the URBACT programme for the development of European urban partnerships shows. Although the URBACT programme itself typically identifies thematic areas for support to participating partner cities (Belügyminisztérium, 2013), the focus is primarily on building a knowledge exchange platform to improve management skills through networking between cities and dissemination of good practices. Of course, management-oriented and innovative approaches in the broader sense such as these do not provide concrete guidelines on the smart dimension of the (smart) sustainable city and the place/role of digitalisation in it: they leave this to local management.

The lack of explicit guidance on the smart dimension is also evident in the pages of the Commission's Handbook on Sustainable Urban Strategies (Fioretti et al., 2020; hereafter: EU Handbook), a key EU document in the (smart) sustainable urban development discourse. Although the term “smart” occurs relatively frequently - 51 times - in the text, these occurrences do not describe the EU's canonised way of smart urban development for local actors. On the contrary, they either emphasise the need for alignment with national and regional smart specialisation strategies[4] in the preparation of SDS documents, or present particularised good practices. It is therefore not surprising that the relationship between the smart city and digitalisation is not clarified in the text, which essentially leaves this task to urban governance. Indeed, when the EU Handbook expresses the conviction that “*effective urban governance is democratic and inclusive, long-term and integrated, multi-scale and multilevel, territorial, proficient and conscious of the digital age*” (Fioretti et al., 2020, p. 90), it is at most affirming the role of digitalisation in effective governance in general terms. Accordingly, the term “digital” is used much less frequently in the document than “smart” - only 12 times. In summary, therefore, the MF Handbook "*does not provide a ‘quick fix’, but rather provides suggestions - giving concrete examples and*

[4] According to 2015/2278 (INI), D.: Smart specialisation as an EU policy instrument “*combines and brings together different policies, including those for entrepreneurship, education and innovation, in order for regions to identify and select priority areas for their development and related investments by focusing on their strengths and comparative advantages*”.

referring to existing tools and guidelines - on how to tackle key challenges during the process of strategy design, implementation and monitoring.". (Fioretti et al., 2020, p. 9)

The other direction of EU policy, which continues to focus on smart solutions and shows less signs of a paradigm shift than the previous one, is much more strongly linked to technological approaches. Of course, it is also a significant step forward that, in line with the New Leipzig Charter, digital technologies are no longer presented here as an end in themselves, but only as a key tool - or, if you like, as a necessary but not sufficient condition - for (smart) sustainable urban development. As a logical consequence, the focus will remain on services based on various smart solutions. The European Green Deal agreed in 2020, for example, aims to highlight the role of a wide range of smart services in achieving climate neutrality by 2050, be it "*designing new and retrofitted buildings"* or *"supporting new sustainable mobility services*". (European Commission, 2019, pp. 9-10)

Overall, the pro-active role of the EU is undoubtedly present in the Hungarian discourse on (smart) sustainable urban development, but its role should not be overemphasised for two reasons. On the one hand, the EU Handbook, which plays a key role in communicating the EU discourse to the national level, explicitly declares the recommendatory character of what it describes, and on the other hand, both the management-oriented approach and the service-oriented approach, which continues to focus on digitalisation, can be read in the EU policy documents referred to in the MF Handbook. It seems therefore that Member State level of the (smart) sustainable urban discourse - as elsewhere, including Hungary - may have sufficient room for manoeuvre to actively shape the meaning of the (smart) sustainable city.

3.2. The Member-State context

Some of the contradictions in the institutionalisation of the smart city discourse in Hungary have already been explored in a previous paper. (Buskó, 20-23a) In Hungary, the definition of a smart city was introduced by the 2017 amendment of Government Decree No. 314/2012 (XI.8.), which is the basic legal document for planning at the municipal level. According to this decree, a smart city is "*a municipality that prepares and implements its integrated settlement development strategy based on a smart city methodology*". In the spirit of standardisation, the government then made the development of the methodology in question the exclusive task of the Lechner Knowledge Centre, the professional background institution of the Prime Minister's Office for Architecture, Construction, Real Estate Registration and Spatial Information. However, the smart city concept of the document entitled Methodological Guide to the Smart City Development Model (Miniszterelnökség, 2016; hereafter: Lechner Guide), published by the Lechner Knowledge Centre in November 2017, seems to lag behind the concept of the (smart) sustainable city already present in the international literature and EU policies at that time. As stated at the beginning of the Lechner Guide, a Smart City is "*a municipality that prepares and implements its integrated urban development strategy on the basis of the Smart City methodology*". As for the methodology itself, it is a method for the development of a municipality or a group of municipalities that "*develops its natural and built environment, its digital infrastructure, the quality and economic efficiency of the services available in its area, using modern and innovative information technologies, in a sustainable way and with the increased involvement of its inhabitants*". (Miniszterelnökség, 2016, p. 5) At first glance, this technology-oriented definition may seem forward-looking, as “innovative information technologies” are not seen as an end in themselves, but as a tool for sustainable urban development. Furthermore, the Lechner Guide correctly

recognises and distinguishes between the three pillars of sustainability used in the literature (economic, social and environmental sustainability). However, later sections focus exclusively on the financial sustainability of the (digital) projects to be implemented (esp. Miniszterelnökség, 2016, p. 12.), and as a result the use of ICT technologies becomes an end in itself rather than a means.

The MF Handbook published in July 2021 can be also understood as a kind of corrective attempt of the Hungarian smart city concept in the spirit of the (smart) sustainable urban development discourse, in order to facilitate the most efficient use of the funds provided for sustainable urban development by Regulation (EU) 2021/1060 of the European Parliament and of the Council. However, the result is still not free of contradictions, as the MF Handbook, in addition to the above-mentioned EU-level policy documents, also emphasises the importance of consistency with Government Regulation 314/2012 and even with the Lechner Guide, which was already outdated in many respects at the time of its creation. (Pénzügyminisztérium, 2021, p. 12, p. 85)

Let's start with the fact that, in the spirit of compliance with Government Decree 314/2012 and the Lechner Guide, the PM Handbook continues to state that the SDS documents should support Hungarian cities "*in particular in the implementation of financial sustainability and resource mix' in order to develop a sustainable urban development practice*". (Pénzügyminisztérium, 2021, p. 12) While such an overemphasis on the financial understanding of sustainability could theoretically run the risk of marginalising more complex sustainability concepts, in my view this is not the main direction that the MF Handbook takes. Although the MF Handbook states that the SDS documents should include a chapter on the financial plan and that the basis for "*sustainable operations*" should be developed within this chapter (Pénzügyminisztérium, 2021, p. 12, pp. 89-95), the meaning of sustainability to be pursued is outlined from a much more complex concept of resilience. Accordingly, the concept of resilience, originally used in physics and reflecting the resilience of metals, but later given an increasingly complex meaning in ecology and the social sciences (Christopherson et al., 2010), is interpreted in the PM Handbook on three levels, as follows:

- *absorptive capacity*: the ability of the system to absorb external pressures without requiring change;
- *adaptive capacity*: the ability of the system to adapt to changing environmental conditions;
- *transformative capacity*: the ability of the system to respond to external influences by making changes of its own, thereby establishing a new initial state for the system as a whole (Pénzügyminisztérium, 2021, p. 6, p. 12).

The MF Handbook then defines five so-called "planning dimensions" for the realisation of the Resilient City, namely the "*Prosperous City*", the "*Greening City*", the "*Digital City*", the "*Retaining City*" and the "*Serving City*". These dimensions also show links not only with the three pillars of sustainability in the literature, but also with the management-oriented and broadly innovative approach of the EU Handbook, in that

- in the case of the "prosperous city" linked to the economic pillar, the emphasis is on the "innovative" use of local resources and assets (Pénzügyminisztérium, 2021, p. 54);

- in the case of the “greening city”, linked to the environmental pillar, the involvement of the local government sector and its cohesive and coordinating role are highlighted (Pénzügyminisztérium, 2021, p. 56);
- in the case of the “retaining city” and the “serving city”, which are linked to the social pillar, the focus is on the efficiency of the organisation of services, be it in terms of meeting the diverse needs of local society (sustaining city) or in terms of the material infrastructure that defines the spatial and physical framework of society (serving city) (Pénzügyminisztérium, 2021, pp. 59-61).

It is important to note, however, that the management/broad innovation approach does not have a separate (sixth) planning dimension. Even in the case of the “serving city”, which comes closest in name, the focus is on “*sustainable land use, the built and man-made environment, urban green spaces and natural ecosystems, urban utility systems and infrastructures, their optimal spatial mapping*” (Pénzügyminisztérium, 2021, p. 61); rather than on how these are organised and served. In short, despite the presence of a management-oriented / broadly innovative approach in some places, the MF Handbook is more service-oriented, i.e. it focuses on individual services - and the particular smart technologies associated with them. However, this resolves in a somewhat contradictory way the tension between the narrower (financial) and broader approaches to sustainability. On the one hand, it is welcome that the financial sustainability of (digital) projects is not presented as an end in itself, but merely as a means to (smart) sustainable urban development. On the other hand, the focus on individual services - and the particular smart technologies that can be associated with them - remains a major obstacle to a management-oriented or broadly innovative interpretation. Indeed, “efficiency” in this sense will mostly mean the efficient development of individual projects, overshadowing the horizontal (e.g. organisational) components and the holistic approach of (smart) sustainable urban development.

Another issue relates to the place/role of digitalisation in (smart) sustainable urban development. Let us start from the fact that a very important section of the MF Handbook makes a clear distinction between the concepts of the “smart city”, which are closer to the concept of the innovative city in a broader sense, and the “digital city”. It states that “*smart city reinforces the human side of the application of technology, as well as its embeddedness, i.e. it is a slightly more complex system. Smart cities use digital technology solutions to improve the management and efficiency of the urban environment*." (Pénzügyminisztérium, 2021, p. 85) However, by focusing on the application of technological solutions, the MF Handbook marginalises innovation in a non-technological sense, but perhaps also the role of management as the main custodian of this type of innovation, again tending towards a service-oriented approach.

4. The smart dimension in the Hungarian SDS Documents

In the rest of this paper, we will empirically examine how the smart dimension contributes to (smart) sustainable urban development as defined in the Hungarian SDS documents, with a special focus on the place/role of the management-oriented/broadly innovative approach. Our analysis is based on the self-definitions of the Hungarian cities preparing their SDS documents according to Article 69 (1) of Government Decree 256/2021 (18 May). Accordingly, we have searched for and analysed those passages and their immediate context in which the Hungarian expression “okos város” (or its English equivalent, the “smart city”) appears. For practical reasons,

we limit our analysis to the most important Hungarian cities (cities with county status + Budapest) that already had an SDS document available to the public on the Internet on 31 October 2023, the starting date of the research.[5]

4.1. Explicite smart city definitions

First, we limit our attention to the SDS documents where we find an explicit definition of a smart city. Interestingly, the SDS documents of only 7 cities, Kecskemét, Eger, Veszprém, Érd, Salgótarján, Kaposvár and Pécs, can be classified in this category, while in the remaining 14 cases the meaning of "smart city" can only be inferred from the direct context of the occurrences of the term. When analysing the explicit definitions, the first point to note is that the smart city definitions in the SDS documents - in line with the approach of the MF Handbook - give a key role to digital technologies within the smart city concept, and thus in many respects still prefer the concept of "digital city" to that of "innovative city" in a broader sense. The only exception is the SDS document of Kecskemét, which identifies the concept of smart city and smart area with the "*qualitative and innovative development of all public services and urban management*", without emphasising (or even explicitly mentioning) digitalisation. However, as the definition does not provide any further information on this "innovative" nature, (Kecskemét, 2022, p. I/33) it is too early at this stage of our analysis to draw any far-reaching conclusions from the Kecskemét SDS document.

Among the other SDS documents that explicitly define smart cities, three cities, Eger, Veszprém and Érd, do not yet have their own definitions (including those formulated with the help of literature), but take them from national policy documents without any changes. As a result, their definitions tend towards a "digital city", which more or less neglects the importance of innovation in a broader sense. Specifically, Eger and Veszprém are content to quote verbatim the technology-centric Lechner Guide's definition of a smart city (Eger, 2022. p. 240; Veszprém, 2022, p. 96), while Érd is more sophisticated. On the one hand, it states that "*developments must not be an end in themselves, i.e. they must in any case contribute to the achievement of already defined overall and thematic goals*". On the other hand, it also adopts the distinction made in the MF Handbook between the smart city and the digital city, highlighting in the former case the human dimension and the embeddedness of the use of technology, its role in improving the management and efficiency of the urban environment. (Érd, 2022, p. 27, p. 129) This could even open the way to a broadly innovative, management-oriented approach.

The SDS documents of Kaposvár, Salgótarján, and Pécs attempt to define the concept of a smart city by formulating their own definitions. These definitions go further in the direction of a more management-oriented approach, but the picture is less clear with regard to the "digital city – broadly innovative city" spectrum. In particular, despite the shift towards a management-oriented approach, the Kaposvár definition remains faithful to the technology-centric approach of the MF Handbook in that it continues to give a prominent role to innovation identified with digital technologies. Although Kaposvár's SDS document defines the essence of the smart city by specifically mentioning the term "management", it goes on to say that "*smart cities use digital technology solutions to improve the management and efficiency of the urban environment*". (Kaposvár, 2023, p. 244) A more complex interpretation - much closer to the broadly innovative approach - is suggested by Salgótarján's SDS document. Although it states, in very similar terms to Kaposvár, that "*the step of a city to the level of a*

[5] With the exception of Baja, Dunaújváros, Győr, Miskolc, Zalaegerszeg, a total of 21 cities with county status + Budapest belong to this group.

smart city means a radical leap in the life of the settlement" and that *"if this is achieved, the city will operate according to a completely new operational, management and administrative model*", it considers the implementation of digital developments only as an "*important*" and not as an essential element of the creation of a smart city. (Salgótarján, 2022, p. 189) Pécs' definition goes even further. It sharply criticises approaches that absolutise the role of digitalisation, pointing out, for example, that "*Process digitalisation (...) alone will not solve the change in the development trend of the city.*" (Pécs, 2022, p. 20). (Pécs, 2022, p. 20) Of course, the Pécs SDS document does not want to diminish the role of digitalisation and still gives priority to "*the most innovative and efficient solutions made available by IT and technological development*". (Pécs, 2022, p. 20) At the same time, however, it points out that "*in contrast to the (...) essentially technological proposals limited to a single sector (transport, street lighting, etc.), a truly 'smart city' approach (...) moves in the opposite direction: it first develops a logical planning and operational model of the basic system, then extends the system development to the individual physical subsystems, linked to the strategic-operational planning and management subsystem"*. (Pécs, 2022, p. 235)

Overall, the SDS documents that provide explicit smart city definitions can be positioned as follows along the "digital city - broadly innovative city" and "service-oriented approach - management-oriented approach" spectrums:

Table 1:

Explicite smart city definitions in Hungarian SDS doctuments

	Explicite smart city definitions		
	existence	type	
		digital vs. broadly innovative city	service-oriented vs. management-oriented city
Kecskemét	own	?	?
Eger	adapted	digital	service-oriented
Veszprém	adapted	digital	service-oriented
Érd	partially adapted	digital	management-oriented
Salgótarján	own	digital	management-oriented
Kaposvár	own	broadly innovative	management-oriented
Pécs	own	broadly innovative	management-oriented

Source: own edit based on the SDS documents, 2023

4.2. Concrete urban development objectives

The self-definitions presented in the previous sub-chapter have not yet provided a clear answer to the question of how local actors see the contribution of the smart dimension to the concept of a (smart) sustainable city. Indeed, it is possible that the definitions of the smart city are not in line with the urban development objectives that are introduced in the SDS documents and/or that will be implemented in the future. For example, a service- and technology-centric definition could easily be replaced by an emerging management-oriented/broadly innovative attitude, but it is also possible that a promising management-oriented/broadly innovative definition will remain at the level of declarations. Accordingly, I will extend the analysis of the SDS documents to the level of the concrete urban development objectives reflected in the strategies. Of course, our analysis would only be complete with an analysis of the (smart) sustainable urban development projects implemented on the basis of the SDS documents. However, in the current phase of the 2021-2027 programming period, especially in view of the current uncertainties regarding access to EU funds in Hungary, I would like to focus only on urban development objectives for the time being.

For the majority of the 21 SDS documents examined, the lack of explicit smart city definitions is associated with service-oriented urban development objectives that focus on the innovative role of digital technologies. This group includes the strategies of 11 of the 21 SDSs we examined, namely Békéscsaba, Debrecen, Hódmezővásárhely, Nagykanizsa, Nyíregyháza, Sopron, Szeged, Szekszárd, Szolnok, Szombathely and Tatabánya. In their case, the smart dimension is almost exclusively related to the digitalisation of the productive infrastructure[6] or the digitalisation of services related to the material[7] and non-material[8] subsystems of the municipal infrastructure. It is also worth mentioning here the cities with an explicit smart city definition, whose SDS documents are also dominated by service- and technology-oriented urban development objectives. In the case of Veszprém, these objectives are perfectly in line with the spirit of the smart city definition, taken verbatim from the Lechner Guide. (Veszprém, 2022) However, in the case of Kaposvár and especially Salgótarján, where the smart city definitions are management-oriented and innovative in a broader sense, the stagnation of concrete urban development objectives at the level of the "digital city" and individual services is more surprising. (Kaposvár, 2023; Salgótarján 2022)

Behind the urban development objectives of the next 7 SDS documents, we can detect a much more complex smart city concept. Let us first look at examples of cities that do not have an explicit smart city definition. In some cases, the presence of a management-oriented and broadly innovative approach is not yet pronounced, but is already clearly evident. For example, the SDS document for Székesfehérvár still refers to some smart technologies related to specific services, but sub-objective R9 in the city's strategic objectives (*"broaden and deepen the platform for municipal planning*") seems to shift the smart dimension towards a horizontal sense of the planning process. Indeed, when the document states that "*developing and operating a community planning platform means involving and engaging the public at various points in the planning,*

[6] Typically, this includes a wide variety of economic purposes.
[7] Typically, this includes objectives relating to the built environment, energy systems and urban mobility.
[8] Typically, this includes objectives related to education and training, cultural services that develop community identity.

preparation, implementation and monitoring process", it is certainly about making the whole planning process smarter, not only in the sense of digitisation, but also in the sense of socialisation. (Székesfehérvár, 2022, p. 17)

There is some uncertainty even in Esztergom's smart approach, although it is much more elaborate than Székesfehérvár's. Esztergom's SDS identifies an explicit "Smart Esztergom" sub-objective, but it is still rather sectoral in nature in that it places "*special emphasis on education, training and programmes to improve the quality of education, in addition to developing the digital literacy of the population*." (Esztergom, 2022, p. 208). (Esztergom, 2022, p. 208) Elsewhere, however, there is a clear move towards a management-centric and broadly innovative logic: the strategy makes a clear proposal to institutionalise the smart development process through the creation of a smart city referent position. Moreover, based on the tasks and competences of the referent, it seems clear that for Esztergom the term "smart city" means much more than the digitalisation of individual (human) public services. In addition to the digital switchover, the tasks and competences in question also include strategic planning and monitoring of the smart city, as well as liaising with NGOs, citizens, economic operators, government and public service providers - in essence, strengthening community participation. (Esztergom, 2022, p. 236)

The example of Budapest is very specific to our study. On the one hand, there is a clear commitment to a management-oriented approach: the concept of a smart city is not explicitly defined in the SDS document, but the smart dimension is explicitly associated with a "*smart urban development process.*" (Budapest, 2023, p. 153) However, this approach is counterbalanced by a narrow, technology-centric understanding of innovation. For Budapest's SDS document, the management- oriented approach is too closely symbiotic with the digital city: the best example of this is the aforementioned "*smart urban development process*" described in the Digital Transition Agenda chapter. (Budapest, 2023, pp. 153-161) Nevertheless, we highlight the dominance of the management-oriented approach, i.e. the fact that although the text often refers to smart solutions linked to various individual services, the planning dimension of the "digital city" is not primarily linked to them. Rather, the objectives of "*collaborative urban development*", "*customer-centric development of urban services*", "*advanced data management and acceleration of digital transformation*" and "*innovation and organisational development in metropolitan services*" are linked to the planning dimension of the digital city, (Budapest, 2023, p. 96) and thus become the focus of (smart) sustainable urban development policy.

In the remaining four cities - Érd, Pécs, Eger, Kecskemét - the explicit smart city definitions in the SDS documents are clearly management-oriented and, with the exception of Érd, focus on innovation in a broader sense. Perhaps the least elaborated is the case of Érd, which only tentatively moves beyond the Lechner Guide approach, although the fact that the document refers to the importance of "*non-traditional development practices*" and to improving "*the efficiency of urban management and governance*" more generally certainly indicates a management-oriented approach. (Érd, 2022, p. 27) On the "digital city - innovative city" spectrum, however, Érd does not really go beyond the "digital city" approach, which neglects the importance of innovation beyond digital technologies. This is perhaps best illustrated by the fact that the objectives of the Érd SDS document subordinate the Smart City objective (T20) to the overarching Digital Érd objective (A6). (Érd, 2022, p. 27) In contrast, the Pécs SDS document does not absolutise the place of digitalisation within the management-oriented framework of the R15 objective "*SMART CITY: new urban governance model and operating system.*" Accordingly, while "*achieving digital transformation and creating integration of digital subsystems*" remains a "*prerequisite*" for the Smart City process, it is far from being identified with the latter. (Pécs, 2022, p. 374).

Finally, Eger describes the introduction of "*digital technological*" and "*organisational*" solutions in a parallel and equal sense (horizontal objective H2). Contrary to the Smart City definition taken literally from the Lechner Guide, Eger's concrete urban development objectives clearly move in a management-oriented and broadly innovative direction. (Eger, 2022, p. 293)

We have left the urban development objectives of Kecskemét's SDS document for last. We have already seen that the Kecskemét's explicit definition of a smart city does not include the concept of digitalisation. The analysis of the concrete urban development objectives shows that Kecskemét in a way separates the concept of a 'digital' city (here: focused on ICT solutions) from the concept of a 'smart' city (here: management-oriented). Accordingly, digital transformation is present in the city's SDS document, but only as an element of thematic objective No. 15, "Supporting organisational, financial and infrastructural innovations for green and digital transformation". In contrast, the concept of digitalisation is no longer included in the horizontal objectives that are most relevant for smart sustainable urban development: horizontal objective Hc3 links "*creating the conditions for smart growth*" to education and awareness-raising, rather than digitalisation.. (Kecskemét, 2022b:36) Thus, Kecskemét tends to underestimate the role of ICT solutions in (smart) sustainable urban development in a way that is unprecedented among the SDS documents examined.

On this basis, the concrete urban development objectives of the SDS documents can be positioned along the "digital city - broadly innovative city" and "service-oriented approach - management-oriented approach" spectrums as follows:

Table 2:

Concrete urban development objectives in Hungarian SDS documents

	Characteristics of concrete urban development objectives			Characteristics of concrete urban development objectives	
	digital vs. broadly innovative city	service-oriented vs.-management oriented approach		digital vs. broadly innovative city	service-oriented vs.-management oriented approach
Debrecen	digital	service-oriented-	Veszprém	digital	service-oriented-
Békéscsaba	digital	service-oriented-	Kaposvár	digital	service-oriented-
Hódmező-vásárhely	digital	service-oriented-	Salgótarján	digital	service-oriented-
Nagykanizsa	digital	service-oriented-	Székesfehérvár	partially innovative	partially management-oriented
Nyíregyháza	digital	service-oriented-	Esztergom	partially innovative	partially management-oriented
Sopron	digital	service-oriented-	Budapest	digital	management-oriented
Szeged	digital	service-oriented-	Érd	digital	management-oriented
Szekszárd	digital	service-oriented-	Pécs	broadly innovative	management-oriented
Szolnok	digital	service-oriented-	Eger	broadly innovative	management-oriented
Szombathely	digital	service-oriented-	Kecslemét	broadly innovative	management-oriented
Tatabánya	digital	service-oriented-			

Source: own edit based on the SDS documents

5. Conclusion

In the earlier part of my study, I posed the question: in the discourse analysis of the (smart) sustainable city, is it more appropriate to use a constructivist approach (emphasising the active participation of subordinate levels in the meaning construction process) or a critical approach (suggesting the dominance of power relations)? In my opinion, the analysis of the Hungarian SDS documents and their placement in the context of development policy at EU and member state level has shown that there is no simple answer to this question. The critical approach is countered by the fact that the higher levels, which can be understood as centres of power - the EU and the Member-State level in Hungary - not only do not convey clear expectations to the subordinate levels, but also do not clearly commit themselves to one or the other concept of the (smart) sustainable city. At the EU level, the management-oriented and broadly innovative approach of the EU Handbook stands in stark contrast to the service- and (digital) technology-centric approach of the New Leipzig Charter and the European Green Deal. The MF Handbook, which can be seen as a fundamental document of the Hungarian (smart) sustainable urban development discourse, can be seen as a controversially successful attempt to create a consensus between the EU discourse, which is itself quite contradictory, and the Hungarian Lechner Guide's interpretation of the smart city - the latter already outdated compared to the EU discourse when it was first written in 2017. In principle, this confused situation could also imply that, in the absence of clear guidelines, the local level has sufficient room for manoeuvre to actively shape the meaning of the (smart) sustainable city. However, the empirical analysis of SDS documents in Hungary has shown that such an assumption has also its own limitations. Of the 21 SDS documents analysed, the majority adopted a service- and (digital) technology-centric smart city approach, which was closer to the implicit expectations of the managing authority and thus maximised the chances of local actors to access EU funds earmarked for sustainable urban development. However, the minority of counter-examples shows that this implicit compliance constraint is not absolute in point of view local actors, and perhaps the quality of strategic and project planning in the 2021-2027 budget cycle could be an important factor for sustainable urban development funding, in addition to the implicit constraint to meet higher expectations. However, confirmation of this assumption already points to a possible direction for further research.

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