

# **Poverty Risk and Quality of Housing** in the EU regions with a Different **Urbanisation Rate**

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### **Abstract**

This article aims to compare selected parameters of quality of life in the European Union countries by the degree of urbanisation of living space and to verify the validity of three hypotheses aimed at quality of life evaluation in rural EU areas. The primary data source is the Eurostat statistical data. Comparative analysis, variability, and concentration analysis using the method of adjusted index of geographical concentration have been applied during the processing. The analysis results show that the degree of risk of poverty "is split" in the EU between rural areas and cities. In this respect, European countries are divided into two roughly equal groups. The degree of concentration of people at risk of poverty in rural areas exceeds half the attainable interval. The extent of the actual geographic concentration of the population, and at the same time, the disparities existing between European countries are both involved in it. Cost and quality of housing show the highest variability within European rural areas. The findings are compliant with those experts who plead for a more effective tool targeting of EU cohesion policy in pursuit of its objectives in the field of poverty reduction.

### Keywords

Rural Region, Housing, Degree of Urbanisation, Risk of Poverty, Overcrowding, Cost Overburden

# **JEL Classification**

R58, R21, I31

### Introduction

Until late 2007 and 2008, when the rate of urbanisation worldwide has grown from 49.98% to 50.49% of city dwellers (Index Mundi, 2016), most of the Earth's population lived in the countryside. Despite the higher proportion of the urban population on Earth, the countryside is currently still home to more than 3.5 billion people.

If the competitiveness of the region is manifested in the ability to retain or attract people and capital, then it is necessary, namely, for people – both residents and potential residents – to create suitable living conditions. If the rural regions want to achieve an increase in human and social capital (Katonane Kovacz et al. 2016), it appears necessary to pay increased attention to the quality of life of people in rural regions. The EU places considerable emphasis on regional policy, aiming to bring Europe's regions and cities closer together in economic, social, and environmental terms. The Cohesion Policy has been devoted to reducing economic disparities. Currently, the Cohesion Policy is an integral part of the Europe 2020 strategy, with a strong focus on employment, innovation, sustainability, and reducing poverty and social exclusion.

Regional targeting generates a demand for more detailed information on poverty and social exclusion in rural areas of Europe. The at-risk of poverty rate is a crucial monitoring indicator in connection with the European 2020 strategy.

Majority of studies are focused on testing convergence in poverty and social exclusion indicators progress of the EU member states towards the targets of the Europe 2020 strategy (Lafuente et al., 2020). Whelan and Maître (2010) developed alternative indicators of poverty in the enlarged European Union in consideration of the welfare regimes and socioeconomic variation in poverty levels. Fusco et al. (2011) investigated the relationship between income, poverty, and material deprivation in 25 EU countries and analysed the most important factors that determine the risk of being poor or materially deprived. Halásková and Bečvář (2020) evaluated social protection expenditure in relation to poverty and social exclusion in 27 EU countries. Report of European Anti-Poverty Network (EAPN, 2019) state that the risk factor increasing poverty is housing tenure (people in rented

accommodation facing rising unaffordable rents) and in some countries the geographic factors - living in rural rather than in urban areas.

The importance of paying attention to rural areas emphasises some authors in their works already in the 1994 year (Shuckmith et al.). They stress the EU rural areas are endangered because of poverty, deprivation, and social exclusion. Melo et al. (2016) in their analysis investigated that in the UK, there is considerable spatial dispersion in at-risk of poverty rates. The highest rates tend to be found in large cities, but there are also relatively high rates in some remote rural areas. They confirm that regional differences in housing costs can act as an essential driver of poverty, particularly in large cities. Other studies (Matz, Stieb and Brion, 2015; Iwacewicz-Orlowska, 2016; Bernard, 2019) provide some evidence that disparities in living and social conditions between urban and rural regions, are still found. Interregional comparison of the risk of poverty and material deprivation in the Czech Republic was developed by Kraftová and Duriová (2017).

To develop programs for reconstruction and effective policies for rural areas, we pay attention to the issues of poverty and housing as parameters of quality of life. Based on OECD (2016), housing is the most crucial indicator among the three indicators evaluating the material side of life, in addition to income and work.

This article aims to compare selected parameters of quality of life in the European Union countries by the degree of urbanisation of living space and to verify the validity of three hypotheses aimed at quality of life evaluation in rural EU areas:

- A. The risk of poverty rate applies to the rural population in most EU countries.
- B. Geographical concentration of people at risk of poverty in rural areas is significant.
- C. The cost and quality of housing indicators in rural areas of the European Union (EU) relating to the value of the EU28 as a whole
- Ca. have high variability in terms of evaluated parameters,
- Cb. have the highest level in all countries.

# **Literature Review**

The definition of regions is not entirely without problems, and there are many approaches to it. Among the best known is the OECD typology (OECD, 2011), which divides the regions into predominantly urban, intermediate, or predominantly rural, with emphasis on the criterion of population density. This division is more or less used by Eurostat (2014), namely, for classification NUTS 2 and NUTS 3 (Dijkstra and Poelman, 2015). However, some authors have tried to modify it. For example, Brezza et al. (2011) use the categories of predominantly urban and intermediate, but within predominantly urban and intermediate, they distinguish "close to a city" and "remote". According to Brandmueller et al. (2017), several economic and social issues have currently urban or rural characteristics, and therefore statistical data on NUTS regions was supplemented with data on cities and rural areas. Degree of urbanisation classifies local administrative units (LAU) based on the share of the local population living in urban clusters and urban centres into cities (densely populated areas: at least 50% of the population lives in rural grid cells and less than 50% of the population lives in urban centres) and rural areas (thinly populated areas: more than 50% of the population lives in rural grid cells)

Furthermore, 24% of the EU's population lives in predominantly rural areas and 35% in significantly rural regions. The European rural areas are incredibly diverse, ranging from remote rural areas suffering from depopulation and decline to peri-urban areas under increasing pressure from urban centres.

There are significant regional differences in one of the most important living conditions – housing. This is being stated while aware of the multidimensional evaluation of its quality. Differences can be observed both between urban and rural regions (Dobelniece and Rasnaca, 2016) and within the rural regions themselves (Ren et al., 2019). It is confirmed that the parameters of housing play a crucial role in comparing the risk of poverty in urban and rural regions (Melo et al. 2016). At the same time, the diversification of regions within individual European countries must be seen in this respect; Weziak-Bialovska (2016) notes that: "In countries with a low number of poor, in general, poverty is relatively higher in large urban areas."

Housing conditions are both an essential contributor to quality of life and an essential indicator for differences in social conditions among various states, regions, and cities (Clark and Dieleman, 1996; Murie, 1983; Mayer et al., 2016; Oyvat, 2016).

Turkina (2007) emphasises that the rural territory is the most important source of social security, at the same time, rural settlement is the most vulnerable form of the territorial organisation, which is characterised by a continual increase of the gap in the quality of life in comparison with the city.

Programs for the reconstruction and development of rural communities are based on the knowledge of the specific values of the countryside, its irreplaceable social, cultural, environmental, and economic importance, and the necessity for healthy and comprehensive development in the context of sustainable development of society (Pezzini, 2001).

In respect of that, the objective of our research is assessing whether the risk of poverty affects the rural population and to what extent is this concentration of rural population significant by developing an adjusted index of geographic concentration. Consequently, the quality of housing in rural areas in EU is evaluated by using selected indicators (housing costs on disposable income, housing costs overburden, rate of overpopulation dwelling) based on the degree of urbanisation at the national level with relation to the value of these indicators at EU-level.

# **Methods**

Eurostat data were used in the analysis - Survey on Income and Living Conditions (EU SILC) regarding the EU28 countries as a whole and an individual EU country except Ireland, whose data were not published. Three degrees of urbanisation mentioned above have been considered, i.e. "cities", "towns and suburbs" and "rural" as defined by Eurostat (2014). Eurostat always provides data for the relevant type of regions of the country as a whole. The reference year is the year 2015.

The following indicators are used to verify the validity of the hypotheses mentioned above.

Ad A) The indicator of at-risk of poverty rate (hereinafter "RPR") - after deducting housing costs - represents the percentage of persons with an equivalent disposable income below the risk of the poverty threshold, which is set at 60% of the national median equivalent of disposable income after social transfers (Eurostat, 2016). The data obtained are put into tables and sorted in descending order by the risk of poverty of the rural population. The A hypothesis will be adopted if the RPR is highest in rural areas at least in 15 EU countries.

Ad B) The geographic concentration of people at risk of poverty in rural areas is assessed using an adjusted index of geographic concentration (AGC) using the formula (1). AGC is a general measure of geographical concentration. It can be divided into two parts, namely, regional disparities in the evaluated parameter (here RPR, respectively r) and the geographical concentration of the population, which illustrates the additive decomposition (1):

$$AGC = \sum_{i=1}^{N} \frac{r_i - p_i}{r_i - a_i} |r_i - a_i| + \sum_{i=1}^{N} \frac{p_i - a_i}{r_i - a_i} |r_i - a_i|$$
(1)

where

N - number of regions/countries,

r – the share of the population at risk of poverty in rural regions of the i-th country on the total population of EU rural regions.

a - share of rural regions surface of the i-th country on the surface of EU rural regions in total,

p – the share of the population of rural regions of the i-th country on the total population of EU.

The AGC for assessing the population at-risk of poverty consists of the impact of regional disparities in the proportion of the population at risk of poverty (left sum) and the effect of geographical concentration of the population (right sum). The AGC reaches values in the range <0; 1>, and it is true that the higher the value of the index, the higher the geographical concentration, the lower the value, the phenomenon is more scattered.

In the absence of data, Ireland but also Croatia, Cyprus, Luxembourg, and Malta have not been included in this part of the analysis, i.e., they are small countries in terms of population, and the result of the calculation can be considered acceptable.

The B hypothesis will be adopted, if the concentration of the population in the rural area exceeds the mean value of the interval, where the AGC is moving, i.e., the AGC will be higher than 0.5 regardless of the degree of influence of the two components.

Ad C) For housing assessment, three indicators have been chosen as strongly affecting the quality of life also in other parameters. Two relate to the cost aspect (Eurostat, 2015); the proportion median of housing costs (after housing allowance deduction) on disposable income (hereinafter "MHC", or the median of housing costs) and the proportion of people living in households where the total cost of housing is more than 40 % of the total disposable household income - again housing allowances are eliminated (hereinafter "HCO", or housing costs overburden) the third concerns the quality of housing, and it is the proportion of people who live in overcrowded dwellings (hereinafter "ROD", or rate of overpopulation dwelling)<sup>1</sup>.

For better comparability of the results, the values of the housing indicators of each country and individual degrees of urbanisation were indexed relative to the EU28 value, as indicated by the formula (2):

<sup>&</sup>lt;sup>1</sup> A person is considered as living in an overcrowded household if the household does not have at its disposal a minimum of rooms equal to: one room for the household; - one room by couple in the household; - one room for each single person aged 18 and more; - one room by pair of single people of the same sex between 12 and 17 years of age; - one room for each single person between 12 and 17 years of age and not included in the previous category; - one room by pair of children under 12 years of age. (Eurostat, 2016)

$$i_{x,c,u} = \frac{X_{c,u}}{X_{EU28,u}} \tag{2}$$

#### where

X – represents the relevant indicator (MHC, HCO, ROD),

c - individual country,

u – one of the three degrees of urbanisation,

EU28 – indicates that it is a value of the whole group of EU28 countries.

The variability of indexed values was assessed by the variation coefficient of each indicator and each degree of urbanisation. For the overall assessment of the level of housing within the three degrees of urbanisation in individual countries, the sum of these indexed (relative) values of the three analysed indicators (3) has been used.

$$\sum_{r=1}^{3} i_{c,u} \tag{3}$$

#### where

i – represents the indexed relevant indicator (MHC, HCO, ROD)

c - individual country,

u – one of the three degrees of urbanization.

It should be noted that all three housing indicators have the minimisation character, i.e., the lower the value, the better.

### Results

Results of the analysis of the problem and further discussion have been divided into three parts - the results of the risk of poverty analysis in EU countries based on the degree of urbanisation; evaluation of parameters of living in EU countries based on the degree of urbanisation and comparison of the summary of housing parameters of the EU countries to the EU28 values.

### Risk of poverty rate in EU countries based on the degree of urbanisation

Regions in which there is a higher degree of risk of poverty and social exclusion of the population cannot undoubtedly be classified among competitive regions. Based on the Eurostat data (2016), more than 117 million people have thus been at risk in 2015 in the EU27 countries<sup>2</sup> from the estimated total EU population of 508.2 million people, which is far from negligible. The situation in the regions of the EU countries based on the degree of urbanisation illustrates Table 1.

Table 1. Risk of poverty rate in the EU countries based on the degree of urbanisation (%)

Country	Cities	Towns& suburbs	Rural areas	Country	Cities	Towns& suburbs	Rural areas	
Romania	22.0	30.0	53.9	Estonia	30.1	31.4	32.6	
Bulgaria	25.2	38.3	52.7	Netherlands	39.6	33.4	32.6	
Greece	43.7	45.9	52.2	Slovakia	24.2	27.4	31.6	
Malta	21.4	21.7	50.0	United Kingdom	40.4	28.6	30.4	
Poland	24.0	30.8	40.6	Italy	30.8	29.9	29.7	
Lithuania	25.6	29.4	40.2	Sweden	30.1	27.0	29.3	
Latvia	27.6	28.9	39.8	Belgium	39.5	26.3	28.9	
Croatia	21.5	27.3	37.5	Cyprus	22.5	32.6	28.0	
Spain	29.2	32.7	36.7	Czech Republic	30.4	29.4	26.3	
Hungary	20.4	32.6	36.7	Finland	28.1	26.2	26.3	
Portugal	28.4	28.4	35.4	Slovenia	26.4	24.2	24.5	
European Union	33.2	30.7	33.9	France	30.1	29.1	23.0	
Germany	39.2	32.5	33.7	Luxembourg	32.0	31.2	21.2	
Denmark	40.5	31.0	33.0	Austria	34.6	28.8	20.2	

Note: Highlighted by colour are values higher than the EU as a whole

Source: own processing based on the Eurostat data (Eurostat, 2016)

It is clear from Table 1 that across the EU, the risk of poverty is divided almost equally among the three types of territory by the degree of urbanisation. EU countries should be even split into two halves (if we ignore the atypical

<sup>&</sup>lt;sup>2</sup> without Ireland – data is not available

Cyprus, where the highest risk of poverty rate is in towns and suburbs). The first one of them shows the highest levels of risk in rural areas (mostly South and Central Europe), the second on the contrary, has the highest rate of risk of poverty in cities (the Czech Republic and Slovenia join the traditional EU countries, the richest countries of the EU13).

Regarding the condition to determine the validity of the stated hypothesis A, it should be noted that this hypothesis was not confirmed. In contrast to the required conditions, the RPR is not the highest in 15, but only in 13 EU countries. Although the EU28 indicator for rural areas slightly exceeds the value for cities, in the EU countries, the problem is similar in rural areas as in cities. The difference is that in countries, where the number of at risk of poverty persons is higher in rural areas, the indicator values are significantly higher than in countries, where the at-risk of poverty persons are mainly in cities.

# The degree of concentration of people at risk of poverty in rural areas of the EU countries

The calculated index AGC for the year 2015 reached the level of 0.670, i.e., the B hypothesis is confirmed, because the result AGC>0.5 shows a significant rate of concentration of at-risk of the poverty population. Interestingly, this result is about 44% due to regional disparities in EU countries in indicators of risk of poverty and 56% due to the influence of the actual geographic concentration of rural population in the countryside, since AGC = 0.294 + 0.376 = 0.670.

# Housing parameters in EU countries by degree of urbanisation

Table 2 shows the values of the median of housing costs, housing cost overburden, and rate overpopulation dwelling based on individual degrees of urbanisation for the EU28. The following relations result from this:

Table 2. Values of the analysed housing parameters within the EU28 based on the degree of urbanisation (%)

Degree of	Cities			T	owns & sub	urbs	Rural areas			
urbanisation/Housing parameters	MHC	НСО	ROD	МНС	НСО	ROD	MHC	НСО	ROD	
in %	18.3	13.4	18.0	16.3	10.7	10.7	15.4	9.1	17.4	

Source: own processing based on Eurostat data (Eurostat, 2015)

Thus, based on costs, housing in rural areas looks like the most advantageous (the median of housing costs and housing costs overburden are the lowest there). However, in terms of selected quality indicators - the extent of overcrowding dwellings - cities and rural areas are close to each other. They are followed, with a considerable gap, by a moderate degree of urbanisation, i.e., towns and suburbs.

Table 3 points out more specifically to the situation in individual countries; the last line also contains the variation coefficient values as the selected indicators of variability to verify the Ca hypothesis.

Relatively unfavourable values of the monitored parameters are in Table 3 highlighted by colour. An unfavourable situation for all parameters can be seen in all degrees of urbanisation in Bulgaria and Greece, in cities, Romania joins them in all except for one parameter. Denmark, Germany, and the Netherlands show better values than EU28 only in two parameters.

From this shortlist, it is clear that the issue of housing is not directly linked with the level of wealth of the country. Relatively wealthy EU countries such as Denmark, Germany, and the Netherlands, are lost compared to the EU28 because of housing costs. Only the level of overcrowding dwellings does not represent a problem.

However, regarding the evaluation of housing parameters variability according to individual degrees of urbanisation with a coefficient of variation (CV).

$$CV$$
 (cities 0.42) <  $CV$  (towns and suburbs 0.60) <  $CV$  (rural areas 0.61) (7)

It can be stated that the European rural area shows in this respect the highest variability in all parameters, the inequality (7) is valid. The validity of the Ca hypothesis is thus confirmed.

Table 3. The relative values of the housing parameters of individual countries relative to the EU28 degree of urbanisation

	Cities			Towns & suburbs			Rural areas		
Country/housing parameters	MHC	HCO	ROD	MHC	HCO	ROD	MHC	HCO	ROD
Belgium	1.06	1.07	0.18	0.88	0.72	0.72	0.97	0.74	0.02
Bulgaria	1.04	1.04	2.67	1.24	1.36	1.36	1.37	1.78	1.94
Czech Republic	1.18	1.16	1.31	1.22	0.99	0.99	1.11	0.65	0.70
Denmark	1.42	1.65	0.77	1.36	1.19	1.19	1.35	1.20	0.28
Germany	1.31	1.43	0.58	1.27	1.36	1.36	1.28	1.32	0.22
Estonia	0.72	0.63	0.87	0.78	0.57	0.57	0.70	0.57	0.68
Greece	1.96	3.11	1.62	2.20	3.91	3.91	2.23	4.32	1.60
Spain	0.72	0.84	0.36	0.76	0.98	0.98	0.75	0.95	0.22
France	0.92	0.56	0.61	0.74	0.50	0.50	0.67	0.37	0.20
Croatia	0.72	0.43	2.34	0.90	0.57	0.57	1.00	0.95	2.36
Italy	0.70	0.85	1.94	0.67	0.72	0.72	0.68	0.66	1.34
Cyprus	0.55	0.35	0.07	0.61	0.28	0.28	0.55	0.33	0.13
Latvia	0.81	0.67	2.38	0.91	0.66	0.66	0.84	0.82	2.20
Lithuania	0.79	0.75	1.42	1.03	1.17	1.17	0.87	0.91	1.57
Luxembourg	0.57	0.63	0.73	0.59	0.70	0.70	0.44	0.46	0.31
Hungary	0.96	0.69	2.17	1.14	0.89	0.89	1.17	0.84	2.49
Malta	0.24	0.08	0.20	0.23	0.11	0.11	0.08	0.00	0.00
Netherlands	1.59	1.43	0.23	1.56	1.26	1.26	1.52	1.11	0.26
Austria	1.04	0.90	1.57	0.91	0.55	0.55	0.70	0.26	0.40
Poland	1.04	0.73	2.42	1.06	0.82	0.82	1.06	0.87	2.56
Portugal	0.75	0.71	0.71	0.84	0.93	0.93	0.80	0.80	0.46
Romania	0.99	1.03	2.88	1.14	1.30	1.30	1.27	2.04	2.74
Slovenia	0.73	0.69	0.93	0.76	0.58	0.58	0.71	0.54	0.67
Slovakia	0.98	0.90	2.00	1.02	0.80	0.80	1.10	0.86	1.84
Finland	0.78	0.56	0.51	0.76	0.36	0.36	0.70	0.32	0.26
Sweden	0.96	0.71	1.04	0.94	0.61	0.61	1.01	0.68	0.38
United Kingdom	0.98	1.10	0.56	0.91	0.92	0.92	0.99	1.04	0.20
Coefficient of variation	0.36	0.61	0.70	0.37	0.74	0.74	0.42	0.86	0.95
The average of indexed housing indicators values	0.94	0.91	1.22	0.98	0.92	0.92	0.96	0.94	0.96

Source: own processing based on Eurostat data (Eurostat, 2015)

# Comparison of overall housing parameter values in individual country relative to EU28

The overall indicator is the sum of the indexed values of the housing parameters of the corresponding country and the degree of urbanisation (3).

If we assess altogether, the level of housing in EU countries is greatly differentiated based on the degree of urbanisation of the region. Problems can be seen in Romania, Bulgaria, Croatia, Hungary, Poland, but also in Slovakia, Latvia and Lithuania. (It is also consistent with the AGC analysis results). On the contrary, in some countries, "moderate degree of urbanisation" – is problematic: Germany, Greece, the Netherlands, and the United Kingdom. Cities are then a problem for the Czech Republic, Denmark, Slovenia, Sweden and Slovakia. If the value of EU28 is considered as the "cohesion level", in order to improve the situation, it is necessary to target the cohesion policy designed to eliminate the inclusion of housing regionally in a differentiated way.

Based on the analysis of the applied index (3), it is clear that the individual degrees of urbanisation show, on the one hand, a different level to the values EU28, on the other hand, it is a different distribution within the evaluated countries.

The sum of the indexed values of housing indicators (MHC, HCO, and ROD) based on Formula 4, enables us to state that "cohesion level" (i.e., for EU28 has value 3) in a negative sense, on average exceeds the level of urbanisation in the cities (3.08). On the contrary, the rural areas do not achieve the cohesion level (2.86), and towns and suburbs are even farther from the desired value (2.82). Nevertheless, the number of countries (again, in the negative sense) exceeding this average of urbanisation level is: 19 countries exceed the level in cities, 10 in rural areas, and 9 in towns and suburbs.

Cb hypothesis was not confirmed. Parameters related to the cost and quality of housing have a higher value within the cities of the European Union to the value of the EU28 as a whole, followed by rural areas and then by towns and suburbs.

### **Discussion**

Across the EU, the risk of poverty is almost equally divided among the three types of territory by the degree of urbanisation. EU countries can yet be divided into two parts - the first one shows the highest levels of risk of poverty in rural areas (mostly South and Central Europe), the second, however, has the highest rate of risk of poverty in cities (these are the traditional EU countries with the Czech Republic and Slovenia).

The concentration of at-risk of poverty population in rural areas of EU countries exceeded the mean value of the interval, which is caused by both the actual geographic concentration of population in the country, as well as the disparities existing in this regard between EU countries.

In terms of cost and selected quality parameters of housing, it is noted that the higher the degree of urbanisation, the higher the median housing costs and the greater the cost of living burden, i.e. these cost parameters look best for the EU28 rural areas. The situation is different in terms of overcrowded dwellings - this indicator is the highest in the cities, followed by rural areas and the lowest level, i.e., the best value indicator, is shown by towns, the second-best in the suburbs.

The level of the sum of indexed indicators for EU28 level "3", which the authors describe as "cohesive" is exceeded in cities. The aggregate value of rural areas is higher in comparison with towns and suburbs, which is caused by a high overpopulated dwelling rate. This eliminates the low-cost parameters of housing in rural areas. However, what is significant is the considerable difference between countries within the monitored parameters.

It should be noted that it is important to consider the variability of indicators in its summarised evaluation. Variability causes deviations between relation on based on a percentage and based on an average of indexed values.

# Conclusion

The degree of urbanisation determines in various respects (risk of poverty, population concentration, cost and qualitative parameters of housing) quality of life, population satisfaction and as well competitiveness of regions.

The performed analysis shows that the cohesion policy, whose objectives were formulated in the Europe 2020 strategy and included inclusive growth, should use its tools in a much more targeted manner. The rate in which the housing situation was improved during the programme period might be shown by further research, which can be done when the relevant data from 2020 will be available.

Rural regions in Europe are of a distinct historical-cultural entity. If the cohesion policy gave up the care of these region populations, it would resign from maintaining part of Europe's cultural heritage. On the other hand, it is essential to create comparable living conditions to the inhabitants of rural regions, in the relevant parameters, to the ones in cities, towns, and suburbs. Developing policies for increasing overall cohesion requires recognising the particular characteristics of certain regions, cities, or areas. This research is intended to help steer the regional policy instruments of the EU and its countries materially.

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