Towards a multiscalar perspective on the prospects of 'the actually existing smart village' – a view from Hungary

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Abstract

This paper aims at expanding the scope of the dominantly pragmatic, local scale-oriented smart village scholarship towards a perspective that recognizes that smart village development is a multiscalar political process. To show the necessity of this move, the shaping of smart village policies and practices in Hungary is examined through a qualitative lens. As the authors argue, path-dependent structural obstacles and interscalar relations undermine the prospects of smart village building in the sense of bottom-up integrated rural development, and there is a risk of a bias towards technological innovation. This exploratory article, using Hungary as a case study, argues that smart village scholarship should draw on the results of critical smart city scholarship to acquire in-depth understanding of current debates regarding potential smart village developments.

Keywords: smart village, smart rural development, rural development, digitalisation, Hungary, multiscalar perspective

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Introduction

Expanding on the focus on 'the smart city' in policymaking and scholarly research concerned with the use of digital technologies for the improvement of urban management (KITCHIN, R. 2014, 2015; KARVONEN, A. *et al.* 2018; Joss, S. *et al.* 2019), recently one could witness a growing interest in the smart development of rural areas. The European Union has incorporated 'smartness' into its rural development policy, and the 'smart village' concept has been proposed as a way of addressing the challenges faced by rural areas such as depopulation and funding cuts, boosting local economies and improving quality of life through a combination of technological and social innovation (ENRD, 2018; ZAVRATKNIK, V. *et al.* 2018; KOMOROWSKI, L. and STANNY, M. 2020). Parallel to this, more and more

scholars (HOSSEINI, S. *et al.* 2018; VISVIZI, A. and LYTRAS, M.D. 2018; SPICER, Z. *et al.* 2019; COWIE, P. *et al.* 2020) have called for extending (the study of) smart development to rural areas. This paper is motivated by the observation that although this emerging scholarship has provided useful insights on smart village policies and practices, it has been characterized by a rather narrow focus on local conditions and has unduly maintained a pragmatic solution-oriented stance. While agreeing that "(t)he rural should no longer be the tailpiece of urban-centred research on smart development" (COWIE, P. *et al.* 2020, 175), this paper argues that smart village research can usefully draw on the perspective of critical smart city scholarship (VERREST, H. and PFEFFER, K. 2019) to acknowledge that the 'actually existing smart village' – akin to the 'actually existing smart city' (SHELTON, T. *et al.* 2015) – is

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the product of multiscalar political processes. To demonstrate the usefulness of a broader political-economic view, the paper presents the findings of a qualitative exploratory study of the shaping of smart rural development policies in Hungary, where smart rural development has recently begun to receive more explicit national policy attention through the launch of the Digital Village Programme (DVP). Based on the (preliminary) evaluation of this emerging policy agenda, the paper argues that although the policy discourse in Hungary has reiterated the emphasis on the bottom-up character of smart village development and the need to combine technological innovation with social innovation, a lack of policy coordination and the weak(ening) position of the local scale makes the realisation of smart villages questionable.

The main aim of this article is to analyse how digitalisation policies and "smartening" efforts may take effect in the Hungarian context and what incentives affect the use of info-communication technologies (ICTs) in rural areas. We argue, contrary to the pragmatic solution-oriented focus and coupled with an emphasis on the local context, that smart village development needs to be examined as a broader multiscalar policy process, as this provides a more complete picture of barriers and opportunities.

In other words, a key question is to what extent interscalar power relations across different policy fields facilitate or impede the development of the bottom-up approach that is considered to be fundamental to the smart village.

The emergence of 'the smart village' as a policy concept

The notion of 'smart' first appeared in the discourse on cities as part of an urban policy approach that emerged in the 1990s and which has since emphasized the importance of ICTs and business-led initiatives for solving urban problems (Hosseini, S. *et al.* 2018; Spicer, Z. *et al.* 2019). According to some, the recent upsurge of interest in the smart city has been driven by the ICT corporate sector promoting a technocratic urban policy approach with the aim of selling technological solutions (Söderström, O. *et al.* 2014; Wiig, A. 2015). In addition, critical approaches to the smart city highlight that the spread of the smart city concept can also be interpreted as part of a neoliberal market-oriented transformation process in the urban space, with the main interest being to increase the value of urban space as a commodity together with the concentration of R&D capital (Green-field, A. 2013; Vanolo, A. 2014; Grossi, G. and Pianezzi, D. 2017). As competition between cities increases, the concept of smart city needs to be re-conceptualized as a discourse network, permeating and binding together various geographical scales (Joss, S. *et al.* 2019). In the European context, another source of the popularity of smartness has been research in the field of the economics of innovation on (regional) smart specialisation conducted for the European Commission (Torre, A. *et al.* 2020). In the post-2008 crisis period, the concepts of smart, sustainable and inclusive growth became the cornerstones of the 'Europe 2020' growth strategy launched in 2010, with the aim being to address the structural weaknesses of the EU economy (Naldi, L. *et al.* 2015; Haarstad, H. 2017). The growth strategy also marked the start of a new generation of regional innovation policy promoting 'smart specialisation', an approach emphasizing the role of endogenous resources (Rosa Pires da, A. *et al.* 2014) and a broader-than-technological understanding of innovation (European Commission, 2010 a, b).

Within the EU, the introduction of smartness into the field of rural development can be primarily linked to the above EU regional policy shift (Philip, L. and Williams, F. 2019) and to the application of the smart concept – in the sense of smart specialisation – on a territorial scale that goes beyond the urban space (European Parliament, ECORYS, 2019). Building on this framing of smart rural development in terms of sustainable economic development, the smart village concept has

appeared more recently to emphasize the potential role of ICTs in addressing the "circle of decline" that is maintained in rural areas by two mutually reinforcing trends, namely, a shortage of jobs and sustainable business activity and inadequate and declining services (see ENRD, 2018). These issues and the importance of ICT for rural regions has already been identified by the Europe 2020 strategy (Naldi, L. *et al.* 2015), but it is only in the past five years that the notion of the smart village has entered the EU's policy vocabulary. Consequently, relatively few smart village concept-related projects have been implemented.

Definition of the smart village

The definition of the smart village[3] proposed by the EU Action for Smart Villages (see Zavratnik, V. *et al.* 2018) emphasizes the need of social innovation on the basis of existing strengths and regarding digital infrastructure as a catalyst of, rather than as a sufficient condition for, digital innovation (ENRD, 2018, 7). The definition extends earlier conceptualizations of smart rural development in terms of smart specialisation. More recent policy initiatives – for example, the European Innovation Partnership for Agriculture (EIP-AGRI) and the European Network for Rural Development (ENRD) – and the *Bled Declaration for a Smarter Future of the Rural Areas in EU* (2018) have marked a new approach that accords digital technologies a more explicit and pivotal role.

It is important to point out that technological development in itself (e.g. installing smart benches, establishing public space wifi networks) should not be regarded as constituting a smart village. Smart villages are rural communities which rely on participatory planning and seek to develop their services based on their local characteristics by using ICT (thereby reinterpreting the rural way of life).

Smart villages can be understood as innovative and resilient communities that use the mobilization of internal resources (local values and community) and the channelling of external resources (through the effective mobilization of a mix of tender resources) for institutional capacity building and service development. As part of this approach, ICT plays a central, but not exclusive, role, especially in such areas as resource sharing (e.g. shared cloud-based platforms between municipalities), e-commerce and public services (e.g. e-government). As global challenges also affect rural areas, environmental protection, green energy production, and the reduction of pollutant emissions in agricultural production are factors of consideration. Thus, locally based ecotourism (which can be well supported by application developments and using GIS tools in order to gather more data about landscape values, see Lontai-Szilágyi, Zs. *et al.* 2019) and shopping communities, overall quality living conditions for teleworkers in the post-COVID period serve as a potential breakthrough for rural areas. The essence of the smart village initiative is to connect community resources with information technology achievements, which are embedded in community innovation and development programs (*Figure 1*).
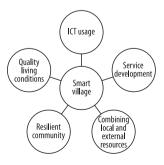

Fig.1. Main elements of the Smart Village concept. *Source:* Compiled by the authors.

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[3] According to the 'EU action for Smart Villages', smart villages are "rural areas and communities which build on their existing strengths and assets as well as new opportunities to develop added value and where traditional and new networks are enhanced by means of digital communications technologies, innovations and the better use of knowledge for the benefit of inhabitants." (ENRD, 2018, 7)

Smart village projects in the EU, with special attention to V4 countries

To place our Hungarian case study into context, we conducted a collection of smart village initiatives among the Visegrád countries (V4: Czechia, Hungary, Poland and Slovakia). The sites and main objectives of the projects have been derived from the databases of EU-based networks and from the Final Report of the Pilot Project: Smart eco-social villages (European Parliament, ECORYS, 2019). It can be noted that the Visegrád region is underrepresented in the list of smart village projects in the analysed EU-wide databases: only a few initiatives can be highlighted in terms of community, infrastructure or even in organizational matters in the last few years (*Table 1*).

The listed V4-based smart village projects are also represented on a map (*Figure 2*). Specific smart village projects cover a large spectrum from "soft" strategy development (Smart Rural 21 Project, which is a network of settlements forming a smart village strategy, the main profile is technical assistance) to ENRD-supported local brand development (in Lower Silesia near Karpacz), circular economy-based business development (Dzialdowo) or agriculture modernisation (Panovce) using digital technologies. Carbon-free villages like Nagypáli and Tomaszyn are examples of environmental and energy-focused smart village developments. The map also shows the NUTS 3-level administrative division of the four

countries based on the urban-rural typology of EUROSTAT. There are several urban-rural typologies, and each of them builds on a mix of statistical data, using different methodological approaches. (Novotny, L. *et al.* 2015). EUROSTAT identifies three types of region based on the share of the rural population, using clusters, which consist of 1 km² sized grid cells with different population intervals. The three spatial categories are predominantly rural regions (where at least 50% of the population live in rural grid cells), intermediate regions (where between 50% and 80% of the population live in urban clusters) and predominantly urban regions (where more than 80% of the population live in urban clusters).

Regarding the general features of smart rural development in these countries, local leadership plays a very important role, as does also external knowledge transfer (which can initiate developments). As researchers have noted, access to digital tools is not necessarily the only obstacle to smart rural development within this area, as this concept implies not only technological modernisation but also organizational, institutional and societal innovation (Vaishar, A. and Štastná, M. 2019; Torre, A. *et al.* 2020). This requires a thorough (qualitative) analysis of the situation in rural areas in terms of local potentials and priorities Šipilova, V. *et al.* 2017) and the development of RIS (Research and Innovation Strategy) on a smaller scale (Pelse, M. and Lescevica, M. 2016).

Table 1. Overview of smart village initiatives in the Visegrád region

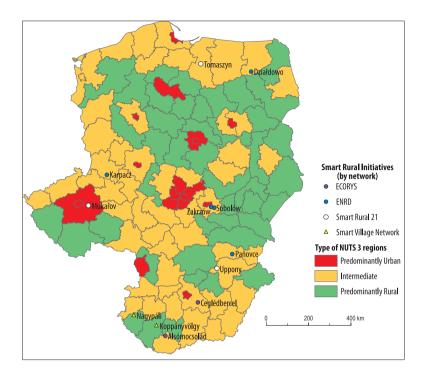| Location of smart village initiatives	Country	Description
Nagypáli	Hungary	Solar energy systems, innovation eco-centre, hybrid power plant
Koppányvölgy		Aquaculture; soil borehole heat pumps along with solar panels; insect breeding, hydroponics.
Alsómocsolád		Complex smart village program: smart tourism development, local currency, digital market
Ceglédbercel		Wireless LAN systems, CCTV
Uppony		Smart village strategy framing
Panovce	Slovak Republic	Modernisation of dairy production via digital systems
Mukarov	Czech Republic	Smart village strategy framing

Fig. 2. Overview map of smart village initiatives in the Visegrád countries. *Source:* Eurostat, Smartrural21.eu, ENRD smart villages portal, smart-village-network.eu, European Parliament, ECORYS, 2019. Compiled by the authors.

Towards a multiscalar perspective on the smart village

Academic research on the implementation of smart villages is still in its infancy, but in the past years one could witness a proliferation of studies on this issue (Prause, G. and Boevsky, I. 2015; Zavratnik V. *et al.* 2018; Philip, L. and Williams, F. 2019; Vaishar, A. and Štastná, M. 2019; Komorowski, L. and Stanny, M. 2020). A shared aim of emerging smart village scholarship so far has been to discuss, mostly against the backdrop of the EU's emerging smart development policy field, existing smart village initiatives and projects, and to assess their utility in revitalizing rural areas. Beyond emphasizing that good digital telecommunications infrastructure is essential (Philip, L. and Williams, F. 2019; Adamowicz, M. and Zwolińska-Ligaj, M. 2020),

a key point of convergence is the focus on the facilitating and hindering factors of smart village implementation at the local scale. For example, Komorowski, L. and Stanny, M. (2020) and Guzal-Dec, D. (2018) mention the lack of skills and insufficient acceptance or awareness of new technologies as the main barriers to implementing the smart village idea; in a similar fashion, Vaishar, A. and Šťastná, M. (2019) refer to the lower education levels and conservatism of rural populations, and Zavratnik, V. *et al.* (2018) emphasize the importance of strategies and solutions based on local or regional knowledge. Although Adamowicz, M. and Zwolińska-Ligaj, M. (2020) acknowledge the relevance of the supportive policy of regional and central governments, they also refer to the active participation of business entities, local institutions, and citizens. This is echoed by Guzal-Dec, D. (2018)

who underlines the initiating, activating, and coordinating role of local authorities. Another related, yet often implicit commonality of smart village research is a pragmatic solutionist attitude, grounded in an (almost – see Philip, L. and Williams, F. 2019[4]) unquestioned belief in the positive effect of digital technologies on rural development. Hosseini, S. et al. (2018), for example, propose a blueprint for innovation processes that can stimulate digital innovation in smart towns. Káposzta, J. and Honvári, P. (2019) seem to be convinced that the smart village is a factor pointing towards the future. According to Visvizi, A. and Lytras, M.D. (2018, 2), "smart villages research has a very strong pragmatic orientation in that it seeks to diagnose a problem and, by reference to ICT, offer a way of bypassing it".

This paper acknowledges the need to investigate the local conditions for smart development, as well as that of societally relevant research on smart rural development. However, it argues that to develop a comprehensive understanding of (the prospects of) smart village building, it is necessary to apply a perspective that attends to the interscalar processes through which smart village development takes shape, as well as to the fact that the solutions that smart village building claims to provide are not neutral. For example, how digital tools and non-digital interventions are combined to address a perceived rural development problem is a matter of political decision that benefits some actors (e.g. ICT companies) and not others. Also, the application of smart technologies might address some problems but might create new patterns of exclusion if certain groups cannot access or make use of the technology.

The multiscalar perspective proposed by this paper builds on the assumption that just as smart city development does not unfold 'at' only one (the local) scale, smart village building has multiple scalar dimensions and is the result of power-laden institutionalized practices 'at' multiple (supranational, nation-al, regional, and local) scales (cf. Varró, K. and Bunders, D.J. 2020), whereby actors variously positioned fill the smart village concept with different meanings. Drawing on insights from critical smart urbanism, smart village can, thus, also be interpreted as a political strategy involving actors 'at' different scales, promoting new arrangements for different policy areas and, by doing so, (re)shaping the institutional-territorial configuration of the state (cf. Smigiel, C. 2018). From this perspective, the focus is on what (implicit) claims are advanced by which actors, and how power relations among actors, actors' dependence on (external) resources, as well as coordination between relevant policy areas (or the lack of it) influence the actual course of smart village development. In other words, a key question is to what extent interscalar power relations across different policy fields facilitate or impede the development of the bottom-up approach that is regarded to be fundamental to the smart village. The remainder of the paper addresses this question regarding the case of Hungary, to assess the prospects of smart village development.

Methodology

The research had a qualitative exploratory nature and started off with the content analysis of (national and local) policy documents and websites of relevant institutions, focusing on how policy discourse and (envisaged) interventions frame the link between rural development and digitalisation. Furthermore, eleven in-depth semi-structured interviews were conducted in the period between September and December 2020[5] with key figures of the emerging smart rural development policy field. The research questions (see *Table 2*) were designed to investigate the research phenomenon in an open-minded way and to understand how key players of rural development such as mayors

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[4] As Philip, L. and Williams. F. (2019, 629) note, "digital modes are not always appropriate. For example, some health care requires physical contact between patient and health professional".

[5] Given the restrictions that were in place due to the COVID-19 pandemic during this period, all interviews were conducted online.

Table 2. Main interview topics

Topic guide	
What is your opinion about recent processes in rural development? What kind of trends can be observed?	What do you think about smart rural development and the smart village concept? What elements should it contain?
How did you find out about the smart village concept?	Which developments serve the interests of rural areas the most?
Which policy framework has recently influenced rural development in Hungary?	How would you describe the vision of rural areas in terms of development policy?

of small settlements, consultants, and spatial planners describe their approaches to digital transformation and understand smart village and its implementation as part of their real-life experiences. The topic guide was sent to the interviewees who requested it before agreeing to participate in the interview.

Specifically, the selection of some experts was based on their known national status in the field of rural development and their prior participation in (inter)national projects or in decision making. They have a high-level overview of the topic, as well as special knowledge and experiences based on their functions or responsibilities. Further experts were selected by snowball sampling, that is, existing study subjects recruited future subjects from among their acquaintances. Amongst the respondents, a representative of the Digital Welfare Programme should be highlighted, who were selected with the aim of gaining an overview and understanding of governmental policies and plans, as well as a bottom-up perspective on policy developments by actors 'on the ground'. The length of the shortest interview was 45 minutes, the longest was 91 minutes, and the average duration of an interview was 59 minutes. Verbatim interview transcripts were closely (re-)read to distil the (implicit) assumptions that key actors hold about smart village development, as well as to identify the perceived tasks and challenges related to it. Finally, insights were considered from the online Civitas Sapiens 2020 Smart City conference in November 2020, where several sessions and panel discussions dealt with the issue of smart development and the launch of the DVP.

Towards smart(er) villages in Hungary?

The forming of the smart village idea

Rural areas cover 87 per cent of the territory and are inhabited by 47 per cent of the population in Hungary (Eurostat, 2018a); furthermore, the country is characterized by a fragmented settlement structure, with 76 per cent of the 3,152 settlements having less than 2,000 inhabitants (Gáspár, M. 2019). The problems that these rural areas have faced – migration of the active well-trained labour force, depopulation, unfavourable age structure and high unemployment rate – are in many respects comparable to those of rural areas in other parts of Europe (Csotó, M. and Herdon, M. 2008).

The idea of addressing these problems by harnessing ICTs has already been present in the series of strategic documents (*Table 3*) that have served as the backbone of Hungary's digitalisation agenda, which seeks to ensure the country's alignment with Digital Agenda for Europe (European Commission, 2010c).

The *National Information and Communication Strategy 2014–2020* (NICS) (Government of Hungary, 2014a, 14) mentioned that ICT investments may help rural areas integrate and improve quality of life. Subsequently, the 'Digital Welfare Programme 2.0'[6] (DWP 2.0), which set the aim of ensuring that "every citizen and business of Hungary and

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[6] In some instances, the Programme is referred to as 'Digital Success Strategy'. The present paper translates the middle term of the original Hungarian title (*jólét*) as welfare. It should be noted that *jólét* also signifies 'well-being' as well as 'prosperity'.

Table 3. Overview of rural development related policy initiatives and organisations

Scheme of relevant policy initiatives	
EU level	National level
Digital Agenda for Europe	Digital Village Programme (DVP)
Europe 2020	Digital Welfare Programme (DWP)
Common Agricultural Policy (CAP)	National Information and Communication Strategy (NICS)
–	New Hungary Rural Development Programme
–	National Digitalisation Strategy
–	Hungarian Village Programme (HVP)
Scheme of organisations	
European Innovation Partnership for Agriculture (EIP-AGRI)	Digital Welfare Non-profit Ltd.
European Network for Rural Development (ENRD)	Digital Future Settlement Network (DFSN)
–	Civitas Sapiens Smart City Knowledge Centre (CS Knowledge Centre)

the Hungarian national economy becomes a winner of digitalisation" (Government of Hungary, 2017, 3), asserted that government was "committed to the development of smaller settlements and lagging areas" (Government of Hungary, 2017, 121) and argued in favour of extending the notion of 'smart' beyond cities to 'smart areas' (ibid.). Nonetheless, despite the occasional occurrence of 'smart settlement' – also in the series of documents making up 'the smart city methodology' (http://okosvaros.lechnerkozpont.hu/hu) of the Lechner Knowledge Centre, the background institution of the Department of Spatial Planning and Urban Management of the Prime Minister's Office in the fields of architecture, spatial planning and related IT services – ICT use in the policy discourse of spatial development and public administration has remained dominantly framed in terms of the 'smart city'. The 2017 revision of the 2012 government decree on local-level planning contained a definition of the smart city[7], and the first government pilot (in the town of Monor) aiming at the development of a central platform for smart services has been referred to as a smart city pilot.

The first steps aiming to extend the smart development discourse to include non-urban areas were initiated by a handful of municipalities. Led by the town of Budaörs and the village of Alsómocsolád, they set up the Digital Future Settlement Network (DFSN) in 2016 to create a community platform for the testing and upscaling of inclusive smart projects and the exchange of best practices. Yet, it was the promotion of the smart village concept by the EU's policy discourse that created more publicity for the topic. Arguably, what played a role was also that it was Tibor Szanyi, Member of European Parliament for Hungary who – along with his Slovenian colleague Franc Boɢoᴠıč – assumed a key role in starting the Smart Villages for Europe movement[8] in 2018. Confirming the government's commitment to the development of (small) rural settlements, in November 2020 the 'Digital Village Programme' (DVP) was

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[7] Following this definition, smart cities are those 'settlement(s), or a group of settlements, which develop(s) its natural and built environment, digital infrastructure, and the quality and economic efficiency of its locally available services by adopting novel and innovative information-technologies, in a sustainable way, through the increased involvement of its residents' (Hungarian Gov. Decree No. 56/2017 [20.03]).

[8] Furthermore, perhaps not unimportantly, Tibor Szanyi, then member of the opposition Hungarian Socialist Party, argued that a key motivation for his initiative was that the Hungarian government had not done enough to reverse depopulation and the brain drain from rural to urban areas.

launched in order "to effectively facilitate the improvement of the attractiveness and liveability of small settlements with different digital or smart solutions" (https://digitalisjo-letprogram.hu/). The DVP is directly related to the Hungarian Village Programme (HVP) and the DWP. Introduced in 2019 and fully financed from the central state budget, the aim of the HVP is to keep quality of life in villages as high as possible in order to maintain or increase populations in rural areas; more specifically, the HVP's aim is "to reinforce the capability of places with a population of less than 5,000, representing more than 30 per cent of the total population and more than 91 per cent of cities and villages, to retain their population, as well as to support housing opportunities in the countryside of Hungary" (Government of Hungary, 2020, 23).

The embedding of the DVP in the DWP is ensured through the supervision of the DVP by the Civitas Sapiens Smart City Knowledge Centre (CS Knowledge Centre), a division of the Digital Welfare Non-profit Ltd. (DWN Ltd.) operating under the auspices of the Ministry of Technology and Innovation. The CS Knowledge Centre, which sees itself as an "agile developer that makes the move from academic thinking on smart development to implementation" (interview, CS Knowledge Centre representative) has also been responsible for elaborating the structure of the programme (see *Figure 3*).

At the moment of writing (December 2020), only one project has been fully put in place: the free online self-study training in digital area development targeting decision-makers and practitioners in towns and villages. The long-term aim and objective of the training is "that every settlement has at least one expert who has accomplished the training and who, thus, can effectively contribute to the operation, digitalisation and smartening of his/her own village and of neighbouring towns and villages" (https://www.edutus.hu). Furthermore, the CS Knowledge Centre offers a 'settlement survey' which is meant
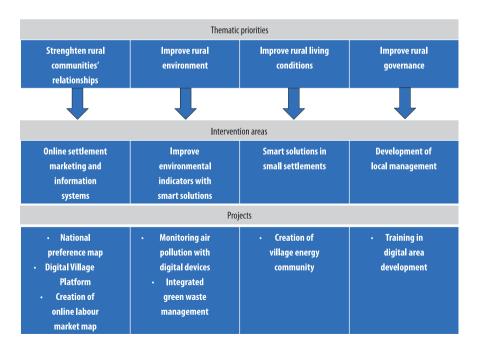

Fig. 3. The structure of the Digital Village Programme. *Source:* Authors' own elaboration based on conference material.

to reveal, based on the analysis of statistical data, existing planning documents and participative research (including in-depth interviews with key actors and local opinion makers), the state of digitalisation and aspects of local ICTs use, in order to sketch a local 'problem map'. Subsequently, reflecting on local needs, proposals are made by the Knowledge Centre concerning the improvement of municipal management, including suggestions concerning the use of specific products and services from the 'smart city marketplace' (to be launched early 2021), a centrally managed platform for the assessment, quality control and validation system of smart city products.

While the DVP is yet to be implemented, small settlements eager to harness the opportunities offered by digitalisation have continued to seek collaboration at different scales to take steps on their own. The already mentioned village of Alsómocsolád participated in the Pilot Project on Smart eco-social villages (2018–2019), initiated by the European Parliament and ECORYS, along with four other villages forming the North Hegyhát Micro-Regional Union (NHMRU), has set the aim of forming Hungary's first smart area. The Union, which has also joined the European Smart Village Network[9,] published a detailed strategy that puts great emphasis on community participation and stresses the need to combine technological innovation with social and economic innovation (Északhegyhát Mikrotérségi Unió, 2019).

Assessing the prospects of smart(er) villages

Given that the DVP has only been recently launched and it is still taking shape, only a preliminary assessment of its prospective impacts can be given. However, based on the analysis of the declared objectives and instruments of the Programme, as well consider-

ing the perception of it by local stakeholders, some weaknesses can already be identified that make the shift towards smart(er) villages and to smart rural development, understood as a bottom-up form of governance, questionable, or in any case difficult in the short term.

First, the DVP does not address the (longstanding) lack of synergy between the weakly positioned non-sectoral part of rural development policy on the one hand and digitalisation policies primarily geared towards the improvement of digital connectivity and skills in rural areas on the other. As to the former, the failure of the EU's Common Agricultural Policy (CAP) to move away from being mainly an agricultural funding policy towards effectively addressing environmental and socio-economic challenges (Pe'er, G. *et al.* 2020) has been exacerbated by domestic political choices in Hungary. Like other Central Eastern European countries, the country's EU membership strengthened the position of agricultural lobbies and turned Hungary into a stronghold of industrial agriculture (Augustyn, A.M. and Nemes, G. 2014). The focus on agricultural production and the food industry has deepened rural inequalities rather than tackling them (Farkas, J.Zs. and Kovács, A.D. 2018). The agricultural focus remained strong in the 2014–2020 period, as Hungary's Rural Development Programme prioritized agricultural development and decreased the available funding for rural development (Finta, I. 2015). The relative stronger position of the agricultural sector is also apparent from the fact that under the DWP, a Digital Agricultural Strategy has been issued. Furthermore, rural development strategies – for example, the New Hungary Rural Development Programme (Government of Hungary, 2014b) – tend to mention technological renewal and ICT use in relation to agricultural production. Finally, even within the (marginal) section of rural development that was not defined in sectoral (that is, agricultural) terms between 2014 and 2020 (only 5% of the funds were used for LEADER purposes, see Finta, I. 2015), one could observe little if any direct concern with aspects of digital-

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[9] The Smart Village Network is a bottom-up initiative of villages and village associations across Europe that aim to exchange their views and experiences about smart solutions in response to rural challenges (smart-village-network.eu).

isation, as (EU) funding was primarily made available for local economic development and community-building. The same holds for domestic funding for rural development, as the focus of the HVP is on basic infrastructural investments and public service provision.

Considering digitalisation policies, in line with the EU's Digital Agenda, they have regarded digitalisation as one of the key driving forces of competitiveness, growth and welfare and, despite some references to rural areas (see above), they have shown less concern with the actual spatial development implications of digitalisation (Varró, K. 2019). The National Digitalisation Strategy[10] (Ministry for Innovation and Technology and Ministry of the Interior, 2020), the objectives of which have been formulated in response to the EU's latest Digital Economy and Society Index report[11] of Hungary (European Commission, 2019), lays the focus on efforts in the field of the economy, education, and public administration that promote the country's competitiveness and the well-being of its inhabitants. References to rural areas in the document are restricted to remarks on the spatial patterns of FTTx (broadband network architecture using optical fibres) coverage and on internet use by, and the digital skills of, the rural population.

Second, state centralizing tendencies have prevented the development of a bottom-up integrated approach and the forging of inter-municipal cooperation, both of which are is regarded as prerequisites of successful smart village development (see Zavratnik, V. *et al.* 2018, and Spicer, Z. *et al.* 2019, respectively). State centralization has been characteristic of the whole post-1990 period. However, since 2010 the trend has intensified, leading to a loss of competences and financial and discretionary freedom at the municipal level (Pálné Kovács, I. 2019). This in turn further reinforced the external funding dependence of (especially smaller) municipalities.

Third, the dominantly top-down character of both rural development and digitalisation policies has also unfavourably affected the prospects of smart village development. Following EU accession, the LEADER programme – characterized by a bottom-up approach and a focus on local partnership in planning and implementation – was welcomed in Hungary by many as a method that would allow the catching up of backward rural regions (Patkós, Cs. 2019). However, bottom-up processes encountered strong resistance from central institutions and the public sector at the local level (Augustyn, A.M. and Nemes, G. 2014). Strengthening central state control has limited the room for implementing a bottom-up approach to rural development. In the 2014–2020 programming period, the LEADER method was extended under the broader term Community-Led Local Development (CLLD), but Hungary chose to limit the institutionalisation of CLLD to the obligatory 5 per cent within the overall rural development budget (Finta, I. 2015). The ability of LEADER local action groups (LAGs) to co-ordinate local forces and channel them into development programmes through governance remained at a low level, due in part to frequent changes in institutional structures and bureaucratic burdens (Patkós, Cs. 2019). Moreover, lengthy and rigid procedures and the punitive attitude of national authorities have hindered local experimentation and innovation and have contributed to a loss of trust. Coupled by the decrease in the volume of available of funding, the networking and project generating capacity of LAGs has diminished (Nemes, G. and Magócs, K. 2020). Against the background of the above trends, respondents have expressed doubts that settlements can take development into their own hands; referring to the DVP, one of them noted that most likely that will be just as centralized as the HVP (interview with spatial planner at international organisation).

A centralizing attitude has also permeated digitalisation policies. Although large-scale ICT infrastructure developments arguably warrant a centralized approach, the Digital

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[10] The National Digitalisation Strategy has replaced the NICS.

[11] The European Commission has been monitoring Member States' digital progress through the Digital Economy and Society Index (DESI) reports since 2014.

Hungary programme has often not sufficiently considered existing local capacities and knowledge. For example, the establishment of a network of 1,500 'Digital Welfare Programme Points' (internet access points) did not build on the legacy of the telecottage movement[12] that played a pioneer role in introducing ICTs to rural areas (see Kovács, G. 2001). Even more importantly, the DVP does not seem to take notice of the experiences of existing bottom-up initiatives of smart village development such as that of the he DFSN and NHMRU. Despite the rhetorical emphasis on the involvement of inhabitants, the CS Knowledge Centre represents a centralizing approach, where the smart city marketplace is meant to ensure that "(local) solutions don't diverge from the state's efforts" and to prevent situations arising in which "municipalities spend money unnecessarily" (interview with CS Knowledge Centre representative).

Discussion and concluding remarks

In Hungary, the interest in smart village building is rooted in long-standing efforts to improve the position of the rural population. Meanwhile, the increased concern with digitalisation at the supranational and national scales has given a new impetus to attempts to harness ICTs for rural development ends. In line with the dominant policy discourse in Europe, the smart village has been promoted as a locally led and holistic approach that combines social and technological innovation to address the challenges faced by rural areas. Undoubtedly, the smart rural development policy field is still taking shape in Hungary, and there might be promising initiatives. However, the latter appear to be sporadic illustrations of the role of local innovators (mostly mayors), and they have difficulties

scaling up successful interventions. Overall, our analysis reveals that path-dependent structural obstacles to bottom-up integrated development – such as the lack of (supranational and national) cross-sectoral policy coordination and the weak(ening) position of the local vis-à-vis other scales – present considerable obstacles to realize smart villages in the above sense. Ongoing pressures to align with EU policy frameworks and performance targets, coupled by centralizing measures – which have been further reinforced in the course of the COVID-19 pandemic – continue to represent an obstacle to local capacity-building and reinforce the funding orientation of small settlements and their focus on maintaining basic infrastructures.

Digitalisation policies, while increasingly including spatial development considerations, seem to remain primarily geared towards creating a 'digital state' where ICTs contribute to the effective and competitive functioning of the state. Although there is a rhetorical emphasis on the need to make smart development people-centred, the dominantly user-centred view of inhabitants and the assumption that the 'social validation' of ICT use is to be defined on the national level ("the question is, can a development be justified in Hungarian society?", interview, CS Knowledge Centre representative) implies that little room is left for genuine bottom-up citizen engagement and, thus, also for social innovation. While the lack of human resources and local knowledge might warrant a role for the central state in smart rural development, arguably, this should take a more a facilitating form and apply a long-term perspective. As a respondent noted, "these communities should be allowed to develop at their own speed […] central power should play an enabling role and supply them with information and knowledge" (interview with mayor). However, in its current top-down form ("it is an absolutely technocratic approach that reigns", interview with consultant), there is a risk that the DVP will be biased towards technological development. It will be a task for future research to confirm whether this is in-

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[12] Telecottages functioned as hybrid (NGO-small business-municipal) organizations (ibid.) from the mid-1990s, and they have been conceived of as multifunctional public spaces offering a variety of technological, organizational and personal services tailored to the needs of local communities (Gáspár, M. 2016).

deed the case, and to what extent Hungarian policy developments fit the ideal-typical 'European' model of smart village building, or whether they show more similarities with a top-down approach applied elsewhere (e.g. in China, see Zhang, X. and Zhang, Z. 2020).

However, the juxtaposition of top-down and bottom-up approaches can easily lead to the formulation of a false dichotomy. In the context of globalisation, the situation of rural areas should be seen from a more complex relational perspective. Building on the argument of Massey, D. (2005) that local places are not passive victims of, or spatially fixed sites of resistance to, globalisation, there is a need to acknowledge that the character and development of rural places is determined by how local actors engage with global networks and processes, and as a result, how these places are constantly reconstituted, that is, the process of rural place-making is determined by both local and global forces (Woods, M. 2007). From this point of view, an analysis of power geometries and the changing roles of the state and development policies is of utmost importance. In the era of globalisation, the legal monopoly of the state in the regulation of spatial processes is weakening, and new normative systems are emerging at both supranational and subnational levels. Consequently, legal pluralism has become the norm, and normative systems operating at various territorial levels are key to determining the patterns of regional and local differences. State regulation, however, continues to have important functions, especially when other forms of regulation create and perpetuate socio-economic inequalities (Kondor, A.Cs. 2010).

Taking a relational multiscalar view on the production of local places and regional development has relevant implications for rural policies. In the age of globalisation, neither exogenous development models, driven from outside/above, nor purely endogenous approaches, based solely on local resources, seem to be realistic options for the development of rural (especially remote) areas. Instead, as several scholars argue, a hybrid neo-endogenous development model needs

to be adopted. While neo-endogenous development emphasises the importance of local actors and resources, this does not mean that national- and regional-level actors should not contribute to the process. The main aim of this model is to develop long-term partnerships and cooperation between social actors at different territorial levels and with different needs. The role of the state lies in capacity building and in facilitating cooperation with local stakeholders. In addition, all these activities should be integrated into a broader rural policy and carried out in line with sectoral policies (Shucksmith, M. 2010; Gkartzios, M. and Scott, M. 2014; Bosworth, G. *et al.* 2016; Gkartzios, M. and Lowe, P. 2019).

In more general terms, the findings of this paper show that smart village research should not limit its focus to the assessment of local conditions, and it should not be conceived in narrow solutionist terms. Rather, and despite its (partly) different empirical focus, smart village research can usefully draw on critical smart urbanism (Verrest, H. and Pfeffer, K. 2019) to acknowledge the multiscalar and political nature of smart village development. Smart rural futures might indeed need to be framed differently from smart cities research (Cowie, P. *et al.* 2020), but both smart rural development and smart city development are shaped by shifting (spatial) forms of state power and governance in the digital age. A political-economic perspective allows for a more comprehensive assessment of the potential of smart village practices to address rural development challenges. It should, thus, be included in the repertoire of smart village scholarship.

However, there is a need to strengthen the links between small rural towns and villages, as current policies do not pay enough attention to coordinating the development of different categories of space. In the future, more emphasis should be placed on communication, with the aim of familiarizing the community with the various aspects of smart development and its potential everyday benefits. In this way, future developments can be made known and acceptable to the

community. For this reason, the successful implementation of pilot projects, the exchange of experiences and the projects implemented during the EU development period 2021–2027 will be even more important. Still, it appears that the approach calls for making the current financial instruments more flexible and tailored to EU and national scales.

Limitations

The course of the research was influenced by the COVID-19 pandemic situation in several ways: none of the expert interviews were conducted face-to-face, leading some potential interviewees from the corporate sector to pull out of the interviews. Given the pandemic situation and the fact that the Digital Village Program will enter the implementation phase from 2021, we did not gather field data, so this study outlines a conceptual framework and was not intended to present topic-specific empirical results. In the light of the above, a micro-level investigation of examples of the local implementation of the smart village concept could be a potential direction for future rural research.

REFERENCES

ADAMOWICZ, M. and ZWOLIŃSKA-LIGAJ, M. 2020. The "smart village" as a way to achieve sustainable development in rural areas of Poland. *Sustainability* 12. (16): 1–28.

AUGUSTYN, A.M. and NEMES, G. 2014. Catching up with the West? Europeanisation of rural policies in Hungary and Poland. *Studies in Agricultural Economics* 116. 114–121.

Bled Declaration for Smarter Rural Areas. Available at https://pametne-vasi.info/wp-content/uploads/2018/04/Bled-declaration-for-a-Smarter-Future-of-the-Rural-Areas-in-EU.pdf

BOSWORTH, G., ANNIBAL, I., CARROLL, R., PRICE, L., SELLICK, J. and SHEPHERD, J. 2016. Empowering local action through neo-endogenous development. The case of LEADER in England. *Sociologia Ruralis* 56. (3): 427–449.

COWIE, P., TOWNSEND, L. and SALEMINK, K. 2020. Smart rural futures: Will rural areas be left behind in the 4th industrial revolution? *Journal of Rural Studies* 79. 169–176.

CSOTÓ, M. and HERDON, M. 2008. Information technology in rural Hungary plans and reality. In *Rural Futures: Dreams, Dilemmas and Dangers.* Rural Futures Conference 08. 1–4 April 2008. University of Plymouth. Plymouth UK, University of Plymouth, 1–6.

ENRD 2018. *EU Rural Review 26 'Smart Villages: Revitalising Rural Services.'* Available at https://enrd.ec.europa.eu/sites/enrd/files/enrd_publications/publi-enrd-rr-26-2018-en.pdf

Észak-Hegyháti Mikrotérségi Unió, 2019. *Okos Hegyhát Stratégia – Magyarország Okos Falu Térségi Pilot Programja* (Smart Hegyhát Strategy – Smart Village Regional Pilot Programme of Hungary). Available at https://eszakhegyhatiunio.files.wordpress.com/2019/07/okos-hegyhc3a1t-stratc3a9gia_rc3a9szletes_fin.pdf

European Commission, 2010a. *Europe 2020 Strategy Executive Summary.* Available at https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf

European Commission, 2010b. *Communication from the commission to the European Parliament, The Council, The European Economic and Social Committee and the Commmittee of the Regions: Regional Policy contributing to smart growth in Europe 2020.* Available at https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52010DC0553

European Commission, 2010c. *A Digital Agenda for Europe.* Available at https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52010DC0245R(01)&from=EN

European Commission, 2019. *Pilot project: Smart Eco-Social Villages.* Available at https://op.europa.eu/en/publication-detail/-/publication/9ff90911-a0c9-11ea-9d2d-01aa75ed71a1/language-en

European Parliament, ECORYS, 2019. *Pilot Project: Smart Eco-Social Villages.* Available at https://op.europa.eu/en/publication-detail/-/publication/9ff90911-a0c9-11ea-9d2d-01aa75ed71a1/language-en

Eurostat, 2018a. *Statistics on Rural Areas in the EU.* Available at https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Statistics_on_rural_areas_in_the_EU&oldid=391832)

Eurostat, 2018b. *Urban-Rural Typology.* Available at https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Urban-rural_typology

FARKAS, J.Zs. and KOVÁCS, A.D. 2018. Kritikai észrevételek a magyar vidékfejlesztésről a vidékföldrajz szempontjából (Critical remarks on Hungarian rural development from the perspective of rural geography). *Területi Statisztika* 16. (1): 57–83.

Finta, I. 2015. A vidékfejlesztés lehetséges szerepe és átalakításának várható következményei a magyar fejlesztéspolitika 2014–2020-as időszakában (Possible role of the rural development and expectable consequences of its conversion in the Hungarian development policy during the period 2014–2020). *Comitatus: Önkormányzati Szemle* 25. (219): 112–126.

Gáspár, M. 2016. Csipkerózsika, ébredj! – avagy új kihívások előtt a közösségi hozzáférés (Sleeping Beauty, wake up! – or new challenges for public access). *Információs Társadalom* 16. (3): 113–133.

Gáspár, M. 2019. Az Okos Falu – egy másik falu (The Smart Village – it's another one). *Új Magyar Közigazgatás* 12. (3): 19–27.

Gkartzios, M. and Scott, M. 2014. Placing housing in rural development: Exogenous, endogenous and neo-endogenous approaches. *Sociologia Ruralis* 54. (3): 241–265.

Gkartzios, M. and Lowe, P. 2019. Revisiting neo-endogenous rural development. In *The Routledge Companion to Rural Planning.* Eds.: Scott, M., Gallent, N. and Gkartzios, M., London, Routledge, 159–169.

Government of Hungary, 2014a. *National Infocommunication Strategy 2014–2020.* Available at https://joinup.ec.europa.eu/sites/default/files/document/2016-11/nis_en_clear.pdf

Government of Hungary, 2014b. *New Hungary Rural Development Programme.* Available at https://www.mvh.allamkincstar.gov.hu/documents/123932/0/NHRDP_20140516.pdf

Government of Hungary, 2017. *Digital Welfare Programme 2.0.* Available at https://digitalisjoletprogram.hu/files/58/f4/58f45e44c4ebd9e53f82f56d-5f44c824.pdf

Government of Hungary, 2020. *National Reform Programme of Hungary.* Available at https://ec.europa.eu/info/sites/info/files/2020-european-semester-national-reform-programme-hungary_en.pdf

Greenfield, A. 2013. *Against the Smart City.* Urban Omnibus. New York, Architectural League of New York. Available at https://urbanomnibus.net/2013/10/against-the-smart-city/

Grossi, G. and Pianezzi, D. 2017. Utopia or neoliberal ideology? *Cities* 6. 79–85.

Guzal-Dec, D. 2018. Intelligent development of the countryside – The concept of smart villages: Assumptions, possibilities, and implementation limitations. *Economic and Regional Studies / Studia Ekonomiczne i Regionalne* 11. (3): 32–49.

Haarstad, H. 2017. Constructing the sustainable city: examining the role of sustainability in the 'smart city' discourse. *Journal of Environmental Policy and Planning* 19. (4): 423–437.

Hosseini, S., Frank, L., Fridgen, G. and Heger, S. 2018. Do not forget about smart towns how to bring customized digital innovation to rural areas. *Business & Information Systems Engineering* 60. (3): 243–257.

Joss, S., Sengers, F., Schraven, D., Caprotti, F. and Dayot, Y. 2019. The smart city as global discourse: Storylines and critical junctures across 27 cities. *Journal of Urban Technology*, 26. (1): 3–34.

Káposzta, J. and Honvári, P. 2019. A smart falu koncepciójának főbb összefüggései és kapcsolódása a hazai vidékgazdaság fejlesztési stratégiájához (The concept of smart villages and a rural home development strategy). *Tér és Társadalom* 33. (1): 83–97.

Karvonen, A., Cugurullo, F. and Caprotti, F. (eds.) 2018. *Inside Smart Cities: Place, Politics and Urban Innovation.* London, Routledge.

Kitchin, R. 2014. The real-time city? Big data and smart urbanism. *GeoJournal*, 79. 1–14.

Kitchin, R. 2015. Making sense of smart cities: Addressing present shortcomings. *Cambridge Journal of Regions Economy and Society* 8. (1): 131–136.

Komorowski, L. and Stanny, M. 2020. Smart villages: Where can they happen? *Land* 9. (5): 1–18.

Kondor, A. Cs. 2010. *The effect of the norms on the socio-economic spatial processes and the possibilities of the regional regulation in Hungary.* PhD thesis. Budapest, Eötvös Loránd University.

Kovács, G. 2001. Telecottages in Hungary. *Journal of Computing and Information Technology* 2. 153–160.

Lontai-Szilágyi, Zs., Bertalan-Balázs, B., Zsiros, B., Vasvári, M., Kumar, S.S., Nilanchal,P., Martonné Erdős, K. and Szabó, Sz. 2019. A novel approach of mapping landscape aesthetic value and its validation with rural tourism data. *Hungarian Geographical Bulletin* 68. (3): 283–301.

Massey, D. 2005. *For Space.* London, Sage.

Ministry for Innovation and Technology and Ministry of the Interior, 2020. *National Digitalisation Strategy.* Available at https://2015-2019.kormany.hu/download/f/58/d1000/NDS.pdf

Naldi, L., Nilsson, P., Westlund, H. and Wixe, S. 2015. What is smart rural development? *Journal of Rural Studies* 40. 90–101.

Nemes, G. and Magócs, K. 2020. Közösségi alapú vidékfejlesztés Magyarországon – A LEADER-intézkedés eredményei a 2014–2020-as tervezési időszak félidejében (Community-based rural development in Hungary – Program level impacts of LEADER in the mid-term of the 2014–2020 planning period). *Gazdálkodás* 64. (5): 416–434.

Novotny, L., Hruska, V., Egedy, T. and Mazur, M. 2015. Defining rural areas of Visegrad countries. *Studia Obszarów Wiejskich* 39. 21–34.

Pálné Kovács, I. 2019. A magyar önkormányzatok korlátai a helyi gazdaságfejlesztésben (Limits of Hungarian local governments in the local economic development). *Tér és Társadalom* 33. (2): 3–19.

Patkós, Cs. 2019. Bottom-up rural development movements to support the industrial revolution 4.0 in agro-industry. In *Proceeding the 4th International Conference on Green Agro-Industry.* Ed.: Setyaningrum, T., Yogyakarta, ICGAI, 11–21.

Pe'er, G., Bonn, A., Bruelheide, H., Dieker, P., Eisenhauer, N., Feindt, P.H., Hagedorn, G., Hansjürgens, B., Herzon, I. and Lomba, Â. 2020. Action needed for the EU Common Agricultural Policy to address sustainability challenges. *People and Nature* 2. (2): 305–316.

Pelse, M. and Lescevica, M. 2016. Smart specialisation assessment in Latvia. In *Proceedings of the 2016 International Conference "Economic Science for Rural Development"* No 42. 21–22 April 2016, Jelgava, Ed.-in-chief: Auzina, A., Jelgava, LLU ESAF, 126–131.

Philip, L. and Williams, F. 2019. Healthy ageing in smart villages? Observations from the field. *European Countryside* 11. (4): 616–633.

Prause, G. and Boevsky, I. 2015. Smart rural development. *Agricultural Economics and Management* 60. (4): 63–69.

Rosa Pires da, A., Pertoldi, M., Edwards, J. and Hegyi, F.B. 2014. *Smart Specialisation and Innovation in Rural Areas*. S3 Policy Brief Series No. 09. Seville, Spain, Joint Research Centre – Institute for Prospective Technological Studies.

Shelton, T., Zook, M. and Wiig, A. 2015. The 'actually existing smart city'. *Cambridge Journal of Regions, Economy and Society* 8. (1): 13–25.

Shucksmith, M. 2010. Disintegrated rural development? Neo-endogenous rural development, planning and place-shaping in diffused power contexts. *Sociologia Ruralis* 50. (1): 1–14.

Šipilova, V., Ostrovska, I., Jermolajeva, E., Aleksejeva, L. and Olehnovics, D. 2017. Evaluation of sustainable development in rural territories in Latgale Region (Latvia) by using the conception of smart specialization. *Journal of Teacher Education for Sustainability* 19. (1): 82–105.

Smigiel, C. 2018. Urban political strategies in times of crisis: A multi-scalar perspective on smart cities in Italy. *European Urban and Regional Studies* 26. (4): 336–348.

Söderström, O., Paasche, T. and Klauser, F. 2014. Smart cities as corporate storytelling. *City* 18. (3): 307–320.

Spicer, Z., Goodman, N. and Olmstead, N. 2019. The frontier of digital opportunity: Smart city implementation in small, rural and remote communities in Canada. *Urban Studies* 58. (3): 535–558.

Torre, A., Corsi, S., Steiner, M., Wallet, F. and Westlund, H. (eds.). 2020. *Is There a Smart Development for Rural Areas?* London, Routledge.

Vaishar, A. and Šťastná, M. 2019. Smart village and sustainability. Southern Moravia case study. *European Countryside* 11. (4): 651–660.

Vanolo, A. 2014. Smartmentality: The smart city as disciplinary strategy. *Urban Studies* 51. 883–898.

Varró, K. 2019. Tracing the (hidden) spatialities of digital agendas: the case of 'Digital Hungary'. *European Spatial Research and Policy* 26. (2):135–150.

Varró, K. and Bunders, D.J. 2020. Bringing back the national to the study of globally circulating policy ideas: 'Actually existing smart urbanism' in Hungary and the Netherlands. *European Urban and Regional Studies* 27. (3): 209–226.

Verrest, H. and Pfeffer, K. 2019. Elaborating the urbanism in smart urbanism: distilling relevant dimensions for a comprehensive analysis of smart city approaches. *Information, Communication and Society* 22. (9): 1328–1342.

Visvizi, A. and Lytras, M.D. 2018. It's not a fad: Smart cities and smart villages research in European and global contexts. *Sustainability* 10. (8): 1–10.

Wiig, A. 2015. IBM's smart city as techno-utopian policy mobility. *City* 19. (2–3): 258–273.

Woods, M. 2007. Engaging the global countryside: globalization, hybridity and the reconstitution of rural place. *Progress in Human Geography* 31. (4): 485–507.

Zavratnik, V., Kos, A. and Stojmenova, E. 2018. Smart villages: Comprehensive review of initiatives and practices. *Sustainability* 10. (7): 1–14.

Zhang, X. and Zhang, Z. 2020. How do smart villages become a way to achieves sustainable development in rural areas? Smart village planning and practices in China. *Sustainability* 12. (24): 1–20.