

8th Central European Conference in Regional Science „Resilience of cities and regions in an uncertain time”

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Online Event

www.cers.amu.edu.pl



Book of abstracts Program

Adam Mickiewicz University, Poznań, Poland
European Regional Science Association – Polish Section
European Regional Science Association – Slovak Section
European Regional Science Association – Hungarian Section





Dear Participants,

On behalf of the members of the Faculty of Human Geography and Planning of the Adam Mickiewicz University in Poznań, I warmly welcome the participants of the 8th Central European Conference in Regional Science. It is a great honour and pleasure for us to organize this important scientific event which is devoted, not without reason, to the issue of resilience of cities and regions in an uncertain time. The COVID-19 pandemic and Russia's aggression against Ukraine are two powerful shocks, the social and economic consequences of which are unprecedented. They have become an increasingly serious challenge for all. Identifying spatial differences in mechanisms of changes occurring as a result and looking for ways to solve often new and unheard-of problems are our common responsibility. It is fortunate that for the next three days our conference will create an opportunity to discuss these important issues.

The human geography and planning has been present at the Adam Mickiewicz University since the very beginning. It was already in 1919 that the Institute of Geography became part of the Faculty of Philosophy, whereas the Seminar of Economic Geography was held from 1924 at the Faculty of Law and Economics. The combination of environmental and social issues within geography was always noticeable in the structure of the University of Poznań, which in 1955 took the name of the Adam Mickiewicz University. The Faculty of Human Geography and Planning is a successor of the Institute of Socio-Economic Geography and Spatial Management established in 1981 on the initiative of Professor Zbyszko Chojnicki. It strives to continue the intellectual tradition of the Poznań school of economic geography, commonly associated with the creation of conceptual models and the application of quantitative methods, seeking at the same time to engage with newly emerging theoretical and methodological approaches. Today, the Faculty is one of the largest urban and regional research centers in Central and Eastern Europe. It carries out studies relevant in the present-day context, contributing to the future quality of life. Research areas include, but are not limited to: development of cities and metropolitan areas, the changing role of agriculture and rural areas, challenges of integrated strategic and spatial planning, socio-economic and spatial inequalities, public participation in planning processes, ecosystem services and last but not least mobility and transport.

I would like to thank Tomasz Kossowski, president of the Local Organizing Committee, and the whole Team for their efforts which have made the idea of this year's meeting of regional scientists in Central and Eastern Europe a reality. The adopted online form of the event, with all its disadvantages, basically allowed increasing the number of participants, creating an opportunity for a broad exchange of experience and research results. I am glad that our Faculty is hosting this meeting.

Once again, I am pleased to welcome all participants to Poznań and wish many inspiring presentations and fruitful debates. I hope that your virtual experience of Poznań will be followed by a real visit to the city and our Faculty, which I strongly encourage you to do.

Paweł Churski
Dean of the Faculty of Human Geography and Planning
Adam Mickiewicz University, Poznań, Poland



Dear Colleagues,

On behalf of the community of ERSA Polish Section let me warmly welcome you to this outstanding scientific event. As part of a European regional scientists' family, we want to thank the Slovak and Hungarian sections of ERSA for the possibility to co-create the history of Central European Conference in Regional Science.

In 2018, when we first discussed the idea of becoming part of this great network with professors Oto Hudec, Stefan Rehak and Zoltan Gal; the founding fathers of CERS; we made plans to welcome you to Poland. Neither the times of COVID, nor the cruel invasion over Ukraine held by Russia was part of our life at that time. When approaching the organization of the event in 2019, we wanted to repeat the success of the last conference held in Sopron, Hungary. We discussed different topics but as soon as we realized that the new normal will arrive with COVID, we started to look for the most adequate keywords. That is how we arrived at the term resilience that has never been so important and at the same time interesting to study; the resilience of cities and regions in an uncertain time. We do remember as Ron Boschma (2015, 734) extended the understanding of the term regarded as a response to external disturbances and a move back to a steady state, to be rather seen as “the ability of regions to reconfigure their socio-economic and institutional structures to develop new growth paths”.

Hereby, we start the three days of discussions and academic debates on the transition of our cities and regions. We probably want to understand more how we can absorb shocks and, more importantly, what can unveil the capacity of regions / cities to develop new growth paths. CERS has always welcomed a variety of disciplines and approaches to study regional phenomena. The same goes to resilience that needs to take into consideration individuals, organizations, industries, networks, and institutions. I am sure we can add value to face the challenges of becoming more resilient by discussing the theory and praxis of this concept.

The Polish Section of ERSA welcomes you, at least virtually, in Poznań – a beautiful academic city – as we keep on building adaptation and adaptability and wishes you a truly fruitful event.

Artur Ochojski
President of ERSA – Polish Section



Dear Colleagues,

On behalf of the Local Organizing Committee and ERSA – Polish Section we welcome to the 8th Central European Conference in Regional Science. This year, the conference is held in Poland for the first time. It is a great honour for the Adam Mickiewicz University in Poznań and for ERSA Polish Section to host this event virtually.

The CERS conference has been organized every 2-3 years since 2005 and aims to support research in Regional Science in Central Europe. CERS is also a platform for exchanging ideas and views of groups of scientists dealing with human geography and economics, spatial management, regional and urban economics, demography, spatial planning, architecture and ecology. The theme of this year's conference is "Resilience of cities and regions in an uncertain time". In Central and Eastern Europe, this uncertainty results from recent events, the effects of which have affected this region. First of all, these are migration crises, the COVID-19 epidemic and the Russian-Ukrainian war, and shortly, possible threats are economic and energy crises. We hope this conference will facilitate the finding of solutions that allow cities and regions to get through this difficult and uncertain time.

The 8th CERS Conference is held remotely for the first time, hosting 2 great keynote speakers and over 120 presentations in 12 general sessions, 6 special sessions and 5 sessions of young scientists. We hope this meeting will contribute to the further strengthening of Regional Science in the countries of Central Europe and support the cooperation between ERSA Sections.

We want to thank our colleagues from the Slovak and Hungarian Sections of ERSA for their trust in the Polish Section of ERSA and Adam Mickiewicz University and their support in organizing the 8th CERS Conference in Poznań. We wish the conference participants fruitful and successful discussions and invite them to another visit to our city and our University, not only in a virtual form.

*Tomasz Kossowski
Head of LOC CERS 2022
Adam Mickiewicz University, Poznań, Poland*

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Keynote Speakers

Lectures supported by the ID-UB project:
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Jean-Claude Thill is the Knight Distinguished Professor of Public Policy in the Department of Geography and Earth Sciences at the University of North Carolina Charlotte (the USA). He is a core faculty of the doctoral programs in Public Policy and Infrastructure and Environmental Systems and is also a Faculty Affiliate of the School of Data Science. He earned his Doctorate in Sciences at the Catholic University of Louvain, Belgium. His scholarship encompasses transportation and mobility systems, urban and regional science, geospatial data science, and place-based policy analysis. He has extensively published in these areas internationally over the past few decades and was recently recognized among the top 2% of most cited scholars by a Stanford University study. He has received a number of national and international scholarship and service awards and was named a fellow of the Regional Science Association International and of the American Association of Geographers. He is the recipient of the 2022 First Citizens Bank Scholars Medal at UNC Charlotte. He is Past President of the Regional Science Association International.



Kostyantyn Mezentsev is a professor and Head of the Department of Economic and Social Geography at Taras Shevchenko National University of Kyiv (Ukraine). His recent research examines the transformation of post-Soviet urban regions and cities, suburban spaces, migration, urban geopolitics, and IDPs issues. He is co-editor of the book *Urban Ukraine: In the Epicentre of the Spatial Changes* (2017) and has co-authored *Ukraine's Outpost: Dnipropetrovsk and the Russian-Ukrainian War* (E-International Relations, 2021). He is involved into the international multi-disciplinary research project *Ukrainian geopolitical fault-line cities: urban identities, geopolitics and urban policy*, funded by the Research Council of Norway.

The 8th CERS conference received the following honorary patronage

Bogumiła **Kaniewska**, Rector of Adam Mickiewicz University



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Marek **Woźniak**, Marshal of the Wielkopolska Region



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Committee for Spatial Economy and Regional Planning, Polish Academy of Sciences (Komitet Przestrzennego Zagospodarowania Kraju, PAN)



Polish Economic Society (Polskie Towarzystwo Ekonomiczne)



Polish Geographical Society (Polskie Towarzystwo Geograficzne)



Themes and special sessions

A. Contemporary and future challenges for cities and regions: Are we ready for them?

B. Cities and regions facing the economic crisis and global epidemic

C. Cities and regions in climate change

F. Urban and regional development

G. Demography, migration and social inequalities

H. Innovation, entrepreneurship and regional competitiveness

I. Spatial planning, sustainable development and ecological transition

J. Rural regions and their development

K. Culture, tourism, health and education in an uncertain time

L. Land use, transport, mobility and accessibility

NP. Regional economics

O. The digital world, digital region and digital society

SA. Societies and borders - cooperation in the turbulent environment

SB. Smart, sustainable, resilient regions in time of multiple and overlapping crises

SD. The relationship between innovation ecosystem and creative industry in the development of regional centers

SF. Resilient Development as driving Force of urban-regional Transformation

SG. Digital Entrepreneurs on the Pathways of Regional Development

SH. Migration within and out of VISEGRAD regions

YSS. Young Scientists Session

Abstracts

The internal periphery in the face of the economic crisis and global epidemic - selected findings from Poland

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Keywords: FUA, inner peripheries, regional development, COVID-19, Poland

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Inner peripheries are common throughout Europe, irrespective of a country's level of development. The peripheral nature of these areas is affected primarily by the limited extent of their relations with the economic environment. The current COVID-19 pandemic, as well as Russian invasion on Ukraine have multi-faceted economic and social consequences for European regions. Therefore, it is crucial to identify the challenges it brings to the socio-economic development in inner peripheries and evaluate their sensitivity and resilience to the consequences of the crisis, which will enable to design recommendations for the changes in development policy interventions.

The paper presents the assumptions and research stages of the project TIPERICO (www.tiperico.web.amu.edu.pl) "Trajectories and challenges of the development of internal periphery in the new conditions of post SARS-CoV-2 cohesion", whose main task is to identify the regularities in socio-economic development changes in selected areas of internal peripheries in the post-COVID-19 period.

In particularly, the presentation contains the results of the first stage of the project has been presented – delimitation and typology of the inner peripheries in Poland. The results point at a wide diversity of the characters of peripherality in various geographic settings.

The presentation also discusses the plan and expected results of the second stage of the project – case study research, where four functional urban areas will be places of in-depth quantitative and qualitative studies with key stakeholders. This will further enable to explore the diversity of challenges that peripheral regions face in the context of the crisis, inform the third country-wide stage of research and design recommendations for the changes in development policy interventions.

Acknowledgments: This work was supported by the National Science Center in Poland (UMO-2020/37/B/HS4/01034 *Trajectories and challenges of internal periphery development in new conditions of coherence post SARS-CoV-2*).

Investigating the role of big data in smart city management Case Study: Tehran City

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Keywords: Big Data, Smart City, Urban Management, Urban Management, Tehran

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A fundamental source for setting-up any urban management and planning mechanism is knowledge and one major challenge and hindrance in urban policy making processes is the lack of knowledge management framework encompassing accurate, potential, accessible and integrated information. Tehran has a multiplicity of decision-makers, policy-makers or participants who produces data and information but they do not share these data and information. Urban big data as one of the most important sources of urban data continuously provides planners with a wealth of records about the patterns of behavior of the massive number of urban and rural residents, the functions of cities and how they could manage them.

The application of this type of data has expanded to meet the uncertainties and provide the needs of decision-making systems in urban and regional studies in the world. This means that access to new data sources is necessary to reduce the uncertainties and constraints in decision making in Tehran and can be used as an opportunity to strengthening its planning function. In addition, it could be considered as a tool to confront with the challenge of sharing data and information at inter-organizational, inter-sectional, and inter-regional levels, and between public and private sectors. It can also

be used to promote the use of information resources and to publicize data and intelligence and new information services. Also, by increasing the production, transfer and use of accurate information, the establishment of knowledge-based information systems in Tehran transition to smart city is facilitated.

Big data is certainly enriching our experiences of urban planning and management, and it is offering many new opportunities for more informed urban decision-making and planning. In the city of Tehran, big data as one of the data resource -along with other types of data- can help to shaping and development of knowledge-based planning and management system. Big data production in Tehran has begun in some governmental and non-governmental organizations by development of new information technologies. The big data can be used to acquire and analyze behavioral data to determining the travel behavior, especially for managing urban transport and traffic, improving land use patterns, and distributing services and managing crisis in Tehran.

The present study investigated the function of big data in Tehran and how to utilize them to make Tehran as a smart city.

The European Committee of the Regions and the question of representation

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Until the Treaty of Maastricht, the European integration debate concerned only the member states (and within them - the national governments). Hence, from the perspective of the local and regional authorities, the only way to influence the decisions taken at the European level was via the national level. That was so even though the vast majority of the EU law has had an impact on the functioning of the local and regional government. One of the main reasons for the establishment of the Committee of the Regions was to provide the subnational level with the representation within the institutional system of the European Union. As the body advising the EU institutions, the Committee can influence the decision-making process. Since it consists of members of the local and regional authorities, one may ask if it does offer the

opportunity for the peculiar territorial self-government units to be represented at the EU level. And in the broader terms – what does the relation between the general and particular interests look like in that regard?

The aim of the presentation is to determine whether the Committee of the Regions is a suitable place for the individual territorial self-government unit to promote its interests. The findings of the paper are based on the author's own empirical research conducted among the Polish members of the Committee. The findings concern inter alia the question of taking the interests of the territorial self-government unit while working in the Committee or possible benefits resulting from being represented in this EU's advisory body.

Divergent Population Dynamics: The Case of the Inner-City of Riga

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Keywords: population dynamics, urban development, residential mobility

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Population dynamics are transforming urban areas all across Europe. Interaction between demographic change, aging processes and residential mobility have profound economic and social implications. The aim of this research was to identify and analyze demographic changes in the central neighborhoods of Riga in order to gain an insight into them, as well as into the interaction of these processes, if any, between the central neighborhoods and the suburbs. The research was based on a dataset from the annual surveys conducted by the Central Statistical Bureau (CSB) of Latvia between 2016 and 2021 that covered all 58 (both central and peripheral) neighborhoods of Riga, as well as seven adjacent municipalities of Riga. The key

variable calculated in this research was the population growth rate that was later visually analyzed using three sets of maps. Presence of a reurbanizing city core and a substantial rise in the number of people choosing to live specifically in the central neighborhoods of Riga was found. Additionally, it was found that, alongside these reurbanization trends in the central neighborhoods, there is rapid ongoing suburban growth in the nearby municipalities. Thus, reurbanization in Riga and suburbanization in its vicinity are coexistent.

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Adaptation of smart city models in rural areas

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Although the literature of smart cities is very rich and broad, the possibility and usefulness of the application of information and communication technologies in rural areas and villages is barely researched area, in spite of the fact that rural areas are facing challenges that can be answered using appropriate innovative solutions. As the process of depopulation of rural areas progresses, so is the heritage inherent in villages vanishing. At the same time risks, threats, and new challenges arise. These challenges are including rural shrinkage, depopulation, outmigration, aging population, lack of appropriate infrastructure (roads, electric grids, schools, health care, affordable groceries), lack of capability to attract newcomers, lack of skills to create liveable community, keeping youth in the settlements.

The aim of our study is to present how smart city approaches can be applied in rural areas, how the model can be applied to smaller settlements and communities, and what are the advantages and disadvantages of technology (ICT) in these areas, what challenges and opportunities the smart approach offers in this environment.

Firstly, we would like to sum up the main findings of smart city approach and give a literature review on what smart rural development is. We would like to present how the original smart city approach has to be changed to rural communities, and what can we learn from earlier research, to avoid the so-called “ICT-hype” and focus on the problems that villages face in the first place.

Then we would like to present the results of the findings from research among rural villages and small towns, which was carried out in 2018-

2020 in a disadvantaged rural area of Hungary. The first element of the attitude survey was a questionnaire survey conducted in the settlements. The second element consisted of interviews with mayors and representatives of NGOs in 10 selected settlements. Finally, as a third element, we asked high school students about their knowledge of smart communities, what digital tools they use, how they use ICT in their lives, and what they think about their settlement, its liveability, quality of life and the possibilities of using digital technologies in this field.

Finally, as a conclusion we would like to present, that smart villages are an approach to rural development whose central role is played by the local community and its actions. Local governments that meet the basic needs of the local community and consider the needs of various stakeholders not only fulfill their mandated mission but also build trust and help release the creative potential of the local community. The essence of a smart settlement is to make the best possible use of the given opportunities and resources by exploiting the opportunities provided by technologies. Success depends to a large extent on the commitment, enthusiasm, knowledge, and ability of the leaders of the settlement to activate and win for change the population of the settlement. The involvement and activation of young people and the increase of the retention power of the settlement are of key importance, because young people have a high tendency to emigrate.

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City and Regional Demand for Vaccines Whose Supply Arises from Competition in a Bertrand Duopoly

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Keywords: Bertrand Duopoly, City, Innovation, R&D, Region, Vaccine

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We study a one-period model of an aggregate economy composed of cities and regions that demand vaccines designed to fight a pandemic such as Covid-19. The supply of vaccines is the outcome of Bertrand competition between two firms *A* and *B*. The marginal cost of producing the vaccine for both firms is stochastic and drawn from a uniform distribution. In this setting, we perform three tasks. First, we describe the equilibrium pricing strategies of the two firms and then we compute their mean *ex ante* profits. Second, we permit both firms to conduct risky R&D and then determine the conditions under which only one firm engages in R&D and conditions under which both do.

Finally, we introduce a way of mimicking the effect of increased competition and then analyze the impact of this increased competition on the incentives to conduct R&D faced by the two firms compute their mean *ex ante* profits. Second, we permit both firms to conduct risky R&D and then determine the conditions under which only one firm engages in R&D and conditions under which both do.

Acknowledgments: We thank the Editors of this volume for inviting us to contribute a chapter. In addition, Batabyal acknowledges financial support from the Gosnell endowment at RIT. The usual disclaimer applies.

How Climate Change Affects the Ganges and Water Pollution by Tanneries in Kanpur

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We provide a theoretical framework to analyze how climate change influences the Ganges and how this influence affects pollution in the river caused by tanneries in Kanpur, India. We focus on two tanneries, *A* and *B*, that are situated on the same bank of the Ganges in Kanpur. Both produce leather and leather production requires the use of noxious chemicals. Tannery *A* is situated upstream from tannery *B*. Tannery *A*'s leather production depends only on labor use but tannery *B*'s leather production depends on labor use, the chemical waste generated by tannery *A*, and the natural pollution absorbing capacity of the Ganges. In this setting, we perform four tasks. First, we construct a metric that measures the climate change induced mean reduction in the natural capacity of the Ganges to absorb

pollution in the time interval $[0, t]$. Second, we use this metric and determine the equilibrium production of leather by both tanneries in the benchmark case in which there is no pollution. Third, we ascertain how the benchmark equilibrium is altered when tannery *B* accounts for the negative externality foisted upon it by tannery *A*. Finally, we study the impact on leather production and on labor use when the two tanneries merge and then discuss the policy implications stemming from our research.

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Space-time effects of Covid-19 on loans, savings and current accounts in Romania

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Keywords: Covid-19, banking sector, space-time econometrics

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The outbreak of the Covid-19 pandemic in 2020 has ravaged the social and economic landscape globally, the banking sector included. While survey-based literature reveals valuable insights into the way the pandemic affected the banking sector, studies at spatial level remain almost inexistent. Our aim is to go beyond the classical time series methodology which is characteristic to this field of research and use a space-time approach to assess the way in which the Covid-19 pandemic has immediately impacted loans, current accounts, and savings in Romania. We do this by using monthly data for the 41 counties of Romania (Bucharest and Ilfov joined together due to financial data availability issues), for the period of January 2020 to June 2021. The dependent proxies are the financial variables given by loans, deposits and savings per capita measured at county level. The impact of Covid-19 infection rate, cured rate, and deceased rate was evaluated. The analysis' starting point is the space and time exploratory phase. Spatial characteristics were assessed using quantile maps of three groups plotted for four months during the pandemic, representative for the beginning of the pandemic (April 2020), the second infection wave (November 2020), the third wave (March 2021) and the end of the study period (June 2021). Global spatial autocorrelation diagnosis was also performed for all variables to check for the systematic variation in their spatial distribution. For a better understanding of the temporal evolution of each variable, time series with error bands graphs of aggregated values of all counties were constructed, to assess the particularities of the pandemics over the financial sector at national

level. We have also plotted line graphs of the temporal evolution of two variables: the Covid-19 incidence rate and the loans rate for each county to check for specific changes in the evolution from one spatial unit to another. In the spatial modelling process, a row-standardized queen matrix was employed. Finally, the spatial panel model estimation method with fixed effects was used to model the impact of the Covid-19 pandemic upon the Romanian banking sector. Our descriptive results point out a special spatial grouping around Bucharest, explained by the capital effect. Additionally, there is emphasis of spatial clustering of loans, deposits and savings in counties with higher development level. But the autocorrelation results show a random spatial distribution, which might come from the fact that the local county banking market is strictly dependent on the internal features of each county, without having any interaction with the neighbours. This is confirmed by the spatial OLS results, along with a stable negative impact of Covid-19 upon the banking sector. The same type of relationship is also provided by the spatial panel estimations.

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Outlining the main perception strands on the Hungarian-Romanian border

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Keywords: border perception, attitudes, cross-border cooperation, national minorities

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The Romanian-Hungarian border has been for a long time an outstandingly interesting laboratory for analyzing the border citizens' perception on the border itself. The historical-cultural framework of the territory creates a unique context where there is enough "otherness" (the Hungarian and the Romanian languages are different enough for impeding mutual understanding to only mention one), but at the same time there is enough "familiarity" as well (since there is a considerable Hungarian minority living in the Romanian side of the border and vice versa) in order to make it interesting to see what types of perceptions are still alive at a time when the two countries already went through several stages of relationship and currently simultaneously are in and out of the same community (both countries are already part of the EU, but the border between them constitutes a Schengen divide).

Nevertheless, cross-border economic cooperation is a tool that is needed on both sides in order to develop the otherwise peripheral territory. Thus, it is of utmost importance to understand the underlying perceptions which influence the dynamic between the actors on the two sides of the border.

To grasp the main perception trends on the Hungarian-Romanian border, the main institutionalized actors (such as chamber of commerce, EGTC, NGOs, University, counties, municipalities, big companies etc.) of the cross-border economic cooperation were interviewed in a semi-structured in-depth interview method.

The research focuses on three main questions: (1) How do citizens perceive the border with the neighboring country? (2) How do citizens view their neighbours on the other side of the border? (3) Who or what are the main actors that work towards cross-border economic cooperation in the Romanian-Hungarian border section?

The answers are synthesized in a coherent picture which is contrasted with the available literature in the topic, thus providing a certain level of longitudinal comparison and shedding some light – and opening up new avenues of research – on the extent and methods how these perceptions change and can be changed over time.

The role of vocational training institutions in reducing regional disadvantage in Hungary

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Keywords: vocational education and training, disadvantage, centralisation, innovation

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The role of vocational education and training (VET) in reducing social inequality and injustice is particularly important in areas where VET, especially secondary VET, is the type of school with the highest educational attainment. This situation is most prevalent in disadvantaged areas and leads to serious consequences if a VET institution ceases to exist. The operation of VET institutions in disadvantaged areas is influenced by several circumstances: ensuring adequate recruitment, related to both students and teachers, can be difficult. If there is no viable company in the area, providing practical training for students can also raise a problem. Numerous examples show that in case of the lack of local VET school, the family move to a larger settlement, a city, where their child can get involved in vocational training, precisely to ensure learning conditions. The loss of the school and the consequent relocation of the families will inevitably lead to a further decline and depopulation of the disadvantaged area. The impact of economic considerations has a negative long-term impact on both local vocational training and the life of local society. In a disadvantaged area, sometimes the school in a smaller settlement is being closed in order to make up for the shortage of students in cities due to declining interest towards VET or a declining number of children. Potential students from the discontinued school will thus appear among the applicants in the city. The city school will have a sufficient number of students, but this will come

at the cost of the lagging area losing possibly its last educational institution. The additional roles that VET institutions could play in the rise of local society, in stopping the backwardness of a disadvantaged area, are not taken into account behind the primacy of traditional economic considerations. Municipalities and their institutions have lost their former power because of the strong centralization process in recent years. It is likely that one of the negative consequences of increasing centralization is that it will slow down and make impossible internal, bottom-up innovation efforts. I assume that local innovation can be successful when it is actively supported by local education and training institutions. In underdeveloped areas, this can be a task especially for secondary vocational schools. Unfortunately, in Hungary, this question remains open in the highly centralized system. Answering the question „What room is left at regional, sectoral and local levels for institutional diversification and innovation?“, the answer is: not too much, nearly nothing. There is a room only for local heroes. My paper presents that building partnership among possible actors in underdeveloped areas is a particular challenge. The method of my research is literature processing and document analysis. I have been planning to carry out expert interviews, but in the current unusually uncertain situation, it is not expectable to obtain long-term valid information through interviews.

The location of the social 'elite' in urban areas of Hungarian regional centres

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Keywords: highly qualified social strata, spatial concentration, spatial-social structure of catchment areas

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This study investigates the spatial concentration of highly qualified strata using statistical indicators and methods.

Representation of highly qualified social strata means the spatial concentration of groups with higher social status (i.e. education level, foreign language skills, professional skills, and employment level) in the urban regions being studied; it does not coincide with mainstream definitions of social capital (based on interaction and networks between social groups). According to one of the most basic assumptions of the complex city concept, settlements with urban status are much more complex in terms of their economic, social, and technical structure and their network relations and interactions than settlements that have not been declared as cities.

Simultaneously, the difference in social composition between cities and other settlements cannot be disputed because the concentration of economic resources and

activities and the potential of employment and the fact that higher income attracts skilled workers to the cities and their catchment areas; all of these resulting in a higher proportion of highly qualified social strata. To meet the increasing needs of the global society and results of the transition to a market economy and globalization processes, a wider range of services are emerging, so the workforce is also undergoing significant differentiation, causing changes in the characteristics and composition of society. This paper attempts to study these processes exploring the dynamic trends of change in the spatial distribution of the examined groups. The author is looking for answers to questions such as how this aspect of society could be measured? Is there a difference in the structure of the society of urban centres and their catchment areas regarding highly qualified groups? Has there been a change in the spatial-social characteristics of urban areas over the decades?

Firm geography in Central European second tier cities

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World cities are the main nodes of the global economy (Taylor, 2004), or alternatively, (Vitali et al. 2011) the world economy is controlled by the most important companies, headquartered in world cities. While the position of the leading world cities appears stable (GaWC, 2020), the shifting foci of the world economy and the emerging crises have triggered a continuous expansion and geographical restructuring of world cities.

Since the 1990s, new actors have been admitted into the rank of world cities (Sassen, 2001): a case in point were various cities in post-socialist countries, whose global economic integration was driven mainly by foreign direct investment (Lux-Horváth, 2017; Gorzelak, 2019). Aside from the capital cities, most of the regional centres in Central and Eastern Europe – which are medium-sized or small cities at a European scale – are becoming gradually integrated into this global system (Rácz, 2019).

From the perspective of space shaping processes, capital cities and metropolitan areas have played a dominant role in Central and Eastern Europe, gaining centre-stage in national and EU development policies. Thus, transformation processes have primarily affected metropolitan functions, which highlights the importance of studying this category of cities (Hajdú et al. 2017).

The motivation of the research is to provide a review the post-socialist transformation and economic-geographical processes. Its aim is to examine the territorial structure (NUTS3 or LAU1/city level), economic potential and industry (NACE) structure of the most important firms (and institutions) in selected Central European second tier cities.

The methodology of the study is based on an inventory drawing on data from Orbis Europe.

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Post-pandemic phase and Economic Convergence: the role of the National Plans for Recovery and Resilience in the 27 EU Member States

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Achieving the highest effectiveness of interventions funded through the National Plans for Recovery and Resilience (NPRR), while at the same time strengthening the additional objectives of cohesion, resource concentration on NPRR actions and reduction of geographical inequalities, is only possible by means of a strategic, coordinated and coherent action planning.

The present research aims at assessing and quantifying the potential impact of NPRRs across the 27 European Member States, in terms of economic convergence, considering disaggregated data on the 20 sectors identified in the NACE Rev.2 classification.

The first step of the research involves a performance analysis of the main macroeconomic indicators (employment and value added) describing the trends of 27 EU economies before the pandemic outbreak. In doing so, we construct a ranking of the 27 European economies for each of the considered economic sectors, in order to investigate weaknesses and strength. Furthermore, by comparing the allocation of resources performed at national level on the different sectors, preliminary descriptive evidence can be provided.

In order to evaluate the potential effect of the resources allocated through the Recovery and Resilience Facility (thus, excluding complementary funding deriving from national budget allocation and other EU funds, e.g., REACT-EU), we perform an impact analysis of previous similar EU investment policies, namely Cohesion Policy. Indeed, through econometric techniques, we estimate national sectoral elasticity coefficients associated to the

expenditure of the 2007-2013 and 2014-2020 Cohesion programmes.

Subsequently, these coefficients are exploited to construct scenarios and implement sensitivity analyses. The construction of these forecast/Adjustment scenarios involves the application of the computed elasticity coefficients to data on economic trends in the NACE Rev.2 sectors following the pandemic outbreak.

Finally, convergence analysis is performed on the data used for constructing scenarios, in order to understand whether the expenditure of funds, in the present setting, might be useful to foster economic convergence, besides driving recovery.

The empirical results of our analysis are that service and industry-related activities have been those reporting the most negative trends in the context of the pandemic, with not-excellent performance reported in the years preceding the 2020 outbreak. Furthermore, the allocation of resources largely mirrors the aims of the policy framework underlying the NPRR, thus reporting the largest investments in both those sectors mostly affected by the economic shock (Services sector) and those considered fundamental for the digital and green transition (mainly, electricity, gas, steam and air conditioning; transportation and storage; construction).

Finally, our studies show that the NPRR will achieve the target of supporting economic recovery in almost all production sectors and countries, although large differences exist among European countries. However, based on the current allocation of resources, NPRR investments will not be able to activate or boost convergence processes.

Social attitudes of academic teachers towards the digitalization of education. The case of the Wielkopolska region, Poland

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Distance learning in all types of schools was forced by the COVID-19 pandemic. Previously, in Poland, this form of teaching was used sporadically, basically only with regard to extra-curricular activities. The vast majority of academic teachers did not have any experience in this field. Digitalization radically changed the work of academic teachers. The large-scale introduction of new forms of distance learning and methods of knowledge transfer and enforcement created a number of challenges but also opened up new opportunities. The presented study attempts to identify the social attitudes towards the digitalization of education during the COVID-19 pandemic expressed in the opinion of academic teachers of the Wielkopolska region, Poland.

As a theoretical background, we use in this work behavioral direction, namely the concept of social attitudes. Attitudes can be defined as the expression of a person's cognitive-emotional state, connected with a specific tendency to act. The concept of an attitude reflects three basic aspects, namely knowledge about an attitude object (a), its evaluation (b), and behaviors towards it (c).

Analyses of social attitudes covered the following issues: (a) recognizing the knowledge of teachers about the tools that enable conducting online classes, verification the

degree of academic teachers' readiness to work remotely, and conduct online classes in particular; (b) analyses of academic teachers' evaluation of their working conditions during the pandemic (availability of basic equipment for work, workplace), learning about academic teachers' evaluation of the organization and methods of conducting online classes, (c) analyses of academic teachers' ability to combine remote work with everyday duties, identification of the advantages and disadvantages of remote work experienced by academic teachers during the pandemic.

The research was carried out on the basis of empirical material obtained from questionnaires addressed to academic teachers from the Wielkopolska region. We received 726 questionnaires from academic teachers working in 11 public and 10 private higher education institutions. The applied approach allowed us to obtain representative results, which may transpose into generalizations on the scale of the entire country.

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The Turów dispute - perception of the locals

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Euroregion Neisse-Nysa-Nisa, located in the German-Polish-Czech borderlands, has been the platform for trilateral cross-border cooperation (CBC) of subnational (and mainly) public actors since 1991. It was the first cross-border entity with the participation of members from the former Soviet block, established by the local actors after the trilateral meeting of three presidents (von Weizsäcker, Walesa, Havel) in Zittau in spring 1991. Being the first CBC entity, it has also served as an inspiration/model for later constructed cross-border entities. During its 30+ years of CBC expertise, the ERN has helped to develop many cross-border partnerships, also thanks to the administration of the EU-funded

INTERREG programmes, supporting cooperation of Saxon, Polish and Czech non-for profit operating entities. Despite certain ups-and downs, the ERN has been perceived as a successful initiative by local, national and European actors. This almost idyllic image was heavily damaged by the bilateral Polish-Czech dispute over the Polish lignite mine Turów, where the mining area almost touches the Polish-Czech (and also Polish-German) bilateral border. The contribution addresses how the local inhabitants perceive this crisis. It is based on ongoing research, where several different research methods were applied.

Initial signs of post-Covid-19 urban structures? A metropolitan assessment in Israel

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Keywords: urban dynamics, urban structure, residential land value, covid-19, residential preferences

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The Covid-19 pandemic that spread worldwide during the last two and a half years, and the attempts to cope with it, are a great natural experiment that has implications also for the future spatial structure of cities. Even if the pandemic is controlled and ultimately eliminated during the coming months, there were several behavioral changes triggered during the quarantine and lockdown periods that are expected to persist. The pandemic forced large groups of people to experience home-based work and online shopping on a scale that was unthinkable before. These behavioral changes imply possible changes in the demand for office space, housing, and retail space. Following the new work and shopping patterns, changes in rents and in the demand for building types and locations of income-generating real-estate are expected, including changes in access to recreational facilities, amenities and services. Also, the demand for housing, especially in the demand for high-rise apartments and for single family housing units is expected to experience modifications. However, reliable and sufficiently extended data about these issues are still unavailable and, in our opinion, spatial changes will start to be evident only during the coming years.

However, changes in the willingness to pay for locations are faster than changes of the physical shape of urban landscapes. One of the most plausible working hypotheses regarding the changing locational preferences during and after the pandemics, is the built density avoidance. The assumption is that, because of the experiences of the last years, people will prefer to avoid crowded spaces for any activity they do (work, leisure, shopping, sport, etc.). Combined with the expected decline of demand for large office or retail buildings, one possible consequence will be that future urban

developments will be less dense and more spaced than they are actually. This working hypothesis can be tested assessing changes in land values during the last two years.

In this paper, we present results of a residential land value model calibrated during pre-Covid-19 and Covid-19 periods with vast Geo-referenced data of the major metropolitan areas in Israel. Each land parcel includes information concerning regulations indicating permitted land-uses as well as the certain characteristics of existing buildings. Data concerning all real estate transactions includes information about the assets and the price of the exchanges.

We compare confidence intervals of the mean land values in the Covid-19 period with the regression prediction intervals built from the pre-Covid-19 period. Actual mean Covid-19 period land values of old apartments in high-rise buildings appeared statistically significantly lower than their corresponding pre-Covid-19-based predictions.

At the same time, a significant increase in the mean land values was observed for new private houses, located predominantly in relatively sparse-built suburbs of large cities or in small settlements. This suggests a possible shift of preferences triggered by the pandemics towards private houses that may include private owned gardens on one hand, but also have access to public open spaces.

We hypothesize that this phenomenon of simultaneous decrease of land value means of old apartments, located in the core cities, together with the observed increase of mean land values of new private houses, mainly located in the suburbs, may indicate a starting point of a change of preferences' process of in the market of real estate in Israel.

Climate proactivity as a factor fostering regional competitiveness and resilience

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In the face of the rapid climate change and the ongoing climate transformation, the competitiveness of regions reveals in their ability to achieve and maintain a competitive advantage under the constraints of climate change impacts (WEF, 2021). This approach is clearly an extension of the concept of regional competitiveness, highlighting the region's impact on climate change and the region's adaptive and proactive actions (Karman et al., 2021). In general, proactivity is defined as voluntarily initiated behavior aimed at bringing about transformation through appropriate foresight, supported by forward-looking actions (Parker et al., 2006). Climate proactivity addresses the challenges of the so-called green transition. Gaining a competitive advantage through climate proactivity makes it possible to mitigate the effects of progressive climate change caused by negative anthropogenic activities. Climate change and the need to protect the natural environment, which has lost its ability to self-regulate due to highly expansive human activity, are leading to a paradigm shift in competitiveness. Competitive economies are described as those that are distinguished by prosperity and high quality of life, but are also innovative, knowledge-based and eco-efficient (OECD, 2021). Climate change requires a new approach to competitiveness and development, that includes the complex interactions between climate and socio-economic systems. Climate Proactivity is considered as a response strategy to anticipate and cope with impacts that cannot be avoided under different scenarios of climate change. Mitigating the negative effects of

climate change is also expected to contribute to improving the competitiveness of individual territorial units. For maintaining and increasing the competitiveness of regions the pro-environmental actions are essential.

This article attempts to define the regional climate proactivity in institutional, social and economic dimension. To describe climate proactivity, a set of different variables was distinguished. The diagnostic variables used to assess climate proactivity were divided into 3 groups, i.e. institutional (e.g. climate policy, environmental protection expenditures), economic (e.g. intensity of economic emissions, eco-innovations, green market) and social (e.g. pro-ecological awareness, eco-friendly attitudes). To group EU regions by climate proactivity level k-means clustering algorithm was used. This allowed to show the regional differentiation in terms of climate proactivity and distinguish groups of regions with low, medium, moderate and high levels of climate proactivity. Thus, it enabled the identification of European regional leaders in terms of climate proactivity. The results obtained in the field of climate proactivity were compared with the outcomes of the European regional competitiveness rankings. This made it possible to evaluate the importance of the factor of climate proactivity for the regional competitiveness.

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Polish workers in Germany – a descriptive picture

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In the past Germany had a substantial inflow of individuals from Poland. The majority of them are in employment; their share is even higher compared to the Germans. Thus, Polish employees substantially contribute to the German economy. In this paper we analyse the structure of Polish employees in more detail. We consider individual characteristics, their educational and vocational degrees, their occupations, their labour market performance such as unemployment, and their wage structure

in comparison to the Germans. To identify potential selectivity in space, we also consider the Polish's employee distribution with respect to agglomerated, urbanized and peripheral regions. We aim to consider Polish data on employment and outmigration to better understand the economic impact of the outmigration for Poland. An outmigration leads to a reduction in unemployment but potential also to labour shortages.

The effect of distance on the potential values formation

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Keywords: distance, potential model, spatial interaction models, spatial regression, Austria

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The aim of this paper was to analyze the effect of the distance variable in the potential model on the resulting potential values. Based on a review of the literature, two main positions were identified for the formulation of potential models, i.e. (1) the position adopting the formulation of models of gravity and potential in a form strictly analogous to the concepts of gravitational force and gravitational potential derived from Newtonian physics, in which the distance variable is not modified, and (2) the position assuming the necessity of verification and modification of potential models on an empirical-statistical basis, in which the distance variable is replaced by a function of this variable. In addition, four types of distances used most often in socio-economic studies were identified. These were: distances measured in a straight line, actual physical distances, temporal distances, and economic distances. The units' own distance and four different ways of measuring it were also included in the analysis. A total of 48 potential models were obtained, which differed among themselves in the individual variables of the equation as well as in how the potential model was formulated. The first part of the analysis was concerned with determining the basic properties and characteristics of each model. These characteristics were formulated on the basis of the spatial distribution of potential values and their descriptive statistics, as well as on the value of the potential concentration coefficient, which informs what part of an entity's own potential is responsible for shaping the overall value of its potential. The second part of the analysis concerned the assessment of compliance with selected socio-economic phenomena. In the first step, the rule of size and order of centers was applied to analyze the picture of the settlement network obtained using the various approaches to formulating potential models. Models were sought that would be characterized by high values of the network concentration exponent,

as determined by the interpretation of the exponent itself and the theoretical assumptions of the potential models. The final step in analyzing the variation in potential values was spatial regression analysis. Spatial regression analysis was used to determine the exploratory power of individual models as measures of the level of socioeconomic development. For this purpose, the obtained values of potential were compared to the actual indicator of the level of development, which was taken to be the size of the average per capita income of local government units. A spatial error model was used, which takes into account the effect of the value of the random component in neighboring locations on the dependent variable in the location under study. The study made it possible to determine how the distance variable and different approaches to its concretization affect the formation of potential values. Thus, it was possible to determine some basic properties of individual potential models (such as the course of equipotential lines or the formation of potential hypersurfaces) and recommendations for their use (based on the analysis, the usefulness and validity of using individual models in the analysis of socio-economic phenomena were determined). It was found that the potential models more useful and suitable for describing socio-economic phenomena are those verified by empirical-statistical means, i.e. those in which the distance variable is replaced by a function of this variable, based on straight or physical distances and which, in addition, take into account the own distance different from the unit distance. This is evidenced by a better level of fit to the actual development level index and high values of the network contrast exponent. In addition, it has been shown that economic distances (as the distances on which the model is built) should not replace classical separation measures such as straight-line or physical distances.

Smart Cities and the urban digital divide

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The debate on urban smartness as an instrument for planning and managing more efficient cities has been recently arguing that smart cities might be causing an increase in inequalities. This effect would be due to the role of driver of smart urban transformations played by multinational corporations, who, in a dystopic view, would drive local policymakers' agendas (Vanolo, 2014; Shelton et al., 2013).

This paper follows up to Caragliu and Del Bo (2021), where we document a negative relationship between urban smartness and the intensity of urban income inequalities, suggesting that Smart City features actually help reduce income inequalities. In this work we address a complementary question, empirically verifying whether smart urban characteristics are associated to an increase in urban inequalities along the digital divide dimension among urban dwellers.

To this aim, we exploit a large data base of 180 European cities, with data on smart urban

characteristics, along with the measures of digital divide obtained with the use of survey data carried out at the EU level. Results show a negative association between the level of urban smartness and the digital divide within EU cities. Our findings are robust to a number of robustness checks, including additional control variables to correct for potential omitted variables bias, and additional empirical analyses disentangling the role of ownership from that of use of digital technologies.

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Obstacles in implementation of circular economy. Occurrence of market failure – case study of Lodz region

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Implementing the assumptions of the circular economy is not an easy task, but nowadays it seems to be a necessity. The transition from a traditional economy to a circular economy requires the efforts and support of stakeholders from various groups. Based on the quadruple helix model, groups implementing the circular economy include government, society, academia and companies (Carayannis, Campbell, 2009). What can stand in the way of implementing a circular economy are the so-called market failures, which are typical for traditional economies.

The concept of market failure has its origin in modern welfare economics (Ledyard, 1989, Arrow, 1951, Debreu, 1959). The most common categories of market failures are public goods, externalities, imperfect competition, incompleteness of the market, and asymmetrical information (Randal, 1988, Stiglitz, 2004, Moreau, 2004, Jackson, Jabbie, 2019). Others add to this list also incomplete property rights (i.e., Perman et al., 2003, Acheson, 2006).

In this paper, we looked at the market failure from the perspective of the circular economy. In a circular economy, it is more often to identify the barriers which derail or slow down the transition towards a CE (Kirchherr, 2017). The issue of barriers to implementing CE was raised by many authors (Grafström, Aasma, 2021, Agyemang et al., 2018, de Jesus, Mendonça, 2018). The distinguished in literature categories of barriers correspond to the problems that emerge during the transition to CE. The most

common categories of barriers are: technological, economic, institutional and social.

Although the neoclassical economy and circular economy represent different approaches to the market and its imperfections, there is a link between them. Barriers that occurred in CE can be identified with classic market failures. This clear connection between market failures and CE barriers was a starting point for our research. The aim of the paper was to identify market failure limiting the implementation of the circular economy and to assess the level of their occurrence in Lodz Region. We asked the following research questions: (1) Which market failures have the most significant negative impact on the circular economy implementation process in the Lodz region? (2) Is there a differentiation in the level of market failures among the different groups of stakeholders? (3) What are the reasons for market failures limiting the implementation of the circular economy in the Lodz region? (4) What changes should be introduced to reduce the occurrence of market failures limiting the possibility of implementing a circular economy in the Lodz region?

We conducted two-step research: online survey and FGI. The research was conducted among four groups: business, government, academia and society, who were considered as main actors in the market.

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International scientific cooperation in the turbulent environment - the case study of Economic and Social Development (ESD) project

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Strong international scientific networks are essential drivers of academic institutions' developments. However, establishing and management of such a network becomes a severe challenge to initiative coordinators. Therefore, different entities use different strategies, programs, and tools. Each institution has to define the needs and expectations of stakeholders. There are different forms and activities of international scientific networks. The most common are: joint studies, joint research, knowledge sharing programs, academicians and students exchange, joint publications, events, internship programs, and certification programs.

The paper presents the case study of Economic and Social Development (ESD) project, the initiative under ownership of private

Croatian company with wide network of international academic institutions and vast history of academic events worldwide, in period 2012-2020.

On the basis of own experiences, interviews and analysis of primary and secondary sources, the key entities and relations between them were identified. A model of governance has been built. Conditions and effects of scientific cooperation were identified. Within the research 78 conferences on 6 continents were thoroughly analysed. The cooperation resulted in 1,561 publications indexed in the Web of Science database. The paper also presented the main problems, challenges, and activities related to scientific cooperation during and after the COVID 19 pandemic.

Management of metropolitan areas in Slovenia

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Keywords: metropolitan areas, governance, integrated management, Slovenia

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The rapid urbanisation of the world leads, inter alia, to dynamic development of metropolitan areas. Many of the problems faced by territories cut across sectors and administrative borders. Working at the level of the metropolitan area can help develop innovative solutions that benefit the wider functional urban areas. Effective solutions require an integrated approach and cooperation between the various authorities and stakeholders involved. It is essential for metropolitan stakeholders to understand that an integrated approach to local governance is essential to bring forward many of their goals. The new dynamics of cooperation is a serious challenge for governance of cities and urban areas that stay, more or less, rigidly connected with closed administrative borders.

The paper aims at assessing whether the integrated planning and management is used in metropolitan areas in Slovenia. In Slovenia, according to combined OECD, EUROSTAT and European Union's delimitation, there are two functional urban areas (FUA) that can be classified as metropolitan FUAs: Ljubljana Urban Region and Maribor Metropolitan Area.

Desk research method was applied to analyse Slovenian administrative system,

strategic documents for the development of metropolitan areas and reports on their implementation. Due to the fact that one of the main challenges in metropolitan areas is the integration of spatial development, also the spatial planning system in Slovenia has been analyzed. On-line questionnaire addressed to the stakeholders of metropolitan areas provided additional valuable insight.

The research results show that stakeholders of metropolitan areas of Ljubljana and Maribor see the need of cooperation and integrated management on metropolitan level. They prepare and implement integrated strategies in order to boost competitiveness on national and international scene. The main barrier of metropolitan governance is lack of regional level of administration and conflicts between interests of municipalities. In Slovenia there are only two levels of administration: local and central governments. These problems and conflicts could be solved by proper regionalisation and territorial governance of Slovenia, with institutionalisation of functional (urban) regions and establishment of administrative regions (provinces) which has been the very topic at professional and political debates for several decades.

In Search of Key Determinants of Innovativeness in the Regions of the Visegrad Group Countries

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The COVID-19 pandemic has had a huge impact on the functioning of societies and economies. Discussions on the state of the economy in times of crisis focus not only on maintaining or improving innovativeness but also on the emergence of new dimensions of this phenomenon and changing the significance of individual determinants of innovativeness. Therefore, this paper is an attempt to answer the question of whether the COVID-19 pandemic has affected the key determinants of innovativeness.

Innovativeness is a complex, multidimensional and difficult to measure phenomenon, which implies the need to select various indicators and methods for its assessment. Synthetic measures of innovativeness are widely used in comparative analyses, in particular presenting results in international or interregional cross-sections. The degree of innovativeness should also be assessed at different levels of economic aggregation. The lower the level of aggregation, the easier it becomes to capture the specific determinants of the increase in innovativeness of a given area.

The main aim of the paper is to attempt to measure the relationship between expenditures and results of innovative activities for NUTS-2 regions of the Visegrad Group countries. Three variables were adopted as measures of innovation: PCT patent applications per billion

GDP (in PPS), trademark applications per billion GDP (in PPS) and public-private co-publications per million population. The study covered 37 NUTS-2 regions of the Visegrad Group countries in the years 2014-2021. From the point of view of the purpose of the paper and the need to search for the relationship between expenditures on innovative activity and the results of this activity, it is worth emphasising that the use of static and dynamic econometric models proved to be a substantively correct solution leading to the formulation of clear conclusions.

The conducted confirmed that business R&D expenditure on GDP has a positive effect on inventions expressed by patents and trademarks, especially in the long run. In addition, the literature review and empirical analyses indicate that the main determinants of innovativeness (both before and during the pandemic) are the expenditures of economic entities on R&D, competences expressed by the level of education or participation in tertiary education, as well as the number of ICT specialists and the percentage of people employed in science and technology. Despite the deterioration of many macroeconomic indicators in the countries of the Visegrad Group, the expenditures of the business sector on R&D in most regions did not decrease in the pandemic period, between 2019 and 2021.

The digital divide and its mitigation in Romania

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Keywords: digital divide, NGOs, Romania, non-formal digital education

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While the digital transformation of the European society at large rapidly advances, the Digital Economy and Society Index (DESI) reveals large differences among the EU states in terms of connectivity, digital skills, e-government, and use of the digital technologies in the economy. In this respect, in the case of Romania, DESI 2022 shows contrasting aspects – the country is ranking average in terms of connectivity (15th out of the 27 EU member-states) and high in terms of the number of ICT graduates (in the top tier), but finds itself at the bottom of the EU hierarchy in terms of the general populations' digital skills, integration of digital technologies by the SMEs and provisioning of digital public services (the last place in the EU in the three enumerated topics).

In this context, the goals of the present study were twofold:

- to identify and describe the digital divide in Romania,
- to understand the “ecosystem” of actors (mostly NGOs) working for the bridging of the identified digital divide by providing services of nonformal digital education to the general population.

By analyzing Eurostat and Romania's National Institute of Statistics data on the population's access to, and use of the internet, we revealed a large digital divide between rural

and urban areas, between young and elderly people, between more educated and less educated people etc., and highlighted important regional differences.

While the digital skills divide remains largely unaddressed by the public authorities in Romania, several NGOs and local libraries (among others) stepped up to provide non-formal digital education. However, data from a survey and two focus groups targeting these actors showed that their activities are mostly oriented towards schoolchildren and young adults, and the nonformal digital education is available especially in urban areas, thus contributing less to the bridging of the identified digital divides.

Moreover, a subsequent social network analysis showed that the NGOs providing non-formal digital education are inefficiently connected to each other and do not share a common strategy.

This study shows that in order to efficiently address the identified digital divide in Romania, more collaboration among NGOs and other stakeholders in the digital education area is needed.

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Comparative analysis of the digital policies in Romania and Hungary

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Ranking 22, and respectively 27 in the EU based on the Digital Economy and Society Index (DESI) 2022, both Hungary and Romania need to implement urgent measures in order to catch up with the EU's goals for the Digital Decade.

In this paper we examine the digital policies of both countries (as expressed in the national digital strategies, sectorial digital strategies, and other general planning documents at national level – e.g., Recovery and Resilience Plans, etc.) addressing at least one of the four dimensions of the European Digital Compass (skills, government, infrastructures and business).

We analyzed the content of each strategic document using an analytical framework adapted from the scientific literature, based on five aspects:

- contextualization of the strategy/plan,

- goals and actions of the strategy/plan,
- stakeholders and segment/share/sector of the society impacted by the strategy/plan,
- conditions and consequences of the implementation of the strategy/plan,
- similarities and differences between the digital policies in the two countries.

This approach allowed us to compare the digital policies from Romania and Hungary, and to assess their convergence towards the EU digital goals.

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Community gardens and their contribution towards pro-climate activities as an element of social integration and motivation based on city of New York

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Challenges related to climate change and its negative effects – affecting millions of people in urban spaces all around the world - impending sensible actions like an adaptation to these events – is an important challenge for many agglomerations all around the world (at the spatial, economic or environmental level).

Impending sensible actions implemented towards this direction in the cities are varied in nature of actions, - from so-called top-down actions, which transform large urban areas, often undeveloped up until now - to individual actions – grassroots - organized by local communities, immediately willing to change surroundings where they live.

Both approaches to changing public understanding of and attitudes to climate change are valuable, both types of action can contribute to adapting city space to climate change. But we should remember that the top-down activities by their scale and costs, can lead to a gentrification's phenomenon, while grassroots actions are more friendly for the local community and less likely to gentrification process, it is an element of social integration and is environmental justice.

One of these grassroots actions is creating community gardens, often in lots left vacant by the city and degraded in urban fabric. This way of planning allows or even promotes the use of many functions (from recreational up to production farming), they are also used as local centres for its communities.

The Integration of local communities around the community gardens reinforces the commitment (motivates) toward pro-environmental actions in there. In that way community gardens may play an important link between a way of perception a greenery not only as a decoration element in the city – but largely geared towards adaptation urban area to climate change actions

and as a result - to motivate citizen for implementation by local community – such a solution like – bioswales, grass ponds, retention ponds, rain garden etc.

During the Conference will be presented research results of the study an existing community gardens in New York (August 2022), which were implemented in urban fabric already in the 1970s, through transforming degraded urban micro-spaces for little oases of greenery for using by their local communities, often without public green spaces nearby. Their structure will be presented here with a social importance, functional and financial aspects, the story of their foundation and potential and grooving to motivate people for counteraction to a climate change.

At the same time will be presented community gardens that were built near new housing investments in Paris, Copenhagen and Oslo (research of these areas were also carried out in 2022). These examples show a new approach for creating this type of area, very often in its structures we found many of a NBS solution (a very important aspect in adapting urban spaces to a climate change action).

Presented conclusions are a part of research conducted within the project CoAdapt "Communities for Climate Change Action" with universities UW, SGGW, WNRI, OsloMet and can be good guidelines for creating this type of facilities in Polish cities, or good examples motivating local communities for pro-environmental activities and changes in their immediate environment.

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Digitalization of companies in Europe: barriers, supporting activities and the effects of the Covid-19 pandemic

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Keywords: digitalization, companies, barriers, support, Europe, Covid-19

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Digitalization of companies refers to a variety of innovations based on ICT or more recently – internet-related technologies and applications. In the scientific literature and policy debates about manufacturing it is analyzed under the so-called Industry 4.0 framework, describing advanced digital technologies in production and management, utilizing internet innovations. Those innovations widely influence firms' organization of work (remote working, online meetings), and depending on the profile (manufacturing or services), also production (smart/connected robots), relations with clients (e-commerce) and other elements of business models.

Adoption of digital / industry 4.0 innovations is a great challenge for managers and workers, but also for policy-makers who have to identify digitalization barriers and undertake activities fostering introduction of digital innovations, which in consequence may lead to industrial growth and regional economic development. Additionally, in 2020, many aspects of digitalization of companies accelerated due to the Worldwide Covid-19 pandemic, with many possible long-lasting changes in how companies function and how they are organized and managed.

The presentation is based on research which aimed at answering the following questions:

- 1) What are the barriers to the digitalization of companies in Europe?
- 2) What activities are undertaken at the regional level, to facilitate adoption of digital / Industry 4.0 innovations in companies?

3) How the COVID-19 pandemic influenced the process of digitalization of companies in Europe?

The first part of the research was based on interviews with representatives of three European regions characterized by different innovativeness level: Baden-Württemberg (Germany), Veneto/ Friuli Venezia Giulia (Italy) and Wielkopolska (Poland). The second part of the research is based on the online survey conducted between October and December of 2021 among 124 experts in digitalization from 22 European countries. The experts represented Digital Innovation Hubs (DIHs – specific KIBS that specialize in digital technologies) or regional administration units cooperating with Digital Innovation Hubs or involved in the implementation of digitalization programs or projects.

The analysis allowed to show that:

- 1) Main barriers for digitalization in companies include lack of knowledge on new technologies, lack of skills among workers and lack of financial resources (especially in SMEs).
- 2) Actions facilitating digitalization of companies, conducted at the regional level include: infrastructure building, planning and monitoring, financial support, trainings, direct consultancy for start-ups or active firms, promotion.
- 3) Online meetings and reduction in business travel are believed to become a universal in Europe, long-lasting effects of digitalization of companies in times of the COVID-19 pandemic.

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Monitoring of barrier-free roads accessibility in the city using shared e-scooters data

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Nowadays in the „data“ era is the importance of data collection, its processing and meaningful application, especially in public areas, essential. Urban micro-mobility represented by various types of shared transportation services can be the source of unique datasets with potential applications for the improvement of public services such as the size of a transportation network, its quality, traffic safety or transportation services' perceived quality.

This paper's objective is to explore the usability of data generated by shared e-scooter providers in middle-sized cities for monitoring and assessment of accessibility. Where the focus is on barrier-free roads, crossings and sidewalks. For this purpose, we have acquired

trip trajectory data in the form of GPS location points, speed, and accelerometer data from e-scooter users. To create and understand various behavior patterns and for modelling purposes, an experiment on selected e-scooters was carried out. The resulting models from the experiment could be afterwards applied on the trip trajectory data and based on the model help to identify critical points on roads, sidewalks, or crossings. Results from this research can be helpful for the city transport network planning, and future facilitation of shared transportation services with the aim to create a barrier-free network that will provide smooth and safe urban micro-mobility environment.

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Economic convergence of the Southwest Iberian socio-economic area in Spain and Portugal

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Keywords: Convergence, Iberian states, Socio-economic area, Spain, Portugal

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The socio-economic area of the Iberian Southwest is an emerging area of peninsular development in the Iberian states that claims our attention and economic analysis in the period 2000-2019. We propose the comparative socio-economic analysis of the area and the Iberian states in terms of convergence of economic activity, using the usual σ , β and γ statistical and econometric techniques.

On the basis of the literature reviewed, our work deals with a spatial distribution that is fixed on an axis in promising construction during the end of the 20th century and the beginning of the 21st century that is still to be definitively undertaken and for the entente and articulation of the Iberian capitals and the development of impoverished regions of both Spain and Portugal.

In our study we will start from a spatial demarcation based on provincial and Portuguese NUTS 3 spatial units to construct the Southwest Iberian Development Area. We have analysed it in terms of internal differentiation, and we have contrasted it with the rest of the Iberian states in its European continental peninsular area, serving as a framework for its recent evolution.

The temporisation covers an extensive recent period and the sub-periods that are significant to us according to the evolution of recent historical and economic events in the

world and in the Iberian states, such as the beginning of the century, the great international economic and financial depression and the beginning of the recovery up to a year before the generalisation of the COVID pandemic (2019).

The objectives of our work, in the spatial and temporal framework already outlined, are to examine and observe the different comparative convergences in economic activity.

The structured breakdown of our work under different headings will develop the proposed objectives. We will deal with GDP (PPS) pc; its convergences σ , conditional β and convergence γ ; and, finally, we will consider the dynamic variation by sub-periods of both the economic activity indicator and its factor components.

The main results found are that, despite the stability of the convergence σ , we find three Iberian convergence clubs, where different spatial units of the Area are located. Madrid and Lisbon, apart. Intertemporal changes, measured in cumulative average annual rates of change, follow very different spatial and temporal patterns.

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Human development index and sustainable human development indices in the iberophone region. 2000-2020

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Keywords: Lusophony, Iberophony, Ibero-American, IDH Human Development Index (HDI), Sustainable Human Development Index (SHDI).

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Lusophony and Hispanicity make up two international areas which, when combined, generate a larger bloc of countries representing seven hundred million inhabitants and 10% of the world's GDP.

This area is called Iberophony and logically includes all the countries that speak Portuguese and/or Spanish in the world or some Creole variant thereof. This area is currently in a phase of international political and diplomatic articulation thanks to the efforts and work of the Organisation of Ibero-American States (OEI) and the Community of Portuguese-speaking Countries (CPLP).

So far, there is no work on Iberophonía in the economic literature. Therefore, this work is pioneering from a comparative economic development point of view and relative to the entire international bloc.

We have considered it of utmost importance for our work to initiate socio-economic studies on Iberophonía.

Starting from recent tentative definitions of a Sustainable Human Development Index (SHDI), we have constructed these new descriptions (Sustainable Human Development Indices zero, one, two and three, SHDI0, SHDI1, IDHS2 and IDHS3 respectively) of development for the thirty or so countries that comprise Iberophonía and contrasted the results and the ranking of classifications between the different hypotheses and the already consolidated and conventional results of the HDI, AHDI¹ and all sustainable human development indices, for the year 2019, the most recent fully available, from the statistical database of the World Bank.

The methodology consists of constructing simple indicators and composite indicators,

based on the initial matrix variables, in terms of the economy (GDP), health (life expectancy) and education (levels of education and literacy). This compilation procedure is carried out on the basis of the simple variables and, in order to make it dimensionless, it is reconverted to the interval 0-1, considering a minimum value and a maximum value, with the following formula:

$$IS_{ij} = \frac{V_{ij} - V_{j\min}}{V_{j\max} - V_{j\min}}$$

And orlando with one or more variables related to the environmental area that in this consideration we want to incorporate in different tentative ways. As usual, the SIs facilitate the construction of the different composite indices of the different areas: economy, health and training. We can also consider alternative formulations of an HSDI, with the consideration of economic composite indices disappearing because they are understood to be highly correlated with education and health levels.

Finally, we will not only analyse and compare country rankings within the Iberophonía and their different ordering for different types of human development indicators, expanded or not, together with environmental considerations, but we will also study the degree of correlation between GDP and these old and new definitions of socio-economic and also environmental development.

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1 Adjusted Human Development Index.

Role of Foreign Direct Investment in regional economic growth and regional productivity: The contradictory case of Central & Eastern Europe

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Keywords: FDI, dependent market economy, GDP, regional economic growth, regional productivity CEE

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In Central & Eastern Europe (CEE) economic transformation was primarily driven by foreign direct investment (FDI) during the postsocialist transition. The paper examines the effects of FDI on GDP, Gross Fixed Capital Formation (GFCF) and regional productivity and tests the causal relationship between these variables in the V4+ countries. The econometric analysis confirms that FDI inflows are not the main driver of GDP growth, while more FDI flows to already more developed regions. The impact of FDI varies significantly across countries and regions, particularly in metropolitan regions. In a panel regression controlling for GFCF, employment, R&D and total factor productivity, FDI has no significant effect on regional development indicators. Moreover, we used

regional (NUTS 2level) and industry data, we obtain the aggregate, regional and sectoral elasticities of measured total factor productivity, GDP, and employment to regional and sectoral productivity changes and to measure the impact of FDI on these TFP trends. The paper argues that in the absence of endogenous growth factors in the FDI-dependent market economies of CEE FDI alone is not sufficient to ensure the long-term development of the regions and its contribution to productivity spillovers is rather contradictory. This reinforces the negative perception of economic transition and strengthens anti-EU populist parties and governments' search for economic policy alternatives.

Regional centers vs. regional cohesion in Poland

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Territorially oriented cohesion policy of the European Union (EU), emphasizing the competitiveness of the regions, their sustainable development and improvement of the quality of life, is put to the test as it faces socio-cultural changes (increasing external migration, aging and processes of depopulation). Regional cohesion policy, implemented in Poland by the Voivodeship self-governments within the limits of their powers, closely follows the findings of EU and national strategic documents. However, to be effective, administrative regions should reflect the scope of the impact of functional center and the strength of its relationships with

municipalities as much as possible. The authors formulate the thesis that large regions – usually metropolitan – are not covered comprehensively by the influence and cooperation with their centers and wide zones having periphery character are formed in them. The aim of the research is to determine how far the centers of Polish regions are linked with the regions. They also attempt to identify the municipalities in each Voivodeship, which „do not feel” the impact of regional centers and they can be considered as regional peripheries requiring special development policy.

Adaptation to climate change in the space of Polish seaside spas - is it possible to avoid a crisis?

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Natural conditions have predisposed a number of coastal towns to the development of a health resort function. Given that their space should provide security for vulnerable users, their development policies should be directed particularly towards the effects of climate change. In this article, the authors have attempted to

typify Polish seaside health resorts in terms of their vulnerability to the effects of climate change and the response of local public policies to this challenge. Based on the collected data, they also try to identify scenarios for the future fate of these resorts and recommendations for adaptation measures.

Potential for renewable energy production in wastewater treatment plants' protection zones

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The challenges of sustainable development require optimisation of spatial management, as well as the reduction of fossil fuel requirements of urban systems. In particular, this applies to cities located in sensitive ecosystem zones. This paper aims to present the issue of the protection zones of wastewater treatment plants in the context of their potential for energy transformation and more sustainable use of the

space of Polish coastal cities. The scope of the paper includes analyses of conditions for developing selected forms of renewable energy sources and analyses of the functional and spatial specificity of the protection zones of large coastal wastewater treatment plants. On this basis, guidelines for the future development of these areas were formulated.

International Trade in Food and Agro-based Products in the Time of COVID-19

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The COVID-19 pandemic has affected almost every sector of the economy, including agriculture and the food sector. According to the related literatures the pandemic in the food market had an impact on both the demand and supply sides, especially in the first period of the pandemic, in the first half of 2020, but later periods were also affected. The pandemic affected trade in almost all food products and in almost every country.

The study was based on secondary databases (EUROSTAT, ITC Trade Map). The aim of the study was to examine the effects of the COVID-19 pandemic and its individual waves on agricultural and food trade, thus databases that include data at least quarterly, but rather monthly, were considered. In addition, for the sake of comparability, the years immediately preceding 2020 were taken into consideration. The methods used in the study are simple statistical methods (absolute deviation, mean, standard deviation, ratios [dynamic, distribution], matrix, graphical representation).

The results show that the COVID-19 pandemic has also affected trade in agricultural and food products, mainly due to government restrictions and only to a lesser extent because of its health implications. The worst negative impact of the pandemic has been on US trade,

but it has spilled over to almost every country, especially its two main trading partners, the European Union and China. In terms of agricultural yields, it was not COVID-19 that caused crop losses in crop production, but the unfavourable weather conditions of the pandemic year. However, one of the reasons for the decline in livestock production was the closure due to the pandemic, as transport of feeding stuff was disrupted by the closure of borders. Furthermore, they also fell from losing a significant market due to the closure of catering sector, forcing them to reduce production. Food trade stagnated in the initial period of the pandemic (even then only due to temporary border closures) and later recovered relatively but fluctuated slightly in subsequent waves (but not to the same extent as in the first period). The most affected products are meat and meat products, fish and other aquatic invertebrates, and tobacco. Also in the initial period, there were more serious disruptions with fertilizer imports. Finally, there have been significant changes not only in the supply system but also on the consumer side, both in terms of products purchased (e.g., demand for healthier food has increased) and shopping habits (e.g., increased demand for online shopping, reduced time spent in stores), some of which appear to remain, to which both producers and distributors must adapt.

Location selection method for DRT utilisation based on the fixed transportation cost and effectiveness analysis

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Keywords: demand responsive transportation, fixed bus transportation, effectiveness analysis, location selection

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Mobility and transportation services as part of the public services are still in high demand in European countries as this type of transportation was and is presumed to be more ecological and economically friendly than individual transportation. Almost every European country has in the past decades developed and applied fixed and semi-fixed public transportation models with country-related differences. Despite that these systems can provide a certain level of general accessibility for each settlement in the country, the demand for such transportation can change over time and varies depending on many factors such as the geographical conditions, landscapes, road network, level of urbanisation or the demographic change in the country. Often in rural areas, the accessibility of public transport can be limited since these areas face a population reduction and so are the transport providers facing increasing expenses per passenger due to decreasing demand. Here is demand responsive transportation (DRT) occasionally proposed by researchers as a

viable alternative to fixed or semi-fixed models. This paper analyses the utilisation of the fixed bus transportation system in Košice self-governing region during the last decade with a focus on rural and distant regions of the country where this type of transportation system lacks its benefits. The analysis covered a database of all bus lines with the corresponding routes, stops, and schedules from every transport provider in the region to provide the coverage network. To assess the transportation, demand a database of one-day snapshot from all sold bus tickets was used. The objective of the paper is to identify bus lines and routes which generate low efficiency when it comes to the number of transported passengers compared to costs for line maintenance. These lines are then analysed if suitable for a DRT application. The results are used as a base for future DRT application analysis and cost simulation modelling.

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Mobility segregation throughout the lifetime among Warsaw inhabitants - patterns of segregation of lower social profile inhabitants

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Keywords: social segregation, new mobilities paradigm, social inequality, spatial behaviour, qualitative approach

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Mobility has become on the one hand a way of life and a lifestyle and on the other hand, a threat and a new dimension of social inequality. In the context of inequalities, we can distinguish for example privileged, elite groups, for whom the world has no limits, and disadvantaged, excluded groups, whose mobility is limited by economic, social, cultural or psychological barriers to local space. This new dimension of reality needs to be included in the research on social diversity of cities and more particularly on social segregation, hence this study proposes a new approach of mobility segregation. Mobility segregation concept can be rooted in both classic and contemporary research perspectives. Firstly, the concept can be linked to the research tradition of time geography (Hägerstrand 1970), which limitations have been already discussed (Rose 1977, Giddens 1984, Hannam et al 2006, McQuoid and Dijst 2012) however, which was used in research on activity-space segregation (e.g. Palmer 2013). Secondly, the mobility segregation concept can be referred to geobiography approach (Kaczmarek 2005) and to a sociological school of everyday life studies (Każmierska 2016, Sztompka 2009, Tarkowska 2009, Siciński 2002), that was applied to study a life and institutional transformation of Polish society (Siciński 1988, Palska 2009, Warzywoda-Kruszyńska 2011, Każmierska 2016). The innovative contribution of the proposed research is to relate social segregation and everyday life studies to a new mobility paradigm (Hannam et al 2006). The methodology proposed by Rau and Sattlegger (2016, 2018) of mobility biographies research (MBR), based on traditional narrative-biographical interviews (Rosenthal 2012, Schütze 2012), allows to study transformation of spatial behaviour across a life course and was used in this research on mobility segregation.

The aim of the presentation is to define the concept of mobility segregation during lifetime and to distinguish mobility segregation patterns among Warsaw inhabitants characterised by lower social profile. Biographical material was gathered in June 2021-February 2022 period, and it consisted of three stages: pre-task, main biographical interview up to 2,5 hours with additional survey and in-depth interview up to 2 hours. There were 15 narrators of lower social profile, distinguished by their low income (less than PLN 2500 gross per person in a household), economically active and performing a simple profession. The sample is not representative in the statistical sense of the term but inclusion of narrators of different socio-demographic characteristic (gender, age, familial situation, district of residence in Warsaw, level of education) allows research based on theoretical sampling that prioritises variety over representativeness and according to the theory-guided approach to qualitative sampling, each case is treated as a generalizable expression of social reality (Sattlegger, Rau 2016, Miles, Huberman 2000). Interviews gathered on 610 pages and 435 photos with their descriptions and 35 films were analysed using Maxqda Plus Programme, where they were encoded by over 8100 codes. Based on reconstructive approach to biographies research, everyday mobility practices and segregation patterns of Warsaw inhabitants belonging to the lower social profile group were identified. The patterns are categorized into 6 types to allow identification of the extent and change of mobility segregation during lifetime.

The new concept of mobility segregation, proposed in the research, enables a holistic approach to segregation studies and wider to studies on a social inequalities issue and research outcomes may lead in practice to a social sustainable development of cities.

Urban planning and innovation with creativity for health and resilience

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The concept of smart cities is often implemented with human factors in mind besides the technological aspects. Consequently, the innovation ecosystem in modern towns should be built on the creativity of the local people in synergy with attracting talent and companies alike. The Global Network of Learning Cities (GNLC) is a good example because they are devoted to building healthy and resilient cities because „with more than half of humanity living in urban areas, cities have a key role in promoting learning for health and strengthening resilience”.

Members of this network have defined a new paradigm for learning for health in cities: a concept which includes mental health and well-being and a personal and societal resource for health literacy and citizenship for health. Their commitment to lifelong learning throughout the COVID-19 pandemic included their efforts to promote health literacy among local populations, and their capacity to now expand on innovative strategies and programmes implemented during the crisis.

Their endeavour to integrate these commitments into local actions and development strategies has been done via strengthening learning for health and to develop resilience of the cities. This approach has also broadened the scope of stakeholder involvement in lifelong learning at city level so that the health sector is well represented, including health professionals, practitioners and experts, as well as stakeholders in the field of urban design in the knowledge that city planning decisions impact health and learning.

The development process aimed at strengthening resilient cities in terms of community resilience – multi-sectoral planning involving local people, and bottom-up and top-

down policies and practices to foster long-term resilience in communities. It was implemented by making use of informal spaces within the cities for learning for health and to develop resilience, including homes, local neighbourhoods, workplaces, green spaces, public transport, municipal buildings and the digital sphere.

GNLC has members in all European countries therefore their example can be disseminated and shared in various territorial levels. An example for implementing the guidance of GNLC can be presented from the town of Szombathely which can show how the health sector can occupy a strategic role in the development of a town in Hungary. The presented strategic planning process has been implemented with guidance and professional support from the Intelligent Cities Challenge as European initiative to help cities in developing smart and sustainable towns with strong involvement of citizens. The resulted strategy „Szombathely 2030” was the joint effort of a large group of stakeholders and therefore it can be considered a long term commitment of the town and their citizens together.

Our presentation shall also highlight the experience of other towns in Hungary with special attention to Pécs as Hungarian member of GNLC. As Pécs has been European Capital of Culture in 2010, we also compare the role of creativity in innovation and resilience in the Capital of Culture programme of Veszprém for 2023.

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Artificial Intelligence for Industry 4.0 by Learning Factories

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The concept of smart cities is often implemented with human factors in mind besides the technological aspects. Consequently, the innovation ecosystem in modern towns should be built on the creativity of the local people in synergy with attracting.

Successful cases of innovation and urban development are often based on new paradigms of entrepreneurship and community development. The trend of digitalisation can be strengthened by the support for economic development of local and national authorities and the companies that provide software and hardware solutions can play an important role in this process. These companies – that can be qualified as digital entrepreneurs – provide services to their clients and – in the same time – contribute to technology development in the framework of Industry 4.0.

Digitalisation and Industry 4.0 are in the focus of the National Strategy for Artificial Intelligence that was developed in 2020 as the result of a long planning process implemented by the national Artificial Intelligence Coalition. The priorities of the strategy have defined support for Industry 4.0 in manufacturing sector as a key area of intervention and learning factories are one of the flagship projects that were selected for implementation of the strategy.

Learning Factory (LF) aims at creating an integrated, realistic learning environment for testing and experimentation therefore LF can be defined as an experiential learning environment that contains up-to-date manufacturing infrastructure. The value proposition for clients is that it offers the opportunity for step-by-step, systematic engagement, digital readiness improvement and project development. The physical environment of the Learning Factory offers the opportunity to stakeholders to test and evaluate new technologies and Industry 4.0 applications in a real production environment with the objective to optimise their business

operations and manufacturing processes. Value proposition of a Learning Factory can therefore be summarised as innovation-oriented risk reduction and technology development.

The digital twin, as one of the major Industry 4.0 components, is a virtual representation of a physical product containing information about the product, underlying product life-cycle management. The virtual model can be employed to study opportunities for operational improvements and analyse the establishment of new technology in current production. Learning factories can therefore enable the utilisation of various digital and artificial intelligence solutions by playing a key role in the regional industrial training system.

As a result, the educational paradigm in manufacturing needs to be revised and many educational institutions have tried to bring their educational practice closer to industry also by embracing the LF concept. Results show that strong focus on Industry 4.0 can mean that dedicated learning factories may narrow their scope because they base their services on the existing set of equipment which may become obsolete after a certain period.

Consequently, the teaching factory approach presented in various academic studies aims at a much broader use of novel learning methods. At conceptual level, it can be considered as an extended LF paradigm based on the knowledge triangle approach. The proposed paradigm focuses therefore on integrating industry and academia through novel adaptations to the teaching / training curricula achieved by the deployment of ICT-based delivery mechanisms.

Our paper presents therefore the case from Hungary where the practical aspects of implementation are highlighted together with the scientific background and implications for innovation ecosystem in urban environment.

Do demographic indicators affect the expansion of non-profit organizations? Case study of Slovak districts

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Non-profit organizations, created to perform non-profit activities, carry out their activities concerning the needs of that particular area. The paper examines the relationship between the needs of individual areas (in the case of this paper - districts) for development and the activities of non-profit organizations through a detailed analysis of the activities of non-profit organizations in the Slovak Republic and the demographic indicators of 79 districts of Slovakia.

The results showed the most significant interest in implementing non-profit activities in

social services and education across the entire Slovak Republic, with not too significant differences between individual districts of the Slovak population.

The analysis includes the number of non-profit organizations per resident in the district, the number of non-profit organizations per registered unemployed person and other indicators explaining the type of activities and the relationships of non-profit associations to the demographic indicators of the districts of the Slovak Republic.

Covid19 and ‘Urban Exodus’. Evidence from house prices in rural Ireland

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In the initial stages of the Covid19 pandemic there was much written about a supposed ‘urban exodus’. With flexible working arrangements and remote working becoming the new norm and much of the amenities that normally accompany urban living forced to close, the prospect of a life in rural areas became both more attainable and more attractive (Vogiazides and Kawalerowicz, 2022). In the academic discourse, the understanding of rural areas is still split between the rural living as rural idyll (e.g. Schucksmith, 2018) or rural decline (e.g. Hedlund et al., 2017). It is unclear however if this change in behaviour has been a long-term change and the desire to live in rural areas has continued or if the opening of the economy has

reversed the trend. Recent research addressing the issues of spatial (in) justice in general (Madanipour et al., 2022) and through the lens of relational rural theory in particular (Goodwin-Hawkins et al., 2022) suggests that there are many factors contributing to the urban exodus and counter-urban lifestyle motilities. With this starting point, this research proposes to better understand the ‘urban exodus’ phenomenon by analysing how house prices have changed since the beginning of the Covid19 pandemic as house prices give a good indication of demand for rural living. This research will better inform policy makers on how to address the need for improved services such as remote working in rural areas.

Mechanisms of new path creation based on Industry 4.0 technologies providers in (post)mining towns and cities in Poland

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More than 10 years have passed since the first introduction of the Industry 4.0 concept at the Hannover conference. During this time, researchers from around the world have tried to discuss the opportunities that Industry 4.0 offers for various regions and cities. Adler and Florida (2021) point to three types of places or "niches" that can foster the emergence of P4.0 technology concentrations: leading technopolises (tech hubs), large global cities and areas of traditional industry. So far in the literature, analyses of the potential of economies toward Industry 4.0 are mainly at the scale of countries and regions. There is little analysis of urban centers, especially those with a mono-functional, industrial past trying to carve out their new development path.

The purpose of my presentation is to assess the local absorption capacity of Industry 4.0, as well as the factors and mechanisms behind it in Polish cities with a strong tradition of extractive industries. The analysis was conducted based on a multi-stage procedure. In the first stage, using dispersed datasets, clusters of digital entrepreneurs were identified at the county level (NUTS 4).

Next, the location of (post)mining cities in relation to other areas of concentration of Industry 4.0 technologies providers was determined, which led to a cross-sectional analysis for all mining centers in Poland. The next stage involved an in-depth analysis of case studies of four towns located in old mining districts.

The research revealed a very diverse potential of (post)mining centers toward Industry 4.0. Of the 68 mining districts in Poland, providers of Industry 4.0 technologies were identified in 28 units. Areas with the highest concentration of I4.0 companies were found to be those with a diversified economic base and well-developed higher education. Among the centers with moderate potential, several possible mechanisms were identified that could initiate broader development of the Industry 4.0 ecosystem in the coming years.

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Coworking places in Hungary during the Covid-19 pandemic

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The explosion in information and communication technologies, and thus the increased possibilities for location-independent working, and the constraints caused by the pandemic, among other things, have helped to promote new types of workspaces. These spaces are associated with buzzwords such as innovation, knowledge transfer, creativity or autonomy, which are also specific to higher education institutions. While the critical mass of coworking spaces is mainly linked to global centres, in Hungary to the capital city, few studies have focused on rural workspaces in Hungarian university towns. Through a few Hungarian examples, we will show the forms of manifestation of coworking places and their relationship with local institutions in the urban cultural milieu and territorial fabric. Outside the capital cities, these spatial scales are also centres of the emergence of the creative economy, Industry 4.0 solutions and innovative start-ups, reflected in the new generation of innovation policies. Epidemiological measures have brought new insights into new working

spaces, which have been accompanied by the definition of new development and action directions. The epidemic, which swept through the country with incredible speed, has caused serious problems in all sectors and industries, with a few exceptions. In particular, we highlight the influences that have affected new types of working spaces during the waves of Covid-19. In this way, the results of the research provide insights into the centre-periphery relations that permeate the domestic urban fabric, the new spatial formations of the post-industrial economy, and highlight the existence of serious constraints to growth that limit the development of new types of spaces.

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The territorial characteristics of cultural and creative industries through the case of Pécs and Cluj-Napoca

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The Eastern European region centers cannot play such space organizing roles as their Western European counterparts. There are specialities as regards the functions which we wish to focus on, e.g. several of those functions are artificial (such as appointed regional centers); and as a result partially they have less chance to integrate into big international networks due to the dominant capitals. The two regional centers (Pécs and Cluj-Napoca) subject to our interest have many similar and number of unique features in terms of their function scope and agglomeration. Their comparative analyses, their resource base, local circumstances, and capital formation processes may result in interesting results. In order to meet the great global challenges which, the cities have to face, more attention needs to be paid to the resource efficiency in the creative sector. Establishing a resource efficient economy is the major environmental and development challenge today, which requires political actions at all (international, national and local) levels. Improving resource efficiency by better understanding of the available amount, value, structure, ownership, use etc. of resources within a given locality is crucial to planning and implementing good resource

based spatial policies. For the adaptive and sustainable development of a territory the decision-makers need the exact information about the potential and the consumption (new working places, culture-based economy, innovation ecosystem etc.) of resources related to the development processes of a given place. As a starting point, in addition to the analysis of the literature framework, we will review the territorial specificities of the cultural and creative industries of two selected cities.

The analysis will have two main steps: the first step will be based on qualitative rating-based analysis. The values within the range will be calculated based on the ratio of the area occupied by each accessibility class to the total area of the study area. In the second step we will integrate, all the quality goodness classes and obtain the cumulative spatial impact which will be analysed in terms of territorial impact and territorial extension.

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Advancement and new spatial patterns of the creative sector in the old industrial structure

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Greater economic complexity is not only related to diversification, but also to the sophistication of production and the setting of diverse and unique knowledge that drives economic development. The Economic Complexity Index assessed in 79 districts of Slovakia has confirmed the growing dominance of agglomeration and the disadvantages of more peripheral regions. A long time series of data for the last 30 years has revealed how the artificial territorial organisation of job creation policies in each district, enabled by central state planning, has gradually disintegrated. The self-organisation of the complex economic system has created a new spatial equilibrium with the concentration of economic complexity in the newly created capital city Bratislava and several regional centres.

The analytical framework gives a threefold view across district, industry and time as a way

of predicting future trends. Changes have occurred in the economic landscape of the country with the creation of spikes in the west of Slovakia as well as affecting urban-rural relationships. The formerly industrialised country has begun to discover a creative sector, finding its way in the midst of industrial lock-in, especially the automotive sector. Košice, Slovakia's second largest city, subsequently serves as a micro-level study whose trajectory has shifted away from heavy industry thanks to ICT investment and the successful European Capital of Culture project. The creative industry has been brought to the forefront of the city's social progress, significantly increasing its attractiveness for the life of the creative class. The micro-scale of the city reveals the gradual occupation of territory by the creative sector particularly by culture and arts, ICT firms and R&D entities.

Impact of EU Integration on Development of Border Cities

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In this paper, we evaluate the impact of EU regions on cities located near the borders affected by EU integration. In particular, the recent Eastern enlargements of the EU provide a quasi-experiment to study the impact of removing borders (and barriers associated with them). Just like Brakman et al. (2012) and Redding and Sturm (2008), we use municipal level data as a proxy for economic development. To be able to do that, we use the Directorate-General for Regional and Urban Policy data on population at the LAU2 level for the 28 EU member states for the years 1961, 1971, 1981, 1991, 2001 and 2011. The historic depth of our dataset thus enables us to evaluate the impact of the majority of EU widening as well as EU deepening processes.

Our results contribute to the existing literature in several ways. First, we take advantage of a broad and balanced dataset that enables us to evaluate the various elements of EU integration. Second, previous literature concentrated mainly on the evaluation of either one specific integration process or computed an average over several steps of an integration process. In contrast to that, our aim is to cover and directly compare different stages of EU deepening as well as EU widening processes.

Third, we concentrate solely on the border regions of the EU, while previous analyses compared the development of the border municipalities also to the internal municipalities, with Brakman et al. (2012) including also non-EU municipalities in the control group of several specifications. Lastly, the existing literature concentrates on land borders, whereas we aim to also consider regions in the proximity of maritime borders affected by integration.

Since border regions (on NUTS3 level) comprise a significant part of the EU – according to EC (2017) it is 40% of EU area and 30 % of EU population- our analysis provides an insight to what extent municipalities located in these regions benefit from EU membership. Importantly, by considering the various elements of integration (not only in time but also in their nature, by differentiating between widening and deepening of integration), we can shed light on which aspects of integration have had the most profound effects, and whether these effects have been universal or context dependent. The results of our paper thus help quantify the size and nature of the various benefits of EU membership for existing border regions of the EU as well as the border regions of EU candidate countries that may become part of the EU in the future.

Cultural heritage of Ukraine in Danger: Influence of Russian Invasion

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Keywords: cultural heritage, heritage in danger, Ukraine, Russian aggression, restoration work

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Cultural heritage is an important component of national culture, identification, and also increases the attractiveness of the tourist potential of a certain country. The cultural heritage of Ukraine consists of objects of material culture and intangible heritage. Some of the objects of material culture are included in the UNESCO World Heritage List (the center of Lviv, Kyiv-Pechersk Lavra, etc.), most of the objects of cultural heritage belong to objects of national and local importance. By 2022, there are 20,339 objects of cultural heritage, most of which are monuments of architecture, archeology, and history.

Since 2014, the Autonomous Republic of Crimea, part of the Luhansk and Donetsk regions have been occupied by the Russian Federation, and the objects located in these territories do not have proper conservation and preservation. Ukraine's access to these objects was limited and the condition of some objects is unsatisfactory due to deliberate destruction, if it is related to Ukrainian history or culture, or due to the negligence of the Russian occupation authorities. About 10% of cultural heritage sites were located outside the controlled territory of Ukraine.

The full-scale invasion of the Russian Federation on February 24, 2022 led to the occupation of about 20% of the territory of Ukraine (together with the occupied areas in 2014). Objects of cultural heritage in Chernihiv, Kharkiv, Sumy, Kherson regions, as well as partially in other regions, were or are under constant danger from military operations, or were destroyed.

At the moment, no less than 461 objects are destroyed or have significant damage. Some of

these objects are in the register of cultural heritage. Therefore, there is a problem of accounting for such objects, entering them into the register, if they have historical, aesthetic or architectural value. For example, in the Cherkasy and Mykolaiv regions, most objects of local cultural value are not included in the register.

The issue of accounting and identifying the degree of destruction is important for the restoration and restoration works, investment of regions for the restoration of cultural heritage. Local and state authorities in Croatia had similar conditions. During the Great Serbian aggression and the Croatian War of Independence, up to 20% of the territory was located in the combat zone. In the post-war period, Croatia restored settlements, reimbursed citizens for the restoration of their own houses. The restoration of the territories takes place at the expense of the state and local budget, public-private partnership. Cultural heritage sites were assessed for value and level of damage and were either to be restored and restored, or to remain as monuments to Croatia's own war of independence.

The long-term military aggression of the Russian Federation against Ukraine has already led to large-scale destruction of some cultural heritage sites and has a devastating effect on society. Using the experience of Croatia and countries that had similar large-scale destruction should be used by Ukraine to restore its own cultural heritage.

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Ukraine in Geopolitical Border Area and 'Russian World' Concept

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The historical basis of Russia's aggression against Ukraine begins with the idea of a Greater Russia, which was formed in the fourteenth and sixteenth centuries in Muscovy. This theory is based on several claims. The first considers Muscovy as a collector of lands of the former Kievan Rus, lands that continue the endless expansion of Muscovy throughout its history and eventually become the Russian Empire and then the Soviet Union. The tendency to expand is a consequence of the adoption of the Tatar-Mongol system of government, which provides for the formation of a vertical system, with the main khan receiving all of the taxes and incomes of the neighborhood, and with the vassals completely dependent. Today's Russia essentially maintains such a system of government.

Another claim of Great Russia is based on religion. The Christianization of the outskirts of Kievan Rus and its subsequent transformation of religion into an instrument of struggle intensified in the seventeenth century, during the expansion of Muscovy and the West. During this period, Ukrainian territories lost their own metropolis, and Belarusian lands, mostly Greek Catholic, were forcibly transferred to the jurisdiction of the Orthodox Church with its center in Moscow. In the following centuries, the religious institutions pursued a policy of promoting the idea of Greater Russia, the triune people, the

election of the tsar, and the assimilation of Belarusian and Ukrainian lands. Most of the parish and zemstvo schools were Russian-speaking.

The third claim of Great Russia provides for the election of the tsar. For this purpose, for several centuries from the fourteenth to the eighteenth century, the idea of finding the roots of genealogy either in the Roman Empire or later in Byzantium was formed. This idea was transformed into the idea of the Third Rome, which must regain its power, the borders of Kievan Rus, and the greatness of the "Russian" people. This idea was constantly changing but survived the collapse of the USSR. In modern Russia, this idea continues to be seen as the idea of a special path, a triune people and a common history, a single church. The idea of the Third Rome is directly related to Ukrainian territory. The Baptism of Kyiv, religious monuments, and the center of Kievan Rus are located far from Moscow on the banks of the Dnieper.

Despite the long assimilation and shuffling of historical facts, the Ukrainian ethnic group has constantly declared its independence. Much of the historical literature, especially in the West, mixes two separate concepts, "Russian" and "Rus'ky" (from Kievan Rus). It is worth dwelling on this in order to note that the Russians are not directly related to the inhabitants of Kievan Rus. The long history after the disintegration of Russia and the inclusion of smaller, local nations does not give an unequivocal answer that the Russians are direct descendants of Kievan Rus.

A spatial model for the evolution of job insecurity during the first pandemic wave

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Unemployment caused by the COVID-19 pandemic is of the utmost importance for governing bodies worldwide. Its constant increase during the last months is subject of major concern for both citizens and policy makers, as individuals might experience increased feelings of job insecurity due to the pandemic context and to the latest developments on the job market. Job insecurity refers to a perceived threat to the continuity and stability of employment as it is currently experienced and has a negative impact on the individuals' quality of life. Many research have linked job insecurity with low levels of well-being and high levels of stress, as well as local or national measures taken in job creation and job retention. Aside from individual factors, there are other critical influences that should be considered in order to better understand the dynamics of job insecurity against the COVID-19 pandemic. Such influences can come from regional features such as spatial, economic, or demographic characteristics, like gender, age, or education.

Our analyses are based on the PsyCorona database, a study with self-reported data deployed in 116 countries all around the world, that monitored various psychological variables starting March 2020. In order to get a better understanding of the spatial distribution of self-

reported job insecurity, we chose to focus on eight European countries (France, Germany, Netherlands, United Kingdom, Greece, Romania, Spain, and Italy). Respondents from Western Europe countries expressed lower scores on self-reported job insecurity and less variance over time while those from Southern and Eastern periphery displayed higher scores for job insecurity and more variance. Moreover, we found that the higher the overall job insecurity is perceived in a country, the higher the discrepancies between age, gender, and education categories tend to be.

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The connections between smartness and resilience on urban tourism destinations

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During the last decades smart city initiatives increased both in number and financial investments. This increase was followed by a rapid diversification of their strategic fields, from the initial focus on energy consumption, transportation, and digital sensors towards more scattered areas like tourism, communication, social media, citizen participation. The tourism dimension of smart initiatives encompassed various topics relating to visitors' experience, transformation of tourism products, virtual and augmented reality, or guiding apps. However, there is an ardent ongoing debate regarding the palpable effect of smart initiatives upon tourism performance of urban destinations. Our paper tries to contribute to this debate with concrete evidence by taking into account the tourism resilience of cities. For our research we first selected the top 50 Romanian cities in terms of tourism digital footprint. The digital footprint was

calculated based on their presence on websites of booking, review, eWOM, and similar tourism related platforms. Second, we compared their digital footprint with the smart city initiatives, especially tourism-related smart initiatives, the value of smart initiatives, tourist arrivals, lodging units, and tourism development potential, as assessed by national authorities. The results suggest a limited, however visible effect of smart city initiatives upon the tourism resilience and upon digital of Romanian urban areas. The study addresses a series of recommendations for policymakers regarding the introduction of smart initiatives in local and regional tourism strategies.

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Changing spatial patterns of excess mortality in Europe during the COVID-19 pandemic

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Keywords: excess mortality, territorial resilience, spatial diffusion

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The novel Coronavirus pandemic affected Europe severely but not equally. The aim of my presentation is to show the regional inequalities and the changing spatial pattern of the excess mortality of the COVID-19 waves and the potential influenced factors behind them; since February 2020 until summer 2022.

For my analysis I used the indicator of excess mortality. In the presentation, I will discuss the methodological issues of this indicator, as well as the data management and interpretation challenges associated with it. I found that although the excess mortality can be used to overcome problems that complicate the interpretation of COVID-19-related mortality, it poses other challenges: the role of the calculation method and the unclear effects of other factors, both related and unrelated to COVID-19.

In my analysis, I have paid particular attention to exploring territorial disparities on excess mortality; in macro-regional, country and regional level. I found that there were significant spatial inequalities and a strong centre-periphery relationship in the excess mortality in Europe: although the centres (metropolitan and urban regions, Western and Southern Europe) were the most affected during the first wave, from the second wave the main negative effects of the pandemic were shifted to the peripheries: rural regions, East-Central Europe (especially in Bulgaria). However, the geographically isolated peripheries (sparsely populated areas, islands, Northern Europe), had low excess mortality throughout the whole period.

I also considered it important to investigate the reasons behind these spatial disparities: on the one hand I drawn attention to the

spatiotemporal characteristics of the diffusion models used by regional science and related models in network research. I found that the initial phases of each wave of the COVID-19 pandemic are characterised by a so-called hierarchical-type diffusion, whereby each wave reaches the centres (metropolitan regions, transportation hubs, tourist regions) first, and only then spreads to the peripheries. I found that this is an important factor if strict and timely measures are taken, as it can have a major impact on which areas are reached by the virus and which are not.

On the other hand, I addressed the issue of territorial vulnerability and resilience. In doing so, I investigated which demographic, geographical, availability, governance (including the pandemic management, vaccination etc.) and socio-economic factors influenced the value of excess mortality during each wave. I found that a number of indicators had an impact; while during the first wave the accessibility was one of the main important factors during the later waves of the pandemic other factors (correlated with socio-economic development) became increasingly important.

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A new approach on renewable energy as a support for regional economic development among the European Union

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Keywords: energy policies, sustainable policies, seasonal energy sustainability model, energy sustainability clusters, econometric model

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Energy security in the current geo-political context is an essential aspect and directs supranational strategies and policies, especially at European Union level, towards finding new sustainable solutions to restore the balance in the European energy system. We propose to analyze sustainability objectives in the energy sector through a spectral analysis of the dynamics of the main indicators over a period of 11 years, judging that this period adequately captures the causal vulnerabilities induced by economic crises and other socio-economic events, which makes renewable energy relevant as a new support for regional economic development among the European Union. The novelty of the approach lies in the assessment of

renewable energy at the regional level in the context of the global economic and pandemic crises, which have been determining factors in the current geo-political and economic developments. We also aim to create energy sustainability clusters in the presence and absence of seasonality. The methods and procedures used will be represented by a critical literature review in order to verify the working hypotheses and to design, test and validate a new statistical model of energy sustainability seasonality. The modelling results will enable the creation of an EU-wide sustainability profile useful to supranational decision-makers for adjusting energy policies to ensure the energy transition towards 2050.

How effective is the Buffer Zone? In the context of landscape changes and spatial planning a case study of selected national parks in Poland

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Keywords: land use change, landscape fragmentation, spatial planning, nature conservation, national park

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Protected areas (PAs) are cornerstones of biodiversity conservation, but in present time they are in danger of becoming isolated islands in human-dominated landscapes. It is thought to be related to landscape changes, especially to Land Use-Cover Changes (LUCCs). Despite the increasing number of studies, this issue is still not fully understood. This research aims to assess the LUCCs between 1920 and 2015 for three National Parks (NPs) from different parts of Poland. Also, a comparative analysis of the future land use changes has been done based on the spatial planning documents. Data were obtained from the various databases (e.g. topographic maps and aerial photos, National Database of Topographic Objects, Land and Property Register and local planning documents). The analyses were carried out in zones of varying scope and level of protection: park area, park buffer zone and concentric ring buffers around the borders of the park, as well as the area outside the buffer zone and NPs, so

LUCCs in the park and in the buffer zone can be assessed compared to the area not covered by any legal protection. The results have indicated three main types of changes: an overall increase of land abandonment area and forest cover, and intensification of human settlements around border of NPs. The analysis of land use planning shows increased development pressure around NPs, which potentially increases human activity along the edges of protected areas and thus threatens their ecological integrity. The result of presented research in a comprehensive way broadens our knowledge about natural processes and human activities (e.g. land development, land abandonment) in areas surrounding NPs, and allow us to identify the main driving factors of LUCCs. The identification and understanding of the past, current and future LUCCs, particularly the quantification of the impact of human activity on landscape, may be a key to the effective management and monitoring of NPs and other PAs.

Climate Change and Regional Policy: Interactions and Determinants in the Wielkopolska Region

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Keywords: climate change, regional policy, vulnerability

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One modern specific megatrend is the process of climate change, which has become a significant challenge for socio-economic development. This is an additional determinant shaping the spatial differentiation of development between regions, increasing the challenges for regional development policy, which must also consider adaptation and mitigation to climate change. On the other hand, successive IPCC reports alert us to the crisis we are in, and yet we are currently experiencing a climate policy failure. Climate change is global in scope but locally diverse. The global reach allows for the collection and comparison of knowledge, while the local level allows for the implementation of solutions, in line with the saying 'Think global, act local'. Therefore, the need to organise the existing body of science on climate change-oriented regional development policy-making and to further explore the mechanisms responsible for creating these policies seems essential.

This presentation aims to present and empirically verify a theoretical and conceptual model that organises the existing body of knowledge on socio-economic development, climate change, its effects on spatial differentiation of development, and the orientation of regional policy towards adaptation and mitigation.

The research procedure leading to the development of the model was divided into two stages. The first stage used a qualitative method: a systematic review of the literature. This was used to structure knowledge on socio-economic development, climate change and the impact of its effects on the spatial differentiation of development and the orientation of regional policy. In the second stage of the research procedure, quantitative methods were used to

attempt an empirical verification of the model, making it possible to check some of the detailed relationships in it. The result of this verification is a prepared spatial classification of communes of Wielkopolskie Voivodeship in terms of vulnerability to climate change. The classification was prepared based on indicators selected based on a literature review, based on the impact of climate change on spatial differentiation of socio-economic development indicated in the model. First, Pearson's linear correlation was used to select statistically significant variables, followed by standardisation of the values using zeroed unitisation. The final step was to construct a synthetic Hellwig measure.

The proposed model and its empirical verification for the municipalities of the Wielkopolskie Voivodeship allow us to join the discussion on modelling the relationship between the region's socio-economic development and climate change and serves to understand better and explain it. The derived spatial classification is the basis for further research on the processes of taking climate change into account in development policy in the Wielkopolskie Voivodeship.

A community of outcasts – the impact of social exclusion on development processes in Georgia

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Social exclusion is a multidimensional concept, which most simply can be defined as the opposite of inclusion, i.e., participation. The term can be considered in two ways, as a process and state, consisting of a complete cut-off or significant restriction of an individual's or group's access to selected systems that integrate society in the economic, political, and cultural dimensions (Raczkowska, Gruziel 2018; Kaczmarek-Khubnaia 2021). This phenomenon affects the deterioration of the quality of social capital, which is an important factor in the development of contemporary states. Its prevalence and multifaceted nature are significant barrier to positive development changes.

The actual process of systemic transformation in Georgia began after the so-called Rose Revolution of 2003. However, the reforms carried out during the following stages of the transition did not bring about significant changes in its citizens' standard of living and quality of life. The new circumstances did not lead to blurring the existing social divisions and inequalities. The phenomenon of social exclusion is widespread and affects a significant percentage of Georgia's population. Many inhabitants are still exposed to a life of poverty. Its causes should also be sought in the country's cultural peculiarities (conservative social norms), which have not been significantly modified despite the progressive process of westernization.

The numerous social divisions in a multicultural country like Georgia, intensified by

the phenomenon of exclusion, negatively affect the development of the country and its regions. Given the above, it is essential to identify the scale of the problem, the main causes of social exclusion in Georgia, and the impact of this phenomenon on the development processes taking place on its territory.

The presentation aims to answer the following research questions: 1) What are the main spheres, criteria, and examples of social exclusion in Georgia? 2) How does this phenomenon affect the development processes taking place in the country? 3) In which regions of Georgia are residents most vulnerable to social exclusion and why?

Secondary data was used in the research. In addition to a review of expert opinions, reports, legal acts, and press articles, the study compares statistics presenting the level of development of individual regions (e.g., GDP *per capita*) with a range of data describing their differentiation in terms of the degree of inhabitants' exposure to social exclusion. Due to the limitation arising from data availability, the study referred to selected spheres of the phenomenon described.

The descriptive method, desk research and basic statistical indicators were chosen to analyze the secondary data. Graphic and cartographic methods were also used to visualize the spatial diversity of the phenomena.

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“When brothers work together, the mountains turn to gold.”² Sister cities network’s development in Central-Eastern-European regional centres

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In recent years, the analysis of networks of connections has become increasingly popular in academia. The sister-city relationships, which were originally based on cultural understanding and peace through civil diplomacy, are, however, changing in today's society. Recent paper's goal is to analyse the network of sister cities in the Central and Eastern European region. It aims to fill the gap, as sister city relations (SCR) represent an important but less researched type of regional network between cities. The sister-city relationships are grassroots initiatives between cities/municipalities in different countries based on a jointly developed cooperation agreement, formally and long-term established. They emerged in Europe in the early 1900s and spread worldwide after the Second World War.

The research seeks to answer the question of how sister city networks have developed between cities in Central and Eastern Europe today. The analysis focuses on regional centres with regional functions at the NUTS2 level in ten countries (Austria, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia and Slovenia), covering a total of 94 cities with a population of 100 000 and 1 million inhabitants. The research is based on Eurostat's Urban Audit and a database of the sister cities published on the examined cities' official websites. In total there are 1125 sister city connections in 868 different cities from 87 countries around the globe, which were analysed using IBM SPSS Statistics 21 software. The network connections were plotted using Gephi 0.9.5 network graphics software.

The results of the research showed that the cities with the most agreements in most countries are Lublin (28); Plovdiv (21); Constanta (19), Linz (18); Debrecen, Iasi and Split (17). Most sister city connections concentrate firstly in Europe, then in Asia, and North America. Within the city size categories, the highest number of cooperations is found between cities of international importance and macro-regional centres.

The paper concludes that there is a lack of conscious Central-Eastern European awareness and planned cooperation among the partnerships. They mainly concentrate in the small towns of the continent in the Central European geographical region and among Hungarian, Polish and Romanian cities. These cities perceive the development of the sister-cities network as an opportunity to maintain their competitiveness.

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² Chinese proverb

Are children's home–school routes green? An evaluation of green space visibility for primary school children in Lodz

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Keywords: urban green spaces, children, home-school routes, greenest route

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Many researchers highlighted the importance of children's exposure to urban green spaces. Among other things, they noted that children's exposure to adequate green spaces in their daily activities could remarkably promote their mental and physical health.

Most studies on children's exposure to green spaces in urban areas considered the children's living place, and did not take greenery in children's daily commuting paths to school into account. Meanwhile, routes seem to be particularly important, especially for primary school children who mainly walk to school in their living neighbourhood.

Also, as pedestrians, children can select various routes from home to school, including the shortest and greenest paths, which differ in terms of benefits that children obtain from the greenery on their way.

This study aims to see to what extent children's daily paths from home to school expose them to urban greenery in the shortest and greenest routes. This exposure has been based on the visibility of greenery for children in their school's routes.

Lodz was selected as a case study city to achieve this goal. We gathered all pedestrian routes in this city by using the open street map and google orthophoto map.

These routes were imported to ArcGIS for further analysis. In the next step, the visibility map for all pedestrian routes in Lodz urban area was calculated and overlapped with the greenery map, defining the amount of greenery that can be visible from the paths. Finally, using the network analysis in ArcGIS, the shortest and greenest home–school paths were calculated. Also, for each route, the proportion of greenery was measured for the 19,216 primary children from 86 schools.

It is concluded that the proportion of greenery had not been distributed normally for all children in their home–school routes. Also, we found a significant difference between the shortest and greenest home–school paths in children's exposure to urban green spaces in Lodz.

The findings of this study can help us to determine spatial strategies and principles for planning neighborhoods in order to promote children's exposure to urban green spaces in their home–school routes.

Smart City 4.0 as a Set of Social Synergies in 4T Potentials theory

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Keywords: social synergy, city management, 4T social capitals, smart city, talent management

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Synergy is the collaborative interaction of social individuals that produces an intensified combined effect, greater than that which would be the result of their separate work. Currently, the main challenge of cities as dynamically developing organizations is to create innovation, and most importantly, to implement strategies that contribute to attracting and retaining entities initiating intelligent development in the city. Cities in the smart development phase must also face the challenge of building a new quality of life by various social groups, using synergies. Article show theory of 4T potentials, it covers areas like as technology, trust, talent and tolerance. Author

tries to identify by the research of local politics, the innovative potential of a learning city and to diagnose the innovative potential of cities in the context of entrepreneurship, innovativeness of residents, and entities that support innovativeness. Article is the try to identify results of 4T implementation in chooses cities of GZM Metropoly to identify, acquire, and develop Smart City areas and possibly of synergy. The author shows the examples that the local governments of selected cities are not prepared to use the synergies resulting from the possibilities offered by SmartCity.

The Sustainable Smart City Management of heat consumption: Selected Examples from Polish Metropolitan Areas

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Sustainable City solutions can become an essential element of the development of contemporary urban communities. This development path can also provide opportunities for organisations operating in cities and metropolises. An inherent feature of the organisation which a city constitutes is that it enables the people who make it up to cooperate. Climate packages, including the Green Deal and Fit for 55, are implemented in Europe, while in Poland decarbonisation processes are underway. The main challenges in this area include, on the one hand, a search for savings of energy consumed, and, on the other hand, a reduction in pollution resulting from the use of transport or heat or energy sources. Cities and metropolises will become green only when they manage to cope with these problems. The article aims at showing various facets of sustainable smart city management. With relations, information and knowledge gaining importance as the key organisational resource, cities have become, as organisations, an essential element

of contemporary societies and organisations. In recent times, the harmful emissions from heating installations have drawn the attention of the public opinion in Poland. Polish municipalities distribute heat which mostly comes from local, most often district heating systems where energy is generated on a wide scale from coal combustion. This study compares the results of an air quality survey and those of a case study to assess the potential for the implementation of an automated heat control system in cities. On the basis of solutions implemented in the Warsaw Metropolis, the possibility of their implementation in the Upper Silesian (GZM) and Poznań Metropolises, too, was also assessed. Throughout Poland, there is a large potential for the application of innovative smart technologies in district heating systems to reduce the levels of harmful emissions. These reductions, which are still possible, could translate into a significant improvement in the attractiveness and competitiveness of municipalities. Finally, practical recommendations are being provided.

“Smart village” concept in the development of rural areas

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Keywords: smart village, rural development, COVID-19 pandemic

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The “smart village” concept is relatively new in Poland. It is rooted in the “smart city” concept, which is researched and described in subject literature fairly well and is being successfully implemented in city development policies.

Due to its fresh nature, the “smart village” concept has not yet been fully conceptualised and researched, and the effects of its implementation will not yet be visible for some time. It is related to a broad spectrum of topics on the development of rural areas, including economic and social inequalities, the importance of human resources, human activity, using modern tools, including technical and technological tools, etc.

The challenges faced by local governments due to the COVID-19 pandemic basically encompassed all aspects of their functioning: administrative, organisational, technological, legal, social, etc., and affected all aspects of life: healthcare, elderly care, education, work, culture, recreation and many more.

Aside from the obvious negative effects of the COVID-19 pandemic, it was demonstrated that it caused an increase in the city inhabitants’ interest in migrating to the countryside or to so-called second homes.

Rural areas in Poland are essentially viewed as less developed and more backward than

cities. However, the COVID-19 pandemic has created a new view on their functioning. The restrictions imposed on city inhabitants, such as prohibition to leave apartments, inability to take walks, crowded living spaces in which education and work was taking place simultaneously, etc., were less burdensome in rural areas (own garden, lower concentration of people, etc.).

The question is whether rural areas are prepared to use this developmental opportunity? Can the implementation of the “smart village” concept cause a reduction in developmental disproportions and incentivise (e.g. young inhabitants) to stay in rural areas? Will the concept affect the sustainable development of rural areas?

The starting point for these deliberations will be the analysis of the development strategies of particular regions in Poland to determine whether the “smart” concept is already embedded in the awareness of developmental decision-makers. A more detailed analysis will be conducted at a local level based on the example of development strategies for rural and urban-rural municipalities in the Opolskie Voivodeship, which was first to face the issue of depopulation, ageing society and economic migration which in turn substantially affected the functioning of rural areas.

Rural areas in the light of the resilience concept

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Keywords: resilience, rural resilience, crises in rural areas

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The concept of resilience is a relatively new approach to development planning. Resilience has become a 'popular' term. It is mainly associated with certain threatening events with critical and catastrophic phases (terrorist attacks on transport and digital systems, financial crises, epidemics, natural disasters such as earthquakes, tsunamis, fires, etc.). Today we encounter many meanings and definitions of resilience – not all of them are precise or concise. This concept development led scientists to conclude that the term is not well defined; they also emphasize that "the existing definitions are inconsistent and underdeveloped" (Meerow et al. 2016). The idea is most developed with respect to cities and regions, while neglecting rural areas. As noted by Cutter et al. (2016), urban and regional resilience research has overshadowed the struggle with crises in rural areas. However, applying resilience principles in socio-ecological systems to analyze specific rural problems seems not to be fully used. The first definitions of resilience emphasized the ability of a community to recover from a disaster, but current reports are more extensive and focus on preparation, mitigation and adaptability (Berkes

& Ross, 2013; Manyena, 2006). Zolli and Healy (2012) argue that rural areas have a solid but delicate dynamic and can cope with moderate amounts of stress but fail in rare, unexpected situations. Nevertheless, it should be emphasized that resilience has been an emerging topic in rural research in recent years (Scott, 2013).

The presentation aims to present the current state of knowledge about rural resilience. To do this, research articles focusing on this subject will be analyzed. As part of the research issues discussed, use was made of a bibliographic query concerning the problems related to the concept of resilience applied in rural areas. As a result, the author will obtain answers to the following research questions: (a) what does research on rural resilience focus on? and (b) which test methods are most common in rural resilience research?

The selection of publications was deliberate, consistent with the issues raised related to rural resilience, with particular emphasis on defining the conceptual framework and research approaches as well as methods used to determine rural resilience.

Good practices of civil organizations in supporting nationality culture and community organization in Baranya County

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Keywords: NGOs, Baranya County, nationality culture

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The research entitled "Cultural and Community Life of the Nationalities in Baranya County" was conducted by the research group of the Institute for Human Development and Cultural Studies at the University of Pécs with the financial support of the National Institute for Culture's Academic Grant Program for Public Culture between September 2021 and August 2022.

The idea of the research was inspired by the results of our previous study examining the cultural life and community organization of villages in Baranya County which found that good practices are mostly implemented in settlements where ethnic groups live. This aroused our interest and thus we started our new research. In Hungary, the South Transdanubian region has the highest proportion of ethnic residents, and within that the proportion of Germans, Roma and Croats is particularly high in Baranya County.

Based on a stratified sampling procedure, the members of the research group conducted structured interviews with the heads of 30 nationality self-governments and 30 NGOs in Baranya County that play a role in the preservation of ethnic culture, along the following research objectives: 1. Current results and challenges of nationality culture and community organization in Baranya County; 2. Examination of the subcultures and community spaces of Baranya County nationalities, as well as the analysis of the cultural specifics

appearing in the organization of communities; 3. Exploring the role played by nationality self-governments and civil organizations in nationality public education and community organization; 4. Examining the relationship, communication and networking of ethnic cultural organizations and opinion-forming persons.; 5. Getting to know the practices related to financing; 6. Examination of the local and regional changes that shape ethnic culture, and the analysis of the causes and processes; 7. Exploring the impact of the pandemic on nationality culture and community organization in Baranya County.

In addition to the 11 Roma, 10 German, 3 Croatian and 1 Serbian association 5 non-nationality NGOs which founding objectives include the support of nationalities' culture were also involved in the sample of civil organizations due to the high frequency of such organizations in Baranya county. The distribution of the sample was based on settlement size and the proportion of nationalities.

Among the various results of the extensive research, this presentation reveals the characteristics of the good practices implemented by the examined civil organizations in strengthening ethnic identity, preserving and representing nationality traditions, networking with partners as well as encouraging community activity and promoting community organization.

The role of Baranya County nationality self-governments in community organization and preservation of ethnic culture

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The research group of the Institute for Human Development and Cultural Studies at the University of Pécs conducted the research entitled "Cultural and Community Life of the Nationalities in Baranya County" with the financial support of the National Institute for Culture's Academic Grant Program for Public Culture between September 2021 and August 2022.

Our research examined the community organization practice and cultural activities of the nationalities through structured interviews conducted between November 2021 and March 2022 with leaders of 30 nationality self-governments and 30 civic organizations dealing with the preservation of ethnic traditions and the representation of ethnic culture in Baranya County. In the method of our sample selection, we followed the principles of stratified sample selection, in which we sought to present the spatial formation of ethnic and cultural characteristics. The sample of ethnic self-governments was formed by settlement size (Pécs; country towns; villages with 2000-4999

inhabitants; villages with 1000-1999 inhabitants; villages with 500-999 inhabitants; villages with less than 500 inhabitants), as well as the ethnic distribution of Baranya County's nationality self-governments. Our sample of nationality self-governments includes 11 Roma, 10 German, 3 Croatian, one Polish, one Armenian, one Serbian, one Greek, one Bulgarian and one Romanian nationality self-governments from Baranya County.

Among the extensive research results, present lecture reveals the role of nationality self-governments in Baranya County in community organization and preservation of ethnic culture. In addition to exploring the characteristics of the cultural programs organized by the nationality self-governments in order to preserve the cultural heritage and strengthen the ethnic identity, the presentation explores the applied community organization methods, as well as the challenges and good practices related to community organization and program implementation according to settlement types and nationalities.

The role of social innovation transfer through emigration and remittances analysis in the Baltic Countries, 2015-2020

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Keywords: lagging behind regions, economic migration, remittances, taxes, Baltic region

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In this article author is considering social innovation transfer through economic impact of the emigration in three lagging behind regions in the Baltic countries. Emigration is analysed in terms of migration flow sizes, quality of the labour market, level of the unemployment and social benefit systems, which all affect local economies/communities.

The regional scope of this research is linked with distinctive lagging behind regions: Estonian Narva, Latvian Daugavpils and Lithuanian Visaginas. The objective of the paper is (i) to measure social innovation transfer through the emigration in selected regions and regions with high density of minority population and (ii) compare size of remittances and its patterns of distribution within the Baltic countries and its lagging behind regions.

The overall impact of emigration on the economies of Baltic countries is evaluated by weighting negative and positive factors. At least

two quantitative approaches are designed to measure impact on Baltic economies. Each approach factors in different combinations of indicators to describe economic impact of the migration. Underlying formula of the undertaken approaches, with small modifications may be used for examination of similar issues in other regions and countries.

Emigration's economic impact is undoubtful. Author concludes that negative effects of emigration increases, if the level of life/salary grows in emigration-source country. Overall economies of the Baltic countries receive fewer remittances than taxes, which could have been paid by current emigrants. However, situation is different in lagging behind regions, where salaries are declining, and remittances have relatively higher value. Regions are gaining much more from remittances, than they could have earned from taxes of current emigrants.

Italy vs Poland: a comparative analysis of planning system attitudes toward adaptation to climate changes and green infrastructures

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Keywords: planning systems, climate resilience, green infrastructures

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Spatial planning evolution is currently characterized by several driving issues. While the implementation of the European Landscape Convention requires the modification of theoretical and practical frameworks, continental countries deal with two big specific concerns. The first is the adaptation to climate changes (ACC) and the second the management of green infrastructures (GI). ACC is steering renovation of spatial planning and management with the continuous calls for the necessity to prepare properly to tackle severe climatic events. GI are conceived as a coordinated network of green areas with the precise purpose of delivering as many ecosystem services (ES) as possible. ES consist of beneficial functions for many forms of life on Earth (i.e., carbon sequestration, water retention, etc.). ACC implementation is led by an efficient and ready spatial planning system and effective GI management, in a lot of senses, helps realizing many objectives connected with the strengthening of local landscapes.

In this paper, we aim at comparing the attitudes of Italian and Polish spatial planning systems, along two main filters. According to the first, we will be describing general

commonalities and differences between the two spatial planning frameworks with the focus on the institutional premises. With respect to the second filter, we will be delving into the implementation of two concerns: ACC and GI planning and management.

The results demonstrate that institutional and historical features matters: i.e., the evolution of spatial planning is driven by power organization and citizen representation. Secondly, they prove that the pattern of ACC and GI implementation paths differ, because of local spatial planning tradition and maturity.

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Cross-border cooperation in the shadow of crisis - the Turów coalmine case

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Keywords: cross-border cooperation, cross-border projects, INTERREG, borderland, crisis

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Misunderstandings and conflicts of various nature can significantly weaken cooperation on borderlands. A challenge concerned the Polish-Czech inter-governmental dispute on the planned Turów coalmine expansion. The conflict went before the European Court of Justice in 2021 and has caused hostility between Poles and Czechs. Finally, in February 2022 both governments signed the agreement on the Turów coalmine's future existence and compensations for the Czechs.

Although the dispute has been ended formally, some problems on the local level still exist. This unique phenomenon can be a baseline to a deep study on the resilience of cross-border cooperation on the local level against political factors and actors. The Polish and the Czech parts of Euroregion Nysa have been chosen as a testbed for this research. This is the area where the Polish-Czech inter-governmental dispute deteriorated the relations between the partners of the cross-border projects funded by the INTERREG Programme. Since the accession of Poland, Czechia, Slovakia and Lithuania to the EU, no inter-governmental conflict between Poland and its EU neighbours has affected cross-border relations to such extent.

Based on the media monitoring and field research conducted in Bogatynia, it has been hypothesized that the inter-governmental conflict between Poland and Czechia over the Turów mine has significantly affected the mood of Poles and Czechs on the border. Poles were afraid of potential job losses and the marginalisation of their part of the borderland, for which the Czechs were blamed. Czechs accused their Polish neighbours of ignoring environmental problems and an unwillingness to seek compromise.

The research problem concerns the recognition of how inter-governmental dispute at a national level (between the governments of two

EU members) can impact cross-border cooperation at a local level. It comprises the following research questions:

1. Do Polish and Czech partners in cross-border projects want to continue their cooperation and extend it beyond the area of project durability?
2. Does this inter-governmental dispute impact the fields of future cross-border projects prepared by the Polish and Czech partners?
3. Does this dispute limit the desire to extend cross-border cooperation and establish new partnerships in projects on the Polish-Czech borderland?

The main goal of the research, therefore, is to identify the influence of the Polish-Czech Turów-related border dispute on cross-border cooperation in the Nysa Euroregion, particularly among the partners of the cross-border projects.

To answer research questions, quantitative research was conducted in the Polish and Czech parts of the Euroregion Nysa. The research technique was CATI/CAWI survey. The research target groups were representatives of the Polish and Czech partners participating in the cross-border projects financed by the INTERREG Programme in the Euroregion Nysa. The research sample were 64 entities. The study was conducted in the period of March-June 2022.

Research results show the changes in the intensity, efficiency and approach to the cross-border cooperation on both sides of the border and the future activities essential to improving the Polish-Czech relations in the Euroregion Nysa.

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Social perception and awareness in the management of the renewable energy sector. An example of the Lipno powiat

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Today's times are changing the way people think about obtaining energy, energy becomes the engine of change. Continuous price increase and increased energy demand provoke to look for cheaper and safer alternatives. Growing changes resulting from political conflicts, social conditions or changes related to limited natural resources contribute to the introduction of unconventional energy. The influence of the media and environmental pressure have a direct impact on the perception of citizens and thus increase social environmental awareness. The energy transformation based on renewable energy sources, over time, is gaining importance regarding the internal feelings and attitudes of the inhabitants of a given area. Understanding the level of knowledge, social perception as well as entrenched beliefs can be important in relation to distributed energy and renewable energy planning. Positive perception and community readiness provide the right ground for initiating and implementing green technologies.

The aim of the presented work is to analyze and assess the role of perception and social

awareness of renewable energy sources in the management of the renewable energy sector on the example of the Lipno powiat in the Kujawsko-Pomorskie voivodship.

The study showed that knowledge about renewable energy in the powiat is at an average level. However, it turns out that renewable energy sources have a very positive reception among the inhabitants of the studied area and are used in individual households. It has been proven that in the initial phase of development of renewable energy in the powiat, wind energy dominated. Currently, photovoltaics is characterized by a dynamic pace of growth, and in the future it will probably dominate in the structure of energy generation along with wind farms. The determinants of RES development in the Lipno powiat are related to the climatic and economic factors, mainly the increase in the costs of conventional energy. Support programs and environmental awareness also have a significant impact. Additionally, it was noticed that the expansion of renewable energy sources also encounters development barriers.

Main axes of differentiation of cluster policies - dynamic approach

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The popularity of the cluster approach, and the almost universal - in the last 25 years, on the scale of market economies - efforts to adapt to it resulted in a vast catalog of different, appropriate to territorial conditions and challenges, pro-development interventions referring to - or even drawing on - Porter's cluster model.

In the light of the available literature on the subject, one can observe a shift in the main emphasis in the debate on cluster policies. It undoubtedly reflects, at the meta level, the evolution of the policies themselves. The main axes of this shift seem to be 1) the level of indirectness of interventions (initially aimed at the creation or subjective support of existing clusters, with time policies transfer responsibility for the implementation of public tasks to clusters) and 2) its complexity (from simple support tools, e.g. co-financing offices, coordinated from one level of territorial administration, the catalog of policies grows into a number of available to clusters mechanisms for various dimensions of policies). The shift itself takes place with the increasing sum of individual experiences resulting from implementations, but also with the clusters' passage through the next stage of the development cycle and the related

change in the potential they present in the face of development needs identified by territorial administration.

In the view of the two introduced axes, highly indirect and highly complex approaches are currently represented by the cluster policy of the European Union. It is based on a highly functional approach to clusters and a horizontal approach.

In the presentation, based on the review of national and selected regional strategic and program documents, an attempt will be made to embed cluster policies on the two proposed axes of differentiation. Such an approach will feed the discussion on the expectations related to the implementation of cluster policies in Poland, which requires constant reflection.

The issue of cluster policy as a category of description will also be discussed. A query of the literature on the subject shows that the discussion on the issue is bound by a kind of terminological knot that makes it difficult to reflect on the nuances of cluster policies and the description of their transformation.

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Creating spatially detailed demographic forecasts for Hungary using agent-based modelling – earlier results and ongoing updates

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Keywords: demography, forecasts, spatial modelling, agent-based modelling

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The aim of this presentation is twofold: (I) to introduce my initial attempt to create a spatial forecast of the demographic processes of Hungary using agent-based modelling and (II) to present the outlines of an updated methodology and the utilized statistical matching procedure.

The fundamental building blocks of the agent-based methods are the autonomous agents, which each possess a unique set of attributes and rules of behaviour. In my earlier model, the agents represented the inhabitants of Hungary. Each agent possessed the following attributes: age group, sex, residence and a socioeconomic background index (based on the municipality). In each cycle, every agent faces two possible natural movement events (childbearing, passing away), and may participate in one of the four possible migration decisions (employment related migration, university related migration, suburbanisation, counterurbanisation).

I examined multiple scenarios, which differed in their fertility and mortality assumptions, their climatic predictions, and their anticipated socioeconomic paradigm. According to the low natural movement scenarios, the Hungarian population may shrink to 8 342 thousand inhabitants to 2051, while the high natural movement scenarios anticipate 9 138 thousand inhabitants. A drastic shift in the age structure can also be expected: the old-age-dependency ratio will increase from 25% (2011) to 61–65%. The projections reveal big spatial differences. Due to the continuing suburbanisation, the commuting settlements around Budapest and the regional centres preserve or may even increase their population, despite the general decrease. The territorial differences in ageing will also deepen. Since in its initial state, the

methodology could not integrate every aspect and factor I intended to take into account. Thus, a further development of the modelling methodology deemed necessary.

One key challenge is the creation of agents which possess a more detailed set of attributes. Since the record level data of the general population census cannot be used directly, a workaround is needed. Statistical matching provides the solution. The aim of the statistical matching is to integrate two or more data sources related to the same target population to derive a unique synthetic data set in which the variables from the different sources are jointly available. The elaboration of the iterative statistical matching procedure, which uses publicly available aggregated data tables of the population census to create a novel agent attribute value table, is presented through an example. The aim of the carried-out subtask was to create 9 937 628 agents with 6 unique attributes (municipality, sex, age group, marital status, education attainment, economic activity) which reflect the stratification of the country based on the population census.

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“In between giants” – the challenges of building resilience in the rural areas in the hinterland of two large urban centers

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Keywords: rural resilience, AHP method, SWOT method, suburban area

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In today's world rural areas are exposed to all kinds of threats. Rapid environmental, social and economic changes require rural societies to adapt. Now, maybe more than ever, rural areas have become vulnerable. Not only because of climate change that causes more and more extreme weather conditions but also because of pollution that affects natural areas, uncertainty in the global political matters, inflation or consequences of the Covid 19 outbreak. This situation calls for immediate and holistic action. One of ways to deal with threats that affect rural areas is resilience. According to this idea adaptation to changes is not enough - it is not only about preservation but also about continuing to develop.

As said before, rural areas are exposed to natural and anthropogenic threats. Is being close to a large city one of them? Cities are believed to be centers of innovation, cultural and technological hearts of regions. It is, of course, true, but how are they affecting rural regions in a nearby area? Is it always a positive impact? And what about rural areas that are “stuck” between two large urban centers?

In searching for answers to those questions a case study of the Dąbrowa Chełmińska commune (population 8 471 in 2021) was studied. Dąbrowa Chełmińska is located in central Poland, in the central part of Kujawsko-Pomorskie voivodship (NUTS 2). It is also a region in close distance from two major cities in the region – Bydgoszcz (population 339 053 in 2021) and Toruń (population 196 935 in 2021).

Using combined SWOT (the acronym standing for S – Strengths, W – Weaknesses, O - Opportunities, T – Threats) and AHP (Analytic Hierarchy Process) methods, interviews among commune citizens were conducted. The SWOT analysis was conducted by authors based on strategic documents such as Development Strategy. Experts were then asked to make pairwise comparisons between factors in SWOT groups and between particular groups. Combining those two methods allowed to prioritize particular factors within SWOT groups and therefore improved the quantitative information and allowed to identify what factors are the most important in building resilience of the commune.

The results of this research showed that in citizens' opinion, location between two major cities (in their suburban areas) is not really considered as a strength and they don't perceive cooperation between those urban areas as a significant opportunity for developing a rural commune. On the other hand, among weaknesses experts pointed out traffic as the most significant obstacle in building communes' resilience. The biggest threat in their opinion is also connected with transport (failure of the bridge that connects the commune with the nearest city – Bydgoszcz).

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The role of social enterprises in rural development of Hungary

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Keywords: social enterprises, rural development, labour market, municipality

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The concept of countryside and countryside itself has undergone a significant transformation in Hungary in recent decades. Due to the specific developmental characteristics of peripheral and rural areas, the emergence and course of innovations is different in rural areas than in central areas. The composition of society in peripheral areas and their different use of space, as well as their attitudes to culture and customs, require a different approach.

The solidarity economy is also often seen as an alternative to capitalist development, as a possible new model for development. The main pillars of the solidarity economy are social enterprises, which can provide solutions to these problems. The aim of this paper is to present and analyse the functioning of some social enterprises in peripheral areas of Hungary. The types of social enterprises in Hungary are described according to their main activities and legal form.

Hungary's disadvantaged peripheral municipalities face a number of economic and social problems, such as high unemployment,

depopulation, poverty and low-income generating capacity. Enterprises that serve social goals and pay close attention to social responsibility and community interests can help to some extent. Social enterprises are often the only economic actors that provide employment in smaller municipalities alongside local authorities. They have very limited capacity to create jobs and, because of their non-profit nature and limited income, cannot always pay wages, but they do try to address existing social problems.

My aim in exploring the difficulties of social enterprises is to raise awareness of their importance and their relevance in disadvantaged areas.

The research methodology is based on field research, interviewing the manager of a successful social enterprise. I will also present the results of the enterprise and its impact on rural development.

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Challenges of Connected and Autonomous Vehicles in Cities

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The system of autonomous vehicles might open a new perspective affecting almost all aspects of citizens' lives: new daily routine, new travel habits, new business models, new connection networks, new urban structures etc. Few research point to the crucial role of cities in establishing the infrastructural, land-use, legal and regulatory conditions needed for the technology's safe operation. The critical mass and spatial concentration of autonomous vehicles will emerge in urban areas, and it raises a complex issue which requires the outmost planning and preparation. At city level, the real change will not be the autonomous technology itself, but its integration into different vehicle uses and people's lifestyles. All of this predicts a large-scale change that – by its nature – bring about a number of uncertainties, concerns, open questions, ethical problems, and often fears in society that hinder deployment.

As a result, the concept of AV-readiness is becoming more and more valuable which is pointing out that the success of the deployment of autonomous vehicles depends not only on the development of technology, but also on the regulatory environment, the state of urban infrastructure and social acceptance.

Present research aims at Capturing, measuring and improving individual AV-readiness. Therefore, we wish to develop and apply a neuroscience-based methodology in our research which objectively measures the consumer's biological reactions regarding the urban aspects of autonomous vehicles.

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Accounting for rivalry in the local provision of ecosystem services in urban areas

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Keywords: urban ecosystem, ecosystem service, supply and demand, urban-rural gradient

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Citizens benefit from ecosystem services at a wide range of scales. These services originate from different types of green spaces within urban areas and the degree to which their provision meets local demand is strongly dependent on the spatial configuration of green spaces in relation to population distribution. Conventional approaches for the quantification of locally provided ecosystem services in urban areas typically focus on supply only, ignoring local demand for these services. This is especially relevant for congestible services for which the level of utility depends on the number of simultaneous users.

In this paper we assess the supply-demand mismatch of a congestible and non-congestible ecosystem service along an urban-rural gradient: recreation and cooling services. Using data with high spatial resolution available for a 15-year period we quantify the spatial supply, demand, and (mis)match between them of recreation and cooling services. The analysis indicates an increasing mismatch between supply and demand, demonstrating the need for place-based policies to attain more sustainable and resilient urban development.

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Challenges for the finances of metropolitan cities in Poland in a turbulent environment - experiences after the COVID-19 pandemic

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The COVID-19 pandemic and its effects in the form of lockdown and significant changes in the legal conditions of the functioning of local government units, especially in the area of finance, were an important factor affecting the financial management of local government in 2020–2021. The scale and type of effects varied depending on the level of self-government and the type of municipalities. In the case of large cities, the effects of sudden economic and social crises are all the more severe as cities have relatively higher own revenues and are characterized by a number of economic connections with the public and private sectors. Hence, in the article an attempt to assess the impact of the COVID-19 pandemic on the financial management of selected metropolitan cities in Poland was undertaken. The paper is in line with the ongoing discussion on the implications of the changes of law regulations especially during Covid-19-induced crisis.

The aim of the research was to assess the effects of the Covid-19 pandemic on the financial management of selected metropolitan cities in Poland, with particular emphasis on budget revenues, especially own revenues.

For the needs of the study, a survey was conducted among metropolitan cities associated in the Union of Polish Metropolises. Based on the opinion of budget practitioners, the effects of the pandemic have been identified. Expert assessment, based on specialist knowledge of the local income and expenditure

system and the factors shaping it, allowed for the expansion of the cognitive scope of quantitative research, giving a more complete view of the analyzed phenomenon. The scope of research covered the years 2018–2021.

The results of the research constitute a complementation of the research gap on the effects of the Covid-19 pandemic for local government finance. They concern the impact of the pandemic on the financial management of metropolitan cities in Poland. The results of the research indicate that the biggest problem in the area of financial management was the frequent changes in legal regulations and the limitation of the level of revenue autonomy. Budget revenues were identified as the most vulnerable aspect of financial management of metropolitan cities as the effects of the pandemic. The respondents clearly indicated a decrease in own income as a result of the pandemic - both in the case of own revenue in strict sense and wide sense. According to the survey respondents, the effects of the pandemic have been felt the most on the budget deficit and the level of debt. Most of the metropolitan cities surveyed assessed that the financial impact of the pandemic would be medium-term.

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Impact of the Covid-19 on City Budget Revenue in Poland

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The Covid-19 pandemic has given rise to grave economic consequences, especially for the public finance sector, both at the central and local government level. The aftermath of the pandemic-induced crisis began to be felt particularly by local government units (LGUs), which are responsible for the implementation of most public tasks at local level. As a consequence, the role of budget planning increases and the rationalization of public expenditure in response to declining revenues becomes important. This paper is in line with the ongoing discussion on the implications of the Covid-19-induced crisis.

Two research goals were formulated. The former was to assess the effects of the crisis caused by the Covid-19 pandemic on budget revenues and the financial standing of Polish cities, and the latter was to identify changes in the structure of city budgets in Poland as a consequence of the pandemic.

For the needs of the study, we used an indicator analysis of city budgets, which allows for a synthetic determination of the financial condition and verification of development decisions. The aim of the research was achieved by analyzing the dynamics of indicators that characterize city budget revenue in Poland. The scope of research covered the years 2010-2020.

The results and the formulated practical recommendations constitute a complementation of the research on the effects of the Covid-19 pandemic for public finance. This is because – unlike most studies conducted so far – they concern the impact of the crisis caused by the Covid-19 pandemic on the budget revenues of cities, and not of the state budget. The analyses demonstrate a shift in the city revenue structure in Poland, which is the effect of a decreased share of own revenue, especially tax revenue, and an increase in the share of transfer revenue. This was due to three factors: shifts in personal revenue tax, which reduced the revenue of LGUs; reduction in tax revenue (mainly from shares in PIT) as a result of the lockdown and the economic crisis; options of support for local governments in the form of increasing transfer revenue. Consequently, this has caused a worsening of the financial situation of the more financially independent cities, which suffered greater loss of revenue and received less substantial support in the form of transfers compared to units with lower income potential.

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Urban Agglomeration and Income Inequality: Is Kuznets Hypothesis Valid for Sub-Saharan Africa?

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World Bank and United Nations place Sub-Saharan Africa among the leading urbanising regions facing sizeable urban agglomeration. In parallel, most of the region's countries face rising income inequality, primarily attributed to the limited economic opportunities within the urban areas. While several scholars have argued that urban agglomeration provides a large pool of labour supply necessary for specialisation and increased regional economic performance, others contend that lack of government support in terms of fiscal decentralisation and technical capacity, an urban agglomeration is linearly linked to income inequality.

To this extent, Sub-Saharan Africa remains significantly under-researched. Following an inverted U-shaped Kuznets Hypothesis, the study utilised a panel dynamic model and

balanced panel data for 22 countries from 2000 to 2020 to ascertain whether urban agglomeration and income inequality are linearly or non-linearly linked.

The findings reveal linear and non-linear relationships between urban agglomeration and income inequality in the Sub-Saharan African region. Conclusively, the relationship between urban agglomeration and income inequality depends on the measurement used, sampling period (T), and model specification. The paper recommends that the Sub-Saharan African states should consider developing the countryside by offering quality education and social amenities as this will ensure fair distribution of economic opportunities.

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Cultural vitality and tourism development in peripheral areas. Networking local festivals

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In the international academic literature on regional development, the importance of cultural vitality is becoming more widely recognized particularly in urban development, which also emphasizes the growing contribution of cultural and creative sectors to the economic development of cities and regions. Cultural vitality, defined as evidence of the creation, dissemination, validation and support of arts and culture in people's everyday life, reveals the locality's identity and the inhabitants' "sense of belonging", and may be regarded as a key component of local economic and social development. However, the relation of Cultural vitality with intangible heritage and tourism in rural peripheral communities, which mostly rely on agricultural activities, is a research topic that hasn't been thoroughly examined yet, both theoretically and empirically.

The purpose of this paper is to examine the role of Cultural Vitality in the tourism development of peripheral areas in terms of local festivals, and to explore the potential for festival tourism development through networking. More specifically, this research proposes local festival networking aiming to

build cultural tourism routes that would significantly promote a strong brand identity within the study area. The methodology used in this research involves the recording, categorizing and mapping of local festivals. The establishment of a Cultural Vitality Indicator for Peripheral Areas then provides a measurement of the extent to which the networking of these activities contributes to local tourism development. The Region of Eastern Macedonia and Thrace in Northern Greece, a region with rich historical and cultural heritage and vibrant traditional festivities, is used as the study area to highlight the proposed methodology.

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Landscape approach to the organization of recreational urban spaces of Kyiv

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Keywords: landscape approach, recreational urban spaces, spatial planning urban space, islands of freshness

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Appealing to the concept of new urbanism in the spatial development of megacities, successful urban public spaces must be attractive to residents, within which there is stable socio-cultural exchange. Existing trend is the creation of new urban spaces that fit organically into the environment. Landscape approach to the organization of urban spaces is exactly the format of sustainable integration of anthropogenic elements into the natural landscape. The demand for the landscape approach is growing as a result of significant transformation of modern cities: changes in stylistic, increasing the scale of urban space, the desire to improve the quality, safety, comfort of life. The ecological context of the organization of urban space refers to overcoming stressful climatic anomalies, which determines the preservation and expansion of areas with green plants, which become islands of freshness and comfort for citizens.

An important component of spatial planning projects to renew the Kyiv environment is the creation of recreational space in the form of recreational, sports, entertainment, educational, cognitive zones etc. They are able to develop both within the created urban infrastructure and to be a part of the neighbouring urban space, expanding its functionality, adding aesthetic appeal, because the landscape approach in the organization of recreational spaces takes into account the principles of ecology, multi-functionality, aesthetics, connectivity and others. The purpose to the organization of Kyiv recreational space is to implement a strategy of adaptive recreation: recreational space as convenient to meet the recreational needs of

different cyclicity and nature (daily, weekly, annual and active, passive). The Kyiv recreational space is historically formed.

Design and development of residential areas of Kyiv within the low flood plain of the left and right banks of the Dnieper. Urban development was carried out using the hydro-inwash soil method to raise the natural levels of the relief under construction to a non-flooding level (in the period of floods and maximum water spillage). Along with the created artificial relief, the terrain mark was raised to 5 m, the surface was drained with artificial reservoirs and reservoirs, and urban spaces were improved by planting cultural vegetation. In fact, residential areas directly faced the Dnipro and man-made reservoirs. Taking into account the elevation of the relief and proximity to water in these projects laid inter-house aeration, which improved the physiological indicators of the microclimate of the massifs. The study of the thermal conditions of the specified areas indicates a significant improvement in the indicators of heat and moisture exchange between the earth's surface and the environment near water bodies and massifs of plantations.

Recreational spaces of these residential areas become islands of freshness for residents in the conditions of continuous construction and dominance of artificial surfaces. The urban spaces of new buildings are complemented by recreation areas, taking into account the proximity to water bodies and green spaces, which ensures the principle of multifunctionality and connectivity, as it expands the functional capabilities of the spaces.

Impact of Public Transportation on Labour Market and Development - A Spatial Perspective

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Sustainability is a key topic nowadays, mostly because in the last decade the pollution values have reached an all-time high. National governments are searching for sustainable and environmental-friendly solutions to decrease the value of pollution. This study is a cross-sectional study on 28 European countries, having as main goal to show the impact and the sustainability of public transportation on labor market and country development in Europe. Spatial Econometrics methods are used in this respect, with visual maps and graphs to help in the first step of descriptive assessment. As a starting point in the modelling process, the OLS method will be used. In case spatial processes turn out not to be strong, analysis will stop with this estimation method. But if the spatial processes have a higher impact, the regression models will

be modified accordingly, to include the different types of spatial effects in the analysis. The study will consist in two different regressions, one for each endogenous variable mentioned above (labor market and country development), and the exogenous variable (public transportation, measured as volume of passenger transport per GDP), controlled for the pollution from the perspective of emissions and education. The expected results are that public transportation has a positive impact on labor force and country development, and that public transportation is a more sustainable way of transportation compared to personal vehicles.

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The role of green spaces in building a healthy, stress-resilient city

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Keywords: stress, Covid-19, city resilience, re-constraint, health, urban greenery

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Cities, as places of social interaction and human relations, face new challenges, problems and threats that are a source of stress, both for the urban organisms themselves and their residents. One source of this stress in recent years has been the Covid-19 pandemic, with urban residents being the most affected. This is not only through the stress resulting from the fear of infection by the virus, but also as being a consequence of the restrictions and lockdowns that have been put in place. Chronic stress resulting from a sense of uncertainty about the future has led to significant erosion of social health and psycho-physical well-being, especially among the most vulnerable groups in society - children, youth and seniors.

The unfavorable situation faced by the city's residents has prompted the need to seek new solutions for building the city's ability to cope with emerging stressors. The answer to the growing threats seems to be the implementation of the resilient city concept, which offers a chance not only to survive adverse conditions, but to quickly recover and continue socio-economic development.

The aim of the study is to point out the role of greenery in building the resilience of urban

residents to stress, and thus shaping pandemic stress-resistant cities. Ensuring that residents have access to properly shaped green spaces (increasing their area, proper spatial layout, generic structure, etc.) is part of the long-term measures for city resilience of strategic importance (coping strategies), referred to as re-construction. The positive impact of greenery on the health of residents will be described on the basis of biophilia theory, the shinrin-yoku concept, the concept of salutogenesis, and Ulrich's theory of regeneration after stress (SRT), among others.

This approach refers to the growing adoption of urban health programs, which emphasize the role of proper land use and the city's natural resources in building their resilience and recognize their relationship to the health of urban residents. It is noteworthy that re-construction activities aimed at proper landscaping of green areas in the city will help build city resilience to other threats (climate change, urban heat island, effects of sudden, intense precipitation, etc.), as well as affect the overall improvement of the quality of life of city residents.

How social capital is related to migration between communities?

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Keywords: Internal migration, Social capital, Network effects, Online social networks

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In addition to economic and infrastructural factors, social connections of people also influence migration patterns. This influence can be attributed to the resources that are made available by social contacts: social capital, which can also be utilized in the process of migration. Based on previous literature, we identify three different aspects of social capital and test their relationship with domestic migration simultaneously. First, we analyse if the intensity of connections within communities (local social capital) restrains from migration. Second, if the intensity of connections between two communities (bridging social capital) is associated with increased migration between them. Finally, we consider, if the extent to which

local community networks exhibit open or closed structures (bonding social capital) contributes to higher or lower migration rates. We create indicators for these measures using archived online social network data, covering 40% of the adult population of Hungary, and combine them with official migration data of 175 subregions. Based on point-to-point gravity and negative binomial models, we find that bridging social capital between subregions is associated with increased migration flows, but we do not find that local social capital restrains from migration.

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Exploring efficiency at primary level of education. Data envelopment analysis of schools in Bratislava

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Keywords: efficiency, primary schools, education quality, data envelopment analysis

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Evidence based policy decisions belong to key elements of smart governance. Relevant knowledge about the efficiency of institutions should be one important aspect when decisions are made on public matters. This also applies to the field of education, where a significant amount of public funds flow from state level. In the presented article, the efficiency of elementary schools in the capital of Slovakia was analyzed. Through data envelopment analysis, we identify the characteristics of the most effective primary schools in Bratislava. In year 2014 a ranking of elementary schools through a unique dataset of six input and six output indicators is presented. On the one hand, the included indicators relate to both the soft and hard infrastructure of schools. On the other hand, they involve quantitative and qualitative aspects of educational outcomes at the primary level. The last step of analysis is the

examination of factors that can influence the school efficiency. In case of capital city of Slovakia holds that higher the number of pupils with special educational needs, the lower the efficiency of the given primary school. The same applies in the case of girls and boys ratio. As the proportion of girls in the total number of pupils increases, the relative efficiency decreases. If it is a school that achieved, on average, excellent grades in mathematics, we can expect a relatively higher efficiency. The research results can help to analyze inefficient decision-making units, to find the origin of inefficiency and ways to bring problematical schools to the desired level of quality.

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Stakeholders engagement to enhance last-mile distribution in Paris area: an empirical investigation of B2B food distribution

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Keywords: Urban logistics, Paris, Public policy, Stakeholders, Food wholesale

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This paper analyzes the challenges of urban logistics within the Greater Paris metropolis and defines the place of food wholesaling in the metropolitan network. The analysis of these issues is based on three key assumptions.

This study is based on a state of the art of urban logistics and wholesale trade in Île-de-France. Then, a case study of a wholesale company is used to support our research. Finally, a questionnaire is carried out with professionals of the sector in order to highlight the organizational and geographical limits faced by the actors of this logistics.

After surveying some players in the food wholesale industry, we found that the logistics solutions put in place by public policies and

private players do not suit the way wholesalers are organized. The Greater Paris metropolis does take logistics into account in its urban planning. However, it does not act according to the sectors of activity. Food wholesalers impose a specific mode of organization that is not compatible with urban logistics regulations and infrastructures.

Wholesale trade is a key sector of our economies. However, its place in the growth of urban logistics and public policies to integrate it are still poorly known. In order to make a precise inventory of the situation, the authors rely on a field study carried out with professionals of the sector whose daily life is articulated around this activity.

New Center of Lubon. New quality or archipelago of enclaves?

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Lubon is a city, currently integrated with Poznan by transport, performing the characteristics of a satellite town. Its idea as a subzone of Poznan, a center of chemical and processing industry, was conceived during the communist period. Lubon was granted city rights in 1954 as a consequence of the merger of three villages, previously not forming a single center - although functionally linked since the late 19th century (through the policy of industrialization and colonization of Prussia).

The orchestrator of the urban structure was to become the New Center of Luboń (NCL), the implementation of which, in the fashion of the 1990s, was put into the hands of private investors. Nowadays, AD 2022, the NCL project is coming to an end, which prompts reflection, from the point of view of the city-forming project, which is almost 70 years old, that is coming to a close before our eyes. The subject of the speech will be an analysis of the social context of the process of change that contemporary Lubon is

undergoing as a now mature satellite city. We were interested in two issues: civic potential and the conditions of public management. The key conclusions that come out of the research concern the pitfall that is the form of modernist developer construction from a sociological point of view. The metaphor of an "archipelago of enclaves" captures well the essence of the challenge faced by the city government. The research conclusions in this regard suggest a problem of identity for the residents of the new center and a deficit of commitment, with a declarative will to act.

The interpretations offered in the presentation are based on quantitative surveys carried out in 2021 and 2022, as well as spatial analyses and focus group interviews and expert interviews, which were collected during two cycles of student internships by the Faculty of Sociology of the Adam Mickiewicz University in cooperation with the Lubon authorities.

Measuring the Shadow Market Trends of the EUROSTAT COICOP 12 Regional Consumption Datasets by Applying the Konüs-index Using Mathematical Programming Languages

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Keywords: price index theory, Konüs-index, inflation, consumption, shadow market

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The 21st century can be defined as the era of viruses and wars. Although, we cannot and does not intend to influence these processes, as researchers and statisticians, because the elements of these professions must strive for accurate, and precise measurement methods and calculations. Even so, the failure to meet the basic premises accepted for most of the economically feasible processes and cases by most of the researchers, causes distortions of many indicators. (Eg. on the weights of the Laspeyres-type price index defined by EUROSTAT as the harmonized, region-independent measure of inflation and well-being.) Thus, in the present lecture, we intend to measure the consumption process and “real prices”, by applying the philosophy of A. A. Konüs (demand and supply prices, indices) using mathematical tools and programming languages, models, representations and algorithms.

The lecture intends to show multiple real-life examples from the present days (for example bartering of beer in German pubs with cooking oil), which shows a deep connection, with the official price caps and restrictions in Hungary, in a parallel form – on the shadow/gray market segment in Germany. The “price cap” appears in the Hungarian government's program at the legislative level, thus instead of self-restriction, limitations occur to protect certain groups of the population. Hence, the study examines how the non-contradiction of the rule of supply and demand induces exchange of goods and “Konüs-type, shadow market” pricing in the case of products, which are difficult to replace – on the basis of reality. The authors intend to measure, how similar the real processes can be considered in a regional, country-specific aspect, taking into consideration the legislative and developmental aspects, which, according to our price index researcher Pál Köves, makes regional comparability difficult.

Digital resilience is the new normal of higher education: student and teacher perceptions from Romania

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Keywords: digital technology, barriers, strategies, eLearning, blended learning

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This paper aims to emphasize the fact that digital technologies in higher education are a necessity, both teachers and students must develop their ability to adapt and deal with informational technology challenges. Data collection was carried out through the administration of two online questionnaires, one for students and another for teachers from Faculty of Law and Economics, Spiru Haret University in December 2021. The students shared their personal experience regarding distance learning in relation to the classical system (in classroom), access to devices and frequency of their use, the online resources provided by the university and the possible strengths and weaknesses of the implementation of the eLearning. Second questionnaire measures the frequency of teaching-learning methods, the ways of organizing the teaching materials existing in the eLearning platform, the media resources, evaluation methods used in teaching activities at distance and perceptions regarding some issues related with eLearning implementation. Based on the results of the two questionnaires, the

authors highlighted that the online education process cannot be achieved through a simple translation of the didactic activity from the classroom to the virtual environment. The preparation of didactic materials for eLearning system requires more time and digital skills and the protection of intellectual property rights needs more attention. The sanitary crisis accelerated the digitization of activities, including education, so that students are already aware of the advantages of eLearning and only blended learning can combat the disadvantages of distance education. It is about the fact that the digitization of education, a phenomenon that tends to become the norm and not the exception in higher education, needs a solid scientific foundation that addresses to the complexity of these activities, their advantages and limits, as well as the coordinates that define its quality.

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Spatial policy and socio-cultural activity as drivers of ecological changes in an urbanised river catchment – example of the Junikowski Stream catchment, Poznań, Poland

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Providing spatial and ecological order is one of the tasks performed by local governments in Poland. The developed planning documents determine spatial policy, including allocating areas for specific purposes and defining development conditions. At the same time, local governments can initiate social and cultural activities in the catchment area.

The research aims to identify the planned directions of spatial development and socio-cultural activities in the Junikowski Stream catchment. The catchment area is located in Poznań, Poland's fifth most populated city, and is an essential element of the city's green infrastructure. Small fragments of the catchment area are part of other communes (Luboń, Komorniki, Dopiewo, Tarnowo Podgorne). The review of planning documents for the catchment area was the basis for formulating recommendations in the field of spatial policy.

We used cartographic methods and content analysis of local spatial plans, such as the Study of the conditions and directions of spatial development in Poznań and local spatial development plans from 1995-2022.

The first work stage included analysing local spatial development plans that cover the Junikowski Stream catchment. Planned directions of spatial development were identified, considering the following areas: residential buildings, industrial and service communication infrastructure, technical infrastructure, greenery, water bodies, and other forms of development.

The next stage of the work included diagnosing socio-cultural activities in the catchment area. The most important recreational green spaces and cultural facilities were characterised.

The results of the analysis of local spatial planning documents showed the domination of areas designated as green and freshwater areas. The richness of green spaces and cultural facilities favour the organisation of social and cultural events. Such events are organised by municipalities, non-governmental organisations, and groups of residents. At the same time, we noticed a large diversity of planned development directions of the Junikowski Stream catchment within individual municipalities. For example, the planned residential and industrial development areas dominate in the communes of Dopiewo and Luboń.

The Junikowski Stream catchment is rich in green areas adjacent to densely populated residential areas. The importance of green spaces for residents is evident in the number of organized socio-cultural events. Considering that detailed spatial planning arrangements do not cover a significant part of the Junikowski Stream catchment, there is a risk of disordered urban pressure. The high natural values of the catchment and the growing socio-economic pressure justify taking administrative measures to rational use the existing green sites and cultural facilities and protect the most valuable ecological processes and structures.

Environmental pollution and the health condition of the population of Polish towns

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Keywords: environment, health, co-occurrence, towns, Poland

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The aim of the study is to indicate the towns where the co-occurrence of environmental pollution is observed with an unfavorable health situation related to high mortality rates from selected chronic diseases. In the scope of the subject, the analysis covers mortality from such chronic diseases as: circulatory diseases, neoplasms and respiratory diseases, while from the perspective of environmental pollution: air and water pollution (selected types of pollution). Towns with powiat rights will be examined. The analysis will be carried out for selected multi-annual averages from years 2007-2020. The source of data for the analysis is the Local Data Bank of the Central Statistical Office.

The study will use statistical methods belonging to the data exploration group, such as: multidimensional scaling (MDS), *k*-means clustering and principal component analysis (PCA). Statistical methods will be used, inter alia, to indicate similar towns in terms of the examined characteristics. In addition, the method of bivariate choropleth map will be used, belonging to both the cartographic and geomatic research methods. The bivariate choropleth map will allow, inter alia, to analyze the spatial distribution of the examined co-occurrence.

Segmentation of retail customers based on cluster analysis as a part of building successful CRM

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This paper proposes the current state and methods of the decision support system for identifying customer typology to segment relevant customers using cluster analysis, which can help increase economic efficiency and build long-term customer relationships. Cluster analysis is a statistical technique used for classification. It breaks down a group of subjects into smaller groups so that each subject is more like other subjects in its group than subjects outside the group. Customer segmentation is one of the most critical issues in customer relationship management. To succeed in the retail industry, studying the different types of customers is essential. It means to cluster customers reasonably and effectively in improving the economic efficiency of enterprises.

This paper aims to specific customer groups with common characteristics and their subsequent integration into customer groups. These findings may help retailers to focus their business on the most profitable segments of customers, increase sales and profits, and build lasting relationships with customers. The results of this paper will also provide a starting point for subsequent investigation of this issue for case study purposes on a specific company.

Psychosocial working environment in the teaching profession (case study)

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Keywords: teachers, children, education

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The material environment is an integral part of working conditions and plays an important role in the life of each employee, since it affects their life activity and professional activity. This is due to close correlation, which exists between the level and quality of work. The quality of work is one of the fundamental elements that generate the overall quality of life. The working environment is a stimulating, directs and organizes human activity. It has a relative meaning, since it refers to a specific entity.

In any working environment, there are varieties of psychosocial factors, which decide on its level, they are constantly changing under the influence of new technologies and changing economic, social and demographic conditions. The paper presents psychosocial working conditions and their impact on its functioning on a basis of a selected occupational group.

The impact of long-term distance learning on the education and upbringing of children in public primary schools

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The time of the pandemic was a difficult period for both students and teachers. The education and upbringing of children regardless of the educational stage is a complex, long-term process. Primary school plays an important role, perhaps even the most important one, as it shapes the approach of the youngest to learning, culture and regularity. It is particularly important in the first stage of education, including grades I - III (early school education, the so-called integrated education). It is at this stage that the youngest students get to know the world

of everyday school duties, learn to read, write, and make long-term friendships.

The aim of the article is to show the impact of long-term remote learning on the daily functioning of primary school students. Moreover, the views of teachers, parents and students on distance learning and its impact on the level of learning were presented. The opinion of teachers and parents on the cooperation between school and parents was also confronted.

Smart city identification: Empirical criteria

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Transition towards greater smartness is an emerging trend in the development of modern cities. This transition manifests itself in the widespread adoption of information and communication technologies (ICTs), cloud computing, Internet of Things (IoT) and other technological tools, aimed at improving the level of city smartness. Although numerous studies focused on the smart city (SC) phenomenon, knowledge about empirical criteria that can be used to define a city as “smart” and to measure the degree of city’s “smartness” remains limited. The present study aims to bridge this knowledge gap by a systematic literature review of recent studies, in which various empirical criteria are used for SC identification. The study helps to identify a total of 48 SC identification metrics, further split into three main categories - smart digital technology, living conditions, and

environmental (ecological) sustainability. Among these groups of criteria, the “smart digital technology” group of metrics appears to be most popular, while criteria pertinent to “ecological sustainability” are applied considerably less often. As the study also reveals, only about a half of criteria used by empirical studies for SC identification, actually relate to urban residents’ needs, while the rest are general technological measures. Therefore, for a balanced SC assessment, we suggest a simplified ranking system, based on nine most important metrics that equally represent all main aspects of the SC phenomenon, while placing an emphasis on improving the life quality of local residents. The proposed system is applied to several major cities across the globe, to demonstrate its use and usefulness.

Regional and Individual-level Differences in the Impact of Environmental Risk Factors on Sleep Duration and Quality in Urban Areas: Evidence from a Nation-wide Survey in Israel

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Efficient sleep of sufficient duration is important for psychological and physiological health. The impact of individual-level factors on sleep, such as age, gender, caffeine consumption, and alcohol intake, is well established. Yet, the impacts of environmental risk factors, such as artificial light at night (ALAN) and noise, on sleep have been studied only sporadically.

Using records, obtained from the 2017 Social Survey of Israel and combined with ALAN satellite data and various proxies for traffic noise, we attempted in this study to determine how the combination of ALAN and traffic noise impacts the sleep duration and quality in different geographic areas of Israel. In the analysis, we controlled ALAN and traffic noise metrics by individual and environmental attributes, including residential conditions, population density, socioeconomic status, and several others.

As the analysis revealed, an increase in road density at the place of residence from 1 km/km² to 5 km/km² is found to reduce the average sleep duration by ~4.5% (~18 min.) and increase the frequency of reported sleep difficulties by ~3.5%, all other things being equal. Similarly, an increase in nighttime ALAN exposure from 10 ηW/cm²/sr to 70 ηW/cm²/sr is found to reduce the average sleep duration by ~

3% (~12 min) and increase the frequency of reported sleep difficulties by ~11%.

The study also revealed a significant interaction effect between the two environmental risk factors in question, with the adverse impact of ALAN on sleep duration and quality being especially pronounced in high noise exposure areas (p<0.05). The study also revealed that sleep duration was ~14 minutes shorter in densely populated urban areas than in sparsely populated peripheral regions, the difference which we attribute to lower ALAN emissions and smaller traffic volumes.

Acute risks, associated with ALAN and noise exposures, which the present study highlights, might necessitate public policy intervention. In particular, uncontrolled emissions of ALAN to the urban environment should be limited by promoting and enforcing smart nighttime illumination policies. Restrictions on noise-emitting sources should also be considered. In particular, unnecessary ALAN exposure can be reduced by using less dispersed lights and by using dimmers that reduce illuminance, when it is not needed. Concurrently, noise levels might be controlled by acoustic barriers, the use of improved road and tire materials, and sustainable infrastructure planning. In addition, technical legislation and tailored standards need to be adopted and enforced to limit ambient exposure to ALAN and noise in urban areas.

Land use change in Hungarian sample area (Szigetköz) and its effect on agrobiodiversity

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Agrobiodiversity, or in other words, the variety of our agricultural crops and livestock is one of the key factors for our food security, and its increase could also significantly enhance the stability and predictability of crop yields. However, due to various decisive factors (e.g. fluctuating market demands, economic policy decisions), certain agricultural species could disappear, or become displaced within a relatively small amount of time (even within a decade).

These decisive factors also include the general transformation of habitats, namely the reduction of the grassy areas and arable lands, as well as the disappearance of edge habitats. According to the data of Eurostat, in certain countries there is a stronger rate of decrease concerning arable areas, e.g. Italy, Poland, Hungary, etc., however, certain countries – such as Slovenia, Croatia, Greece, etc. – experienced a smaller extent of decrease. Essentially, the decrease of agricultural areas became a general tendency in the countries of the EU since the 1990. In the light of this, we

investigate the – quite significant – agriculture of a Hungarian small region, which could serve as a case study for the countries of the EU. In our study, we endeavour to outline, how the agrobiodiversity of a selected Hungarian landscape conservation area (Szigetköz), was shaped by landscape- and area utilisation.

In the course of the research, by the use of charts and data sources, we conducted comprehensive research in order to examine the trends of land use and the diversity of species / types grown in agriculture. It was done in order to determine the relevance of the correlation analysis between land use changes and agrobiodiversity. In our opinion, the sustainability or even the increase of (global) agrobiodiversity, can be appropriately secured on the level of smaller territorial units. That is why it is important to know the local characteristics of smaller territorial units (areas that can be considered homogenous, e.g. regions) in order to develop befitting agricultural production.

The Formation of Local Political Elites in the Post-transformation Period in the Czechia

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It has been several decades since the fundamental changes in Czech society took place in the exciting atmosphere of the events of November 1989. Along with the onset of changes in historical significance, changes in territorial administration and changes in the geographical organization of society gradually took place, including spatial patterns of electoral behavior and its (dis)continuity. The mentioned (dis)continuities are mainly a manifestation of the social differentiation of the Czech population, further deepening by the polarization of space, contextual influences, and dependence on the chosen path (path dependency), resp. a number of historical consequences.

Within the research of transformation, the polarization of the area of problems of structurally affected and long-term economically weak areas, problematic borders, and peripheral or rural areas, it is clear that the existence of these areas in Czechia is conditioned by different aspects of the electoral behavior of the population. One of the consequences of electoral behavior is, among other things, the stability of election results, which directly affects the spatial distribution of the stability of deputies. However, the importance of differentiating the degree of stability, especially of local political elites (representatives), has not yet been satisfactorily explained.

The results show that the observed regions have a significant territorial differentiation of local political elites. However, their stability or instability in a given municipality does not automatically mean that the continuity or discontinuity of the personnel composition of councils can be evaluated positively or negatively. The differences in the stability of local councils are based on very different processes

(in many cases also cumulative), which can have several causes and impacts. It is for the above reasons that the text is – through the cumulative stability index – to reveal the findings of differentiation of stability of local political elites in the Czechia, to point out one of the possible approaches in evaluating elites as such, and last but not least due to influencing the observed stability and electoral behavior in general.

The results presented so far show a significant spatial differentiation of the investigated stability and its ambivalent nature. Despite certain spatial regularities in the degree of stability of councils, it is clear that the results found do not point to clear conditions that could entirely and conclusively reveal the mechanisms leading to the resulting value of stability in a given place. It turns out that the reality is more complex and dependent on many factors, which ultimately determine the voting behavior of the population. However, from the results found so far, it is possible to mention several factors that, either in isolation or in connection with the other factors mentioned, influence – either positively or negatively – the stability of councils. Above all, it concerns the population size of the municipality, the discontinuity of the development of the territory, the proportion of people born in the place of residence, the unemployment rate or voter turnout, and the support of anti-system political parties or movements.

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Evaluating the accessibility of social housing by sustainable travel modes: a study in Poznań, Poland

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Keywords: Accessibility, Sustainable transport, Social housing

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Several cities across the globe have experienced an increase in housing prices since the financial crisis of 2008, and emerging post-pandemic trends have often led to further increases. There is a risk that the less affluent members of society may be unable to meet their basic need for shelter, as housing has become a highly competitive commodity in many cities. The social housing model (also called public housing or affordable housing model) may help alleviate the negative consequences of rising housing costs. However, existing evidence suggests that policies integrating housing affordability and transport accessibility have been moderately successful. There is a tendency to locate social housing projects in peripheral neighbourhoods where transport infrastructure is limited.

A significant shortcoming of many public housing programs is a lack of quality standards ensuring an equitable level of access to opportunities. Public housing projects tend to be driven by the minimum cost principle, resulting in constrained location choices. Thus, improving the integration of transport and land use planning is particularly important in such cases. Poor accessibility may push lower-income residents to choose cars instead of travel means with lower environmental impact, undermining the sustainability objectives currently central to many cities' transport agendas.

The paper proposes an approach to evaluating affordable housing projects based on accessibility by sustainable travel modes. The approach relies on the following three criteria: (1) versatility: it should be possible to include multiple travel modes and multiple destination types, (2) comparability: it should be possible to

compare the accessibility of public housing projects to the accessibility of housing units sold on the market, (3) replicability: there should be a replicable framework, including the use of open data and open-source software whenever possible. The proposed framework is applied to evaluate social housing projects in Poznań, the fifth-largest city in Poland (532,048 residents as of 2020).

Results show accessibility gaps between low-income social housing and market-rate housing in all four investigated scenarios. Further, gaps tended to be wider when assuming less-than-optimal conditions of the transport systems (i.e., off-peak public transport frequency or cycling only on streets with a low level of cycling stress). Thus, it is crucial to identify such conditions considering the context of a transport system under investigation and include corresponding scenarios. Interestingly, accessibility gaps between medium-income social housing and market-rate housing tended to be narrower but still existed.

A policy recommendation based on this study is to include socially sustainable accessibility as an evaluation criterion in decisions regarding the locations of social housing projects. The increasing availability of open data and open-source analytical tools make such evaluations more feasible. If affordable housing is not available in locations accessible by sustainable travel modes, it may not be possible to integrate the social and environmental dimensions of sustainability.

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Geography of Smart City Research

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Keywords: Smart Cities, Citizen Participation, Application Domains, Smart City Governance

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With the development of new technologies, cities are experimenting with their use in order to achieve better efficiency, higher safety, better availability of public services and goods with the aim of more inclusive and sustainable development. This process describes the concept of Smart Cities. Empirical research describes and analyzes these urban "experiments" in parallel. However, many authors criticize that, despite massive research, the Smart City concept is very fragmented and too technologically oriented. In addition, it lacks a more pronounced focus on typical areas of urban development, such as economic growth, social inclusion and sustainability. In order for the concept of Smart Cities to gain a higher consistency of the development strategy of cities, it is appropriate that empirical research takes place in cities of different sizes, in cities located in different regional contexts as well as in different application domains. As pointed out by Esposito et al. (2019) there is no one size fits all approach, but on the contrary, cities should adapt their smart city strategies to the local context. This paper aims to conduct a bibliometric and content analysis of Smart Cities articles in order to provide a geographical overview of empirical smart cities research. Our database consists of 6259 articles in scientific journals indexed in the Web of Science database, which had the term smart city / smart cities in the abstract, title of the article or in the keyword. From this, through text analysis, we identified 1284 articles that had the name of the city in the abstract. Using a classification algorithm (according to the classification of Neirotti et al., 2014), we assigned individual articles to one of eight application domains (buildings, living, transportation and mobility, government, economy and people, resources and energy, mix and other). Subsequently, we identified individual cities through text analysis.

In total, we obtained research data for a total of 649 different cities from 87 countries. The results show that empirical research is mainly carried out in Europe, America and Asia. European cities dominate research in almost all application domains. In the governance domain, there are most articles about Barcelona, in the topic economy and people about Bologna, and in resources and energy, research about London dominates. Although transport also has the most articles about European cities in total, the leader is Asian Singapore and many articles are also from the USA (New York is the leader). Research on Asian cities is dominant in the theme of living (leaders Singapore and Shanghai). The topic of building is relatively new, so the number of articles is less. The research of European cities is the highest in aggregate, but from the point of view of countries, the most articles are from China (Wuhan and Xi'an are the leaders). Since 1999, when the first article about Smart Cities was published, not only the number of articles about Smart Cities has grown significantly, but also the number of cities that are analyzed in these articles is expanding. In 2020, there were a total of 349 articles about 297 different cities. In terms of the size structure of cities, empirical research is mainly based on large cities (median population is approximately 1 million). There are differences between application domains. In the domain of buildings, the research is based on significantly larger cities (median 2.4 million inhabitants), and on the other hand, in the domain of resources and energy, the median size is smaller (860 thousand inhabitants).

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How can corporate social responsibility (CSR) help the local and regional economy and society to be ready for the challenges with international ideas?

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CSR is a term which has been in the society and economy for many decades. Its role changed a lot in the past few decades, but the core approach is the same: doing something different from the main activity of the firms. The original idea is related to big corporations because their importance in national and international economy is crucial so their responsibility for the economic, social and environmental issues became more and more important from the 1960's. Mainly in the last two decades it became clear that also smaller companies (small and medium sized companies – SMEs) are able to behave responsible but because the SMEs are differ from large companies also their CSR activity will be different is some way. In my presentation I focus on the SMEs.

About two decades ago it was revealed that the CSR motivation changed, and it serves not just altruist and philanthropic scopes but it can be related to the competitiveness and image of the companies, too. During the pandemic years and the current economic situation, it seems that the role of the CSR activity is changing again.

Economic or social problems solutions always need local approaches; regions, settlements have to find their unique solutions, but it can be also important to pick up some international ideas, too. In my view this latter aspect will intensify in the near future. CSR crates new values for companies which can help them to find new solutions and knowledge.

In present days it is very important to be resilient but without being open for the world it cannot be imagine. What is happening around

us? What are the international standards? What can we learn from international context?

Such questions can be appearing in managers' mind. How can they answer it? Firstly, they have to be conscious about their role in the economy and society and about their CSR activity. After it they can pick up international ideas about how CSR can help them to be more resilient and even more competitive.

Between August 2021 and February 2022, I made case studies with three SMEs in the Hungarian city of Győr inter alia about their CSR activity. I knew their motivations, activity and future plans. In my present research I put my focus on how to develop their operation and how the CSR activity can help with it. I examined the EU CSR standards and based on this I would like give ideas to the companies how they can improve their resilience using international CSR inspirations. Companies are in different ages, with several changes in the CSR motivation and activity in the past so the suggestions will be different.

Of course, I would like to share my thoughts also with the companies, so my presentation serves dual purpose: to help companies about outlive the difficulties and to give ideas how to use international approaches to develop a firm's CSR activity. I hope my presentation can be useful also for practitioners and academics and may give ideas how to build in international CSR ideas into a local business to be able to contribute to a resilient region.

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Welcome back! The impact of return initiatives on interregional return migration to rural regions

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Demographic change leads to a significant decline in the supply of labor in many remote regions of OECD countries. One driver of this development is that in particular young, high ability workers tend to leave rural areas and move to agglomerated local labor markets. Several scholars argue that this net out-migration diminishes the future prospects of peripheral regions, as the endowment with human capital is thought to be a crucial factor for regional development.

Against this background, this paper studies the impact of a regional policy measure, so-called return initiatives, on return migration to rural regions of Germany. The return initiatives have been established by local stakeholders in several peripheral regions in the last two decades to address declining local labor supply. Specifically, a return initiative aims at promoting inter-regional return migration of former inhabitants. A key instrument typically is the provision of information on local employment opportunities.

However, even though the first return initiatives have been established 20 years ago, their effect on return migration hasn't been the focus of a solid scientific analysis so far. More generally, our analysis also contributes to the rising literature on the role of spatial search frictions for inter-regional labor migration.

For our analysis, we merge administrative information on individual labor market biographies from the Integrated Employment Biographies (IEB) with novel data on return initiatives in German regions. We consider the universe of all workers, who completed vocational training in Germany in the period 2000 to 2014 and moved to another local labor market in the years thereafter. Based on a

sample of 405,320 workers, we examine the likelihood of return migration to the local labor market, in which vocational training was completed. Our identification strategy rests on exploiting the spatio-temporal variation in the establishment of return initiatives at NUTS 3-level and information on individual return migration decisions. Specifically, we combine event history analysis and difference-in-difference estimation in a panel event study framework.

All of our results indicate that the considered return initiatives, on average, promote return migration. However, the estimates also point to heterogeneous effects across workers. For individuals, who moved to another local labor market immediately after the end of vocational training, we do not observe any significant impact. The same applies to workers at the bottom of the wage distribution, who arguably possess rather low abilities and less specialized skills. For higher ability workers, we, in contrast, observe a statistically and economically significant impact of return initiatives on the likelihood to return. The estimated average treatment effect is about 20 percent for medium wage workers. For those workers with the highest wages in our sample, it is about 30 percent.

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Identification of spatial agglomerations in the Moroccan manufacturing industry

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Keywords: Agglomeration economies, geographic concentration, spatial autocorrelation, spatial externalities, local Moran indicator

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This thesis aims to analyze the spatial logic of manufacturing industries in Morocco, considering the degree of spatial agglomeration of industrial sectors and their location patterns. On the one hand, it is a question of measuring, through dedicated indices, the level of spatial concentration of manufacturing activities and, on the other hand, of identifying the significant agglomerations of these industries. We approach the agglomeration of manufacturing industries as the result of the effects of geographical proximity and the benefits that companies can achieve by grouping together in space. We also seek to contribute to the explanation of the agglomeration economies and their importance in the agglomeration of Moroccan manufacturing industries.

To meet our objectives, spatial econometric techniques were used to examine location patterns, to identify significant agglomerations and to measure agglomeration economies. The data are derived from the annual survey of the manufacturing industries, carried out by the Ministry of Industry, Investment, Trade and the Digital Economy. Our results support the idea of geographical polarity around the most developed economic regions in Morocco, but also around the chief towns of the provinces.

Thus, statistically significant agglomerations with positive high spatial autocorrelation were detected, mainly located close to the major cities of Morocco. However, the significant agglomerations detected are not spread over all the Moroccan provinces but are located close to each other and tend to be concentrated in limited areas. Our results show that the spatial distribution of manufacturing industries is highly unequal, tending to be concentrated in certain provinces and to leave large areas lacking in any manufacturing activity.

Our analysis shows high levels of diversity in co-agglomeration patterns between sectors in some regions, benefiting from urbanization economies. Other less diversified agglomerations with localization economies were also identified. As for the results of the estimation of spatial error models, they suggest that localization economies, as measured by industrial specialization, do not promote the agglomeration of manufacturing sectors at the global level. Localization economies are dominated by urbanization economies measured by industrial diversity. Jacobs' externalities seem more important than MAR externalities in Moroccan context.

Industrial policy and business geography in Morocco: towards a balanced territorial development

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This paper proposes to review the Moroccan experience in supporting clusters, through an analysis of the cluster policy and not of the clusters themselves. We will be led to answer a number of questions related to the conformity between the targeted sectors and those actually affected by the policy, to the consideration of agglomeration economies, as well as to the gaps between the stated objectives and those revealed by our analysis.

Following a spatial approach, this paper explores the location and/or agglomeration of manufacturing economic activities in the most concentric areas found in the literature classifications. Using rich data on Moroccan manufacturing firms, we applied a spatial analysis for the twelve regions and seventy-five provinces of Morocco. As with all economic activities, manufacturing industries are located in a number of provinces, have relationships with other economic activities, and have their greatest effect on a particular spatial pattern. Such a premise led us to pay particular attention to the role played by contiguous regions or provinces in the manufacturing sector. At the beginning of the paper, we hypothesized that agglomeration economies play a key role in the location decisions of manufacturing industries and lead to the formation of manufacturing clusters. With this in mind, the present research seeks to explore the typical spatial distribution of manufacturing activities in the industrial sector.

The industrial policy conducted recently in Morocco is part of a process of reorientation of public policies towards the promotion of

business clusters. The forms of business agglomeration in Morocco, such as P2i, Technopoles or Clusters, have all been supported by public authorities. This shows the important role of the state in these clustering initiatives. However, our results show an uneven geographical distribution of manufacturing activities. This means that manufacturing firms located in different Moroccan provinces are aware of the advantages of cluster economies and tend to co-locate naturally. Like Duranton et al (2008), we believe that the enthusiasm generated by cluster support policies should be tempered without ignoring the economic benefits that clusters themselves generate. From this point of view, clusters are built naturally and cannot be decreed.

Thus, the consideration of agglomeration economies implies a spontaneous emergence of industrial agglomerations. From this point on, clustering support policy should focus on removing the obstacles and shortcomings that hinder the development of already agglomerated industries. Here we support the idea that the reproduction of clusters is not an obvious issue and that in order to succeed in such a policy, it is necessary to build on an existing dynamic. As Porter (2000) rightly pointed out, "There should be seeds of a cluster that have passed the market test before cluster development efforts are justified" Our results have shown that manufacturing clusters rely on the effects of geographic proximity and agglomeration economies.

Evolutionary paths in the automotive periphery and semi-periphery: the cases of Austria and Hungary compared

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Keywords: automotive industry, semi-periphery, upgrading, resilience, industrial policy, Hungary versus Austria

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This paper explores the transition of integrated periphery countries to a semi-periphery status and builds on several strands of literature. A key tenet of the literature on global value chains is that the analysis of GVCs requires an evolutionary approach. The geography and governance structure of GVCs, and the relationships within them, are in a constant state of flux, driven by technological progress, changes in national development strategies, and uneven and uneven dynamics of local learning and modernization (Blažek, 2016; Kano et al, 2020). The automotive industry is perhaps the best example to illustrate the usefulness of an evolutionary approach (Ferràs-Hernández et al., 2017; Sturgeon et al, 2010). The current transformation driven by technological pressures and changing regulations (Pardi, 2021; Raposo et al, 2022) will certainly entail not only further concentration of automotive GVCs, but also a broad restructuring (Pavlínek, 2020). These changes and challenges will force groups of economies in automotive GVCs – core regions, integrated peripheries (Pavlínek, 2018) and semi-peripheries (Mordue and Sweeney, 2020) - to reposition themselves, rethink the characteristics of their participation and related economic policies in order to survive and remain competitive. In this respect, we draw on the claim of evolutionary economic geography scholars that the boundaries of these groups are permeable (Mordue and Sweeney, 2020; Pavlínek, 2022).

Our study focuses on a specific type of transition between categories, where selected integrated periphery countries enter an intermediate competitive situation. Some of the characteristics of this new position are similar to those of semi-peripheral countries. We argue that, as this transition further increases the heterogeneity of semi-peripheral countries, there

is a need to refine the theory of categorization of automobile manufacturers. We refine the semi-peripheral category based on the differences in the situation and characteristics of Austria and Hungary, two economies that occupy semi-peripheral positions in the automotive GVCs, distinguishing between "lower" and "upper" categories of semi-periphery.

The paper shows that compared to established members of the automotive semi-periphery, newcomers are often poorly equipped to thrive in the new competitive environment as it takes decades of organic accumulation to develop competitive assets that provide resilience. Based on 20 expert interviews with researchers, representatives of companies and of industry organizations from both analyzed countries, the paper illustrates the theoretical arguments comparing the evolutionary trajectories of the Austrian and Hungarian automotive industries. We show that Austria, exemplifying the case of within-category upgrading (within the upper semi-periphery), can leverage its strong innovation potential, dense network of capable domestic-owned suppliers, tradition of cluster-based and industry–university collaboration, and developed market for technology. In contrast, the between-category transition of Hungary was propelled by the rising wage-level, while other indicators would not qualify it for the club of semi-periphery countries. Evolutionary trajectories in the lower-order semi-periphery can easily be derailed if the automotive-focused industrial policy gets stuck in its – previously highly effective – integrated-periphery role.

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Outward FDI in the automotive industries of the Visegrad countries and Austria compared. Is it a sign of increased international competitiveness of indigenous companies?

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According to OECD statistics, the Czech Republic, Hungary, Poland and Slovakia have a relatively substantial outward FDI stock in the automotive industry. This may be a sign of increased competitiveness of indigenous automotive companies and automotive suppliers, indicating that they are competitive enough to invest abroad. The paper scrutinizes the outward FDI data in the automotive industry of the four countries and compares them with that of a similar sized in terms of population neighboring country, Austria. Besides macrodata, we go down to the firm level and analyse company cases to get a better insight into the developments in automotive outward FDI.

Based on this analysis, we conclude, that - opposed to the case of Austria - the overwhelming majority of outward FDI realized from the Visegrad countries in the automotive industry is actually realized by local subsidiaries of large foreign automakers and suppliers, while indigenous firms hardly expand abroad through FDI. Thus, the relatively large outward FDI stock in the automotive industry is not a result of increased international competitiveness of indigenous firms, but rather indirect outward FDI

realized by local subsidiaries of large automotive multinationals, due to various reasons. These latter include tax optimization, or geographical or organizational reasons related to global value chains. Exception to the rule is Poland (and of course Austria), in the case of which two countries we have found a considerable number of companies investing abroad. An interesting geographic pattern arises in that respect: we can find efficiency-seeking investments in neighboring lower wage countries and strategic asset seeking investment in the Western part of Europe. Interestingly enough, Polish firms went as far as China with their investments in the automotive industry.

Our analysis shows the role of global value chains on one hand in shaping inward and outward FDI in the automotive industry including through indirect outward FDI, and on the other hand, the paper highlights the importance of economic, industrial and FDI policies enabling local firms to become multinationals.

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Decision makers' perception of the resilience of Romanian regions. A qualitative inquiry

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Keywords: Romanian regions, resilience capacity, in-depth interviews, institutions, strategies

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The qualitative research we propose for discussion in this paper has envisaged the perception of the Romanian decision makers with regard to the manner in which the Romanian regions were confronted with difficult situations, overcame them and showed resilience. According to our study, resilience is understood as the ability to anticipate, resist, recover, respond and transform due to shocks or stressors. Shocks are abrupt external events with substantial short-term negative impacts, while stressors increase long-term vulnerability.

The data were collected between March and April 2021 by the team of researchers from the Bucharest Academy of Economic Studies. The data collection was based on in-depth interviews with decision makers, public authorities at central, regional and local level, civil servants from the working apparatus of the territorial-administrative units, etc.

The interview guide included seven open-ended and one closed-ended questions, which aimed to identify respondents' perceptions of:

- Representative shocks and stressors that regions have faced in the last 15-20 years.
- Factors that influenced the shock response and contributed to recovery.
- The resilience capacity, respectively the existence of strategies, plans, institutional structures, forms of dialogue with stakeholders and dedicated resources for responding to unforeseen situations.
- National, regional and local measures that can be operationalized to increase the resilience of Romanian regions.

The conclusions of our inquiry can be summarized as follows:

- For the analyzed period, the economic crises, the pandemic crisis and the various types of natural disasters are identified as the main

shocks felt in the Romanian regions. To these are added a number of stressors with a slower action, but equally strong and persistent over time, such as the deindustrialization phenomenon and the waves of emigration.

- Socio-economic shocks are highlighted by all participants, while environmental shocks are strongly localized, which claims the need for differentiated intervention measures.

- Dedicated strategies and plans, structures, resources are identifiable, but they are particularly targeted at unforeseen situations such as natural disasters and less so economic and social shocks. The National Emergency Management System and its territorial structures are indicated by most respondents as having a central role in ensuring resilience. Stakeholder consultation is defined more in relation to legal obligations and less in relation to the need for real involvement in increasing resilience.

- Investments in infrastructure, energy and gas, health, intervention equipment made from European funds are the main measures for increasing resilience identified by respondents. At the same time, however, the growth of civic sense and participatory democracy are considered sine-qua-non conditions for resilience.

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Resilience to climate change from bio-regional environmental education in Yucatan

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Climate change caused mainly by the dominant economic system, mass production, and the human being as a potential consumer, threatens the survival of the earth. To a lesser extent developing countries are the ones that contribute the least to climate change, but they are the ones that are most at risk due to the climate effects and natural disasters. Environmental education plays an essential role in understanding what the climate is, the climate change and its consequences. Schools can be those adaptive and safe spaces for learning about the environment and climate. These can also help to prepare an action and contingency plan for unexpected weather events, as well as internal policies, and programs to reduce greenhouse gases and carbon footprint. Bio-regional environmental education could help people understand and manage the impact of the climate crisis, through community/regional adaptation and resilience measures. This kind of environmental education is based on the socio-ecological dimension, characterized by the natural and cultural history of a rural territory. It is a participatory approach at the community level for the solution and adaptation of territorial problems in a proactive, dynamic, and experiential way. This will enable the people of a community to have the knowledge, values and

skills needed to act as bio-regional agents of change and to be resilient in the face of the impacts of climate change. Internationally, the importance of education and training in the fight against climate change is recognized. For this reason, this article aims to analyze how bio-regional environmental education can contribute to climate resilience and be a possible tool for adaptation and social innovation from biocultural territories in Yucatan. The biocultural territory is in the south of Yucatan, Mexico; it is called 'Puuc' zone, and is based on history and living knowledge from ancient generations of the Maya people. The resilience to the present is derived by its agroecological practices and biocultural identity as a central element. A documentary and literature review will be necessary to carry out in the first phase. Subsequently, a participatory action methodology will be applied in a biocultural territory of Yucatan to empirically study the bio-regional environmental education proposal for resilience to climate change. The results will contribute to the theory and praxis of environmental education from rural territories, as well as illustrate whether this perspective can help the adaptation and revaluation of cultural, natural, and economic aspects in the face of the effects of climate change.

European added value in the context of spending on cohesion policy from the EU budget

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European added value is a concept widely commented in public debate. It should be noted that it is a key issue from the point of view of membership in the European Union. Due to the difficulties of measurement, European added value is subjected to many analyzes from different points of view and using a variety of test methods.

The main purpose of the paper is to find an answer to the question whether the European Union budget creates favorable conditions for social and economic integration from the point of view of European added value, on the example of cohesion policy, and what are the consequences for the Member States of the European Union in the context of economic growth and socio-economic development. Cohesion policy was originally aimed at reducing disparities between countries and regions, so the emphasis was primarily on the redistributive role of EU funds. However, since 2007, there has been a partial redefinition of the cohesion policy with a greater emphasis on improving the competitiveness and balanced development of regions. This new paradigm in the cohesion policy results from the ineffectiveness of the current policy of reducing income disparities between regions, which has been demonstrated in many studies.

The specific objectives have been formulated in the form of questions. The questions posed in this paper are as follows:

1. How should the concept of European added value be interpreted and what factors determine it?
2. From the macroeconomic point of view, does the expenditure on the European Union's

cohesion policy contribute to economic growth and development, and is this their role?

Specific research methods were used in the analysis. Descriptive methods in the form of a review and analysis of literature on the subject, reports of the European Commission. European Parliament and European research institutes, as well as legal acts of the European Union. In the conducted studies based on models for panel data from a group of 28 European Union Member States in the period 2000-2019, the expenditure from the European Union budget was disaggregated in a way that allows for finding relatively uniform directions of allocating EU funds with a breakdown by individual Member States, taking into account the limitations related to obtaining more detailed data.

The results of the research included in this paper indicate that in the last decade marked by the consequences of the financial and economic crisis of 2008, problems with cohesion have intensified due to the deterioration of the endogenous capacity of regions to raise growth rates. Expenditure on cohesion policy in relation to HDI, for the EU15 in the period 2000-2019 the relationship is significant and negative, and for the same countries in 2007-2019 it is also negative, but insignificant. A positive and significant relationship appears only in relation to all EU countries, which would prove the importance of cohesion policy for new members, but mainly in the first years after accession.

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Determinants of territorial cooperation of national and ethnic minorities in the Baltic Sea Region

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The Baltic Sea region is characterized by an intensive long-term international cooperation.

It is also the first EU macroregions in which decision-makers undertake numerous initiatives for sustainable development. The region is inhabited by numerous nations, regional communities and ethnic groups, differing in culture, language and religion. Sustainable development, in the social dimension assumes the inclusion in the decision-making process of all key stakeholders, including national and ethnic minorities. The authors identify the key determinants of the development and cooperation of national and ethnic minorities. They indicate and describe social groups constituting national and ethnic minorities in BSR countries and discuss the complex issues of their definitions and classifications. The result of the

research is a model of sustainable development of national and ethnic minorities.

In addition, the authors present the results of empirical research on the use of Cohesion Policy and Neighbourhood Policy funds for the sustainable development of ethnic minorities in the period 2014-2020. The research has shown that territorial cooperation can be a factor supporting a sustainable development of ethnic minorities in the BSR. In practice, the national and ethnic policies of the BSR states and the status of social minorities are very diverse. The participation of minorities in governance of the macro-regional strategy is still marginal. There is a need to use appropriate instruments of social, economic and political inclusion. Particularly noteworthy is the concept of nonterritorial autonomy, developed as part of the COST ENTAN Horizon 2020 action.

The role of natural capital in sustainable regional development

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Rapid socio-economic development and spreading housing land use cause a major challenge for spatial planners and managers to balance protection of important ecosystems and securing their sustainable functioning with human need of constant growth. The growth measured with GDP has been proved to fail to show the full spectrum of development, especially neglecting the scale of human induced environmental degradation. The idea of sustainable development is promising in acknowledging the role of social, economic and environmental capital. These three are interconnected, therefore, the loss of natural capital exposes businesses and societies to risks. Numerous initiatives aiming to tackle urgent sustainability challenges have been gaining momentum within research, policy and practice. In this contribution, the different approaches to define natural capital, as well as

current developments in measurements of natural capital will be presented.

The goal of this contribution is to reflect on the role of natural capital in the sustainable regional development. The concept of natural capital accounting for the regional development is presented based on study in the Lower Silesia region. The regional economic indicators and main economic sectors are assessed. The conceptual framework of ecosystem contribution to main economic sectors is presented. Author shares key methodological and empirical challenges identified through collaboration with experts and stakeholders of natural capital accounting for the regional scale.

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Spatial convergence in Central Eastern Europe (what the patterns of GDP show)

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Keywords: spatial autocorrelation, convergence, Central-Eastern-Europe, GDP per capita, regional analysis

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Spatial inequalities are one of the fundamental characteristics of regional development/ economic studies. There is not two regions with the same characteristics and initial conditions which results in significant differences in the long-run. In the European Union regional differences are crucial, there are significant differences among the given parts of Europe in the case of the GDP per capita. Based on the latest Cohesion Report of the European Commission, since 2000, the disparities across the Member States of the EU have been declining (so convergence has accelerated) as an effect of the huge structural and territorial supports, but internal regional inequalities have been rising across them. On the regional level (based on the data of the Eurostat) the most developed Luxembourg had 263% GDP/capita value compared to the EU average, which was over eight times the index of Severozapaden (36%) in 2020. This question is much more current in the Central-Eastern European region (CEEC), as the Eastern enlargement of the EU has resulted in increasing inequalities of the GDP per capita in interregional and intra-regional level. In economic growth theories, the study of convergence is not new, and one of the EU's main goals is the convergence of peripheral regions.

Different types of convergence analyses are applied in the literature (e.g. sigma, beta and gamma) which try to explain the development path of given regions. In this recent research, the author will examine the spatial patterns of GDP in the CEEC region between 2010 and 2020 to see the trends of development in the area with special regards on the role of spatial interactions. The author have applied besides the above-mentioned convergence measures also the tools of spatial autocorrelation analysis, and spatial regression methods.

The results show that the different types of convergence analysis indicate small pace of convergence among the regions, although the advantage of capital regions is inevitable. The sigma convergence shows slight catch-up for the peripheries, which can be only fairly underlined by the beta convergence process. The spatial autocorrelation is significant in the area, but no major change happened in the patterns of hot and cold spots.

Comparative analysis of the complex resilience index - a Hungarian pilot study

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Cities are highly complex and sophisticated systems. They are centres of development and engines of economic growth. They are characterised by a concentration of population, industry and services. But this concentration of factors also increases the vulnerability and dependence of cities. The main aim of cities is in the long-run to create better life quality for their inhabitants. The wellbeing and prosperity of urban populations can be ensured by the smooth functioning of infrastructure systems, communication networks, large supply systems and supply chains (World Bank 2016), although at the same time, the high degree of interdependence between systems can also make cities vulnerable. The degree of vulnerability of a system, a municipality, a city, its reaction to a challenge or an external shock, its resistance, its adaptation capacity, is becoming an increasingly important characteristic nowadays. The Canadian ecologist, Holling (1973) introduced the concept of resilience to the scientific community, originally referring to the recovery of an ecological system in a complex state of equilibrium after a strong external shock. In this study we deal with the issues of resilience, using the example of a Hungarian county (NUTS 3) Borsod-Abaúj-Zemplén. Based on the pillar structure of sustainability, we identified three main components of resilience: social, economic and environmental. The development of the

social component depends fundamentally on formal and informal social networks (Girard 2011). Economic resilience is the ability (capacity) of a city to generate wealth for its population and profit for its businesses. The environmental (or ecological) component highlights the internal balance and robustness of the system, in line with the implementation of a circular or green economy. In measuring resilience or adaptive capacity, different researchers rely on a very different set of indicators, depending on the purpose of the analysis. Based on the set of indicators we have compiled (14 indicators), we have analysed the position of the cities of Borsod-Abaúj-Zemplén county compared to the national average, and the changes in their positions in 2000, 2006, 2012 and 2018. Our aim is to visualize the resilience of the county's cities between 2000 and 2018 at four points in time, based on the Complex Resilience Index calculations and the Local Moran I method. The results show that in the different components of resilience, the ranking of cities is diverse, but the main centres of economy can be associated with high levels of resilience.

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Challenges in collecting and analyzing data on digital entrepreneurs

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Keywords: digital entrepreneurs, industry 4.0, database, big data, Poland

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The digital revolution in manufacturing (referred to as Industry 4.0) is seen as a phenomenon that will substantially transform the economic landscape. Like previous revolutions, its main added value is to increase productivity through innovation. The digitalisation of industry may play an important role in the creation of a new regional path both in developed and emerging economies facilitating the emergence of new centres of knowledge creation. Strong transformative power is attributed especially to the so-called 'digital entrepreneurs', i.e. the providers of Industry 4.0 products and services for manufacturing sectors.

There is no separate category in the official classification of business activities, nor are there any common standards or industry references to link heterogeneous sets of Industry 4.0 enabling technologies. Moreover, swift technological progress means that the number of new digital technologies is growing rapidly. The main research strategy used so far in regional studies has been to analyse patent data. This technique in countries and regions with low levels of patenting significantly underestimates the number of digital entrepreneurs, hence the need to look for other methods to identify such businesses.

Our main goal is to identify the geography of digital entrepreneurs in Poland by method that goes beyond patent data. The method is based on machine learning using data from the registries of economic entities. Most of such data is already collected in digital form, but as it turns out, their direct (machine) use is still difficult or even impossible.

For the purposes of this analysis, we focus on two main sources, which, by definition, should allow for easy automation: The Central Register

of Economic Activity (CEIDG) database and registry.io, which provides a commercial application programming interface (<https://rejestr.io/api>) for data from the National Court Register (KRS). Information on digital entrepreneurs from all over Poland was collected based on the method of co-occurrence of business activity codes (PKD) related to industry 4.0.

Several technical and methodological challenges were discovered during the acquisition and processing stages of the digital entrepreneurs' identification by machine learning techniques. The main technical challenge was not the data download itself, but the monitoring and logging of errors returned by the server, which required a lot of additional manual work. Due to the granularity of the data and to ensure easy access, the data for each entrepreneur was saved in a separate JSON file. During the analysis stage, the collected data requires more efficient formats than JSON. These can be file formats (e.g. Parquet), saving data in the database or using the Elasticsearch search engine. The challenge at this stage is the high heterogeneity of the data from various sources and varied scope of accessible information suitable for reliable cluster and network analysis.

The development of a method of identifying digital entrepreneurs using big data from registry sets can be useful for regional policy, enabling, among other things, the monitoring of the dynamics and spatial pattern of the emergence of new, innovative economic activities with high growth potential.

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A smart indicator concept for postwar resilient development of Ukrainian cities

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Since some decades cities in the Ukraine experience processes of market driven transformation. Very obviously, cities show different paths of development and socioeconomic restructuring according to their specific territorial conditions in terms of their geographic and geo-political conditions and due to their own regional potentials. Different policies had been elaborated predominantly on the national level, in more recent years also on the city level. According to international trends but also on the background of first Smart City experiences of several cities the Ministry of Digital Transformation Ministry of Ukraine started to develop a Smart City strategy in a top-down manner which is characterized by a strongly data driven understanding with the enforcement of urban technologies. This development of a certain strategy is interrupted (strongly reduced) since the beginning of the war in February 2022. Recent war activities have led to a wide range of impacts in social, economic and environmental terms, and will recently trigger unknown new trends and problems in the next future.

Hence, in the post war period Ukraine cities will face multiple challenges. They are result of more or less strong damages of urban infrastructures worsening quality of live and reducing economic development. In addition, cities are jeopardized in their development capacities through loss of human, social and financial capital. Evidently, they have to regain their role and importance as incubators for

innovative, climate friendly and socially inclusive urban development.

Facing these pre-conditions for urban development, this paper addresses the necessity of a place-based SC indicator concept which is based on the intrinsic logic of the disaster cycle for resilient urban development. The theoretical and methodological basis of the study was made up of the fundamental provisions of urbanism, the concept of sustainable development, the concept of smart cities, as well as the results of research by international organizations, scientific works of scientists, which are devoted to the post-war reconstruction of cities. Hence, our contribution is structured as follows: a brief introduction will discuss the disaster cycle with its main components and corresponding requirements. Based on this differentiated view of development the meaning of a place-based understanding of SC development is introduced which strongly impacts the type and quality of indicators. The empirical part briefly introduces into the differentiated urban development of Ukraine cities and characterizes first experiences with SC activities. As the post war condition for future development are still not clear for many cities, a SC indicator concept (types and quality of indicators, importance of local evidence, etc) will be elaborated. It, unlike the existing ones conceptions, is adapted to the Ukrainian statistical base, supplemented with indicators that take into account the specifics of post-war urban development at the stages of recovery, adaptation and transformation.

Comparative Analysis of the EU-28 NUTS-2 Regions by the Level of Territorial Capital: Evidences from Central and Eastern Europe

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Keywords: territorial capital, material and non-material resource endowment, classification of regions, CEE countries, regional heterogeneity

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The primary aim of the paper is to show empirical evidence from the NUTS-2 regions of Central and Eastern European countries through measuring territorial capital during the 2010s. A database of territorial capital indicators for 270 regions of the European Union is employed, and a classification of regions based on the components of territorial capital is presented using principal component analysis and cluster analysis techniques.

I build on the argument that measurement of territorial capital is essential for a better understanding of the diversity of EU regions. When developing this argument, I investigate the components of territorial capital through a thematic categorisation elaborated by Roberto Camagni, the pioneer of the concept.

Particular attention is paid to the identification of the key variables of territorial capital through which the categorization of NUTS-2 regions can be done. A database containing proxy indicators on regional level was compiled. The variables merged into three principal components: material resource endowment, non-material resource endowment, and material–non-material asset relations. The

cluster analyses resulted in three clusters as well as a 13 subcluster solution.

The empirical results regarding the status of territorial capital of the EU-28 NUTS-2 regions over the 2010s testify to the role of material and non-material components as well as their interrelation in the formation of territorial capital at the European level.

Mapping differences across the NUTS-2 regions of the Central and Eastern European countries enables the comparison of regions according to the level of territorial capital endowments. The results reveal that regions in CEE countries have been differently endowed with territorial capital during the 2010s. High levels of territorial capital can be reported only from a very limited number of regions of CEE countries; the capital regions can be considered as significant hubs of territorial capital. It can be concluded that unfavorable conditions can be found in three quarters of the regions of the CEE countries.

The findings of this study have the potential to contribute significantly to the ongoing discussion and evolving research on territorial capital.

COVID-19 epidemic waves in Hungary and their spatial distribution

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Keywords: COVID-19, epidemic wave, socio-spatial, inequality, Hungary

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The COVID-19 pandemic had already six epidemic waves in the majority of countries as well as in Hungary between 2020 spring and 2022 summer. The pandemic has many territorial characteristics regarding its spatial spreading or regional distribution of infectious and death cases. This presentation reviews the most important spatial features of the pandemic waves in Hungary to discover how human environment can influence their regional inequalities.

This examination is based on a descriptive statistical analysis to make a deeper understanding of the connection between space and health. It examines the regional distribution of the novel coronavirus pandemic in Hungary related to its morbidity and mortality data. The current research also presents a general review of the COVID-19 pandemic waves and their changes in terms of space and time to explore the spatial pattern of each pandemic waves. The presentation also contains a comprehensive comparison based on the key indicators of COVID-19 waves. Regional analysis is based on examination of different

territorial level of key indicators from national (NUTS 1) through county (NUTS 3) to micro-regional (LAU 1 and LAU 2) administrative units.

The most important results highlight the significant inequalities among epidemic waves as well as different spatial pattern of infectious and death rates. Firstly, the most developed and urbanized areas in Hungary are mostly influenced by COVID-19 cases, while peripheries are primarily affected by COVID-19 deaths. Secondly, the socio-economically most developed regions are the sites where epidemic are formed. Thirdly, hierarchical diffusion can affect the developing of the waves and the involvement of peripheries. Fourthly, there are marked differences between autumn-winter and summer waves according to their intensity. Lastly, vaccination can basically influence regional inequalities of each epidemic waves.

The outputs of this examination give relevant information for evidence-based policymaking in future pandemic waves prevention, mitigation and preparedness regarding their spatial characteristics.

Economic restructuring and concentration in the CEE regions between 2000 and 2018 based on Gross value added analysis

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One of the indicators of long-term economic development is that higher value-added sectors growing. Moreover, economic restructuring is also an essential element of the smart specialization strategies emphasized in EU regional policy, as they aim to promote integrated, place-based economic development programs. These trends are especially important in Postsocialist Countries because these areas of Europe go through a special restructuring trajectory after the change of regimes.

In our research, we examine how the economic structure of the NUTS3 level territorial units (counties) of five Central and Eastern European countries (Bulgaria, the Czech Republic, Hungary, Romania, and Slovakia) changed between 2000 and 2018. We analyzed the features based on two main questions:

How can we characterize and describe the concentration of economic sectors in selected CEE regions between 2000 and 2018?

How did the concentrations and spatial patterns change between 2000 and 2018?

Data based on Gross value added (GVA) and employment of 11 sector groups per county are taken into account each year. Analysis

based on chain-linked (2010) euro to describe the restructuring patterns. The spatial concentration of sectors in NUTS3 regions was analyzed using location quotient (LQ) and Theil indices.

Among the results, Labor productivity in modern business services is improving rapidly, reaching 55% in the 12 older EU Member States, while e.g. the manufacturing industry, which enjoys priority development aid, has been stagnant between 30 and 35% for years. Moreover, we can describe in different levels emerging Centrum-periphery patterns in the Information and communication sector next to manufacturing.

Moreover, we can see that there is a strong concentration of modern business services, especially information and communication, as well as the financial sectors in big cities, mainly in capitals, while retail services and manufacturing are more spatially distributed, mainly in intermediate regions.

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Territorial analysis of Lithuanian youth turnout (on the example of 2016-2020 parliamentary elections)

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In modern democracies, every citizen has the opportunity to participate in the electoral process, but not everyone takes advantage of this opportunity and right. Low participation in elections not only reduces the legitimacy of the government, but also creates worse conditions for the growth of civil society. Differences in voter turnout can be determined by various reasons, but they also become apparent when comparing demographic, social, economic or political characteristics of voters. Considering these factors, it was possible to predict voters' behavior with sufficient accuracy, but the emergence of the COVID-19 pandemic changed everything fundamentally. Voter turnout has decreased in most states and its established territorial differentiation has changed.

The purpose of this study is to reveal the territorial trends of Lithuanian voter turnout of different ages in case of the COVID-19 pandemic. The study was conducted based on the statistical data provided by the Central Electoral Commission of the Republic of Lithuania. In most states, certain trends stand out when it comes to the age of voters, with younger voters far less likely to vote in elections than older ones. Lithuania is no exception, the

problem of youth voting also exists. In the elections of the Republic of Lithuania, young citizens are the most passive compared to older voters, the difference in activity can reach up to 20 percentage points in different age groups. From the presented data, it can be seen that the general indicator of youth activity is growing in every election and the situation is improving even in the context of the COVID-19 pandemic. In certain neighborhoods of big cities, the turnout of young voters is even higher than the general indicator of the country, but its territorial differentiation is also increasing. In the metropolitan centers of the country the youth turnout is higher, while in most suburbs of the peripheral regions young voters are becoming more passive. Such a center-periphery structure is completely opposite to the territorial structure of general voter turnout in Lithuania (voter turnout decreases from the eastern part of the country towards the western part) and has more connections with Western democracies, where a divide has formed between urban and rural voters. This situation once again confirms the polarization of the country's development in the center-periphery axis emphasized in other studies.

Differentiation of students' attitudes towards e-learning during the COVID-19 pandemic in the poviats of Wielkopolska region

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Keywords: primary and secondary school students, distance learning, COVID-19 pandemic, Wielkopolska region

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The aim of the paper is to analyze spatial differences in the attitudes of primary and secondary school students towards distance learning in the Wielkopolska Voivodeship during the COVID-19 pandemic. In mid-March 2020, after the suspension of classroom activities, it was possible to observe a varied degree of use of the e-learning platforms available, both by students and teachers in all types of schools. From the point of view of the analysis of phenomena falling within the research field of the geography of education, an important issue discussed in the paper was the recognition of the diversity of students' attitudes towards new events in the sphere of education, i.e. towards an unexpected change in the forms and conditions of education. In particular, the research task was to determine the differences in students' attitudes in individual poviats of Wielkopolska, taking into account the main components of attitudes, i.e. knowledge of new didactic tools and the ability

to use them, to determine the possibility of taking up e-learning didactic classes by students considering the main barriers in this regard, and to find out what pupils think about the forms of distance learning used and the organization of distance learning. The study attempts to answer the research questions based on the survey conducted in the first quarter of 2021 on a sample of over 3,000 students from primary and secondary schools in Wielkopolska Voivodeship. The conducted analysis shows certain spatial differences in pupils' attitudes in the poviat system of Wielkopolska.

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Diversification and multi-level policy supports as enablers of specializations in green technologies at EU regional level

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To implement the sustainability agenda of Europe, regions need to be armed with a competitive advantage to specialize in green technologies. On the one hand, the intensification of green specialization is considered an exploitation process that reinforces the existing knowledge system of regions, analogous to incremental innovation. On the other hand, new green specializations, represent the acquisition of new technological capability and new knowledge production in a period, parallel to radical innovation. This paper links these two dimensions of green specializations to the goal of sustainability and elucidates how to improve both the intensity of green specializations and new green specializations at the regional level in Europe.

The paper addresses two gaps in the literature on green specializations. The first gap is the lack of attention to the linkages between different types of diversification (i.e., related diversification and unrelated diversification) and different dimensions of green specialization. Related diversification and unrelated diversification imply distinct technological portfolios and represent different paths to innovation. Second, as an external stimulus for green specializations, policy supports of environmental protection from the European Union, the national government, and the regional (local) government do not reflect the power balance between multi-level policy administrations in terms of sustainability. It is also noticed that there is a bias in assessing the direct influence of policy supports of environmental protection on sustainability due to the interaction between multi-level regimes. Alternatively, a missing point is that policy support often strengthens or weakens the influence of internal characteristic on green specializations in the form of macro-regulation.

Thereby, the second gap is hidden in the coordination role of policy support of environmental protection based on a multi-level regime that underpins the role of diversification in green specializations.

This paper covers 224 EU27 (excluding the United Kingdom) NUTS2 (Nomenclature of Territorial Units for Statistics) regions over the period 2006-2018 to shed light on the intensity and implementation of green technologies. Based on multivariable linear regression and spatial regression, our findings confirm that related diversification facilitates the intensification of green specializations, whereas unrelated diversification promotes the improvement of new green specializations. EU funding support for environmental protection strengthens the influence of related and unrelated diversification on both the intensity and implementation of green specializations.

The paper contributes in three ways. First, we employ incremental innovation and radical innovation respectively to disclose the inherent characteristics of the two dimensions of green specializations, thereby providing diverse insights for achieving the sustainability goals. Second, this study provides fine-grained linkages between diversification (i.e., related diversification and unrelated diversification) and innovation (i.e., incremental innovation and radical innovation), replenishing a theoretical vacancy between innovation studies and economic geography. Third, focusing on the moderating role of multiple levels of policy support from a macro perspective provides policymakers with a better understanding of managing environmental issues.

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Productivity differences in two regional centres based on regional and firm-level evidence

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Keywords: regional economic growth, second-tier cities, firm-level productivity, micro-level data, Central and Eastern Europe

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In our comparative research, we examine how the economic situation of two Central and Eastern European second-tier cities, Cluj-Napoca and Pécs, has changed in the period following the financial and economic crisis. We contrast the economic trends at the regional level with the trends of the cities' largest companies in the period between the global financial and economic crisis and the coronavirus crisis. Our empirical research therefore covers data from the two hundred largest local firms in the two cities, analysed from a labour productivity perspective.

The two analysed sub-national economic centres are among the few growth poles of their countries, and both cities have a rich cultural milieu, and their knowledge base is maintained by their significant higher education sector. In this research we intend to gain insight into the development potential of second-tier cities, which are themselves developed, but whose regional hinterland/wider regional context is underdeveloped.

The theoretical context of our research lies on the 'productivity puzzle' literature investigating the sources of post-crisis productivity slowdown, as well as the dependent market economy model addressing the limits of FDI-dependent growth in Central and Eastern European countries, and also the literature on the high-pressure economy, focusing on the demand-driven growth. International evidence shows that the productivity challenges have a clear regional dimension, whereas the corporate sector has an ultimate role in determining regional productivity. Actually, the economic fortune of regions and nations is increasingly driven by a handful of large firms. The privatization or dissolution of potential national

champions after the regime change and the weakness of domestic mid-sized firms provides scant alternatives to the FDI-driven model of so-called dependent market economies. Our data indicate that during the high-pressure economy in the second half of the 2010s all regions were able to benefit from the favourable international economic environment, although growth in the capital cities has been well ahead of the others.

The source of our data is the Orbis enterprise database, complemented by NUTS3 level data from Eurostat. Our data also allow for a sectoral analysis, but instead of a detailed study, we highlight the role of the public sector, as well as the creative sector. The main added value of our research is that the use of the Orbis database is uncommon in the Hungarian academic community, especially in the field of regional science. Also, regionally disaggregated productivity analyses are rarely found in the Central and Eastern European research.

The main message of the regionally disaggregated analysis and the firm-level analysis is quite consistent. Our results suggest that the regions of Cluj-Napoca and Pécs face somewhat different challenges, the former having problems in integrating its rural area, while the latter has a persistent difficulty in attracting external resources as well as in retaining and creating endogenous resources. The city of Pécs relies much more heavily on public sector involvement than Cluj-Napoca, but a strong higher education presence alone cannot substitute for other endogenous sources of growth.

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Challenges of energy transition of the post-coal region for local government units on the example of Bełchatów region

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Keywords: climate and energy policy, trust transition, government failure, cooperation

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The climate changes and environmental degradation are key challenges of the world, which currently require radical, wide-ranging, large-scale, cross-border and integrated actions. These changes place all European regions, whose economy depends on mining and coal energy, to face an extremely difficult challenge, which is the economic transformation towards climate neutrality. This process should take place in several spheres. The essential and expected area of changes is taking positive impact on the natural environment. The consequences of the change also include other aspects, including a permanent change in the industrial structure, transformations in the regional labor market and the need to search for new, ecological energy sources.

The role of central, regional and local public administration is to moderate changes towards the transition, which means minimizing social and economic risks resulting from the loss of an important element of the economic ecosystem. Just transition is a relatively young concept, which is why it is often equated with investments in infrastructure. An important element of it, however, is the social factor.

The Lodzkie Voivodeship is one of the largest electricity producers in Poland thanks to the Bełchatów Power Plant and the associated lignite mine. It is also one of the largest employers in the region, which means that the transformation process will be complex, costly and lengthy. Changes to the energy system will consist in gradual reduction of energy production from conventional sources and transition to energy production based on low-emission, innovative sources, while ensuring energy security in the national balance of energy production and social responsibility.

The aim is to present the challenges faced by the region characterized by the dominance of the raw material economy based on rich lignite resources and the production of electricity and heat on the assumption. The considerations will concern the Bełchatów region. According to initial analysis of secondary materials as well as current development directions, the following problem questions were defined in the initial phase of the research:

What is the framework for the energy and climate policy of the European Union and what solutions in this context are adopted by the member states?

What solutions regarding energy and climate policy are adopted at the regional level?

What are the effects of the energy transformation for individual regions?

What are the challenges of the energy transition process?

Are governmental and self-governmental authorities capable of implementing a just transition?

What is the impact of the government failure theory on the implementation of energy and climate policy?

The subject of the research are processes related to the cooperation of local governments, entrepreneurs, NGOs and universities in the field of energy transformation. The catalogue of entities was adopted on the basis of the Triple Helix and Quadruple Helix. The subjects of the research were local government units of the Lodzkie and Bełchatów region. The research was rolling and carried out in several stages, including the analysis of secondary materials, quantitative research conducted with the use of a questionnaire among local government units, and field research conducted in the form of qualitative interviews.

List of participants

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Anna Bernaciak	Poznań University of Economics and Business	Poland
Roger Bivand	Norwegian School of Economics, Bergen	Norway
Raffaele Boffardi	University of Naples "L'Orientale"	Italy
Emilia Bogacka	Adam Mickiewicz University, Poznań	Poland
Hynek Böhm	Technical University of Liberec	Czech Rep.
Dani Broitman	Technion – Israel Institute of Technology	Israel
Urszula Bronisz	Maria Curie-Skłodowska University, Lublin	Poland
Stephan Brunow	University of Applied Labour Studies, Campus Schwerin	Germany
Martyna Burchardt	Adam Mickiewicz University, Poznań	Poland
Andrea Caragliu	Politecnico di Milano	Italy
Jacek Chądzyński	University of Lodz	Poland
Paweł Churski	Adam Mickiewicz University	Poland
Daniela Constantin	Bucharest University of Economic Studies	Romania
Justyna Danielewicz	University of Lodz	Poland
Barbara Dańska-Borsiak	University of Lodz	Poland
Luís Fernando De la Macorra y Cano	University of Extremadura	Spain
Magdalena Dragan	Cluj-Napoca Branch of the Romanian Academy	Romania
Agnieszka Dudzińska-Jarmolinska	Warsaw University	Poland
Wojciech Dyba	Adam Mickiewicz University, Poznań	Poland
Peter Džupka	Technical University of Košice	Slovakia
Renáta Farkas	University of Economics in Bratislava	Slovakia
María Gema Flores Polán	University of Extremadura, Badajoz	Spain
Zoltán Gál	University of Pécs, Centre for Economic and Regional Studies	Hungary
Piotr Gibas	University of Economics in Katowice	Poland
Rudolf Giffinger	Centre of Urban and Regional Research, TU Wien	Austria
Anna Gołędzinowska	Gdańsk University of Technology	Poland
Nóra Gombkötő	Széchenyi István University, Mosonmagyaróvár	Hungary
Anna Grzegorzczak	Warsaw University	Poland
Krzysztof Gwosdz	Jagiellonian University in Krakow	Poland
Tamas Gyulai	Pannon Business Association, Szombathely	Hungary
Barrai Hennebry	Munster Technological University	Ireland
Katarzyna Hetmańczyk	Jagiellonian University in Krakow	Poland
Réka Horeczki	CERS Institute for Regional Studies, Pécs	Hungary
Oto Hudec	Technical University of Košice	Slovakia
Martin Hulényi	LEM Université de Lille	France

Name	Institution	Country
Sergii Iaromenko	Institute of Rural and Agricultural Development, Polish Academy of Sciences, Warsaw	Poland
Bogdan Ibanescu	Alexandru Ioan Cuza University of Iasi	Romania
András Igari	Eötvös Loránd University, Budapest	Hungary
Romeo-Victor Ionescu	Dunarea de Jos University of Galati	Romania
Michał Jakiel	Jagiellonian University in Krakow	Poland
Patryk Kaczmarek	Adam Mickiewicz University, Poznań	Poland
Julia Kaczmarek-Khubnaia	Adam Mickiewicz University, Poznań	Poland
Petra Kinga Kézai	CERS Institute for Regional Studies, Győr	Hungary
Mojtaba Khanian	University of Lodz	Poland
Grzegorz Kinelski	WSB University	Poland
Brygida Klemens	Opole University of Technology	Poland
Krystian Koliński	Adam Mickiewicz University, Poznań	Poland
Zsuzsa Koltai	University of Pécs	Hungary
Tomasz Kossowski	Adam Mickiewicz University, Poznań	Poland
Mihails Kozlovs	University of Latvia	Latvia
Marta Kubacka	Adam Mickiewicz University, Poznań	Poland
Tetiana Kupach	Taras Shevchenko Kyiv National University	Ukraine
Joanna Kurowska-Pysz	WSB University, Dąbrowa Górnicza	Poland
Sylvia Kuziemkowska	Nicolaus Copernicus University in Toruń	Poland
Tomasz Kwiatkowski	Jagiellonian University in Krakow	Poland
József Lennert	CERS Institute for Regional Studies, Kecskemét	Hungary
Agata Lewandowska	Nicolaus Copernicus University in Toruń	Poland
Katalin Liptak	University of Miskolc	Hungary
Jana Lukacova	Technical University of Košice	Slovakia
Miklós Lukovics	University of Szeged	Hungary
Yujing Ma	Vrije Universiteit Amsterdam	Netherlands
Barbara Maćkiewicz	Adam Mickiewicz University, Poznań	Poland
Gunther Maier	University of Economics and Business, Vienna	Austria
Katarzyna Maj-Waśniowska	Cracow University of Economics	Poland
Isaiah Maket	University of Szeged	Hungary
Sevi Malisiova	Aristotle University of Thessaloniki	Greece
Codruta Mare	Babes-Bolyai University, Cluj-Napoca	Romania
Kostyantyn Mezentsev	Taras Shevchenko Kyiv National University	Ukraine
Lidia Mierzejewska	Adam Mickiewicz University, Poznań	Poland
Katarzyna Miszczak	Wroclaw University of Economics and Business	Poland
Brigitta Németh	CERS Institute of Economics, Budapest	Hungary
Valeria Nemethova	University of Economics in Bratislava	Slovakia
Quoc-Thong Nguyen	Sofft Lab, France	France
Marina Novikova	The Leibniz Institute of Ecological Urban and Regional Development, Dresden	Germany
Marek Nowak	Adam Mickiewicz University, Poznań	Poland
Artur Ochojski	University of Economics in Katowice	Poland
Tünde Olexó	Széchenyi István University, Győr	Hungary
Laura Patache	University Spiru Haret, Constanta	Romania
Robert Perdał	Adam Mickiewicz University in Poznań	Poland
Daria Pieczka	Adam Mickiewicz University in Poznań	Poland
Agnieszka Pilarska	Nicolaus Copernicus University in Toruń	Poland
Tomáš Pitka	Technical University of Košice	Slovakia
Kornelia Polek-Duraj	Opole University of Technology	Poland
Boris A. Portnov	University of Haifa	Israel
Andrea Pozsgai	Széchenyi István University, Győr	Hungary

Name	Institution	Country
Jan Prener	Charles University, Prague	Czech Rep.
Szilárd Rácz	CERS Institute for Regional Studies, Pécs	Hungary
Adam Radzimski	Adam Mickiewicz University, Poznań	Poland
Oliver Rafaj	University of Economics in Bratislava	Slovakia
Stefan Rehak	University of Economics in Bratislava	Slovakia
Adrienn Reisinger	Széchenyi István University, Győr	Hungary
Anja Rossen	Institute for Employment Research (IAB), Nuremberg	Germany
Rachid Sadgui	Moulay Ismail University of Meknès	Marocco
Magdolna Sass	CERS Institute for Regional Studies, Budapest	Hungary
Cristina Serbanica	Constantin Brancoveanu University of Pitesti	Romania
Mahla Shojae Anari	Eötvös Loránd University, Budapest	Hungary
Kamila Sikorska-Podyma	Adam Mickiewicz University in Poznań	Poland
Mayanin Asuncion Sosa Alcaraz	Tecnológico Nacional de México, IT Merida, Yucatan	Mexico
Małgorzata Stępniewska	Adam Mickiewicz University in Poznań	Poland
Katarzyna Stabryła-Chudzio	Cracow University of Economics	Poland
Tadeusz Strykiewicz	Adam Mickiewicz University, Poznań	Poland
Tomasz Studzieniecki	Gdynia Maritime University	Poland
Marta Sylla	Wrocław University of Environmental and Life Sciences	Poland
Robert Szczepanek	Jagiellonian University in Krakow	Poland
Dora Szendi	University of Miskolc	Hungary
Jean-Claude Thill	University of North Carolina at Charlotte	USA
Solomiia Tkach	Institute of Regional Research of NAS of Ukraine, Lviv	Ukraine
Balázs István Tóth	University of Sopron	Hungary
Annamaria Uzzoli	Research Centre for Astronomy and Earth Sciences, ELKH, Budapest	Hungary
Sila Ceren Varis Husar	Slovak University of Technology in Bratislava	Slovakia
György Vida	University of Szeged	Hungary
Dovydas Vidzbelis	Lithuanian Centre for Social Sciences, Vilnius	Lithuania
Magdalena Wdowicka	Adam Mickiewicz University in Poznań	Poland
Justyna Weltrowska	Adam Mickiewicz University in Poznań	Poland
Anna Wichowska	University of Warmia and Mazury	Poland
Justyna Wilk	Adam Mickiewicz University, Poznań	Poland
Zhuoying You	KU Leuven, Brusses	Belgium
Zsuzsanna Zsibók	Centre for Economic and Regional Studies	Hungary
Iwona Zwierzchowska	Adam Mickiewicz University, Poznań	Poland
Małgorzata Żak-Skwierczyńska	University of Lodz	Poland

Program

Monday 21.11.2022							
Monday 21.11.2022	13:00-13:30 CET	OPENING CEREMONY - ROOM 1					
	13:30-14:30 CET	Keynote speaker: Jean-Claude Thill - ROOM 1					
	14:30-14:45 CET	Coffee Break					
	Parallel sessions 1						
	14:45-16:15 CET	A(1)	ROOM 1	K(1)	ROOM 2	YSS(1)	ROOM 3
	16:15-16:30 CET	Coffee Break					
	Parallel sessions 2						
	16:30-18:00 CET	A(2)	ROOM 1	K(2)	ROOM 2	SH	ROOM 3

Tuesday 22.11.2022							
Tuesday 22.11.2022	Parallel sessions 3						
	9:00-10:30 CET	F(1)	ROOM 1	H	ROOM 2	YSS(2)	ROOM 3
	10:30-10:45 CET	Coffee Break					
	Parallel sessions 4						
	10:45-12:15 CET	F(2)	ROOM 1	B(1)	ROOM 2	YSS(3)	ROOM 3
	12:15-12:30 CET	Coffee Break					
	12:30-13:30 CET	Keynote speaker: Kostyantyn Mezentsev - ROOM 1					
	13:30-14:00 CET	Mid-day Break					
	Parallel sessions 5						
	14:00-15:30 CET	SD(1)	ROOM 1	B(2)	ROOM 2	I	ROOM 3
	15:30-15:45 CET	Coffee Break					
	Parallel sessions 6						
	15:45-16:45 CET	SD(2)	ROOM 1	YSS(4)	ROOM 2		
16:45-17:00 CET	Coffee Break						
Parallel sessions 7							
17:00-18:00 CET	O	ROOM 1	NP	ROOM 2	YSS(5)	ROOM 3	

Wednesday 23.11.2022							
Wednesday 23.11.2022	Parallel sessions 8						
	9:00-10:30 CET	C	ROOM 1	SA(1)	ROOM 2	G(1)	ROOM 3
	10:30-10:45 CET	Coffee Break					
	Parallel sessions 9						
	10:45-12:15 CET	SF	ROOM 1	L	ROOM 2		
	12:15-12:30 CET	Coffee Break					
	Parallel sessions 10						
	12:30-13:45 CET	G(2)	ROOM 1	SB(1)	ROOM 2		
	13:45-14:15 CET	Mid-day Break					
	Parallel sessions 11						
	14:15-15:15 CET	J	ROOM 1	SB(2)	ROOM 2	SG	ROOM 3
15:30-16:30 CET	Open discussion - Closing ceremony						



8th Central European Conference in Regional Science

"Resilience of Cities and Regions in an Uncertain Time"

November 21-23, 2022

Adam Mickiewicz University, Poznań, Poland

Conference Program

Central European Time Zone UTC+1 (Warsaw, Berlin, Budapest, Madrid, Rome, Paris)

Monday 21.11.2022

13:00-13:30 CET

OPENING CEREMONY

ROOM 1

13:30-14:30 CET

ROOM 1
Keynote speaker: Jean-Claude Thill - University of North Carolina at Charlotte, USA
Vulnerability and Resilience of Urban Regions: Contrasted Landscapes during a Pandemic
Chair person: Daniela L. Constantin

14:30-14:45 CET

Coffee Break

14:45-16:15 CET

Parallel sessions 1

A(1). Contemporary and future challenges for cities and regions: Are we ready for them?

Chair person: Jean-Claude Thill

ROOM 1

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Justyna Danielewicz</u>	Management of metropolitan areas in Slovenia
2	<u>Anna Gołędzinowska</u> , Marcin Zawada	Potential for renewable energy production in wastewater treatment plants' protection zones
3	<u>Adrienn Reisinger</u>	How can corporate social responsibility (CSR) help the local and regional economy and society to be ready for the challenges with international ideas?
4	<u>Marek Nowak</u> , Anna Bernaciak	New Center of Lubon. New quality or archipelago of enclaves?
5	<u>Miklos Lukovics</u>	Challenges of Connected and Autonomous Vehicles in Cities

K(1). Culture, tourism, health and education in an uncertain time

Chair person: Kornelia Polek-Duraj

ROOM 2

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Emilia Bogacka</u> , Jan Hauke, Anna Tobolska, Justyna Weltrowska	Differentiation of students' attitudes towards e-learning during the COVID-19 pandemic in the poviats of Wielkopolska region
2	<u>Kornelia Polek-Duraj</u>	Psychosocial working environment in the teaching profession (case study)
3	<u>Kornelia Polek-Duraj</u>	The impact of long-term distance learning on the education and upbringing of children in public primary schools
4	<u>Sergii Iaromenko</u>	Cultural heritage of Ukraine in Danger: Influence of Russian Invasion
5	<u>Zsuzsa Koltai</u>	The role of Baranya County nationality self-governments in community organization and preservation of ethnic culture

YSS(1) - Environmental and ecological issues

Chair person: Małgorzata Stępniewska

ROOM 3

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Patryk Kaczmarek</u>	Climate Change and Regional Policy: Interactions and Determinants in the Wielkopolska Region
2	<u>Agnieszka Pilarska</u>	Environmental pollution and the health condition of the population of Polish towns
3	<u>Daria Pieczka</u> , Dawid Abramowicz	Spatial policy and socio-cultural activity as drivers of ecological changes in an urbanised river catchment –example of the Junikowski Stream catchment, Poznań, Poland
4	<u>Michał Jakiel</u>	How effective is the Buffer Zone? In the context of landscape changes and spatial planning a case study of selected national parks in Poland

16:15-16:30 CET

Coffee Break

16:30-18:00 CET

Parallel sessions 2

A(2). Contemporary and future challenges for cities and regions: Are we ready for them?

Chair person: Magdolna Benke

ROOM 1

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Katarzyna Maj-Waśniowska</u> , Anna Wichowska	Challenges for the finances of metropolitan cities in Poland in a turbulent environment - experiences after the COVID-19 pandemic
2	<u>Grzegorz Kinelski</u>	Smart City 4.0 as a Set of Social Synergies in 4T Potentials theory.
3	<u>Magdolna Benke</u>	The role of vocational education and training institutions in reducing regional disadvantage in Hungary
4	<u>Sergii Iaromenko</u>	Ukraine in Geopolitical Border Area and 'Russian World' Concept

K(2). Culture, tourism, health and education in an uncertain time

Chair person: Anna Gołędzinowska

ROOM 2

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Sevi Malisiova</u> , Evangelia Stergiou, Stella Kostopoulou	Cultural vitality and tourism development in peripheral areas. Networking local festivals
2	<u>Annamaria Uzzoli</u>	COVID-19 epidemic waves in Hungary and their spatial distribution
3	<u>Zsuzsa Koltai</u>	Good practices of civil organizations in supporting nationality culture and community organization in Baranya County
4	<u>Anna Gołędzinowska</u> , Maciej Ganczarek	Adaptation to climate change in the space of Polish seaside spas - is it possible to avoid a crisis?
5	<u>Emilia Bogacka</u> , Jan Hauke, Anna Tobolska, Justyna Weltrowska	Social attitudes of academic teachers towards the digitalization of education. The case of the Wielkopolska region, Poland

SH. Migration within and out of VISEGRAD regions

Chair person: Stephan Brunow

ROOM 3

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Brigitta Németh</u> , László Lőrincz	How Social Capital is Related to Migration Between Communities?
2	<u>Martin Hulényi</u> , Jan Fidrmuc, Nicolas Debarsy	Impact of EU Integration on Development of Border Cities
3	<u>Stephan Brunow</u> , Katarzyna Mischczak, Aleksandra Wrona	Polish employees in Germany – a descriptive picture

Tuesday 22.11.2022

9:00-10:30 CET

Parallel sessions 3

F(1). Urban and regional development

Chair person: Dora Szendi

ROOM 1

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Balázs István Tóth</u>	Comparative Analysis of the EU-28 NUTS-2 Regions by the Level of Territorial Capital: Evidences from Central and Eastern Europe
2	<u>Zhuoying You</u> , Peter Teirlinck	Diversification and multi-level policy supports as enablers of specializations in green technologies at EU regional level
3	<u>Jacek Chądzyński</u> , Jagoda Adamus, Justyna Trippner-Hrabi	Obstacles in implementation of circular economy. Occurrence of market failure – case study of Lodz region
4	<u>Boris A. Portnov</u> , Oleg Dashkevych	Smart city identification: emperical criteria
5	<u>Dora Szendi</u>	Spatial convergence in Central Eastern Europe (what the patterns of GDP show)

H. Innovation, entrepreneurship and regional competitiveness

Chair person: Barbara Dańska-Borsiak

ROOM 2

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Magdolna Sass</u> , Andrea Szalavetz	Evolutionary paths in the automotive periphery and semi-periphery: the cases of Austria and Hungary compared
2	<u>Rachid Sadgui</u>	Identification of spatial agglomerations in the Moroccan manufacturing industry
3	<u>Tomasz Kwiatkowski</u>	Main axes of differentiation of cluster policies - dynamic approach
4	<u>Barbara Dańska-Borsiak</u> , Maria M. Grzelak, Aleksandra Pleśniarska, Elżbieta Roszko-Wójtowicz	In Search of Key Determinants of Innovativeness in the Regions of the Visegrad Group Countries
5	<u>Magdolna Sass</u> , Gabriella Tabajdi	Outward FDI in the automotive industries of the Visegrad countries and Austria compared Is it a sign of increased international competitiveness of indigenous companies?

YSS(2) - Policies and geography of governance

Chair person: Adam Radzimski

ROOM 3

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Petra Kinga Kézai</u>	"When brothers work together, the mountains turn to gold." Sister cities network's development in Central-Eastern-European regional centres
2	<u>Dovydas Vidzbelis</u>	Territorial analysis of Lithuanian youth turnout (on the example of 2016-2020 parliamentary elections)
3	<u>Jan Prener</u>	The Formation of Local Political Elites in the Post-transformation Period in the Czechia
4	<u>Paweł Baçal</u>	The European Committee of the Regions and the question of representation

10:30-10:45 CET

Coffee Break

10:45-12:15 CET**Parallel sessions 4****F(2). Urban and regional development****Chair person: Oto Hudec****ROOM 1**

	<i>Presenter, Authors</i>	<i>Title</i>
1	Slavomír Ondoš, Žofia Sinčáková, <u>Oto Hudec</u>	Advancement and new spatial patterns of the creative sector in the old industrial structure
2	<u>Rachid Sadgui</u>	Industrial policy and business geography in Morocco : towards a balanced territorial development
3	<u>György Vida</u> , Izabella Szakálné Kanó. Imre Lengyel	Economic restructuring and concentration in the CEE regions between 2000 and 2018 based on Gross value added analysis
4	Krystian Heffner, <u>Piotr Gibas</u>	Regional centers vs. regional cohesion in Poland
5	<u>María Gema Flores Polán</u> , Luís Fernando De la Macorra Cano	Human development index and sustainable human development indices in the iberophone region. 2000-2020

B(1). Cities and regions facing the economic crisis and global epidemic**Chair person: Gunther Maier****ROOM 2**

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Ștefana Belbe</u> , Codruța Mare, Dariu Moldovan, Alin Andrieș	Space-time effects of Covid-19 on loans, savings and current accounts in Romania
2	<u>Amitrajeet A. Batabyal</u> , Hamid Beladi	City and Regional Demand for Vaccines Whose Supply Arises from Competition in a Bertrand Duopoly
3	<u>Nóra Gombkötő</u> , Katalin Mezei	International Trade in Food and Agro-based Products in the Time of COVID-19
4	<u>Katarzyna Maj-Waśniowska</u> , Anna Wichowska	Impact of the Covid-19 on City Budget Revenue in Poland

YSS(3) - Economic geography**Chair person: Artur Ochojski****ROOM 3**

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Tomáš Pitka</u> , Jozef Bucko	Segmentation of retail customers based on cluster analysis as a part of building successful CRM.
2	<u>Katarzyna Hetmańczyk</u>	Mechanisms of new path creation based on Industry 4.0 technologies providers in (post)mining towns and cities in Poland
3	<u>Tünde Olexó</u>	Measuring the Shadow Market Trends of the EUROSTAT COICOP 12 Regional Consumption Datasets by Applying the Konüs-index Using Mathematical Programming Languages
4	<u>Martyna Burchardt</u>	The effect of distance on the potential values formation

12:15-12:30 CET**Coffee Break**

ROOM 1**12:30-13:30 CET****Keynote speaker: Kostyantyn Mezentsev - Taras Shevchenko National University of Kyiv, Ukraine****How many more people must die? Urban geopolitics and military urbicide****Chair person: Tadeusz Stryjakiewicz****13:30-14:00 CET****Mid-day Break****14:00-15:30 CET****Parallel sessions 5****SD(1). The relationship between innovation ecosystem and creative industry in the development of regional centers ROOM 1****Chair person: Reka Horeczki, Stefan Bilasco**

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Réka Horeczki</u> , Dóra Bálint, Judit Kálmán, Gábor Lux	Coworking places in Hungary during the Covid19 pandemic
2	<u>Magdalena Drăgan</u> , Réka Horeczki, Gabriela Munteanu	Comparative analysis of the digital policies in Romania and Hungary
3	<u>Judit Berkes</u> , Szilárd Rác	Firm geography in Central European second tier cities
4	<u>Zsuzsanna Zsibók</u> , Ildikó Egyed	Productivity differences in two regional centres based on regional and firm-level evidence

B(2). Cities and regions facing the economic crisis and global epidemic**Chair person: Raffaele Boffardi****ROOM 2**

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Valeria Nemethova</u> , Eva Belvoncikova	Exploring efficiency at primary level of education. Data envelopment analysis of schools in Bratislava
2	<u>Czesław Adamiak</u> , Paweł Churski, Anna Dubownik, Maciej Pietrzykowski, Barbara Szyda	The internal periphery in the face of the economic crisis and global epidemic - selected findings from Poland
3	Natalia Rybnikova, <u>Dani Broitman</u> , Daniel Czamanski	Initial signs of post-Covid-19 urban structures? A metropolitan assessment in Israel
4	<u>András Igari</u>	Changing spatial patterns of excess mortality in Europe during the COVID-19 pandemic
5	<u>Raffaele Boffardi</u> , Roberta Arbolino, Luisa De Simone, Oreste Napolitano	Post-pandemic phase and Economic Convergence: the role of the National Plans for Recovery and Resilience in the 27 EU Member States

I. Spatial planning, sustainable development and ecological transition

Chair person: Boris A. Portnov

ROOM 3

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Yujing Ma</u> , Eric Koomen, Dani Broitman	Accounting for rivalry in the local provision of ecosystem services in urban areas
2	<u>Marta Kubacka</u> , Antonio Ledda, Giovanna Calia, Maria Grazia Gavina Ruiu, Andrea De Montis	Italy vs Poland: a comparative analysis of planning system attitudes toward adaptation to climate changes and green infrastructures
3	Nahum M. Gabinet, <u>Boris A. Portnov</u>	Regional and Individual-level Differences in the Impact of Environmental Risk Factors on Sleep Duration and Quality in Urban Areas: Evidence from a Nation-wide Survey in Israel
4	<u>Marta Sylla</u>	The role of natural capital in sustainable regional development

15:30-15:45 CET

Coffee Break

15:45-16:45 CET

Parallel sessions 6

SD(2). The relationship between innovation ecosystem and creative industry in the development of regional centers

Chair person: Reka Horeczki, Stefan Bilasco

ROOM 1

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Magdalena Drăgan</u> , Ștefan Cibian, Silvia Fierăscu, Ianis Rusitoru, Edi Beserman	The digital divide and its mitigation in Romania
2	<u>Réka Horeczki</u> , Stefan Bilasco	The territorial characteristics of cultural and creative industries through the case of Pécs and Cluj-Napoca
3	<u>Tamas Gyulai</u> , Balázs Barta, Adrienn Bokányi	Urban planning and innovation with creativity for health and resilience

YSS(4) - Social geography

Chair person: Stefan Rehak

ROOM 2

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Julia Kaczmarek-Khubnaia</u>	A community of outcasts – the impact of social exclusion on development processes in Georgia
2	<u>Sylwia Kuziemkowska</u>	Social perception and awareness in the management of the renewable energy sector. An example of the Lipno powiat
3	Jana Lukáčová, <u>Daniela Hadačová</u>	Do demographic indicators affect the expansion of non-profit organizations? Case study of Slovak districts

16:45-17:00 CET

Coffee Break

17:00-18:00 CET

Parallel sessions 7

O. The digital world, digital region and digital society

Chair person: **Andrea Caragliu**

ROOM 1

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Štefan Reháč</u> , Oliver E. Rafaj	Geography of Smart City Research
2	<u>Andrea Caragliu</u> , Chiara F. Del Bo	Smart Cities and the urban digital divide
3	<u>Boglárka Barsi</u>	Adaptation of smart city models in rural areas

NP. Regional economics

Chair person: **Zoltán Gál**

ROOM 2

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Zoltán Gál</u> , Stefan Apostol	Role of Foreign Direct Investment in regional economic growth and regional productivity: The contradictory case of Central & Eastern Europe
2	<u>Katarzyna Stabryła-Chudzio</u>	European added value in the context of spending on cohesion policy from the EU budget
3	<u>María Gema Flores Polán</u> , Luís Fernando De la Macorra Cano	Economic convergence of the Southwest Iberian socio-economic area in Spain and Portugal

YSS(5) - Problems of rural areas

Chair person: **Tomasz Kossowski**

ROOM 3

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Krystian Koliński</u>	Rural areas in the light of the resilience concept
2	<u>Agata Lewandowska</u> , Justyna Chodkowska-Miszczuk	"In between giants" – the challenges of building resilience in the rural areas in the hinterland of two large urban centers
3	<u>Andrea Pozsgaj</u> , Tamás Hardi	Land use change in Hungarian sample area (Szigetköz) and its effect on agrobiodiversity

Wednesday 23.11.2022

9:00-10:30 CET

Parallel sessions 8

C. Cities and regions in climate change

Chair person: Amitrajeet A. Batabyal

ROOM 1

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Mayanin Sosa-Alcaraz</u> , Alfonso Munguia-Gil, Perla Garrido-Vivas, Gustavo Monforte-Mendez	Resilience to climate change from bio-regional environmental education in Yucatan
2	<u>Małgorzata Żak-Skwierczyńska</u>	Challenges of energy transition of the post-coal region for local government units on the example of Bełchatów region
3	<u>Grzegorz Kinelski</u>	The Sustainable Smart City Management: Selected Examples from Polish Metropolitan Areas
4	<u>Urszula Bronisz</u>	Climate proactivity as a factor fostering regional competitiveness and resilience
5	<u>Amitrajeet A. Batabyal</u> , Karima Kourtit, Peter Nijkamp	How Climate Change Affects the Ganges and Water Pollution by Tanneries in Kanpur

SA(1). Societies and borders - cooperation in the turbulent environment

Chair persons: Joanna Kurowska-Pysz, Tomasz Studzieniecki

ROOM 2

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Joanna Kurowska-Pysz</u>	Cross-border cooperation in the shadow of crisis - the Turów coalmine case
2	<u>Tomasz Studzieniecki</u> , Beata Meyer	Determinants of territorial cooperation of national and ethnic minorities in the Baltic Sea Region
3	<u>Hynek Böhm</u> , Artur Boháč	The Turów dispute - perception of the locals
4	<u>Melinda Benczi</u>	Outlining the main perception strands on the Hungarian-Romanian border
5	<u>Tomasz Studzieniecki</u> , Abdelhamid Nechad, <u>Domagoj Cingula</u>	International scientific cooperation in the turbulent environment -the case study of Economic and Social Development (ESD) project

G(1). Demography, migration and social inequalities

Chair person: József Lennert

ROOM 3

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Mihails Kozlovs</u>	The role of social innovation transfer through emigration and remittances analysis in the Baltic countries, 2015-2020
2	<u>József Lennert</u>	Creating spatially detailed demographic forecasts for Hungary using agent-based modelling – earlier results and ongoing updates
3	<u>Anja Rossen</u> , Jan Cornelius Peters, Moritz Meister	Welcome back! The impact of return initiatives on interregional return migration to rural regions
4	<u>Isaiah Juma Maket</u> , Izabella Szakálné Kano, Zsófia Boglárka Vas	Urban Agglomeration and Income Inequality: Is Kuznets Hypothesis Valid for Sub-Saharan Africa?
5	<u>Anna Grzegorzcyk</u>	Mobility segregation throughout the lifetime among Warsaw inhabitants - patterns of segregation of lower social profile inhabitants

10:30-10:45 CET

Coffee Break

10:45-12:15 CET

Parallel sessions 9

SF. Resilient Development as driving Force of urban-regional Transformation

Chair person: Rudolf Giffinger

ROOM 1

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Lidia Mierzejewska</u> , Kamila Sikorska-Podyma, Marta Szejnfeld, <u>Magdalena Wdowicka</u> , Bogusz Modrzewski, Ewa Lechowska	The role of green spaces in building a healthy, stress-resilient city
2	<u>Anna Marymorych</u> , Tetiana Kupach, Svitlana Demianenko	Landscape approach to the organization of recreational urban spaces of Kyiv
3	<u>Dóra Szendi</u> , Géza Tóth, Zoltán Nagy	Comparative analysis of the complex resilience index - a Hungarian pilot study
4	<u>Solomiia Tkach</u> , Rudolf Giffinger	A smart indicator concept for postwar resilient development of Ukrainian cities
5	<u>Agnieszka Dudzińska-Jarmolińska</u> , Magdalena Fuhrmann, Katarzyna Łatała	Community gardens and their contribution towards pro-climate activities as an element of social integration and motivation based on city of New York

L. Land use, transport, mobility and accessibility

Chair person: Adam Radzimski

ROOM 2

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Peter Džupka</u> , Marek Gróf, Radovan Dráb, Tomáš Štofa	Monitoring of barrier-free roads accessibility in the city using shared e-scooters data
2	Jerome Verny, Ouail Oulmakki, Dhaou Ghoul, Adeline Heitz, <u>Quoc-Thong Nguyen</u>	Stakeholders engagment to enchance last-mile distribution in Paris area: an empirical investigation of B2B food distribution
3	<u>Adam Radzimski</u>	Evaluating the accessibility of social housing by sustainable travel modes: a study in Poznań, Poland
4	<u>Marek Gróf</u> , Peter Džupka, Tomáš Štofa, Radoslav Dráb	Location selection method for DRT utilisation based on the fixed transportation cost and effectiveness analysis
5	<u>Mojtaba Khanian</u> , Edyta Łaszkiwicz, Jakub Kronenberg	Are children's home-school routes green? An evaluation of green space visibility for primary school children in Lodz

12:15-12:30 CET

Coffee Break

12:30-13:45 CET**Parallel sessions 10****G(2). Demography, migration and social inequalities****Chair person: Bogdan-Constantin Ibanescu****ROOM 1***Presenter, Authors**Title*

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|---|---|--|
| 1 | <u>Bogdan-Constantin Ibanescu</u> , Gabriela Carmen Pascariu, Alexandra Gheorghiu, Mioara Cristea | A spatial model for the evolution of job insecurity during the first pandemic wave |
| 2 | <u>Judit Berkes</u> | The location of the social 'elite' in urban areas of Hungarian regional centres |
| 3 | <u>Sindija Balode</u> | Divergent Population Dynamics: The Case of the Inner-City of Riga |

SB(1). Smart, sustainable, resilient regions in time of multiple and overlapping crises**Chair person: Romeo-Victor Ionescu****ROOM 2***Presenter, Authors**Title*

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| 1 | <u>Mahla Shojae Anari</u> , Ákos Jakobi | Investigating the role of big data in smart city management Case Study: Tehran City |
| 2 | <u>Laura Patache</u> , Iuliana Pârnu, Claudiu Chiru | Digital resilience is the new normal of higher education: student and teacher perceptions from Romania |
| 3 | <u>Andreea Matyas</u> , Codruța Mare | Impact of Public Transportation on Labour Market and Development - A Spatial Perspective |

13:45-14:15 CET**Mid-day Break****14:15-15:15 CET****Parallel sessions 11****J. Rural regions and their development****Chair person: Barbara Maćkiewicz****ROOM 1***Presenter, Authors**Title*

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| 1 | <u>Barraí Hennebry</u> , Marina Novikova | Covid19 and 'Urban Exodus'. Evidence from house prices in rural Ireland |
| 2 | <u>Brygida Klemens</u> | "Smart village" concept in the development of rural areas |
| 3 | <u>Katalin Lipták</u> | The role of social enterprises in rural development of Hungary |

SB(2). Smart, sustainable, resilient regions in time of multiple and overlapping crises**Chair person: Romeo-Victor Ionescu****ROOM 2***Presenter, Authors**Title*

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| 1 | <u>Romeo-Victor Ionescu</u> , Monica Laura Zlati, Valentin-Marian Antohi, Irina Olimpia Susanu, Nicoleta Cristache | A new approach on renewable energy as a support for regional economic development among the European Union |
| 2 | <u>Bogdan-Constantin Ibanescu</u> , Gabriela Carmen Pascariu, Cristina Lupu, Ioana Bejenaru | The connections between smartness and resilience on urban tourism destinations |
| 3 | <u>Cristina Serbanica</u> , Alina Profiroiu, Daniela L. Constantin | Decision makers' perception of the resilience of Romanian regions. A qualitative inquiry |

SG. Digital Entrepreneurs on the Pathways of Regional Development

Chair persons: Marcin Baron, Krzysztof Gwosdz ROOM 3

	<i>Presenter, Authors</i>	<i>Title</i>
1	<u>Tamas Gyulai</u> , Balázs Barta, Attila Joós	Artificial Intelligence for Industry 4.0 by Learning Factories
2	<u>Robert Szczepanek</u> , Marcin Budka, Krzysztof Gwosdz, Marcin Baron, Mariusz Hetmańczyk, Agnieszka Sobala-Gwosdz	Challenges in collecting and analyzing data on digital entrepreneurs
3	<u>Wojciech Dyba</u> , Eleonora Di Maria	Digitalization of companies in Europe: barriers, supporting activities and the effects of the Covid-19 pandemic

15:30-16:00 CET

Open discussion
Closing ceremony

ROOM 1