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ARTICLES

Francesco G. TRUGLIA*, Alessandro ZELI**

REGIONAL ECONOMIC CONVERGENCE IN THE EURO AREA

Abstract. The study of the convergence of the euro area (EA) regions allows to test theoretical hypotheses such as: the ex-post satisfaction of the OCA conditions and the resilience to the crisis of the OCA countries. Related to these facts, it has to be noted the emergence of new centers and peripheries in the European Union and euro area. We considered the per capita GDP over the period 2001–2018, the analysis is carried out by applying different methodologies such as: convergence indicators and spatial statistics models. Our results confirm the presence of divergent processes among the EA regions.

Key words: optimal currency area, euro area, regional convergence, beta-convergence, center, periphery.

1. INTRODUCTION

During the 1990s, the European economic landscape underwent a profound transformation. Major European countries transitioned from the European Monetary System to the euro, centralising monetary policy under the control of the European

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Central Bank. Another key shift was the expansion of the European Union (EU) eastward, incorporating ten additional countries from Eastern and Southeastern Europe. The introduction of the euro carried an implicit promise: extending economic prosperity from the more developed Northern European countries (the EU core) to the less developed nations of Southern and Eastern Europe (the EU periphery). Many economists, therefore, anticipated a convergence process, expecting all economies to gradually align with Northern Europe's higher standards (see De Grauwe and Mongelli [2005] for a literature review on this topic).

In the second half of the 20th century, with the creation of a single market for goods, and through the early years of the 21st century, economic growth convergence (or at least the achievement of a common growth rate) was largely accomplished. The introduction of fixed exchange rates in the mid-1990s and the adoption of the euro in 1999 further advanced this convergence process by unifying and liberalising financial markets while eliminating exchange rate risks. However, new divergence patterns emerged, particularly in terms of per capita income. These divergences can be classified along a core-periphery axis (Gräbner and Hafele, 2020; Regan, 2017). The adoption of the euro redefined the economic landscape, reinforcing a new core in Northern Europe while establishing new peripheries in Southern and Eastern Europe. These new divisions overlapped with pre-existing national disparities, sometimes blurring them, but in other cases, amplifying them. Although these trends began taking shape in the late 1990s, they became fully evident following the 2008 subprime and sovereign debt crises.

In the aftermath of the 2008 crisis, it became possible to distinguish between different groups of countries. The first group includes eurozone countries and other EU members outside the euro area. The second group differentiates between core and peripheral countries within the eurozone (Regan, 2017). According to Monfort (2020, p. 6), this issue has two dimensions: a reduction in regional disparities within the EU-28 (at least until the 2008 crisis) and a subsequent stagnation or even reversal of the convergence process. These trends appear to be primarily driven by developments in the EU core, best represented by EU-15 statistics. Unlike the broader EU, the EU-15 countries experienced stagnant divergence indicators until 2008, followed by a sharp increase. Given the economic weight of EU-15 countries, this increase significantly contributed to the overall rise in regional divergence across the EU-28 between 2009 and 2018. Notably, the EU-15 largely overlaps with the euro area, with key exceptions such as the United Kingdom and Sweden. The difference between the EU-15 and the EU-28 primarily lies in the inclusion of newer Eastern European Member States.

The data highlight a dual polarisation. On the one hand, there has been significant convergence among EU regions, primarily driven by Eastern European countries and non-eurozone members. On the other, divergence has increased among eurozone regions (Caraveli, 2017; Franks *et al.*, 2018). At the national level, this polarisation manifested itself as reduced disparities within Northern eurozone countries (the EA core)

while simultaneously pulling down the most advanced regions in Southern eurozone countries (the EA periphery) toward lower convergence levels (Monfort, 2020, p. 18).

This study aims to examine the emergence of European regional clusters, as described by Gräbner and Hafele (2020), and to identify the key drivers behind divergence trends among these regional subsets. Given that regional convergence at the European level also has implications for national convergence, we further explore intra-country convergence and divergence patterns. Our analysis focuses on the first two decades of the 21st century (2000–2018), a period marked by the introduction of the euro and the double financial crises (subprime and sovereign debt crises).

Our main objective is to determine whether a divergence process is underway among eurozone regions and between EA and non-EA countries. Additionally, we assess whether this divergence is linked to the double-dip crisis, whether national borders play a role in shaping these trends, and whether the gap between the richest and poorest regions has widened or narrowed. In this way we test the presence of endogenous OCA properties, i.e. if the a priori Oca conditions can be fulfilled ex-post.

To analyse the EU's regional convergence process, we focus on eurozone countries to assess the impact of the crisis on the EA and the resilience of the euro system in terms of regional convergence and balanced territorial growth. Our findings indicate evidence of convergence among EA regions during the first decade following the introduction of the euro, with Northern regions (the core) experiencing upward convergence, while other (peripheral) regions exhibited divergence after the 2008 crisis. We identify convergent and divergent regional clusters and analyse their geographical distribution. Furthermore, we investigate whether this pattern is widespread across peripheries and explore the new and pre-existing dynamics shaping these countries' trajectories.

A range of methodologies is employed in this regional analysis, including convergence indicators and statistical spatial models. Specifically, we apply spatial-lag models within the framework of the β-convergence approach.

The paper is structured as follows: Section 2 provides a theoretical overview; Section 3 describes the data and variables; Section 4 outlines the methodology; Section 5 presents the findings; Section 6 discusses the results; and Section 7 concludes. Statistical tests are included in the Appendix.

2. THEORETICAL OVERVIEW

2.1. Country-level convergence

Mundell (1961) was the first to explore the economic conditions for an optimal currency area (OCA), arguing that countries aiming for a common currency should have fully mobile factors of production – capital and labor – across borders. His primary focus was on labour mobility, assuming that capital was

inherently mobile. Subsequent refinements to Mundell's theory by McKinnon (1963) and Kenen (1969) highlighted additional necessary conditions, including commercial openness, diversification of production and consumption structures, and fiscal transfers. These conditions are essential not only for the establishment of a monetary union but also for its long-term survival. By ensuring a more symmetrical distribution of economic shocks, they help mitigate the costs associated with losing independent monetary policy and exchange rate flexibility.

McKinnon (1963) emphasised two key factors for the success of a single currency area. First, labour mobility between less developed and more developed regions within the currency union is crucial for balancing initial economic disparities. Second, enhancing internal mobility across industries helps counteract technological disadvantages among different regions within the union.

While these conditions primarily focus on short-term economic convergence, this study examines GDP per capita (in levels) due to its established link with business cycle synchronization among EA countries. Numerous studies suggest that economic divergence (in levels) correlates with the lack of synchronisation in business cycles. Koren and Tenreyro (2007) and Beck (2013) demonstrated that GDP per capita convergence is associated with greater business cycle synchronisation. Specifically, Koren and Tenreyro (2007) identified technological diversification – firms or sectors utilising a wide variety of inputs and advanced skills – as a key factor in reducing business cycle volatility.

Recent studies have extensively analysed business cycle synchronisation and GDP growth within the euro area, the most significant single currency area today. Two notable surveys are de Haan *et al.* (2008) and Stoforos *et al.* (2024). De Haan *et al.* (2008) reviewed multiple empirical studies and found that while euro area business cycles became more aligned after the 1990s, "the business cycles of many euro countries are still substantially out of sync" (Haan *et al.*, 2008, p. 266). Stoforos *et al.* (2024) presented similarly mixed results, particularly due to the impact of the 2008–2011 double-dip crisis. Their survey highlights two key trends. First, they identify two distinct periods: from the 1990s until the crisis, a process of convergence was underway; after the crisis, peripheral countries began to diverge. As they note, "until 2007, business cycle synchronisation favoured the operation of a single currency, but the recession and the subsequent Eurozone crisis led to desynchronisation, particularly for periphery countries like Greece" (Stoforos *et al.*, 2024, p. 229).

The second trend observed is increasing business cycle synchronisation among Eastern European countries that joined the EU after 2000. Several studies report a rising convergence in business cycles for these countries, as well as for the Balkans.

When the euro was introduced between 1999 and 2002, not all EA countries met the conditions outlined by Mundell, McKinnon, and Kenen. However, some researchers, such as Frankel and Rose (1997) and Rose (2000), argued that the OCA theory had endogenous properties: simply creating a currency union would

trigger a convergence process, enabling the initial conditions to be fulfilled ex post. This led to two competing perspectives in academic debate.

The first perspective, known as the European Commission view (European Economy, 1990), asserts that as EA countries reached a certain level of economic integration, the likelihood, frequency, and intensity of asymmetric shocks would decline. The second, known as the Krugman view (Krugman, 1993), identifies four economic consequences of integration: regional specialisation, instability of regional exports, pro-cyclical capital flows, and divergence in long-run growth.

According to the first view, convergence should have been driven by capital and labour mobility. Lower labour costs in less developed peripheral regions, combined with the equalisation of interest rates, were expected to attract investment to these areas (De Grauwe and Mongelli, 2005). Neoclassical theories (Blanchard and Giavazzi, 2002) suggest that removing obstacles such as exchange rate risk and capital flow restrictions should increase capital inflows to peripheral economies while encouraging labour migration from lower-wage to higher-wage countries, equalising the marginal product of labour. Consequently, in the early years of the euro, there was a prevailing belief that the endogeneity of the OCA paradigm would ultimately prevail.

Although per capita income convergence is not a strict prerequisite for an OCA to function, it is a key objective in any economic integration process (Franks *et al.*, 2018). As previously discussed, long-run growth and short-term economic fluctuations are interconnected. A gradual reduction in income disparities across countries and regions facilitates wealth-sharing among areas with different growth rates. Moreover, income convergence fosters a more favourable public attitude toward common financial instruments by reducing concerns about establishing a permanent transfer mechanism between core and peripheral regions (IMF, 2008).

Other factors, such as diminishing economies of scale and weakening agglomeration effects (e.g., due to the increasing dominance of the service sector), were also expected to reduce economic asymmetries across countries and regions (De Grauwe and Mongelli, 2005). Another crucial OCA property is resilience to external shocks. Countries in a monetary union should experience fewer asymmetric shocks, as economic structures become more similar over time. As a result, a single monetary policy should suffice for all members. The key conditions to minimise asymmetric shocks include similarity in economic structures, high intraregional trade, low specialisation, homogeneity of preferences, mobility of production factors, and the presence of transfer payments (Hafner and Jager, 2013).

An alternative theoretical approach focuses on varieties of capitalism (Hall, 2012; Regan, 2017). Northern EA countries rely on export-led growth, while Southern countries follow a domestic demand-led growth model. These two economic models are inherently difficult to reconcile within a single monetary area.

The double-dip crisis hit Southern countries particularly hard, and the proposed solution was for all EA members to converge toward an export-led growth model. However, this approach exacerbated economic imbalances by forcing Southern countries to adopt internal devaluation policies. The result was intensified competition over real wage levels between Northern and Southern regions, deepening existing asymmetries in the euro's structural foundations.

Thus, industrial specialisation has increased the euro area's vulnerability to asymmetric shocks. Furthermore, given the lack of compensatory mechanisms – such as labour mobility and transfer payments – the euro area has struggled to respond to crises in a balanced manner that benefits all member states (Hafner and Jager, 2013).

2.2. Regional convergence

Regions within EA countries can be viewed as regions within a nation undergoing unification (the EA itself). However, the process of regional economic convergence within nations follows different dynamics than convergence between nations. Political unification presents both advantages and challenges for regional convergence.

On the one hand, regional convergence can be facilitated by removing external constraints and creating conditions for rapid capital accumulation. A newly unified entity can implement standardised tax and social security systems that help equalise per capita income. In this sense, if production factors are mobile, regional convergence may be easier to achieve than convergence between independent nations.

On the other, economic activity tends to concentrate in established economic centres, potentially hindering the rapid convergence of peripheral areas. Scale economies and the attractiveness of industrial clusters or urban hubs (agglomeration economies) may reinforce the economic dominance of the wealthiest and most central regions. Additionally, financial transfers from central governments to less developed regions could create long-term dependence, rather than fostering sustainable growth. If wages are equalised across regions despite differences in productivity, peripheral areas may lose competitiveness, discouraging capital inflows and encouraging capital outflows toward the economic core.

A recent survey (Stoforos *et al.*, 2024) highlights the need for further research on regional convergence and business cycle synchronisation, as most studies focus on national-level dynamics. This survey confirms the presence of a national border effect, meaning that regions within the same country tend to be more synchronized than those in different countries. Many empirical studies reviewed in this paper report no significant regional convergence and a persistent influence of national business cycles on regional development. Furthermore, socio-economic

and structural factors play a crucial role in regional economic performance, with spillover effects between neighbouring regions. For example, high-income clusters in Western Europe have positively impacted adjacent areas.

Previous research suggests that regional convergence within the EU, and particularly within the EA, has followed a nonlinear trajectory: initial convergence was followed by stagnation and, in some cases, divergence (Díaz del Hoyo *et al.*, 2017; Diermeier *et al.*, 2018; Monfort, 2020). Specifically, income convergence remained stable during the early years of the euro's introduction, but after the financial crisis, the trend reversed toward increasing divergence (Franks *et al.*, 2018).

While Eastern European countries have consistently experienced convergence, Italy, Greece, and the United Kingdom have undergone divergence. As a result, the convergence process that had been ongoing within the EU-15 since the 1950s came to an end before 2012 (Goecke and Hüther, 2016). In Greece, Ireland, Portugal, Spain, and Italy, convergence turned into divergence, although recent trends suggest a possible reversal for Spain, Portugal, and Ireland (Goecke and Hüther, 2016).

A recent study by Diemer *et al.* (2022) examined regional growth patterns within the EU, applying the development trap theory, which affects middle-income regions in several European countries. The authors incorporated productivity and employment measures alongside per capita income ratios. However, the regional classifications in their study align closely with those found in this paper. We argue that a deeper explanation of these trends lies in economic policy decisions, particularly the introduction of the euro and the absence of effective convergence policies.

On the subject of intra-country regional differences, EA countries have different paths of convergence. In Italy, the pace of gap development between the southern industry and the centre-northern industry has increased in recent years because of a strong and rapid increase in competitive pressure due to European integration in the production system. Conversely, on the other hand, the more industrialised areas of the northwest had difficulty catching up, as they lagged behind in growth compared with other most industrialised European regions. In Germany, evidence (Weddige-Haafa and Kool, 2017) showed a faster convergence of the West and East regions in 2005–2014 compared with the previous period (1995–2005), signalling an income divergence between West German states. The EU accession of Spain in the 1980 s resulted in a strengthening of regional convergence processes and a decrease in interregional disparities (Wójcik, 2017). However, until now, strong income and productivity gaps remain between the core regions (Madrid, Navarra, Catalunya, and Basque region) and the peripheral regions (Extremadura, Andalusia, Castilla-La-Mancha, and Galizia). Moreover, France has shown evidence of divergent trends between the peripheral regions and the core (Ile de France) (Alcidi *et al.*, 2018b).

3. DATA AND VARIABLES

A more detailed regional-level analysis is useful to complement country-level studies, particularly in assessing the effectiveness of a common monetary policy and evaluating whether the European Commission view or the Krugman view better explains economic dynamics. In this paper, we analyse regional divergences in gross domestic product (GDP) per capita, a key indicator of economic growth that allows for meaningful territorial comparisons. The analysis is based on OECD data and follows the Eurostat Nomenclature of Territorial Units for Statistics (NUTS), the standard classification for regional data in European countries. The EU divides its member states into three NUTS levels according to administrative structure: NUTS1: Broad regional aggregations, such as German federal states. NUTS2: Intermediate regional units, such as Spanish autonomous regions and French or Italian regions. NUTS3: The smallest subregional areas.

This study uses NUTS2 regions as the statistical units of analysis. The variable under investigation is regional income per capita, calculated as the ratio between regional GDP and regional population. Changes in GDP per capita serve as a reliable proxy for economic growth trends. The data, expressed in euros at constant prices, cover the period 2001–2018, ensuring comparability across all EU and EA countries.

The analysis includes the following EA countries: Germany, France, Italy, Spain, Portugal, Belgium, the Netherlands, Luxembourg, Austria, Finland, Estonia, Latvia, Lithuania, Slovakia, Slovenia, Greece, Malta, and Ireland. Additionally, we examine the non-EA EU countries: Hungary, Poland, Bulgaria, Romania, the Czech Republic, Denmark, the United Kingdom, and Croatia.

A total of 202 territorial units (regions) are analysed: 130 regions within EA countries; 72 regions in non-EA EU countries. Although some countries joined the EA after 2002, we classify all countries that were part of the EA in 2018 as EA members throughout the analysis. This approach minimises bias, as economic convergence processes typically begin a few years before formal EA accession. For Ireland and Lithuania, we consider the entire country rather than NUTS2 regions for practical reasons.

4. METHODOLOGY

In our analysis we apply, differently from other studies (Esteban, 2000; Díaz Dapena *et al.*, 2019), as methodological instrument statistical spatial models and also convergence indicators. In the following section, we describe the methodological features of both statistical approaches.

4.1. Divergence indicators

The regional divergence of the GDP per capita is analysed by explaining two divergence indicators: the Williamson index and the Theil index, which have been used in similar studies (Malanima and Daniele, 2007). The Williamson index can be calculated as follows:

$$W_t = \sqrt{\sum_1^n i \left(\frac{y_{i,t}}{y_{m,t}} - 1 \right)^2 \frac{p_{i,t}}{p_{m,t}}} \tag{1}$$

Where y_i is the GDP per capita in the i-th region, y_m is the average GDP per capita, and p is the population with the same notation. The Theil index, calculated at time t, is expressed as follows:

$$T_t = \sum_1^n i x_{i,t} \ln \left(\frac{x_{i,t}}{q_{i,t}} \right) \tag{2}$$

where $x_i = y_i/y_T$ is the GDP share of region i, and $q_i = p_i/p_T$ is the share of the population. We consider all regions in the EU, but the indexes are calculated separately for the regions in the EA and for the countries outside of it.

4.2. Beta convergence

Among the different procedures used for territorial convergence analysis, for which a broad litature exists (Taufer *et al.*, 2016), we use the β-convergence approach in this study. In this approach, changes in territorial divergences relative to a specific variable are registered over a certain period. If the changes in territorial divergences decrease, a convergence process takes place, and the convergence parameter b_1 takes a negative sign. The basic model can be written as follows:

$$v_i = \beta_0 + \beta_1 \ln y_{0,i} + \varepsilon_i \tag{3}$$

where $y_i = \ln(v_t/v_0)/T$ is the natural logarithm of the average change over time T, and ε_i is the stochastic component. Therefore, the β-convergence model registers the convergence speed and is a function of the parameter β_1 (Arbia 2014).

$$\beta_1 = -(1 - e^{-bt})$$

which produces

$$b = \frac{\ln(1 + \beta_1)}{t}$$

The valuation of the longitudinal economic effects of the EA should also consider the spillover effects on territorial units. For this purpose, considering some results of the preliminary analysis, a spatial – lag model is used to spatially regress the dependent variable. A dummy variable to discriminate the divergent and convergent regions in the EA for the period of 2008–2018 is also considered. The model, including a spatial lag, is expressed in the following matrix format (Cliff and Ord, 1981; Anselin, 1988):

$$\mathbf{y} = \boldsymbol{\rho}\mathbf{W}_1\mathbf{y} + \mathbf{X}\beta + \boldsymbol{\varepsilon} \quad \text{with } |\rho| < 1 \tag{4}$$

$$\boldsymbol{\varepsilon} = \lambda\mathbf{W}_2\,\boldsymbol{\varepsilon} + \mathbf{u} \quad \text{with } |\lambda| < 1 \tag{5}$$

where **y** is vector *N x 1* of the observations of the dependent variable (*N* is the number of geographical units), $\mathbf{W}_1$ and $\mathbf{W}_2$ are matrixes of continuity *N x N* associated with the lag and error variables, and **X** is a matrix *N x k* of observations of the explanatory variables. Measures ρ and λ are the two (scalar) autoregressive coefficients associated respectively with lag variable *y* and error factor **ε**, while **β** is the *k x 1* vector of the parameters associated with the explanatory variables ***X***. Finally, *u* is the error term, which shows normal distribution with 0 mean and diagonal covariance matrix **Ω**.

Since there are three autoregressive terms in the general model ($\rho\mathbf{W}_1\mathbf{y}$ e $\lambda\mathbf{W}_2\,\varepsilon$), the ordinary least squares (OLS) method of estimation produces inaccurate estimates with little consistency, thereby proving biased estimates. Consequently, the maximum likelihood method (ML) is applied; in this case if:

– ρ and λ = 0 we obtain the classical regression model

$$y = X\beta + \varepsilon; \tag{6}$$

– ρ = 0 we obtain the error model

$$y = X\beta + (I - \lambda W_2)^{-1}u \tag{7}$$

– λ are set at 0, we obtain the lag model.

$$y = \rho W_1 y + X\beta + \varepsilon \tag{8}$$

The concept of spatial dependence assumes different meanings according to the applied model (Doreian, 1980). The *ρ* parameter of the Spatial lag model represents the relationship among the territorial units in terms of the dependent variable.

The parameter λ of the Spatial error model represents the combined effect due both to the spatial configuration of the variables and the variables not included in the model. The statistics for model identification (Appendix A, Table A.3) suggested the presence of spatial lag for the dependent variable. Finally, we estimated the following β-convergence model:

$$tgp_{i,t} = \rho Wtgp_{i,t} + \alpha + \beta gp_{i,t-1} + \epsilon_i \quad (9)$$

Where:

– $tgp_{i,t}$ is the natural logarithm of the per capita GDP growth rate;

– $Wtgp_{i,t}$ represents the spatial lag for the dependent variable: in other words, the regional growth rate also depends on the growth of neighbouring regions;

– $gp_{i,t-1} = \ln(v_{i,\,t-1})$ is the natural logarithm of the initial per capita GDP;

– β is the parameter that signals the presence (if negative)/ absence (if positive) of convergence;

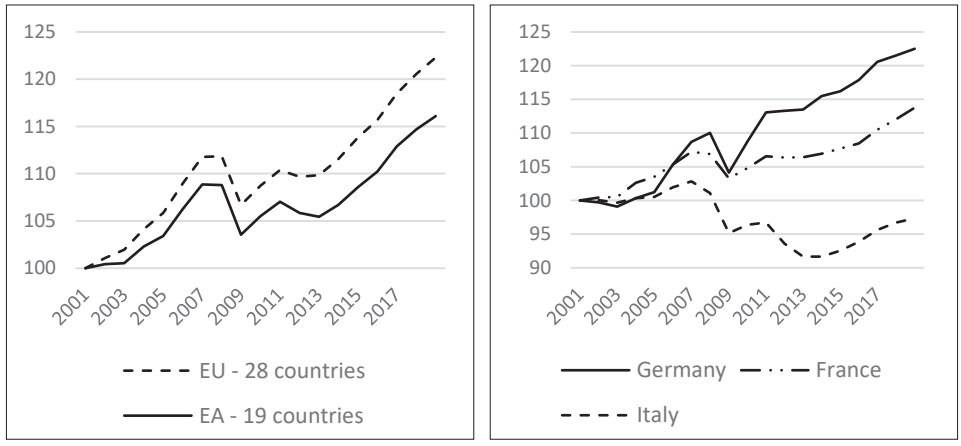
– ρ is the spatial autoregression parameter;

– $\varepsilon_{t,\,i} \sim N(0, \sigma^2)$ represents the error.

5. RESULTS: REGIONAL DIFFERENTIAL GEOGRAPHY IN THE EA

5.1. Introduction

We first consider the framework that includes the trends and dynamics from our analysis. We present the GDP per capita trends in the EU and EA, which are divided into e three main countries in the EA (Fig. 1).



a) b)

Fig. 1. GDP per capita trends in the EU and EA and in the main EA countries: years 2001–2018

Source: own work based on OECD data.

The EU GDP per capita trend shows an increasing trend before and after the double-dip crisis, even at a slower pace in the second period. The EA countries

register an even slower pace compared with the EU as a whole (Fig. 1a). If we examine the GDP per capita trend of the main economies in the EA (i.e., Germany, France, and Italy), the growing pace of Germany accelerates after the crises and overcomes the results of the other two countries (Fig. 1b). This is a sign of an ever-deeper divergence among the different zones in the EA.

5.2. Geography of divergence

The descriptive analysis takes into account the GDP per capita differentials compared with the EA average at three specific points in time: the 2001 (introduction of the euro), 2007 (the year before the subprime crisis), and 2018 (last available year before the COVID-19 global pandemic). The regional differentials are calculated as the GDP per capita percentage differences with respect to the EA average.

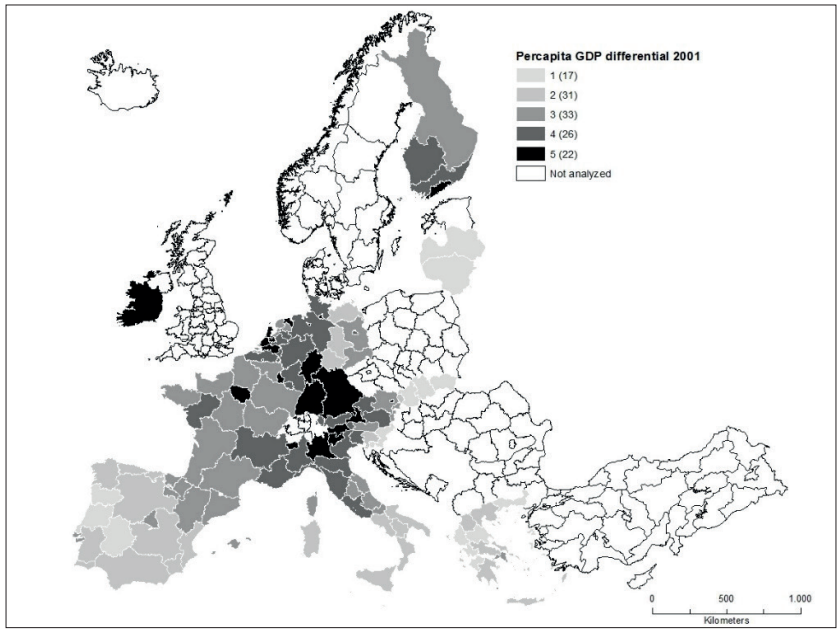


Fig. 2. Regional differentials in the EA: year 2001
(GDP per capita percentage differentials compared with the EA average)

Note: 1: < 50%; 2: 50%–75%; 3: 75%–100%; 4: 100%–125%; 5: >125%. EA borders in 2018 (Germany, France, Italy, Spain, Portugal, Belgium, the Netherlands, Luxembourg, Austria, Finland, Latvia, Lithuania, Slovakia, Slovenia, Greece, Malta, and Ireland). Euro constant values.

Source: own work based on OECD data.

The regional differentials map for year 2001 (Fig. 2) registers a more developed central area that has Germany as a pivot. Next to this central area is an Al-

pine–Mediterranean zone extending from the Alps to the Po Valley to the south and the Netherlands and the North Sea to the north. The regions, including the capitals, highlight the major GDP per capita values. Therefore, Ile de France, Madrid, Helsinki, the Attic, Latium, Hamburg, Berlin, Lisbon, Holland, and Vienna present greater values than the adjacent regions.

The most underdeveloped regions are located in the south (Southern Spain, the Italian *Mezzogiorno*, and Greece) and in the east (Baltic countries, East Germany, and Slovakia). Compared with the map for 2001, the map for 2007 registers upward and downward movements. The latter is mainly due to a decline in some Italian and French regions (Fig. 3).

Specifically, Lombardy in Italy and some regions in the French West (Pays de la Loire) show a decrease in GDP per capita values compared with the EA average.

Greece, as a whole, lags significantly behind. The regions of the Iberian Peninsula increase their ranks. The regions registering an increase in GDP per capita are located in Finland and Austria.

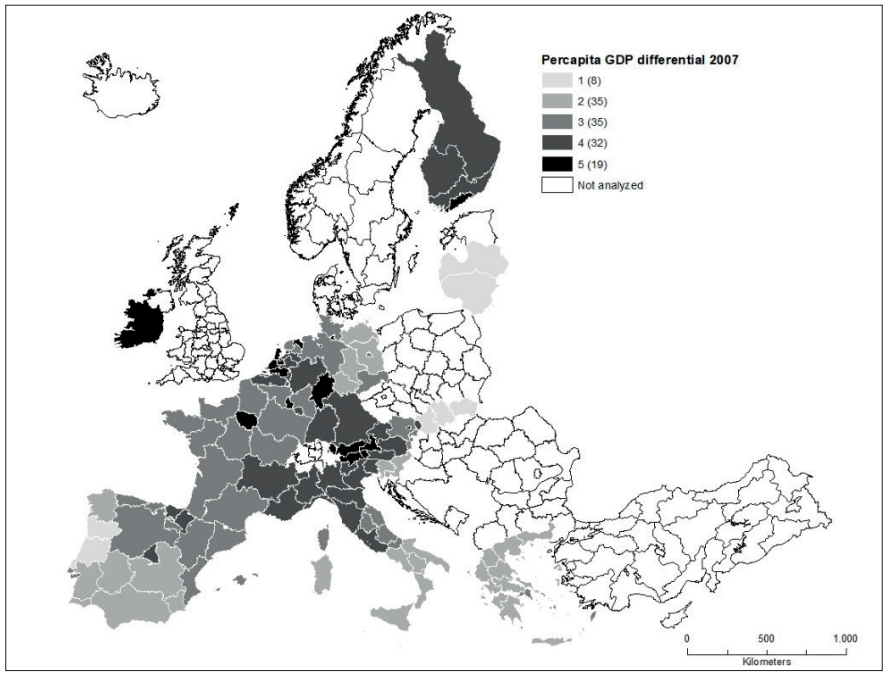


Fig. 3. Regional differentials in the EA: year 2007
(GDP per capita percentage differentials compared with the EA average)

Note: 1: <50%; 2: 50%–75%; 3: 75%–100%; 4: 100%–125%; 5: > 125%. EA borders in 2018 (Germany, France, Italy, Spain, Portugal, Belgium, Netherlands, Luxembourg, Austria, Finland, Latvia, Lithuania, Slovakia, Slovenia, Greece, Malta, and Ireland). Euro constant values.

Source: own work based on OECD data.

In 2018, 10 years after the subprime crisis and seven years after the sovereign debt crisis, the regional divergences within the EA notably increased. As shown in Figure 4, in terms of the GDP per capita, the northern regions rank high in the EA, whereas the southern regions rank low. For the Italian and French regions, divergence is significantly augmented. In Italy, the central geographical macro-region loses position, specifically Latium and Umbria. In France, the macro-regions of Rhone-Alpes and Auvergne, located in the centre of the country, lag behind in terms of the GDP.

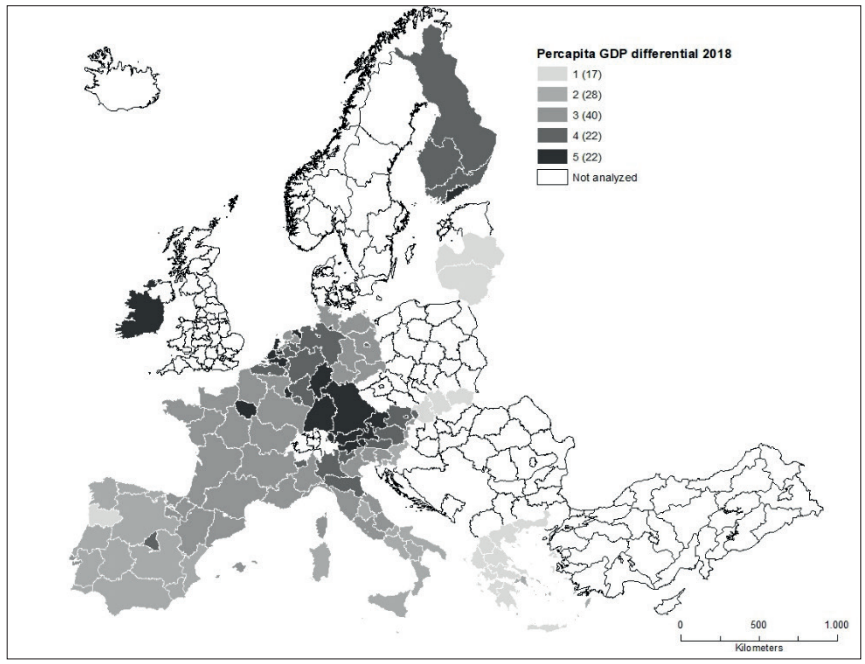


Fig. 4. Regional differentials in the EA: year 2018
(GDP per capita percentage differentials compared with the EA average)

Note: 1: < 50%; 2: 50%–75%; 3: 75%–100%; 4: 100%–125%; 5: > 125%. EA borders in 2018 (Germany, France, Italy, Spain, Portugal, Belgium, Netherlands, Luxembourg, Austria, Finland, Latvia, Lithuania, Slovakia, Slovenia, Greece, Malta, and Ireland). Euro constant values.

Source: own work based on OECD data.

The changes are concentrated in these regions, and the rest remain unchanged. The Iberic peninsula and Greek regions generally rank last. The regions of the Italian *Mezzogiorno* do not register any change in pace in catching up with the North European regions, similar to the Greek and Eastern regions. This means that the GDP per capita increments registered in the post-crisis period for the EA were not uniformly shared among the different economic areas within the EA and that some regions had more advantages than others, as shown by the main countries in Figure 1b.

In terms of the different paths followed by the regions with capital cities, these regions generally outperform the other regions in a country (Alcidi *et al.*, 2018a), especially when the role of the capital city is coupled with the role of the financial centre. The regions with capital cities and financial centres perform better than others, even if a general lag-down is registered in the rest of the country, as in France. Therefore, the continental financial centres, such as Frankfurt, Paris, Luxembourg, and, also, Dublin, outperform (Gräbner and Hafele, 2020) other regions, even if there is a general lagging back, as in France. This is another factor increasing divergence among regions (Degl'Innocenti *et al.*, 2017). In countries where the crisis strongly hit and where were not present financial centres, as in Italy and Greece, the regions seats of capital cities notwithstanding perform better than the other regions, however lose positions.

5.3. Divergence indicators

Figure 5 shows the Williamson (W) and Theil (T) indices calculated for the EA and for most non-Euro countries in the EU in 2001–2018.

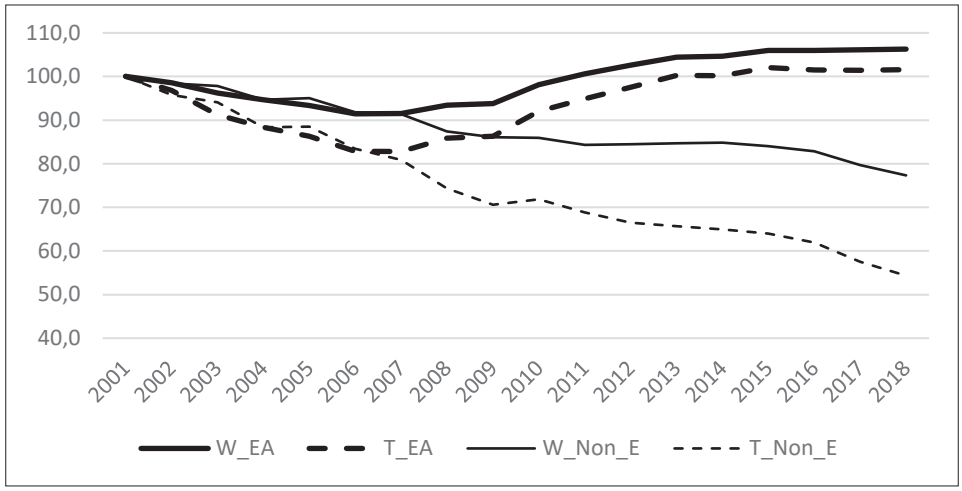


Fig. 5. Divergence indicators 2001–2018 Williamson (W) and Theil (T) for Euro-Area (EA) and not Euro Area (Non-E) (Index number: base = 2001)

Note: Index number calculated for the W and T indices and based on 2001. EA borders in 2018 (Germany, France, Italy, Spain, Portugal, Belgium, Netherlands, Luxembourg, Austria, Finland, Latvia, Lithuania, Slovakia, Slovenia, Greece, Malta, and Ireland). The non-Euro EU countries considered here are Hungary, Poland, Bulgaria, Romania, Czech Republic, Denmark, Sweden, the United Kingdom, and Croatia. US dollar constant values.

Source: own work based on OECD data.

The Williamson and Theil indices present the same trends in the two country groups. The regional divergence indicators for the EA countries as a whole show a strong time-dependent path. A convergence of the GDP per capita is observed in the first period of 2001–2007; the same result is observed for the non-Euro regions in the same period. Starting in 2008, the differences among the EA regions increase to offset, or more than offset (in the case of *W_EA*), the gains in terms of convergence achieved in the first period. The trend of the indicators makes it possible to identify two well-defined periods for the EA regions. In the first period (2001–2007), the introduction of the euro caused a slight convergent push among the EA regions. This is probably due to capital inflows and the creation of financial bubbles caused by the downward convergence of interest rates and the contemporaneous maintenance of inflation differentials between the core and peripheral countries. The first-period convergence seems to depend on the convergence of some northern regions (Finland and East Germany) toward the average levels rather than on sustained growth by the peripheral regions. After the subprime crisis and the sovereign debt crisis (2008–2018), the capital inflow reversal and the launch of pro-cyclical economic policies, which mainly hit the peripheral regions, determined an increase in divergence processes among the EA regions. Note that the EU regions outside the EA continued their convergence path, which seemed unaffected by the double-dip crisis, and thus did not present the same time path as the EA. This shows a strong sign of how an economic crisis (in a monetary union) is an important factor in generating imbalances among regions and countries.

5.4. Regression results

As described in Section 4, we estimate an econometric model for each sub-period (2001–2007 and 2008–2018) using the β-convergence approach. All variables are taken in the logarithms.

5.4.1. First period (2001–2007)

We first estimated the OLS model (Equation 3) and performed statistical tests to verify whether the data were better fitted by a spatial error model or a spatial–lag model. A spatial–lag model was then estimated. The OLS outcomes and the general diagnostics are presented in Appendix A.

Tables A.1 and A.2 show the results and statistical tests for the OLS. Table A.3 presents the diagnostics for spatial dependence. The statistical tests indicate how the spatial – lag model better fits the data: the Lagrange multiplier (lag) is greater than the Lagrange multiplier (error). On the basis of the outcomes of the diagnostics for spatial dependence, we estimated the spatial – lag model described in Equations 4 and 5. Table A.4 presents the log-likelihood ratio test comparing the

OLS and spatial–lag models. As the test was significant, the second model was confirmed to be better than the first. The spatial–lag model estimates (Equation 9) are presented in Table 1.

Table 1. Spatial–lag model outcomes (2001–2007)

Variable	Coefficient	Std. Error	z-value	Probability
Constant	0.118551	0.019014	6.23499	0.00000
gp – 2001	−0.010853	0.001841	−5.89594	0.00000
Wtgp – 07_01	0.530334	0.060527	8.76194	0.00000

$Dep = tgp_{2007/2001}$.

Source: own work based on OECD data.

The results presented in Table 1 confirm the presence of a convergence process in the EA for the period of 2001–2007. Therefore, b_1 (*GDPpc_2001)* presents a negative sign. Although statistically highly significant, the convergence is not very strong in terms of intensity. The highly significant and positive coefficient of the spatial dependence variable (*W_LNGDP07_01*) indicates a strong spillover effect on the regions. That is, the regions tend to move grouped into blocks.

5.4.2. Second period (2008–2018)

We carried out the same procedure for the second period. Table A.5 presents the results of the OLS model. In this case, the b_1 coefficient is not statistically significant. The diagnostic tests (Tables A.6 and A.7) suggest the application of the spatial–lag model.

Table A.8 presents the log-likelihood ratio test comparing the OLS and spatial–lag models. The log-likelihood ratio test indicates spatial–lag as the better fitting model. Table 2 presents the spatial–lag model estimates (Equation 9).

Table 2. Spatial–lag model outcomes (2008–2018)

Variable	Coefficient	Std. Error	z-value	Probability
CONSTANT	−0.010115	0.018597	−0.54393	0.58649
gp 2 – 2008	0.000974	0.001820	0.53497	0.59267
Wtgp – 18_08	0.696366	0.060985	11.4187	0.00000

$Dep = tgp_{2018/2008}$

Source: own work based on OECD data.

For the spatial model calculated over the second period, we did not find a b_1 significant coefficient. In other words, in the second period, there is no convergence (or divergence) process in the EA as a whole. Thus, we conducted an in-depth analysis for the second period to separately analyse the most dynamic and the most lagged back regions. Considering the preliminary descriptive analyses, we grouped the EA regions into two: the core (i.e., regions with a higher GDP per capita located in the northern countries) and the periphery (i.e., regions with a lower GDP per capita that lagged behind after the double-dip crisis and located in the southern countries).

We determined whether the convergence or divergence process occurred in these two groups. A convergence process for the core regions and a divergence process for the peripheral regions are expected. The richest regions in the north maintain (or ameliorate) their GDP per capita levels, thus maintaining their relative distances. Conversely, the peripheral regions, although lagging behind, cover different paths of divergence. The interaction of these effects yields at the aggregate level a non-significance in convergence parameter b_1, this because of the compensations due to the offsetting of the pressure to convergence and divergence coming from the different areas.

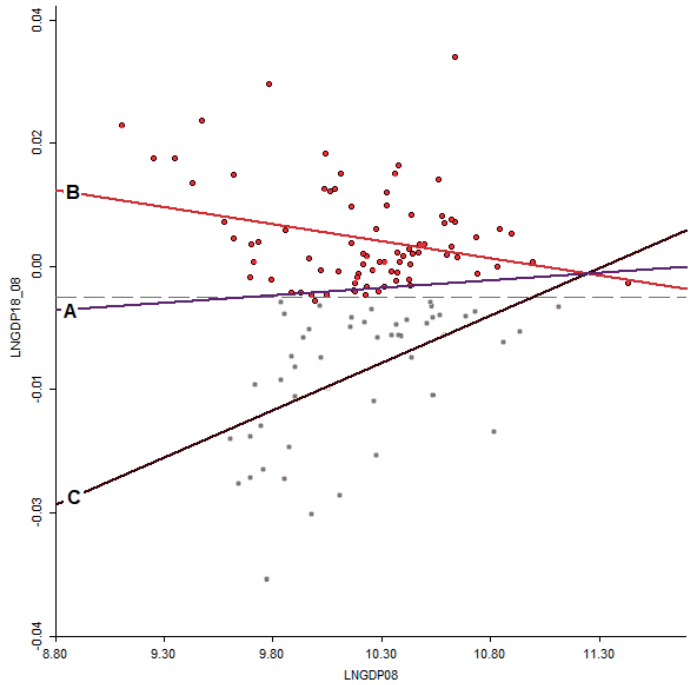


Fig. 6. Regression lines and regional coordinates (LNGDP18_08: log of GDP per capita growth, y axis, and LNGDP08: log of initial value, x axis)

Source: own work based on OECD data.

To verify these hypotheses, we defined two groups of regions, namely, the best and worst performing, over the period of 2008–2018. We calculated the regression lines that fit the coordinates (changes – initial values) for each single region. The regression lines are presented in Fig. 6 (line a), along with the regional coordinates. The best and worst results were identified based on whether the GDP per capita growth was above or below the regression line (darkest and shaded points).

Based on this partition, we calculated two other regression lines: one for the best performers b line (core) and another for those lagging behind c line (periphery). Note that the best performers present a strong convergence tendency, whereas those lagging behind have a divergence tendency. This is confirmed by the regression outcomes presented in Table 3.

Table 3. Results of the β-convergence for all regions and for the two subsets (2008–2018)

	N	**R^2**	**St. Er. (b_0)**	**T (b_0)**	**p-value (b_0)**	**b_1**	**St. E. (b_1)**	**T (b_1)**	**p-value (b_1)**
Total	130	0.005	0.026	−0.726	0.469	0.002	0.003	0.769	0.444
Group 1 (core)	73	0.124	0.017	3.655	0.000	−0.005	0.002	−3.165	0.002
Group 2 (periphery)	57	0.180	0.031	−3.748	0.000	0.011	0.003	3.480	0.001

Source: own work based on OECD data.

The results for the overall regression (first row) confirmed the absence of convergence/divergence processes, and the estimated parameters and tests described an almost a flat line. Conversely, when regression analysis was conducted on the two subsets identified before, we observed a strong convergence for the core (second row) and an even stronger divergence for the periphery (third row). Convergence speed was low in the first period (−0.00157), and no convergence was observed in the second period.

Figure 7 presents the converging and diverging regions as identified above. The converging regions are aggregated at the centre of Europe (core), while the diverging regions comprise the peripheral countries.

The regions tend to move grouped into blocks and concentrated in specific countries. Therefore, the same countries are defined as core countries or lagging-behind countries as a whole. The analysis of Map 4 presents some interesting points. Two great areas are identified: the core, which consists of Germany and its neighbouring countries, the Baltic countries, and Ireland, and the periphery, which includes Italy, Greece, Spain, Portugal, France, and Finland.

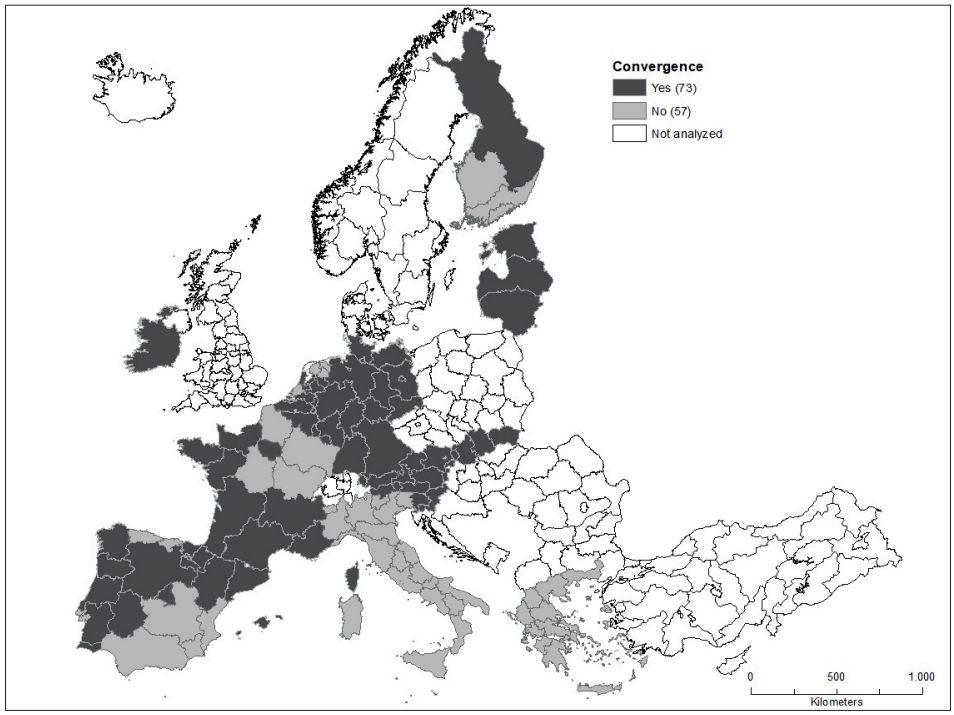


Fig. 7. Converging and diverging regions in the EA according to convergence estimates: years 2008–2018
Source: own work based on OECD data.

The periphery aggregate counts countries whose regions are completely included in the lagged behind group such as Italy and Greece, the first burdened by the industrial and productivity crisis. The case of France seems to be analogous, and the most industrialised regions in the northeast of the country appear to lose their positions. For France and Italy, a decrease in internal divergence may be due more to a process of rapprochement of the more developed regions to the less developed regions rather than to an acceleration of the growing pace of the latter. Even if there are the same rapprochement signals from the regions in the Iberian Peninsula, they remain quite far from the core. Finland was severely hit by the crisis. The tighter the fiscal stance in the EA, the more the developed southern regions in the country seem to have taken a divergent path.

As highlighted above, financial centres seem to have more chances. Paris, Dublin, Luxembourg, and Frankfurt maintain their positions in the core group despite the fact that, in some cases, the rest of the country loses its position and lags behind compared with the more dynamic regions.

6. DISCUSSION

This paper contributes to the literature on regional convergence in the euro area by confirming the existence of significant variability in convergence patterns, which also depend on economic (asymmetric) shocks, particularly the double-dip crisis. The findings confirm the presence of two distinct phases: a relative convergence period lasting until the 2007–2008 crisis, followed by a phase of divergence. These results align with previous studies pointing to increasing divergence among EA regions (Stoforos *et al.*, 2024; Beck, 2020; Beck and Okhrimenko, 2024). Furthermore, the analysis highlights a double polarisation, both within the EA and across the broader European Union.

Over the past two decades, regional convergence dynamics have revealed a double polarisation (Beck, 2020). The first form of polarisation is observed between two groups of economically converging countries: the new EU accession countries of Eastern Europe, the United Kingdom, Sweden, other northern non-euro countries (outer periphery), and the oldest EA member states (EU core). The second level of polarisation occurs within the EA, with a clear divide between the northern EA countries (internal core) and the southern EA countries (internal periphery) (Diermeier *et al.*, 2018).

The study of regional convergence is also crucial in assessing the endogenous properties of an optimal currency area (OCA). Specifically, it examines whether the ex-post fulfilment of OCA conditions occurs through a natural convergence process among regional economies following the creation of the monetary union. Additionally, it evaluates whether the OCA framework strengthens resilience to external shocks, meaning that countries and regions within the monetary union should experience reduced exposure to asymmetric shocks as structural differences diminish. However, our findings indicate a divergent trajectory in GDP per capita, confirming the persistence of double polarisation and the emergence of core-periphery dynamics within the EU. More specifically, we identify a high-growth EU periphery, consisting of Eastern European countries outside the EA, and an internal EA periphery, composed, mainly, of southern EA countries.

This study primarily focuses on the second level of polarisation, that is, the divergence among EA regions. Differences in growth rates have led to alternating phases of convergence and divergence across various periods in European economic history. The analysed timeframe can be divided into two sub-periods: the first phase (2001–2007), characterised by slight convergence, and the second phase (post-2008 crisis), dominated by divergence. In the first period, capital inflows from core EA countries fuelled economic growth in peripheral countries, often creating speculative bubbles, such as the real estate booms in Spain and Ireland. However, when the crisis hit, these capital flows abruptly ceased, triggering a divergence process.

The economic crisis affected EA regions in different ways, as evidenced by GDP per capita differentials across various geographical areas. The observed national border effect, with regional economies moving in country-specific blocks, underscores the lack of a uniform convergence process. It is important to note that regional convergence within a single country is more likely to occur than regional convergence across different countries (Barro and Sala-i-Martin, 1992). This remains a key challenge for EA institutions. Another noteworthy finding is the inclusion of French regions in the peripheral category. Many French regions have exhibited economic stagnation similar to that of southern EA countries, with the exception of Île-de-France, which, as the capital and financial centre, follows a different trajectory (Gräbner and Hafele, 2020; Novac and Moroianu-Dumitrescu, 2020).

Our findings also reveal a synchronous movement among core regions, contrasting with the divergent trends within peripheral regions. Regional disparities have widened, but not in favour of the less affluent regions. Regions with lower initial GDP per capita experienced greater economic deterioration after the crisis, with no evidence of a catch-up process. These findings align with recent studies indicating the absence of convergence between core and peripheral countries, as well as between rich and poor regions (Beck and Okhrimenko, 2024).

Furthermore, these results suggest that European economic policies have primarily benefited northern countries, while a single economic policy cannot effectively address the diverse needs of all EA countries. Beck (2021) highlights a strong negative correlation between GDP per capita disparities and structural similarity, suggesting that further European integration could exacerbate structural divergence by increasing the risk of asymmetric shocks. This raises critical concerns regarding independent monetary policy within the EA.

The increasing regional divergence within the EA poses significant challenges to the effectiveness of the common monetary policy (Beck, 2020). There is no broad consensus in the literature regarding the impact of monetary integration on business cycle synchronisation. In some cases, monetary integration has been associated with reduced cycle synchronisation. One reason for this is that exchange rate fluctuations can act as a shock-absorbing mechanism. Without independent exchange rates, an asymmetric shock within a common currency area may lead to greater economic divergence (de Haan *et al.*, 2008).

Additionally, under a fixed exchange rate regime changes – initial values where the central bank operates with a single monetary policy target – external shocks must be absorbed through adjustments in real economic variables, primarily labour costs (Zeli *et al.*, 2022).

As emphasised by Caporale *et al.* (2015), the lack of an endogenous convergence process calls for a fundamental shift in the EU's political and economic approach. Specifically, the following policy measures should be considered: better coordination of economic policies across different European regions to

account for regional disparities, establishment of a fiscal transfer system to redistribute resources from high-productivity areas to low-productivity regions. These policy adjustments would help address the growing structural imbalances within the EA and ensure a more sustainable and inclusive economic framework for the future.

7. CONCLUSIONS

We analysed the potential convergence trends among EA regions from 2001 to 2018, a period marked by the introduction of the euro, the double-dip crisis of 2008, and new accessions in Eastern Europe.

Our findings allow us to reject the hypothesis of an ex-post (endogenous) fulfilment of the Optimum Currency Area (OCA) conditions, as we found no evidence of stable convergence processes among regions and countries, nor of a uniform and strengthened resilience to external shocks (such as economic crises). As a result, our outcomes align more closely with Krugman's perspective than with that of the European Commission (Beck, 2024), as a result, these results seem to disprove the presence of endogenous properties of OCA.

Furthermore, our research confirms, in line with various studies included in the survey by Stoforos *et al.* (2024), that socio-economic and structural determinants play a crucial role in economic performance. These factors vary significantly across regions, reinforcing the link between economic growth and initially more developed areas.

The increasing divergence between core and peripheral regions has also been documented in other studies that analyse the issue from an international trade perspective (Caporale *et al.*, 2015, p. 160).

Our paper contributes to the literature on regional convergence (Stoforos *et al.*, 2024) also by applying spatial modelling to regional convergence in the EA area. However, we assess convergence using only one economic variable: GDP per capita. A natural extension of our analysis would involve breaking down GDP per capita into productivity and employment rate components, as proposed by Diemer *et al.* (2022). While productivity has generally declined in Europe over recent decades, this deterioration has been more pronounced in some countries than in others. Moreover, there has been no catch-up effect following the introduction of the euro. Countries with initially low productivity have experienced weaker productivity growth and an even steeper decline in recent years (Díaz del Hoyo *et al.*, 2017; Franks *et al.*, 2018). A regional-level analysis of the convergence dynamics in terms of productivity and employment rates among EA countries is therefore warranted.

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APPENDIX A. STATISTICAL ESTIMATES AND DIAGNOSTIC TESTS

Beta Spatial Model 2001-2007

Table A1. OLS model estimates

Variable	Coefficient	Std. Error	t-Statistic	Probability
Constant	0.214317	0.022123	9.68769	0.00000
gp_{2001}	–0.019569	0.002194	–8.91883	0.00000
$Dep = tgp_{2007/2001}$				

Source: own work based on OECD data.

Table A2. Goodness-of-fit diagnostics for regression model

R-squared	0.383268	F-statistic	795.455
Adjusted R-squared	0.378450	Prob(F-statistic)	4,14E-10
Sum squared residual	0.016769	Log likelihood	397.661
Sigma-square	0.000131	Akaike info criteri	–791.321
S.E. of regression	0.011446	Schwarz criterion	–785.586
Sigma-square ML	0.000129		
S.E of regression ML	0.011358		

Source: own work based on OECD data.

Table A3. Diagnostics for spatial dependence

Test	MI/DF	Value	Prob
Moran's I (error)	0.4865	7.761	0.00000
Lagrange Multiplier (lag)	1	57.978	0.00000
Robust LM (lag)	1	9.928	0.00163

Test	MI/DF	Value	Prob
Lagrange Multiplier (error)	1	54.996	0.00000
Robust LM (error)	1	6.946	0.00840
Lagrange Multiplier (SARMA)	2	64.923	0.00000

Source: own work based on OECD data.

Table A4. Diagnostics for spatial-lag model

R-squared	0.637791	Log likelihood	426.916
Sq. Correlation	–	Akaike info criterion	–847.833
S.E of regression	0.008704	Schwarz criterion	–839.23
Spatial Lag Dependence			
TEST	DF	Value	Prob
Likelihood Ratio Test	1	58.5117	0.0

Source: own work based on OECD data.

Beta Spatial Model 2008-2018

Table A5. OLS model estimates

Variable	Coefficient	Std. Error	t-Statistic	Probability
CONSTANT	–0.0187221	0.0257913	–0.725908	0.46922
gp_{2008}	0.00194045	0.00252455	0.768634	0.44353

$Dep = tgp_{2018/2008}$

Source: own work based on OECD data.

Table A6. Goodness-of-fit diagnostics for regression model

R-squared	0.004594	F-statistic	0.590798
Adjusted R-squared	–0.003182	Prob(F-statistic)	0.443527
Sum squared residual	0.0164991	Log likelihood	398.717
Sigma-square	0.0001289	Akaike info criterion	–793.434
S.E. of regression	0.0113534	Schwarz criterion	–787.699

Source: own work based on OECD data.

Table A7. Diagnostics for spatial dependence

Test	MI/DF	Value	Prob
Moran's I (error)	0.5163	8.2129	0.00
Lagrange Multiplier (lag)	1	63.041	0.00
Robust LM (lag)	1	2.0031	0.15698
Lagrange Multiplier (error)	1	61.922	0.00
Robust LM (error)	1	0.8840	0.34712
Lagrange Multiplier (SARMA)	2	63.925	0.00

Source: own work based on OECD data.

Table A8. Diagnostics for spatial-lag model

R-squared	0.475997	Log likelihood	396.009
Sq. Correlation	–	Akaike info criterion	–797.343
S.E of regression	0.00817382	Schwarz criterion	–819.77
Spatial Lag Dependence			
TEST	DF	Value	Prob
Likelihood Ratio Test	1	62.7688	0.00000

Source: own work based on OECD data.

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THE ROLE OF SHORT FOOD SUPPLY CHAINS IN KOSOVO'S AGRICULTURE

Abstract. Short food supply chains (SFSCs) and local markets, where farmers sell directly to consumers, are expanding across the EU, offering alternatives to conventional food chains that limit small farmers' bargaining power and consumer traceability. In the EU, 15% of farms sell over half of their production directly. For Kosovo's agricultural sector, SFSCs present new opportunities. This study examines SFSCs in Kosovo using data from 2,500 respondents. The findings show that 54% rely on oral contracts, 20% on written agreements, and distributors use multiple sourcing channels. SFSCs can enhance sustainability, trust, equality and growth in agriculture, business, and rural policy.

Key words: short supply chains, agricultural sector, small-scale farms, Kosovo.

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1. INTRODUCTION

In recent years, agricultural policy has increasingly focused on small farmers and their role in the sustainable social and economic development of rural areas, offering support to enhance their specialisation (Toma *et al.*, 2021). Globally, small farms constitute nearly 98% of all farms and account for over 50% of total arable land (Graeub *et al.*, 2015; Ricciardi *et al.*, 2018). Their development is crucial from economic, social, and environmental perspectives. Thus, addressing the challenges in logistics and the supply chain, as well as exploring opportunities to overcome them, is of great importance, considering that Kosovo, emerging from a planned economy, continues to face challenges in strengthening institutions, adapting to the demands of free market economy, and attracting investments (Gjokaj *et al.*, 2017). Concurrently, consumers are increasingly interested in the food they purchase. Some prioritise local products, while others value the farming methods used, such as biodynamic farming or permaculture principles. Overall, there is a growing demand for more information about the products they consume (Aubry and Kebir, 2013). A short food supply chain (SFSC) serves as a key market mechanism that facilitates information exchange between producers and consumers, while also establishing a strong market link – an essential priority for enhancing the competitiveness, efficiency, and innovation of the agricultural industry, ultimately benefiting consumers and all supply chain actors (Gjokaj *et al.*, 2018). SFSCs have been established alongside conventional food chains in response to the dominant industrial food system, which often distances and detaches food production from consumption. These chains are increasingly being considered by policymakers and decision-makers (Marsden *et al.*, 2000).

Originally emerging as a response to the widespread agro-industrial model of long and complex food supply chains, "short supply chains" are a collective term for various forms of food production and distribution. The European Commission publication (EC, 2015) identifies short supply chains as those in which food can be identified by the farmer or traced back to the farmer, as similarly noted by Jarzębowski and Pietrzyck (2018) and Vittersø *et al.* (2019). The two basic criteria defining short supply chains are physical and social proximity. Generally, the distance between the producer, the product, and the consumer is shortened compared to conventional food delivery methods as it happens within the same geographical region or locality (Vittersø *et al.*, 2019). Physical proximity refers to the transport distance from the place of production to the point of sale. Social proximity is expressed in the number of intermediaries between the producer and the consumer. In SFSCs, this number is minimal, often one but not more than two. When intermediaries are involved, their role is to facilitate a link between the producer and the consumer, ensuring that information about the origin and production methods remains intact. Ideally, the number of intermediaries should be minimal or non-existent.

In practice, and as referenced in the EU report, the opportunities for implementing short food supply chains can be grouped into the following categories (Augère-Granier, 2016):

– *Direct sales*: Sales directly from the farm, at farmer's markets, from the producer's store, or along busy roads. In these cases, the supply chain consists of only two participants – the farm and the consumer.

– *Collective direct sales*: Involves cooperation among producers to deliver products to consumer groups through a common food supply scheme. An intermediary may collect products from different producers and deliver them to consumers.

– *Partnerships between consumers and producers*: This form enables consumers to play a greater role in supporting small farms, for example, by sharing part of the production costs.

The main objective of this paper is to examine the current state of short food supply chains in Kosovo, particularly their role in improving small-scale farmers' market access and strengthening direct consumer relationships. The study explores the hypothesis that SFSCs contribute to rural sustainability and development by enabling small farmers to engage directly with consumers and compete more effectively with conventional supply chains.

To provide a comprehensive understanding of the topic, this article is structured as follows. The introduction sets the stage by presenting the concept of short food supply chains (SFSCs) and emphasizing their importance in contemporary food systems. The literature review examines existing research, focusing on the benefits and challenges associated with SFSCs. We also analyse the current state of agriculture in Kosovo and discuss policy measures aimed at supporting SFSCs, the methodology section outlines the approach used to collect and analyse data. The results section presents the findings of this research, including an examination of food supply chain diagrams in Kosovo that illuminate the structure and dynamics of SFCSs in the country. Finally, the article concludes by summarizing key findings and insights drawn from the study. The discussion and conclusions section synthesize the research findings, discusses their implications, and provides recommendations for future research and policy development in the field of short food supply chains.

2. LITERATURE REVIEW

A range of studies have explored the potential of short food supply chains (SFSCs) in promoting sustainability and resilience in the food system, Evola *et al.*, (2022) and Kumar *et al*. (2019) both have highlighted the need for further research on

the factors influencing participation in SFSCs and their alignment with sustainability dimensions. Jia *et al.* (2024) and Bayr *et al.* (2022) described SFSCs as a collective network of interconnected actors managing and enhancing the flow of products, services, and information from farm to fork, with the goal of reducing intermediaries and the physical distance between producers and consumers. Luo *et al.* (2022) and Barbosa (2021) have provided a comprehensive overview of the research landscape, identifying key topics and research gaps in SFSCs, including the need for closer farmer-consumer relationships and the potential of SFSCs in addressing food waste and quality. These studies collectively underscore the importance of SFSCs in promoting sustainable and resilient food systems, while also pointing to the need for further research in this area.

Luo *et al.* (2022) identified the major research topics and proposed future research directions for short food supply chains through a comprehensive bibliometric analysis. This study provided insights into publication trends, prominent countries, institutions, journal sources, highly cited papers, research clusters, research gaps, and future research directions in SFSC research, offering valuable insights for SFSC researchers and policymakers.

Another study by Fabbrizzi *et al.* (2014) discusses SFSCs as a sustainable practice benefiting producers, consumers, and the community by promoting relocalisation processes and principles of sustainability. The main findings of Fabbrizzi *et al.* (2014) indicate that SFSCs represent a new dynamic in the agricultural market, effectively linking economic, social, and environmental aspects. These chains offer substantial benefits to producers, consumers, and the broader community, addressing crises associated with modernisation by connecting farmers and consumers within the same locality (Charatsari *et al.*, 2024). Consumers engaging with SFSCs are motivated by a desire to participate in a social movement that prioritises environmental sustainability, fairness, and democratic principles. Meanwhile, producers benefit from direct sales, allowing them to retain a greater portion of the value and improve product quality, resulting in positive social effects for the community.

Similarly, Canfora (2016) discussed the role of SFSCs in achieving sustainability goals by reducing transportation costs and CO_2 emissions, promoting biodiversity, and implementing periurban agriculture, reflecting a growing interest in this concept in EU and national legislations. The methodology used in Canfora's study involves analysing EU law provisions and exceptions that promote SFSCs, including flexibility in the agri-food sector and special competition tools for local businesses. The main findings highlight the increasing importance of SFSCs for environmental sustainability and their economic and social benefits.

According to Malak-Rawlikowska *et al.* (2019), who conducted a comprehensive study on the sustainability of short food supply chains, these chains are widely believed to be more sustainable in comparison to mass food delivery systems. The methodology involved conducting a survey with 208 food producers across seven

countries, following a methodology in line with Tellis, and conducting pilot surveys before the main producer survey. The primary goal was to identify different types of chains and collect data for a quantitative sustainability assessment. The main findings of their research indicate that SFSCs are economically beneficial for producers and contribute to local development with lower environmental impacts.

Renting *et al.* (2003) explored the role of short food supply chains (SFSCs) in rural development by examining alternative food networks. The researchers conducted qualitative research to understand how SFSCs contributed to rural economies and communities. They found that SFSCs could enhance local economic development, promote social cohesion, and support environmental sustainability. The study emphasises the importance of recognising the diverse forms and functions of SFSCs in rural areas and highlights their potential to create more resilient and sustainable food systems.

Furthermore, Mundler (2016) investigated the contributions of SFSCs to territorial development in three regions of Quebec. Employing a mixed-methods approach, combining quantitative analysis of economic data with qualitative interviews with stakeholders involved in SFSC initiatives, the study has revealed that SFSCs play a significant role in enhancing local economies, preserving cultural heritage, and fostering community resilience in the studied territories. Short food supply chains, often described as small-scale, short, traditional, fair, transparent, and socially responsible with established prestige of food producers, underscore the importance of recognising the unique characteristics of each territory and tailoring strategies to local contexts for sustainable development (Raftowicz *et al.*, 2024).

However, scaling up SFSCs faces several barriers, as identified by various studies and reports. The EIP-AGRI Focus Group report on Innovative Short Food Supply Chain Management identifies several obstacles, including the inability of SFSCs to consistently supply enough produce to meet demand, especially from large buyers like caterers. Additionally, there is a lack of awareness among small producers about the products SFSCs can supply. Infrastructure limitations, such as the absence of local abattoirs and processing facilities, as well as the insufficient negotiating power of small producers in contract negotiations, pose challenges. Furthermore, competition among numerous small, uncoordinated SFSCs within a region adds to the complexity (EIP-AGRI Focus Group, 2015). Similarly, the study by Oleksiuk and Rull Quesada (2023) on the co-creation of business and marketing models for SMEs in short food supply chains in Lithuania, Latvia, and Poland highlights barriers such as low consumer awareness or knowledge levels about SFSCs, lack of cooperation between producers and consumers, scarcity of networking events, and insufficient procurement resources to support SFSCs in public institutions. The FAO report on Innovative Short Food Supply Chain Management also acknowledges that while SFSCs offer potential benefits, their collective impact is limited by barriers to scaling up (EIP-AGRI Focus Group, 2015).

Moreover, Aouinait *et al.* (2022) in their study on barriers and facilitators of purchasing from short food supply chains in Europe have found that factors such as the relative lack of convenience and high prices associated with SFSC products are significant obstacles hindering consumer engagement. Additionally, Dovleac and Bălăşescu (2017) identified weaknesses in the short food supply chain for local food, including small production volumes, seasonality of production, high cost of selling in alternative chains, and low capacity to join existing supply chains.

In the European Union countries, various provisions have been enacted at the national level to promote local markets and rural development. A notable example is the rural Code of French legislation, which advocates for the development of short supply chains. This includes initiatives aimed at increasing the presence of local products in both private and public catering services, promoting the supply of seasonal products, and implementing labelling schemes for quality, origin, and organic products (Kapała, 2022).

Similarly, Italian legislation at the regional level has introduced labelling signs and marketing tools specifically tailored to the short food supply chain. These regional laws incorporate labelling rules for identifying local goods, such as labels indicating "zero km" for products sold within local markets, serving as a significant legal instrument for promotion (Kapla, 2020).

Furthermore, several European Union member states have devised legal frameworks and incentives to support such food chains. France, for instance, has precisely defined the concept of a short chain ('circuit court') within its 2009 Action Plan, while Italy has established legislative decrees regulating Farmers Markets. These initiatives often benefit from Rural Development funding, with the European Commission proposed thematic sub-programs within Rural Development programs under the Common Agricultural Policy towards 2020 proposals to further support short supply chains (Kneafsey *et al.*, 2013).

3. AGRICULTURE AND SUPPORT PROGRAMS IN KOSOVO

In 2023, agriculture along with forestry and fishing contributed 7.2% to Kosovo's Gross Domestic Product (GDP) (MAFRD, 2024), while employing nearly 23% of the workforce (MAFRD, 2023). This disparity between labour input and economic output highlights Kosovo's low agricultural productivity compared to regional and international benchmarks. In 2022 in Kosovo, there were roughly 188,375 hectares of arable land, including cultivated fields. Based on the size of arable land, the farm structure is classified into four main categories: (a) very small farms (less than 1 ha) constituted 9.9% of all farms, covering a total area of 18,861 ha; (b) small farms (1 ha to less than 5 ha) accounted for 50.9% of farms, representing approxi-

mately 95,480 ha; (c) medium-sized farms (5 ha to less than 20 ha) made up 29.7% of farms, covering an area of 55,774 ha; and (d) large farms (20 ha or more) comprised 9.5% of farms, occupying a total area of 18,260 ha (MAFRD, 2023).

Small farmers face high input costs and struggle to achieve economies of scale due to limited purchasing power. Unable to buy seeds and fertilizers in bulk at lower prices, they rely on intermediaries, leading to additional mark-ups (Gjokaj *et al.*, 2021). High transportation costs further inflate expenses for small-scale purchases. On the marketing side, low production volumes make it difficult for smallholders to attract large buyers, forcing them to rely on local markets or middlemen who offer low prices (Djordjevic Milosevic *et al.*, 2021). A lack of infrastructure such as storage and transport combined with limited market information, further restricts their competitiveness. Additionally, difficulties in meeting regulatory standards and accessing affordable finance prevent small holders from improving efficiency and securing better prices.

From the perspective of short food supply chains, the farm size distribution in Kosovo has significant implications for local food systems, market access, and sustainability. The predominance of small farms where 60.8% of farms operate on less than 5 hectares suggests that a large portion of agricultural production is suited for local and regional markets rather than large-scale industrial supply chains. Smaller farms typically rely on direct-to-consumer models such as farmers' markets, cooperatives, and community-supported agriculture (CSA), which align well with SFSC principles by reducing intermediaries and strengthening local economies (Hanson *et al.*, 2024). However, on the one hand, the fragmentation of land and the presence of many very small farms may present challenges related to production volume, logistical efficiency, and supply consistency, potentially limiting their ability to meet urban demand at scale. On the other, medium-sized and large farms have greater potential to balance local supply with moderate economies of scale, allowing them to engage in SFSCs while ensuring steady market availability. Encouraging cooperative models, value-added processing, and digital platforms for direct sales could enhance the role of small and medium farms in SFSCs, improving their competitiveness and sustainability.

Kosovo is a potential candidate for European Union (EU) membership. A Stabilisation and Association Agreement (SAA) signed in 2015 between the EU and Kosovo took effect on 1 April 2016, providing a comprehensive framework for structured political dialogue and enhanced economic relations. In this context, several initiatives have been undertaken to enhance the competitiveness of Kosovo's economy, including the agriculture sector. Various instruments and activities have been implemented to strengthen this sector's competitiveness. Between 2014 and 2020, the Rural Development Programme (RDP 2014–2020) was in operation. The programme aimed to increase the competitiveness and productivity of the rural sector, preparing it for future competition within the EU and short-term management of grants from the EU's pre-accession assistance instruments for rural development

(IPARD). Additionally, it sought to generate higher-income employment opportunities in rural areas, acknowledging potential short-term trade-offs between productivity growth and job creation. Aligned with national agricultural and rural development policies, the RDP 2014–2020 focused on specific objectives:

a) enhancing the competitiveness and efficiency of primary agricultural production, processing, and marketing;

b) improving hygiene standards on farms and processing sites;

c) fostering sustainable rural development through investments in rural infrastructure and economic development that adheres to environmental protection standards; and

d) promoting rural diversification to create new job opportunities.

The Agriculture and Rural Development Programme (ARDP) 2014–2020 was structured similarly to the Instrument for Pre-Accession in Rural Development (IPARD) and incorporated measures that closely aligned with those of IPARD. These measures included: (a) Measure 101 – investments in the physical assets of agricultural holdings; (b) Measure 103 – investments in physical assets related to the processing and marketing of agricultural and fishery products; (c) Measure 201 – agri-environmental measures and organic farming; (d) Measure 202 – the establishment and protection of forests; (e) Measure 302 – farm diversification and business development; (f) Measure 303 – preparation and implementation of local development strategies through the LEADER approach; (g) Measure 401 – improvement of training; (h) Measure 402 – advisory services; and (j) Measure 501 – technical assistance and support for the National Rural Network (MAFRD, 2014).

The Agriculture and Rural Development Programme (ARDP) 2014–2020 aimed to strengthen the relationships between producers, processors, and consumers in Kosovo, with a particular emphasis on the regulations governing coordination within this value chain. Given the European Union's (EU) recognition of the importance of short food supply chains (SFSCs) and the introduction of labelling systems to indicate local product origins, Kosovo was expected to align with these trends by considering SFSCs as a sustainable alternative in compliance with EU regulations (MAFRD, 2014). However, the absence of reliable data hindered the assessment of Kosovo's progress in implementing policy measures supporting SFSCs.

Nowadays, the idea of short food supply chain in Kosovo aligns closely with the goals and objectives of the Strategy for Agricultural and Rural Development (SARD) 2022–2028. The SARD emphasises the importance of enhancing the competitiveness of Kosovo's agricultural sector, promoting sustainable rural development, and improving the livelihoods of small-scale farmers. By supporting local production and reducing the distance between producers and consumers, the short food supply chain directly contributes to these objectives. It fosters economic growth in rural areas by providing local farmers and artisanal producers with more direct access to markets, thereby increasing their income and reducing dependency on intermediaries (MAFRD, 2021).

Furthermore, the SARDP 2022–2028 prioritises the adoption of sustainable agricultural practices and the development of local value chains, both of which are integral to the short food supply chain model. The strategy's focus on improving the quality and safety of locally produced food, as well as encouraging organic farming and environmentally friendly practices, aligns with the principles of short food supply chains, which typically emphasize local, sustainable, and high-quality production (MAFRD, 2021). By supporting initiatives such as farmers' markets, community-supported agriculture (CSA), and local cooperatives, the SARD helps to strengthen the infrastructure needed for effective short food supply chains, ensuring that consumers have access to fresh, locally sourced products while also supporting the long-term sustainability of Kosovo's agricultural sector.

4. METHODOLOGICAL APPROACH

First, we explore Kosovo's short food supply chain, emphasising the roles and interactions of various stakeholders, from local producers to final consumers. We created a diagram of the short food supply chain in Kosovo.

To analyse stakeholder interactions involved in SFSCs in Kosovo, we conducted a research study funded by the Ministry of Agriculture, Forestry, and Rural Development (MAFRD). The study employed a structured sampling approach based on the 2014 Agricultural Census compiled by the Kosovo Agency of Statistics (KAS) and the lists of beneficiaries for direct payments/subsidies and grants managed by the Agency for Agriculture Development (AAD). The dataset included (Table 1):

- 26,274 farmers receiving direct subsidies,
- 1,562 farmers benefiting from grants, and
- 1,081 non-beneficiaries of subsidies, identified through supplementary records.

Table 1. Sample distribution

Category	Total observation (population)	Total chosen samples	Participation in a total sample of 2500 farms
Total Grants	1,525	939	38%
Total Subsidies	26,274	1,166	47%
Total Non-beneficiaries of Subsides	1,081	195	7%
Snowball	–	200	8%
Total	28,880	2500	100%

Source: own work.

To prevent data duplication, grant beneficiaries were excluded from the subsidy list. The sample was designed to ensure representativeness, with 40% of grant recipients (1,000 farms) and 44% of subsidy recipients (1,100 farms) included. Additionally, 16% of farms were selected from non-beneficiaries to provide a balanced analysis. Since no centralised list of non-beneficiaries was available, snowball sampling was employed identifying non-beneficiaries through referrals from surveyed farmers. While this method introduces potential biases, it allowed for the inclusion of a critical group often overlooked in agricultural policy assessments.

To ensure geographic representativeness, municipalities were weighted based on the total number of farms per region, ensuring a proportional selection of respondents. The final sample was stratified to maintain fairness and eliminate external influences, with selected farmers owning and actively managing agricultural land. Due to the aim and scope of the research for this paper, only survey questions related to SFSCs were analysed.

5. RESULTS

5.1. Diagram of the short food supply chain in Kosovo

Figure 1 illustrates the flow of the short food supply chain in Kosovo, highlighting the key stages from small-scale producers to final consumers. The process begins with the movement of goods from small-scale farmers, artisanal producers, and community gardens to local processing units, farmers' markets, and cooperatives. These producers are the foundation of the supply chain, emphasising local and sustainable practices. Once the products reach local processing units and distribution points, they are further distributed to retailers, including farm shops, local grocery stores, and markets. These retailers play a crucial role in making locally produced goods accessible to consumers. The final step in the supply chain is the sale of products to consumers through direct sales, local markets, or online platforms. This stage marks the completion of the short food supply chain, ensuring that consumers have access to fresh, locally sourced products.

The key components of the short food supply chain in Kosovo are:

– Production
  - Small-Scale Farmers: Growers of fruits, vegetables, grains, and livestock. Typically, they sell directly to local markets or consumers.
  - Artisanal Producers: Small-scale processors like bakers, cheese makers, and butchers who use local raw materials.
  - Community Gardens: Urban or rural plots where communities grow food for local consumption.

- Processing
  - Local Processing Units: Small facilities that process raw agricultural products (e.g., dairy, meat, grains) into consumable goods.
  - Cottage Industries: Home-based food processing, such as preserves, jams, or traditional foods.
- Distribution
  - Farmers' Markets: Direct sale points where farmers and producers sell their goods to consumers.
  - Local Grocery Stores: Small, independent shops that stock locally produced goods.
  - Cooperatives: Groups of producers who band together to sell their products, often to local shops or directly to consumers.
  - Direct Sales: Sales from farm to consumer, possibly through on-site sales, home delivery, or online platforms.
  - Community Supported Agriculture (CSA): A subscription model where consumers pay upfront for a share of the harvest, receiving periodic deliveries.
- Retail
  - Farm Shops: On-site stores at farms where products are sold directly.
  - Local Markets: Traditional markets where local producers bring their goods.
  - Small Supermarkets: Independent supermarkets that focus on local products.
  - Online Sales Platforms: Websites or social media channels used by producers to sell directly to consumers.
- Consumers
  - Households: The end consumers who purchase and consume locally produced food.
  - Local Restaurants: Restaurants that source ingredients from local producers, often focusing on traditional or seasonal dishes.
  - Community Events: Local festivals, fairs, or events where food is sourced from local producers.
- Support Organisations
  - Department of Advisory and Technical Services, producer organizations like: IADK, PePeKo, Mjedra e Kosoves, AgroDev, and other NGO services that provide technical assistance to small farmers.
  - Local NGOs: Non-governmental organisations that support sustainable agriculture, food security, and local economic development.
- Regulatory bodies
  - Government Initiatives: Programs and policies that promote local food production and distribution.
  - Food and Veterinary Agency: Provides with regulatory and Inspections body.
  - Educational Programs: Training and awareness programs about the benefits of short food supply chains and local consumption.

The flow of the food supply chain in Kosovo, as presented in Figure 1, significantly influences various aspects of the supply chain, including the roles of producers, the quality of products, and the traceability of product origins. Producers in Kosovo play a central role by directly supplying goods to distributors, retailers, and wholesalers, allowing them to maintain some control over product quality and traceability. However, the reliance on multiple channels, including distributors and importers, requires producers to adhere to diverse standards and meet varying market expectations, which can be challenging for small-scale producers facing intense competition and stringent quality requirements.

This diversity benefits consumers by providing more choices and promotes competition among producers to maintain high standards. Nevertheless, maintaining consistent quality and clear traceability of origin can be difficult, particularly when products come from both local and industrial sources. This complexity can lead to issues with product authenticity and potential consumer mistrust if origins are not clearly communicated.

Consumers increasingly demand transparency about the origins of their food, giving a competitive edge to producers who can certify and label their products accurately. However, producers unable to provide such transparency risk losing market share. Distributors segment their channels to effectively reach various market segments, including HORECA (hotels, restaurants, and cafés), retailers, wholesalers, and supermarkets. This segmentation allows for tailored marketing strategies and product offerings that meet specific needs, enabling producers to target niche markets and adapt their production accordingly. However, market fragmentation can make it difficult for producers to scale operations or achieve economies of scale.

The final delivery of products to consumers is the culmination of the short supply chain process, where ensuring high quality and traceable origins helps build consumer trust. Producers who engage in direct sales or have clear agreements with distributors can better communicate the value and origin of their products, fostering greater consumer confidence and potentially higher sales. Conversely, any disruptions or failures in the supply chain, such as delays or quality issues, can erode consumer trust and damage the reputations of both producers and distributors.

The collaborative efforts required among stakeholders, producers, and distributors are essential for maintaining product quality, ensuring fair pricing, and meeting regulatory standards necessary for consumer safety and satisfaction. However, such collaboration can be hampered by misaligned incentives, lack of trust, or inefficient communication channels, negatively impacting overall efficiency and effectiveness.

Last but not least, the short supply chain in Kosovo, with its multiple channels and segmented distribution, affects producers by necessitating diverse market standards while offering opportunities for market reach and product differentiation. The quality and origin of products are crucial in maintaining consumer trust

and competitive advantage within this complex supply network. However, challenges such as consistent quality maintenance, managing fragmented markets, and ensuring transparent product origins highlight potential negative impacts within the supply chain.

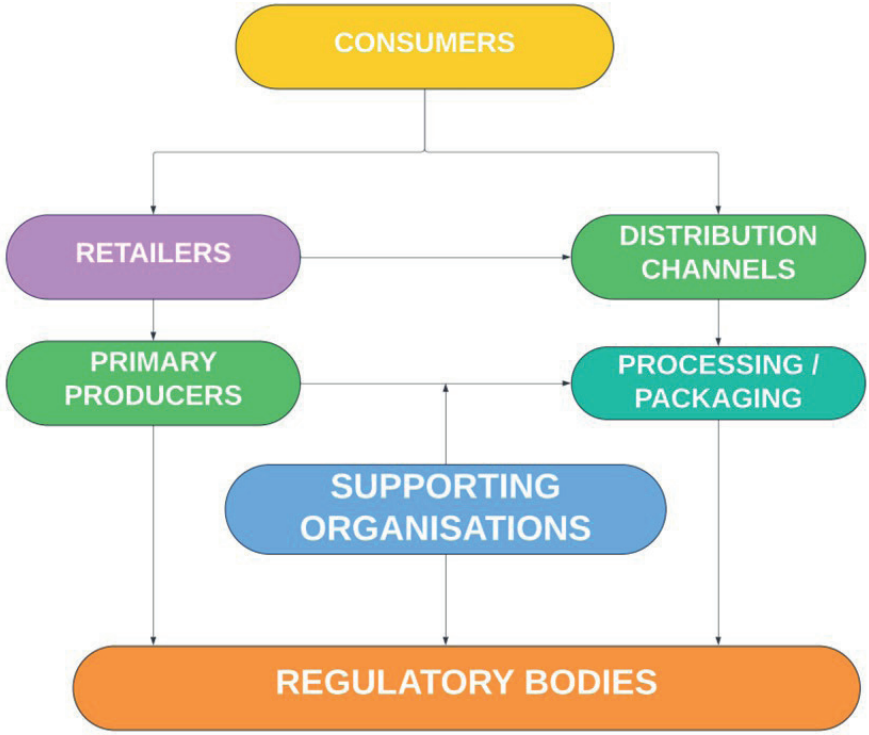

Fig. 1. Flow of short food supply chain in Kosovo

Source: own work based on our findings.

Short Food Supply Chains (SFSCs) offer numerous economic, social, and environmental benefits, making them a key component of sustainable food systems. They contribute to strengthening local economies, reducing carbon footprints, enhancing food security, and supporting small-scale farmers (Renting *et al*., 2003; Kneafsey *et al.*, 2013). The positive impact of SFSCs can be categorised as follows:

– Improved Negotiation Power: Farmers have greater leverage when dealing with retailers by eliminating intermediaries and selling directly to consumers.

– Enhanced Producer-Consumer Communication: SFSCs facilitate direct interaction, building trust and improving customer loyalty.

– Reduced Transportation Costs: Locally sourced products lower energy costs, transportation expenses, and CO_2 emissions.

– Greater Transparency: Fewer intermediaries mean clearer traceability, enhancing consumer confidence in product quality and origin.

– Lower Risk: Shorter supply chains reduce the risk of product damage, contamination, and theft during transportation and storage.

– Higher Product Quality: Reduced need for freezing and preservatives ensures fresher food options and minimises food waste.

– Increased Profitability: By cutting out middlemen, SFSCs allow farmers to retain a larger share of the profits while maintaining competitive consumer prices.

5.2. Survey research results

This section presents the findings from our survey research. The discussion focuses on interpreting the data, identifying key trends, and examining the implications for various stakeholders, including producers, distributors, and consumers.

Table 2 presents the age distribution of the 2,500 surveyed farmers. The mean age is approximately 45 years, indicating that the average farmer falls into the middle-aged category. The mode of 50 suggests that the most common age among farmers is slightly higher than both the mean and median, indicating a concentration of farmers in their early 50s. The standard deviation of 14.17 years reflects considerable variation in age, highlighting the diversity within the farming community. This is further emphasized by the wide age range, with the youngest farmer being 19 years old and the oldest 98.

Table 2. Age of farmers

Statistics	Value
Mean	45
Median	45
Mode	50
Standard Deviation	14.17
Min	19
Max	98

Source: own work.

An analysis of demographic characteristics is important for assessing labour availability, generational transitions, and long-term sustainability of SFSCs. An ageing farming population may indicate challenges in workforce renewal, while the presence of younger farmers suggests opportunities for innovation and adaptation.

The educational attainment of the 2,500 surveyed farmers varies, with the majority having completed secondary education (Table 3). Among them, 375 farmers (15%), have attained only primary education, representing the small segment of the farming population. The largest segment consists of 1,364 farmers (55%) who have completed secondary education, suggesting that this is the most common level of attainment. Additionally, 761 farmers (30%) have attained higher education, representing a significant proportion. The higher level of education may contribute to an increased capacity for adopting advanced agricultural techniques, implementing better management practices, and engaging more effective participation in agricultural markets.

Table 3. Education level of farmers

Education Level	Count	Percentage (%)
Primary Education	375	15
Secondary Education	1364	55
Higher Education	761	30
Total	2500	100

Source: own work.

Analysis of the distribution of education levels within the farming community helps identify potential gaps in knowledge and skills that could limit the growth and sustainability of SFSCs. The higher proportion of farmers with secondary or higher education suggests opportunities for targeted training programs that could further enhance the sector's competitiveness. By analysing educational data, policymakers and stakeholders can better design interventions that support capacity-building efforts, ensuring that farmers are well-equipped to participate in and benefit from SFSCs, ultimately contributing to rural development and the sustainability of local food systems in Kosovo.

The average farm area among the 2,500 surveyed farmers is slightly over 5 hectares (Table 4). However, the large standard deviation of 8.718 and a range from 1 to 176 hectares suggest considerable variability in the data. The median value of 3 hectares and the mode of 1-hectare highlight that, while the average is around 5 hectares, many farmers manage smaller plots. The extreme values of kurtosis (105.925) and skewness (8.310) indicate a highly non-normal distribution. Positive skewness implies that the data is heavily skewed to the right, meaning there are a number of farms with much larger areas than the mean, thus pulling the average upwards. The standard deviation emphasises the variability in farm sizes, suggesting considerable differences in the land managed by different farmers. This variability is reinforced by the range of farm sizes, from the smallest

at 1 hectare to the largest at 176 hectares. Such a wide range indicates a highly diverse farming community. The distribution of farm sizes reveals a predominance of smaller farms, as evidenced by the median and mode values being lower than the mean, with a few very large farms skewing the overall average. It has important implications for agricultural policies, resource allocation, and support programs, which may need to address the needs of both smallholders and large-scale farm operators.

Table 4. Agriculture area cultivated by the farmers (in hectares)

Statistics	Value
Mean	5.066856
Standard Error	0.174353
Median	3
Mode	1
Standard Deviation	8.717654
Sample Variance	75.99749
Kurtosis	105.9247
Skewness	8.309817
Range	175
Minimum	1
Maximum	176
Sum	12,667.14
Count	2,500

Source: own work.

The analysis of farm size distribution, as presented in Table 4, is essential for understanding the structure and dynamics of short food supply chains (SFSCs) in Kosovo. Farm size directly influences production capacity, market participation, and the ability to adopt sustainable agricultural practices. The high variability in farm sizes indicates that a significant portion of the farming community consists of smallholders. This has an implication for SFSCs, as smaller farms are more likely to engage in direct-to-consumer sales, farmers' markets, and local cooperatives, which are key components of SFSCs. The presence of a few very large farms, as reflected in the right-skewed distribution, suggests that while some producers may have the resources to scale operations and access broader markets, policies must ensure that smallholders remain competitive. Understanding this distribution can helps policymakers and stakeholders design targeted interventions, such as financial incentives, training programs, and infrastructure improvements, to enhance the efficiency and sustainability of SFSCs in Kosovo, ultimately supporting rural development and food security.

Out of the total respondents, 1,388 answered 'yes' to the question of whether they sell directly from the farm to consumers, while 1,112 indicated that they do not engage in direct sales. Figure 2 presents the percentage of total sales made directly to consumers. Among the 1,388 farmers who sell their products directly to consumers, 181 farmers report that only 0–19% of their total sales come from direct sales, while the remaining sales occur through other channels. In contrast, 630 farmers sell 80–100% of their products directly to consumers, indicating a strong reliance on direct marketing strategies.

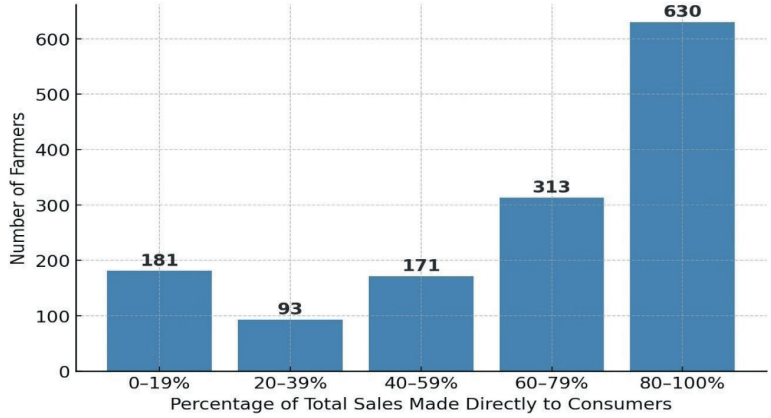

Fig. 2. Distribution of farmers by share of direct sales to consumers (%)

Source: own work.

This data highlights the extent to which farmers engage in direct sales, a key component of SFSCs that fosters closer producer-consumer relationships, enhances transparency, and reduces reliance on intermediaries. The variation in direct sales percentages among farmers indicates differences in market access, production capacity, and consumer demand. The finding that a significant portion of farmers rely on direct sales suggests a well-established SFSC network in some areas, while the relatively lower engagement of others points to potential barriers such as limited market opportunities, logistical challenges, or lack of consumer awareness.

Figure 3 illustrates the various ways in which farmers connect with consumers. Among the 1,112 respondents who reported selling their products through indirect channels (rather than directly from the farm), the majority, i.e. 688 farmers, sold to collecting centres. This method was considered the easiest and most secure way to market their products, although it typically resulted in lower prices. Additionally, 167 farmers sold at farmers' markets one to two days per week, where local municipalities provided tents to facilitate sales. Another common practice involved selling to unlicensed traders, where farmers conduct direct sales from their farms, often receiving only half the market price for their goods. The final

sales channel was through retail shops and grocery stores, where farmers were responsible for covering delivery costs themselves.

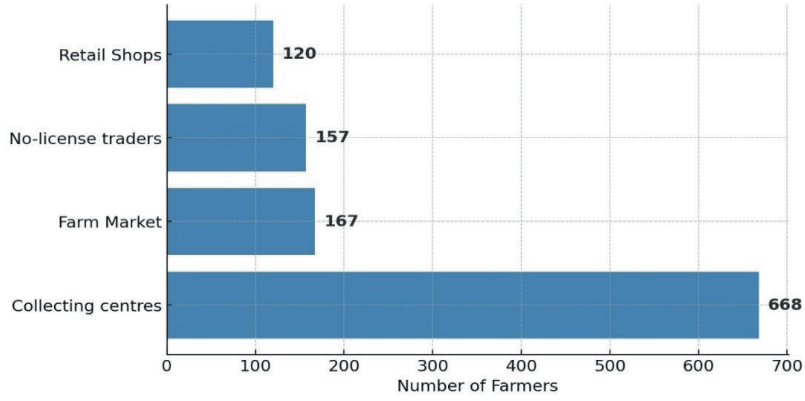

Fig. 3. Product sales places

Source: own work.

By examining how farmers sell their products whether through collecting centres, farmers' markets, unlicensed traders, or retail stores this analysis provides valuable insights into market accessibility, pricing structures, and the challenges faced by agricultural producers. The dominance of collecting centres as a sales channel suggests that many farmers prioritise security and convenience, even at the cost of lower prices. In contrast, direct sales at farmers' markets and through unlicensed traders indicate an alternative approach where farmers seek to maximise profits but may face logistical and regulatory challenges. The inclusion of retail stores highlights the need for more structured supply chain integration, where farmers must manage transportation and distribution costs.

The data in table 5 provides an overview of the different types of contractual agreements used by the farmers in the sample. Out of the 2,500 surveyed farmers, 657 (26.3%) did not engage in any form of contractual agreement, either formal or informal. This suggests that over a quarter of the farmers operated without binding agreements, potentially indicating a reliance on informal trade practices or a lack of access to formal contracting mechanisms. A total of 491 farmers (19.6%) utilized written contracts, which provide legal clarity and protection for the involved parties. Written agreements help ensure compliance and mitigate risks associated with disputes, breaches, or market fluctuations. The majority of farmers, i.e. 1,352 (54.1%), relied on oral contracts, indicating a strong preference for verbal agreements. While oral contracts may be easier and more flexible to establish, they pose risks related to misunderstandings, lack of enforceability, and potential conflicts due to the absence of formal documentation.

Table 5. Types of contracts used by farmers

Contract Type	Number of Farmers	Percentage (%)
No Contracts or Agreements	657	26.3
Written Contracts	491	19.6
Oral Contracts	1,352	54.1

Source: own work.

The analysis of the types of contacts farmers used provides insights into the market structure, farmer behaviour, and transaction security. The predominance of oral contracts suggests that a large share of farmers engage in informal agreements, which are more common among small-scale producers selling perishable goods like fruits, vegetables, dairy, and eggs products that require quick transactions and frequent deliveries, with the small-scale amount of produce. In contrast, written contracts are likely more prevalent among larger, commercial farms or those producing high value or processed agricultural goods, such as milk for dairy processing, meat for retail, or specialty crops, mainly medicinal and aromatic herbs and non-wood forestry products exported through cooperatives. Farmers with higher education levels and younger farmers tend be more inclined to formalise contracts, as they often have greater awareness of legal frameworks and access to institutional markets, or government programs that require formal agreements. Conversely, farmers without contracts tend be engaged in direct, trust-based transactions within local markets, which is characteristic of traditional, smallholder farming systems.

6. DISCUSSION AND CONCLUSION

The short food supply chain in Kosovo plays a crucial role in enhancing local food production and distribution by fostering direct connections between producers and consumers. The efficiency of SFSCs, their socio-economic and environmental benefits, and the challenges faced by stakeholders collectively define their impact and potential in the country's agricultural sector. A key advantage of SFSCs is their emphasis on local sourcing, which reduces geographical and logistical barriers between producers and consumers. By minimising intermediaries, SFSCs enhance product freshness, maintain higher quality control, and foster transparency in food sourcing. This direct interaction between farmers and consumers strengthens trust and loyalty while promoting sustainable consumption habits.

Direct sales through farm shops, local markets, and online platforms empower small-scale farmers and artisanal producers by providing better pricing opportunities

and reducing dependency on large retailers (Paraušić *et al.*, 2024). Community-supported agriculture (CSA) initiatives and farmer cooperatives further contribute to supply consistency and strengthen consumer-producer relationships.

The conducted in this paper research demonstrates that SFSCs in Kosovo predominantly rely on informal agreements, with most transactions occurring through oral contracts. While this flexibility allows for greater adaptability, it also exposes small farmers to financial risks due to the lack of formalized agreements. Strengthening contractual arrangements through cooperative models and legal support could enhance stability and predictability in the sector.

The fragmented nature of the agricultural sector in Kosovo, coupled with small farm sizes, limits economies of scale and makes it difficult for farmers to compete with larger, industrialized food chains. As stated by Krasniqi *et al.* (2023), larger farms with a higher share of other gainful activities (OGA) operate more efficiently. This highlights the importance of diversifying income streams and optimising direct market access for smaller farms to remain competitive. Short food supply chains (SFSCs) present a viable solution by enabling farmers to sell directly to consumers, thereby improving their financial stability and reducing inefficiencies linked to intermediaries. Additionally, infrastructure constraints, including inadequate storage and distribution networks, hinder the expansion of SFSCs (Bayir *et al.*, 2022; Rucabado-Palmar *et al.*, 2020). Addressing these issues through targeted policy interventions, investment in logistical improvements, and farmer training programs could significantly enhance the efficiency and sustainability of SFSCs.

One major issue is also the aging farming population. Ensuring generational transition in agriculture is critical for SFSC sustainability. Targeted educational programs, financial incentives, and technological integration could play a vital role in attracting younger farmers and ensuring long-term sector viability. Educational disparities among farmers also impact the efficiency of SFSCs. Addressing these gaps through tailored training in farm management, digital marketing, and quality assurance could significantly enhance productivity and operational effectiveness.

Policy implications arising from this study suggest the need for more structured governmental support to formalise and strengthen SFSCs. This could include financial incentives for direct-to-consumer sales, development of digital platforms to facilitate market access, and educational programs aimed at improving business management skills among small farmers. Aligning Kosovo's agricultural policies with European Union frameworks on SFSCs would further enhance the sector's integration into broader regional markets. Addressing existing challenges related to scalability, contract enforcement, and generational shifts is essential for long-term sustainability. Policy interventions, capacity-building programs, and regulatory improvements should focus on strengthening SFSCs by ensuring fair business practices, fostering innovation, and integrating youth participation in agriculture. By doing so, Kosovo can leverage SFSCs as a strategic tool for enhancing rural development and food security while promoting sustainable agricultural practices.

In conclusion, to enhance the efficiency and sustainable development of small and medium-sized enterprises in Kosovo, it is recommended to undertake the following actions:

– Strengthening Infrastructure and Logistics: Investment in cold storage facilities and efficient distribution networks can help mitigate logistical challenges and ensure product freshness.

– Educational and Training Programs: Introducing specialised training in farm management, digital sales, and marketing strategies can enhance farmers' ability to compete in the market.

– Youth Engagement Initiatives: Implementing policies that incentivise young entrepreneurs to enter the agricultural sector through grants, mentorship programs, and business incubators.

– Regulatory Support and Certification: Establishing clearer guidelines for organic certification and traceability systems to ensure consumer confidence and market access.

– Digital Transformation: Encouraging the adoption of e-commerce platforms and digital marketing to improve direct sales channels and consumer reach.

SFSCs offer a viable strategy for enhancing Kosovo's agricultural sector by promoting economic resilience, environmental sustainability, and rural development. However, realising their full potential requires a concerted effort from policymakers, farmers, and consumers to address existing barriers and leverage opportunities for growth. Future research should explore the long-term economic viability of SFSCs, their scalability, and their potential integration with digital supply chain innovations to further enhance their efficiency and impact.

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PLANNING AND PRACTICE OF THE POLISH-CZECH TRANSBORDER ROAD NETWORK DEVELOPMENT: FROM INEFFECTIVE TOP-DOWN PLANS TO BOTTOM-UP LACK OF COORDINATION?

Abstract. In this article, the authors analyse the development policy of the major road network in the Polish-Czech border areas in 1958–2024. The methodology of content analysis covering historical bilateral and European planning documents and GIS spatial analysis of access to border areas via roads crossing the border. The analyses have shown: (1) dominance of political and expert planning, without the use of scientific network models; (2) decentralisation of planning and resignation from common documents; (3) prioritising east-west connections and disregarding the north-south European ones; and (4) the greatest increase in border permeability only after the elimination of permanent border controls within the EU Schengen Area since 2007, but mainly due to the opening of historical roads.

Key words: development policy, borderlands, border permeability, road network, spatial planning, European integration, Poland, Czechia.

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1. INTRODUCTION

The analysis of border areas development and the impact of the national border on human mobility and economy, including infrastructure, is one of the most classic topics in socioeconomic geography (Minghi, 1963; Prescott, 1965). One of the important issues is the permeability and accessibility of the border and peripheral regions (Hisakawa *et al.*, 2013; Kolejka *et al.*, 2015; Condeço-Melhorado and Christidis, 2018). These characteristics are significantly important for the development of trade and border tourism in these areas (Więckowski, 2010; Michniak *et al.*, 2014). In most countries, the border is a clear barrier that protects countries from an uncontrolled movement of goods and people, and all traffic passing through the designated and tightly controlled border crossings.

In spatial and economic planning in Poland and former Czechoslovakia, during the communist (socialist) period after World War II, border regions were approached as a political and military buffer zone, vulnerable to military aggression in the event of war, and requiring special protection (Ciok, 1990; Bański, 2010; Rychlík, 2016). That trend was much stronger on the border between Czechoslovakia, Western Germany and Austria, where the 'Iron Curtain' was erected (Jílek *et al.*, 2006; Mašková and Ripka, 2016). As a result, the number of cross-border road and rail links was deliberately reduced, even eliminating those that existed in earlier historical periods. Restrictions on free movement and settlement in border areas negatively affected the development of transport infrastructure and caused the degradation of the existing one before 1945, especially on the Polish side (Ciok, 1991; Bičík and Štěpánek, 1994; Kołodziejczyk, 2014; Jędruch *et al.*, 2020). These restrictions increased the peripheral character of border areas and their disparities resulting in a negative impact on their development (Ciok, 1990; Vaishar *et al.*, 2013; Kolejka *et al.*, 2015; Böhm and Opioła, 2019; Pászto *et al.*, 2019; Kołodziejczyk, 2020). The widespread censorship of publications and the 'secret' status of many planning documents meant that practically until the end of the 1980s, a small number of scientific analyses of the Polish-Czechoslovakian borderland and border cooperation development were carried out (Małecki, 1971; Ciok, 1988). The isolation of the Eastern Bloc countries caused that the analyses of European transport networks until the late 1990s often overlooked Central and Eastern Europe (Gutiérrez and Urban, 1996).

The policy related to borderlands changed only after the collapse of the communist bloc, political transformation of Poland and Czechoslovakia in 1989–1991, and the peaceful division of Czechoslovakia into Czechia and Slovakia in 1993. Reducing restrictions on border traffic and opening local road crossings have had a positive impact on local transborder cooperation and tourism development, although it has not fully eliminated the problem of borderland peripherality (Dołzbłasz, 2017; Furmankiewicz *et al.*, 2020; Piepiora *et al.*, 2021; Sikorski *et al.*, 2023; Furmankiewicz and Trnková, 2024). The accession of Poland and Czechia to the European Union (EU) in 2004 and to the Schengen area in the end of 2007

was of particular importance, when permanent border controls were abandoned (Jańczak, 2014; Directorate-General for Migration and Home Affairs, 2015).

The democratisation of Central and Eastern Europe countries and the processes of European integration have made it more common in the 21st century to analyse transportation problems on a European-wide scale (Christodoulou and Christidis, 2019; Goldmann and Wessel, 2020; Pérez-Acebo *et al.*, 2021), as well as in Central and Eastern Europe (Fleischer, 2003; Koziarski, 2020; Komornicki and Goliszek, 2023). Several authors have also carried out basic analyses of the transport network development in the Polish-Czech borderland (Kolejka *et al.*, 2015; Kołodziejczyk, 2020), although historical planning documents and their actual implementation in investment practice have frequently not been thoroughly analysed or evaluated.

In this article, the authors analyse the historical development of road network planning in the Polish-Czech borderland and the Polish-Czech (former Polish-Czechoslovakian) cooperation in this area covering 1958–2024. However, the focus is on the investments in 1991–2024, when the development of the cross-border road network was at its greatest dynamics after many years of stagnation. The following main research questions (RQ) about the borderland under analysis were considered:

(RQ1) What main stages of cooperation in planning road networks in this area can be identified?

(RQ2) How do the studied area road network plans fit into the European road network policy?

(RQ3) Were the plans based on methodical analyses of road network efficiency or were they primarily influenced by the central government policy or local and regional lobbying efforts?

(RQ4) To what extent were the agreed plans for the development of cross-border connections implemented and how did it affect the permeability of the border for cars?

In Section 2 of the article, the research methods of and the territorial scope of the study are described. Section 3 presents how the current Polish-Czech borderland was considered in pan-European and national documents with a focus on the road network, mainly addressing RQ2 and, to a lesser extent, RQ1 and RQ3. In Section 4, the authors conduct a qualitative analysis of common public strategic and planning documents taking into account the development of the road network in the studied area (the study related primarily to RQ1, less to RQ2 and 3). Next, based on cartographic materials, the changes in the road network layout (national and international) are presented and the permeability of the border in terms of car traffic (paved roads of all categories open to car traffic) in 1991–2024 (GIS analysis focusing on RQ4). The conducted analysis may be useful for researchers and public authorities involved in spatial analysis and planning in border regions, particularly in countries at the initial stages of economic integration.

2. MATERIALS AND METHODS

The detailed analysis presented in this article covers the current Polish-Czech border and adjacent border areas, defined as EU NUTS-3 statistical units according to the classification effective as of 1 January 2018, including the areas located at least 30 km from the border (Fig. 1). This is due to the fact that Poland had a 30-kilometer border zone with various types of restrictions related to the protection of the state border which were later relaxed or completely eliminated.

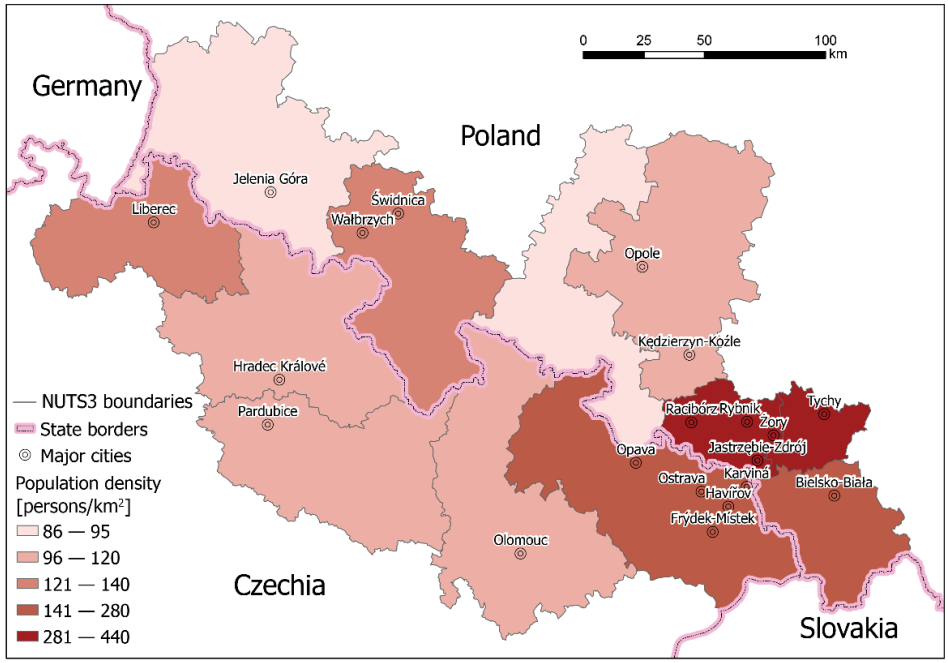

Fig. 1. The studied area of the Polish-Czech borderlands and population density in the analysed EU NUTS-3 statistical regions (2023)

Source: prepared by J. Lipsa, based on data in Table 1.

The current length of the Polish-Czech border is approximately 796 km. It was a fragment of the Polish-Czechoslovakian border (1945–1992, and only short fragment 1920–1992) and the Polish-Czech border from 1993. The western and central part of the border includes the Sudetes mountain region (Krkonošsko-jesenická subprovincie/ Sudety/ Sudeten), while the eastern part includes the densely populated areas of Silesia and a small fragment of the Carpathian massif (Kolejka *et al*., 2015; Furmankiewicz *et al*., 2020). The analysed area covers 46.9 thousand square kilometres, of which 23.8 thousand sq. km in Poland and 23.1 thousand

sq. km in Czechia (Table 1). The area has a population of 7 million (31.12.2023), including 3.7 million in Poland and 3.3 million in the Czechia. The population decreased by 4% between 2004 and 2023.

Table 1. Area and population of EU NUTS-3 regions in the studied area

NUTS-3 region name	Eurostat Code	Area [sq. km] in 2023	Population (CZ-1991; PL-1995)*	Population 31.12.2004	Population 31.12.2023
Liberecký kraj	CZ 051	3,163	425,120	427,722	449,177
Královéhradecký kraj	CZ 052	4,758	552,809	547,563	555,267
Pardubický kraj	CZ 053	4,519	508,718	505,486	528,761
Olomoucký kraj	CZ 071	5,160	647,391	636,313	631,802
Moravskoslezský kraj	CZ 080	5,535	1,278,726	1,260,277	1,189,674
Jeleniogórski	PL 515	5,569	616,602	586,147	530,718
Wałbrzyski	PL 517	4,181	741,624	691,079	605,614
Nyski	PL 523	4,092	406,531	395,031	350,225
Opolski	PL 524	5,319	686,641	656,500	586,500
Rybnicki	PL 227	1,353	667,699	641,861	601,229
Tyski	PL 22C	944	385,606	382,173	392,267
Bielski	PL 225	2,352	640,557	646,166	655,213
Total in Czechia		**23,144**	**3,412,764**	**3,377,361**	**3,354,681**
Total in Poland		**23,810**	**4,145,260**	**3,998,957**	**3,721,766**
Total in studied area		**46,954**	***~7,558,024***	**7,376,318**	**7,076,447**

* The NUTS classification used in the EU was formally introduced in Czechia (CZ) on 1 January 2000 and in Poland (PL) on 26 November 2005 and not all data were available back then.

Source: own work based on: Poland, *Bank Danych Lokalnych GUS* [Local Data Bank Statistics Poland] (https://bdl.stat.gov.pl); Czechia, Český statistický úřad: *Statistická ročenka České republiky 2004*, *Statistická ročenka České republiky 2023*; *Statistický lexikon obcí 2024*.

In Sections 3 and 4, the authors analyse historical planning documents as well as cartographic materials collected through searches in public libraries and offices in Poland and Czechia, and in the Internet databases, the most important of which are listed in Appendices 1 and 2. In Section 4 the focus is on bilateral documents created in cooperation between Polish administration units and partners from Czechoslovakia (until 1992) and Czechia[1] (from 1993) at the national or regional level. The analysis covers only ancillary data on cooperation at the sub-region-

[1] In 1993–2015 only the name Czech Republic was formally used, and in 2016 the shortened name Czechia was also officially introduced.

al level of the Euroregions and European Groupings of Territorial Cooperation (EGTC). The Euroregions and EGTC do not have the authority to plan the road network and can only conduct lobbying activities (Furmankiewicz, 2007; Skorupska, 2018; Lewkowicz, 2019). These sections use a classic qualitative, descriptive content analysis (Neuendorf, 2002; Denzin and Lincoln, 2018), commonly practised in the planning policy and cartographic material historical analysis (Fleischer, 2003; Bański, 2010; Böhm and Šmída, 2019). The information on plans for the development of automobile cross-border roads connecting the areas on both sides of the border, as well as information on planned and historically opened automobile border crossings was searched for in the documents. The Polish-Czechoslovakian agreement on the final demarcation of the border after World War II was signed only in 1958 (its subsequent corrections were minor); therefore, the presented analysis of borderland planning policy begins from that period.

In Section 5, an ArcGIS analysis of the border areas accessibility through border crossings[2] (Kwon and Graham, 2021) was performed. The input layers used were point layers representing border crossings in 1991 and places accessible for car crossing in 2024, as well as a linear layer with a network of roads accessible to cars, specific to each year. The lists of border crossings accessible to public car traffic from the documents listed in Appendices 2 and 3 were used. Other types of border crossings that restricted car crossings for Polish and Czech citizens were deliberately omitted (including, e.g., tourist hiking, cycling, and skiing border crossings, as well as local border traffic crossings restricted to residents of border municipalities with individual passes).

The historical development of cross-border road networks from 1991 to 2024 was identified using cartographic material: traditional road maps, topographic maps, orthophoto maps, the OpenStreetMap database, and Google Street View. The data on the road network was used not considering local restrictions on vehicle tonnage (data not available in historical cartographic materials). In Poland a formal differentiation between 'motorway' (*autostrada*) and 'expressway' (*droga ekspresowa*) was introduced in 1993, which differ in technical parameters and maximum allowed speeds. In Czechia, the different categories of 'motorway' (*dálnice*) and 'road for motor vehicles' (*silnice pro motorová vozidla*) have been present since 2016.

The weakness of our border permeability analyses is the focus on publicly accessible border crossings for vehicles (small border traffic crossings and crossings on tourist routes were excluded from the analysis) and the failure to consider various restrictions in place at these crossings (e.g., limited opening hours of the crossing or the restrictions for citizens of other countries). However, such simplifications are necessary to ensure the feasibility of the research.

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[2] 'Network Analysis Plug-in', 'Service Area' feature, 'Towards Facilities' direction, 'Cutoffs': 10, 25, and 50 km.

3. ROAD NETWORK IN THE POLISH-CZECH BORDERLAND IN NATIONAL AND EUROPEAN DOCUMENTS

The first planned modern long-distance road transport link in the studied area was the German A88 motorway (Breslau–Wien), the concept of which was included in the Munich Agreement of 1938, however, it was not constructed until the end of World War II in 1945 (Janda and Lídl, 2008; Dostál *et al.*, 2023).

After the war followed changes in the national borders of Czechoslovakia and, to a greater extent, Poland, imposed by the major powers of the anti-Hitler coalition at the Yalta conference. As a result, part of the former Czechoslovak-German border became the Czechoslovak-Polish border in 1945 (Eberhardt, 2017). Only a small portion of the former Polish-Czechoslovak border near Cieszyn was preserved in the studied area. Undemocratic one-party communist systems under the control of the Soviet Union were imposed in both countries. The movement of people across the border was limited and strictly controlled (Komornicki, 1990; Rychlík, 2016).

After World War II, the first general plans for the construction of motorways appeared in both countries, focussing on internal connections between the main cities (Prášil, 2007; Kalinowski, 2021). The first concept of a unified system of international roads in Europe, which included Poland and Czechoslovakia, was prepared as early as 1950 as part of a declaration by the United Nations Economic Commission for Europe – UNECE (United Nations, 1951). During that period, three roads of international importance were agreed in the analysed area: E12 (Paris – Praha – Hradec Králové – Słone – Kłodzko – Wrocław – Warszawa – Leningrad (currently Sankt Petersburg) and Moscow), E14 (Trieste – Praha – Mladá Boleslav – Jelenia Góra – Szczecin), and E16 (Bratislava – Žilina – Český Těšín – Cieszyn – Katowice – Gdańsk). These roads included major international passport-border crossings along historical routes.

Plans for motorways, which were similar in terms of the routes Wrocław – Wałbrzych (PL) – (probably Lubawka) – Hradec Králové (CZ) – Praha and Katowice – Rybnik (PL) – Ostrava (CZ), were prepared in 1963, both in Poland and Czechoslovakia (Fig. 2). In Czechoslovakia it included the D11 (E12) motorway link Praha – Hradec Králové – border of Poland (via Lubawka, alternatively via Náchod), and the D47 (E7) motorway from the Brno region via Ostrava to the border of Poland while the E14 through Harrachov (CZ) – Jakuszyce (PL) and E16 through the Český Těšín (CZ) – Cieszyn (PL) border crossings were decided to be preserved as the first class roads (Prášil, 2007). Similarly, in Poland, the project of 'express roads' was approved, including the Wrocław – Wałbrzych – Praha (CZ) and Katowice – Rybnik – Wien (Austria) roads (Rustecki,1965; Kalinowski, 2021).

These plans were retained in the Polish motorway construction plan in 1972 (Kaliński, 2021, p. 412), and in Czechoslovakian plans from 1971 (Prášil, 2007, p. 22). The road plans intended to connect the largest cities were drawn very sche-

matically, often with straight lines or arcs. However, neither of the trans-border motorways were prioritised and they were not built before 1992.

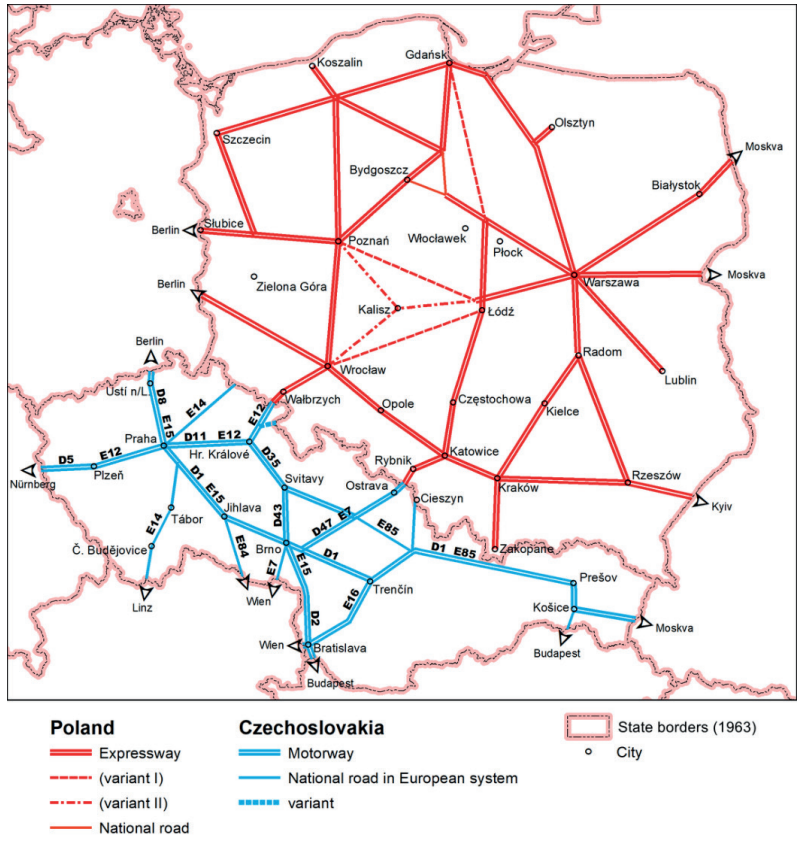


Fig. 2. Plans for the construction of motorways in Czechoslovakia and Poland in 1963.The original national maps were schematic and lack scale

Source: prepared by I. Dostál, based on Prášil (2007, p. 13) and Rustecki (1965, p. 94).

In 1975, the European Declaration of the UNECE was replaced by the European Agreement on Main International Traffic Arteries (United Nations, 2007, 2008). The layout of international roads crossing the Polish-Czech border has not changed significantly (Fig. 3). Only different road markings have been introduced and extended beyond the area of our analysis (E14 to E65, E12 to E67, E16 to E75). The 1985 Polish plan for the construction of motorways and expressways took into account earlier plans (expressway from Legnica and Wrocław to Praha; motorway Katowice – Wien) and additionally included the Katowice and Bielsko-Biala – Cieszyn expressway in the direction of Ostrava (Kaliński, 2021, p. 420).

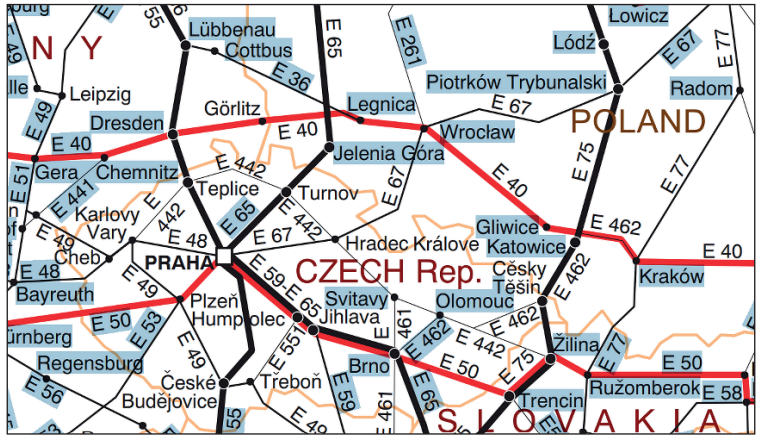


Fig. 3. Excerpt of the plan of international roads agreed in 1975 against the background of the contemporary borders of Poland and Czechia (the original map is schematic without preserving cartographic details)

Source: © United Nations (2007), https://digitallibrary.un.org, downloaded on 22.08.2024.

The economic crisis of the 1980s contributed to the dissolution of the Soviet Union, the collapse of the political socialist bloc in Europe, and the introduction of democratic systems in most eastern European countries. After 1990, the restrictions in border areas were gradually lifted. These changes contributed to an increase in local and international cross-border traffic through road border crossings in the studied area (Komornicki, 1999). The interest of local authorities in the development of trans-border road communication in the area under analysis has also increased (Furmankiewicz, 2007; Kolejka *et al.*, 2015; Kurowska-Pysz and Szczepańska-Woszczyna, 2017). In 1989, on the initiative of the European Commission, the PHARE (Poland and Hungary Assistance in Restructuring Economies) programme was established, which envisaged financial assistance from the European Communities to Central and Eastern European countries, including road infrastructure (Zdulski, 2002).

An important planning activity for long-distance transport links in Europe (including the former Eastern Bloc countries) was the proposal of the so-called Pan-European Corridors (PEC) at the European Conference of Ministers of Transport[3]. The 1991 Prague (Praha) conference defined the original concept of corridors and determined the necessary level of transportation infrastructure. Poland adopted a national motorways construction plan in 1993.

At the following two conferences: in Crete (1994) and Helsinki (1997), ten corridors were finally defined (Stancu *et al.*, 2014). It was recommended that they be

[3] It is an intergovernmental organisation established by a Protocol signed in Brussels in 1953.

given investment priority due to their role in connecting the internal European market and building ties with neighbouring countries (TINA Office, 2002; Miltiadou *et al.*, 2017; Czech, 2021). An offshoot of the planned corridor No. 6 crossed the Polish-Czech border in its eastern part (Gdańsk – Katowice – Ostrava – Brno). However, the main corridors No. 3 and 4 ran parallel to the borderland (Fig. 4). Compared to the 1975 findings, this concept can be considered a regression, as it excluded two international roads: E65 and E67, which were not considered relevant at all.

Road planning was influenced by administrative reforms in both countries. In Poland, self-governing regions (*województwa*) and districts (*powiaty*) had been established since 1999. Consequently, a deconcentration of responsibility for planning, investment and maintenance of roads took effect. One year later, self-governing regions (*kraje*) were also introduced in Czechia.

The simultaneous accession of Poland and Czechia into the EU in 2004 was of great importance for the development of local road network in the borderland (which involved the elimination of customs controls at border crossings), followed by the accession of both countries to the Schengen area in 2007 (lifting permanent passport controls and permitting free border movement). This enabled the opening of local roads to pedestrian and automobile traffic and enabled access to the EU aid funds for infrastructure development (Dołzbłasz and Raczyk, 2015; Kulczyk-Dynowska, 2018; Kachniarz *et al.*, 2019; Przybyła *et al.*, 2020).

After the EU enlargement in 2004–2006, work began on the EU Trans-European Transport Network (TEN-T) to include the new Member States. At that time, several local and regional authorities in Sweden, Slovakia, Hungary, Croatia, Poland, and Czechia formulated an independent and grassroots concept of the Central European Transport Corridor (CETC) (Chwesiuk, 2006; Zathey, 2009, 2010). It was to run between the Skåne region in Sweden through Świnoujście (PL) in the Baltic Sea and Rijeka (Croatia) in the Adriatic Sea, through Legnica (PL) and Hradec Králové (CZ) (Fig. 4) (CESCI, 2010).

Between 2004 and 2009, a joint secretariat was established for the initiative, and lobbying activities were conducted in the EU. On 28 June 2010, the *Szczecin Declaration on CETC development* was announced. The entire CETC was eventually not included in the 'core EU network'. However, the Legnica (PL) – Pardubice (CZ) connection through Lubawka (PL) was listed in the UNECE plans (UNECE, 2012) and in the EU Regulation No. 1315/2013 as a 'core network route to be upgraded' (Fig. 5) (The European Parliament and The Council of the European Union, 2013a, pp. 31, 51). However, it was not listed as the most important for the EU in Regulation 1316/2013 on the establishment of the Connecting Europe Facility (The European Parliament and the Council of the European Union, 2013b). The omission of the Pardubice – Brno connection in this document does not facilitate the dispersion of north-south European traffic, which would continue to be concentrated through the Moravian Gate and Upper Silesia (Ostrava – Katowice connections) or through eastern Germany.

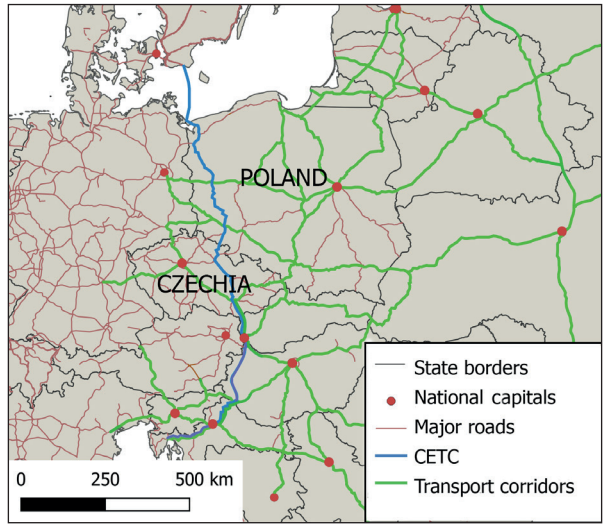


Fig. 4. The schematic plan of Pan-European Transport Corridors agreed in Helsinki in 1997 in the vicinity of Poland and Czechia, and the course of the CETC Corridor, unsuccessful lobbying in 2004–2010

Source: prepared by J. Lipsa, based on: Fleischer (2003), Talberg and Belof (2010), and Stancu *et al.* (2014).

Fig. 5. Excerpt from a map covering the main roads on the Polish-Czech borderlands in the EU document No. 1315/2013: *Guidelines for the development of the trans-European transport network*

Source: The European Parliament and the Council of the European Union (2013a, p. 51).

The spatial planning system introduced in Czechia in 2006 established a new hierarchy of planning documents. At the top is the Spatial Development Policy (PÚR – *Politika územního rozvoje*), which defines the requirements for spatial planning processes and also outlines the most important development axes and

infrastructure corridors. The main planning document at the regional level is the Principles of Spatial Development (ZÚR – *Zásady územního rozvoje*) for individual NUTS-3 regions. These specify the details of the corridors defined at the national level and also add provincial road plans.

The first edition of PÚR in 2008 confirmed the connection D11 between Hradec Králové (CZ) and Legnica (PL) in the form of an expressway, while the D1 corridor through Ostrava was considered operational (individual sections were completed from 2007 to 2009) despite the fact that the cross-border section between Bohumín (CZ) and Gorzyczki (PL) was not opened to traffic before 2012. A new element in spatial planning is the 'corridor of a capacity road' (not necessarily a motorway or expressway) S1 between Mohelnice and the Polish border via Šumperk and Jeseník. It was intended to ensure a quality connection of the Jeseník area to the rest of the country and to promote tourism in this marginalised region. The PÚR has been updated seven times since 2008 with another actualisation in progress. Following the update of the European TEN-T corridors, the corridor of the motorway D48 Bělotín (D1) – Frýdek-Místek – Český Těšín (– Kraków) was added in 2015. However, the aforementioned corridor S1 was removed from the concept in the same update after stabilising the corridor in the regional ZÚR and with the task of defining it in more detail for the lower stages of spatial planning. This document for the Olomoucký kraj specifies the S1 corridor along the existing national road I/44 including the tunnel under the Červenohorské sedlo pass and with an expected border crossing in the area of Mikulovice (CZ) and Głuchołazy (PL) (Ptáček *et al*., 2015).

In 2019, an amendment to the regulation on the network of motorways and expressways in Poland was published, which provides for the extension of the S5 expressway on the Wrocław – Sobótka – Świdnica – Bolków (S3) section in the studied area, and the extension of the S8 expressway on the Wrocław – Kobierzyce – Łagiewniki – Kłodzko section. The possible continuation of S8 to the border near Boboszów was included in the national road network development plan in 2022. However, in Czech planning documents, this expressway has no continuity. Only the ZÚR of Pardubický kraj proposed a corridor for the modern two-lane relocation of the I/43 road with bypasses and even that does not have a high priority in development plans.

4. POLISH-CZECH COOPERATION IN PLANNING THE ROAD NETWORK IN THE BORDERLAND

In the postwar period, the Polish-Czechoslovak border areas suffered from restrictions on movement, residence, and investment typical of the communist system. The border areas were guarded by the Border Protection Army (Ciok, 1991; Kołodziejczyk, 2014).

The legitimacy of cooperation in the field of spatial planning in the Polish-Czech borderlands, including the road network, was first highlighted in 1959–1962 based on the mutual border treaty signed in 1958, when meetings of working teams were held involving representatives of both countries. At that time, it was agreed to build a motorway Ostrava (CZ) – Katowice (PL), and to reserve land for future construction of the border divided city Cieszyn/Český Těšín bypass (Małecki, 1971). In 1955, 1959, and 1961 Poland and Czechoslovakia signed agreements on cross-border tourist traffic, small border traffic and 'tourist convention' in the Karkonosze/Krkonoše Mountains, but these initiatives had no impact on the development of the main road network or on the opening of publicly accessible motor road border crossings. Consultations ceased after the armed intervention of Warsaw Pact troops (including Polish forces) in Czechoslovakia in 1968, which occurred during the efforts to implement democratic reforms. It was not until the late 1970s that wider Polish-Czechoslovakian cooperation began again, with the formation of the 'Temporary Commission for the Development of a Long-Term Concept for the Development of Border Regions'. However, the cooperation was again interrupted after the imposition of martial law in Poland in 1981–1983 following social protests against the communist authorities.

The cooperation was resumed in the mid-1980s. The first joint document entitled *Study of Spatial Development of Border Areas of the Poland–Czechoslovakia* was approved by both sides in 1985 (Łysak *et al*., 1985). The study was dominated by environmental issues, while socioeconomic development problems occupied relatively little space. At the time, the construction of two roads in the north-south direction was maintained: Ostrava (CZ) – Katowice (PL) and Hradec Králové (CZ) – Legnica (PL). The opening of 10 new local road border crossings was planned to facilitate movement for local residents (finally opened in subsequent years, however, only for constrained local movement for local inhabitants with individual passes). The document was not made available to the public, was not publicly consulted, and had a 'confidential' status – 'exclusively for official use by state institutions.' The borderland development maps prepared there on a scale of 1:200,000 were schematic, of poor cartographic quality, often distorted and poorly agreed on – for example, on the borderland development map prepared, the planned Ostrava – Katowice motorway reached the border in different places on the Czech and Polish sides (Fig. 6). This document was consistent with the national plan adopted in Poland in 1985 (Kalinowski, 2021, p. 420).

The democratic transition in Poland and Czechoslovakia in 1989–1991 caused politicians to focus on domestic issues and temporarily reduce cooperation. However, new contacts began as early as 1991, continued after the peaceful division of Czechoslovakia into Czechia and Slovakia (as of 1 January 1993), and in 1993 a joint *Coordination Study of the Development of the Polish-Czech Borderland* was prepared (Borsa *et al.*, 1993). In that document, the low parameters of the transit roads and the poor development of international importance links were

identified as the main communication problems (the border area lacked motorways and expressways that crossed that border at the time). The need for Ostrava (CZ) – Katowice (PL) and Hradec Králové (CZ) – Lubawka (PL) – Legnica motorways was confirmed at the time, pointing out the lack of any international agreement in this regard. Attention was also drawn to the need to open new local border crossings. The cartographic appendices were prepared on a 1:500 000 map base. The planned border and cross-border infrastructure was drawn by hand (Fig. 7), but the quality of the study is higher than that of the 1985 document. In a democratic system, the document became publicly available, although it was distributed in a limited number of paper copies. In 1996, it was decided to update the *Coordination Study (...)*, which was completed and published in 1997. This study took into account, i.a., changes in the number of border crossings.

By the time the update was prepared, the EU pre-accession funds under the PHARE CBC Programme had already begun to be used, which could also be spent on the development of cross-border road infrastructure (Zdulski, 2002). One of the initial programming materials, which referred to the earlier and updated *Coordination Study (...)*, was the *Development Strategy for the Polish-Czech Borderland*, which was then used for the development of the *Joint Programming Document* for cross-border cooperation. Both documents, published in 2000, identified cross-border development priorities in the economic, environmental, and social spheres in border areas (Belof, 2006; Borsa, 2015). The strategy includes a short statement on the need to support the development of the Wrocław – Kłodzko (PL) – Brno (CZ) connection (Borsa, 2000).

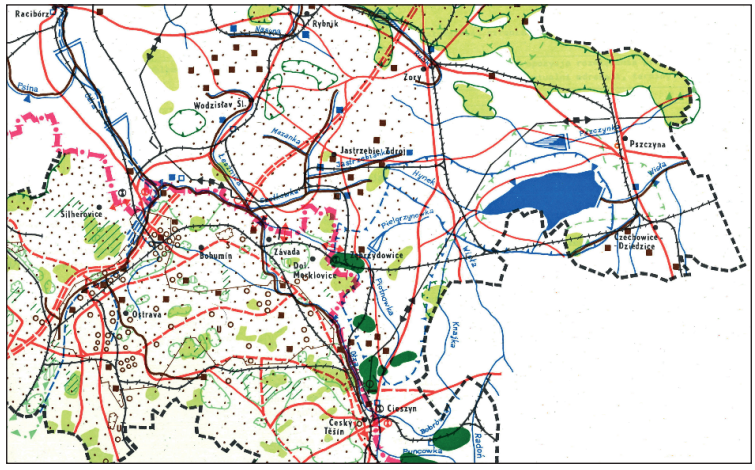


Fig. 6. Excerpt of a map from the document *Study of Spatial Development of the Poland-Czechoslovakian Border Areas: a joint document* from 1985

Source: Polish-Czechoslovakian common official document signed 30.10.1985 in Pokrzywna; see: Łysak *et al*. (1985).

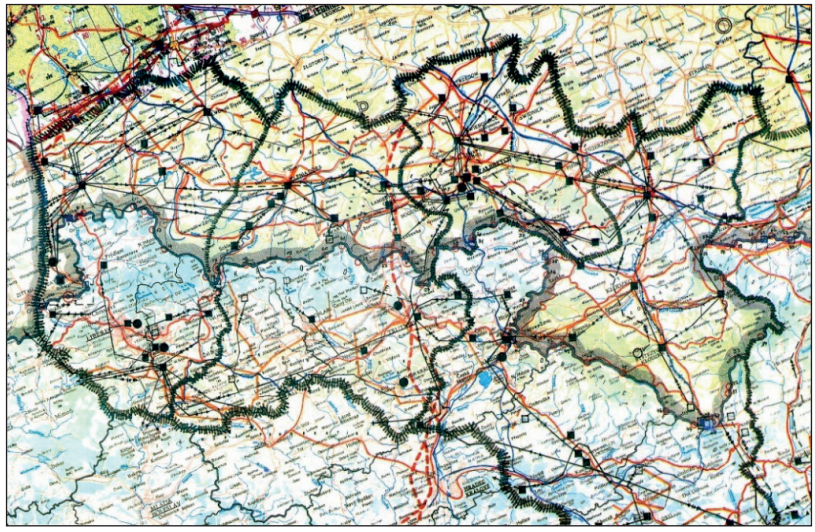


Fig. 7. Excerpt from a map from the document *Coordination Study of the Development of the Polish-Czech Borderland* from 1993

Source: Polish-Czech common official document signed 30.11.1993 in Wałbrzych; see: Borsa *et al*. (1993).

In 2002–2006, a document was prepared entitled *A Study of Spatial Development in the Polish-Czech Borderland. The Synthesis of National Documents*, based on other national Polish and Czech material (Belof, 2006; Polański, 2006)[4]. It was noted that the two main European transport corridors (III, leading from Germany through Poland to Ukraine) and IV (leading from Germany through Czechia to Slovakia) have a roughly parallel layout on both sides of the Polish-Czech borderland, thus relatively easily accessible in terms of transport, despite being located on the sidelines of the main transport corridors. According to the document, this facilitates the development of the 'Sudetes–Carpathian tourist belt'. Only corridor VI (which leads from Austria through Czechia to Poland) crosses the border in the heavily industrialised and densely populated areas of Moravia and Silesia in the eastern part of the studied area (Fig. 8). The study also highlights the efforts of regional and local governments to build the Central European Transport Corridor (CETC) to connect Scandinavia through the Szczecin/Świnoujście ports complex (PL) and the western part of Poland with Czechia and southern Europe (along the route of the Hradec Králové – Legnica expressway, planned since the 1960s).

[4] The two editions of the 2006 document differed in title and chief editor, among other things. The second version is entitled *Spatial Development Study of the Polish-Czech Border Region. Synthesis of National Documents* (Polański, 2006).

The 2006 document adopted an additional division of roads (relative to the one used in 1993 and 1997) into the 'internally' (inside the common Polish-Czech border area) and 'externally' (transit) significant routes. The following key international routes were mentioned: E40, E65, E67, E75, as well as the national road No. 45 (PL) and the D1 (ex D47) motorway (CZ). Undoubtedly, these are the routes that form the most important road connections, providing communication both within the studied area and with neighbouring regions and the rest of Europe. Most of these major arteries were modernised or at least maintained in good technical condition between 2006 and 2024.

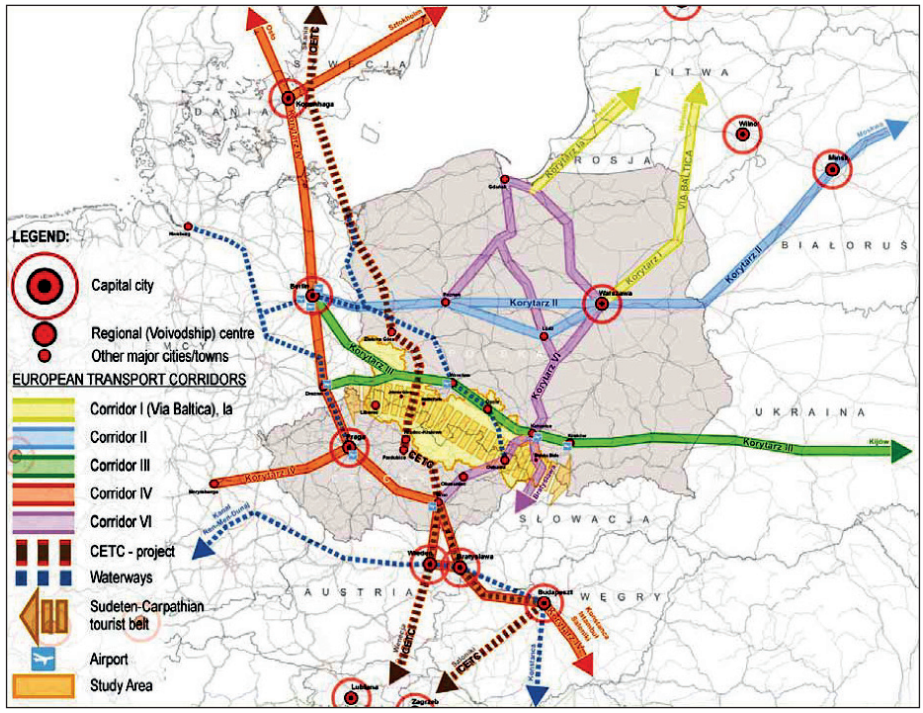


Fig. 8. Polish-Czech border regions against the backdrop of European transport corridors according to the document *Spatial Development Study of the Polish-Czech Border Region. Synthesis of National Documents* from 2006 (excerpt from the map)

Source: courtesy of Institute of Territorial Development, Wrocław, Poland; see: Polański, 2006, p. 44.

After 2006, there was no coordinated planning document for the comprehensive development of road infrastructure throughout the Polish-Czech borderland. The INTERREG cross-border programmes assumed a minor role in coordinating the development of transport infrastructure at the local and regional levels, implemented since Poland and the Czechia joined the EU in 2004.

Successive editions of the programme allowed the development of road infrastructure and the modernisation of existing road sections, but apart from the extremely general formulation of the priority tasks that would receive funding, they did not include rational plans for the development of the road network and cross-border connections (Table 2).

Table 2. EU INTERREG programmes and the enshrined priorities relating to the development of road network in the Polish-Czech borderland

No.	Name of INTERREG programme	Priorities in documents that relate directly to the borderland
1.	Community Initiative INTERREG IIIA Czech Republic – Poland 2004–2006	Priority 1: Further development and modernisation of the infrastructure to increase the competitiveness of the border area. Measure 1.1: Supporting the development of infrastructure of cross-border importance.
2.	INTERREG Cross-border Cooperation Programme Czech Republic – Republic of Poland 2007–2013	Priority axis 1: Strengthening communication accessibility, environmental protection, risk prevention. Areas of support: Strengthening communication accessibility; Improving the state of communication infrastructure and the state of transportation services in the Polish-Czech border area.
3.	INTERREG V-A Czech Republic – Poland 2014–2020	Priority axis 2: Development of natural and cultural potential to support employment. The document includes infrastructure measures for the accessibility and use of cultural and natural heritage across borders. The projects could support road links that improve cross-border accessibility and increase the attractiveness of cultural and natural resources, leading to increased visitation and thus improving the cross-border labour market.
4.	Czechia – Poland INTERREG Programme 2021–2027	Priority 3: Transport Measure: Develop and improve sustainable, climate resilient, intelligent, and intermodal mobility at the national, regional, and local levels, including improved access to TEN-T and cross-border mobility.

Source: own work based on INTERREG programme documents.

INTERREG funds enabled significant investments in local roads and also in provincial roads that were in the area of support. However, these projects were usually the result of the individual capacity to prepare investment projects and the lobbying activities of local and regional governments (Dołzbłasz and Raczyk, 2024). In the analysed area, on the Polish side, INTERREG projects focused on the development of the area along the Pan-European Transport Corridor 3 (Berlin/Dresden – Wrocław – Kraków – Lviv – Kyiv) (Sieradzka-Stasiak, 2012). Only the

project 'EDCIII Via Regia' implemented under the INTERREG III B CADSES Community Initiative (2005–2008), which involved 16 partners from Germany, Poland, Czechia, Slovakia and Ukraine, also included a study for the possible Wrocław – Kłodzko – Międzylesie – Boboszów expressway in Poland. On the Czech side, a similar study was created covering the area from the Międzylesie Pass to Brno. However, due to the focus on the development of Corridor 3, the next edition of this programme – 'Via Regia Plus' (2008–2011) – did not include Czech partners. In 2014, with the support of the EU, the European Groupings of Territorial Cooperation (EGTC) 'Central European Transport Corridor' was established with its headquarters in Szczecin (Poland), but no Czech partner joined this organisation, even though the corridor was to run through that country (the partners came from Sweden, Poland, Hungary, and Croatia).

During the 2014–2020 EU programming period, to obtain the EU funds, regions and central institutions were required to have transport infrastructure development plans. However, there was no demand to use scientific models for the development of the network. For example, in 2014, the 'Strategy for Integrated Cooperation of the Czech-Polish Borderland 2014–2020' was created (ARLEG and CIRI, 2014), covering border areas in Lower Silesia and four adjacent Czech regions. It was a very simplified document that did not adopt any measurable goals. In terms of the road network, strategic objective 2.1 was 'Sufficient transport accessibility and cross-border mobility' without any spatial analysis or recommendations. The problems of transport and road development were also raised in the documents by the Euroregions and EGTC (territorial forms of trans-border cooperation of regional and local governments), but apart from lobbying activities toward authorities at various levels, they have no competence to plan road infrastructure.

Beyond that, no new coordinated Polish-Czech plans for borderland development were prepared. Central institutions (Ministries, the General Directorate for National Roads and Motorways, and the Road and Motorway Administration in Czechia) signed only individual agreements on the expansion of international roads of national importance (e.g., the continuation of the Polish S3 route as part of the Czech D11 motorway was confirmed).

5. ANALYSIS OF THE DEVELOPMENT OF TRANS-BORDER ROADS

In 1962–1991, the border permeability was low. There were only between 7 and 10 road border crossings accessible by cars open on the studied border (Fig. 9); however, only four of them were open to all passengers, whereas the others were typically open only to citizens of the seven socialist countries specified in the regulation (Poland, Czechoslovakia, East Germany, USSR, Romania, Bulgaria, Hungary). In 1991, these border crossings were opened to citizens from all countries.

Within the framework of the funds provided by several PHARE programmes, since 1994 a number of road investments important to cross-border automobile traffic have been subsidised in Poland, e.g., the construction of bypasses for towns (e.g., Lubrza, Prudnik, Kamienna Góra) or the modernisation of international roads (e.g. slow lane Lewin Kłodzki – Duszniki Zdrój). In 1991, a new border crossing was opened between Český Těšín and Cieszyn on the city ring road to relieve two one-way border crossings through the city centre.

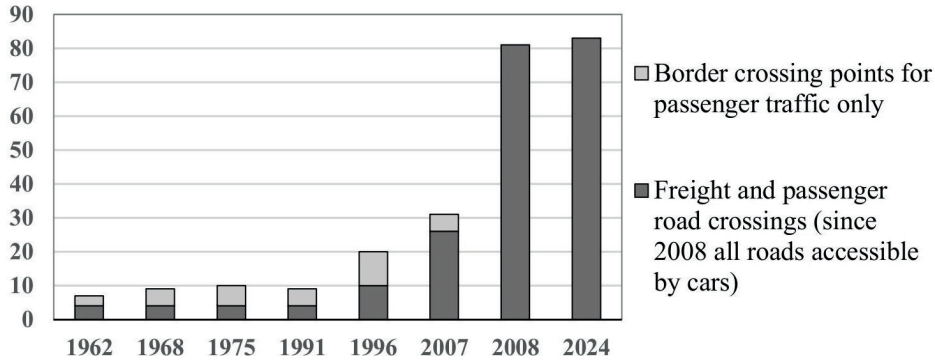


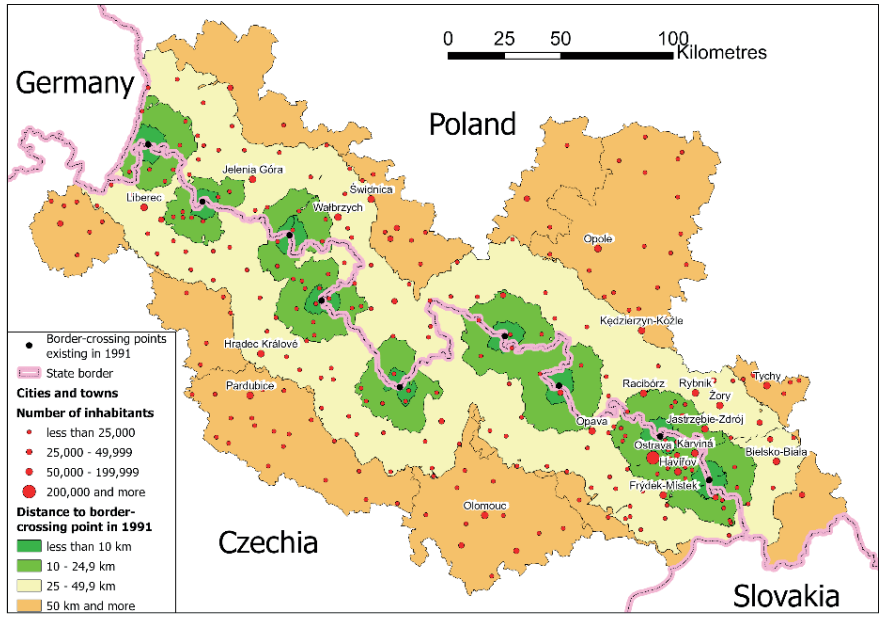
Fig. 9. Number of border crossing points accessible to vehicles (before 1991, some border crossings restricted the movement of persons to citizens of the selected socialist countries only). The so-called local border traffic crossings available based on individual passes or only to residents of specific border municipalities were excluded. The selected dates refer to the publication of information on border crossings or significant changes in their permeability

Source: own work.

Since 1996, 20 road border crossings have been accessible to cars on the analysed border[5], approximately half of which had some restrictions on freight traffic. Therefore, the permeability of the border has doubled as compared to 1991. Additionally, about 37 local border traffic crossings and 24 crossings on tourist routes excluded from car traffic were opened. Poland and Czechia joined the EU in 2004. As a result, customs controls at the border crossing were eliminated. Only passport control was left. There were 11 new passport border crossing opened for cars in 1997–2007, reaching 31 crossing points (Appendix 3), when Poland and Czechia joined the so-called Schengen zone of the EU on 21 December 2007. As a result, permanent passport controls were abolished, freedom of crossing the state border was implemented and crossing the border with a motor vehicle was allowed on all roads crossing the border where no special restrictions on vehicle traffic had been imposed. The border permeability increased significantly, allowing free local and tourist traffic through local roads (Fig. 10).

[5] Additionally Miłoszów (PL) – Srbská (CZ) border crossing was open only for motorbikes up to 50 cc.

A)
1991



B)
2024

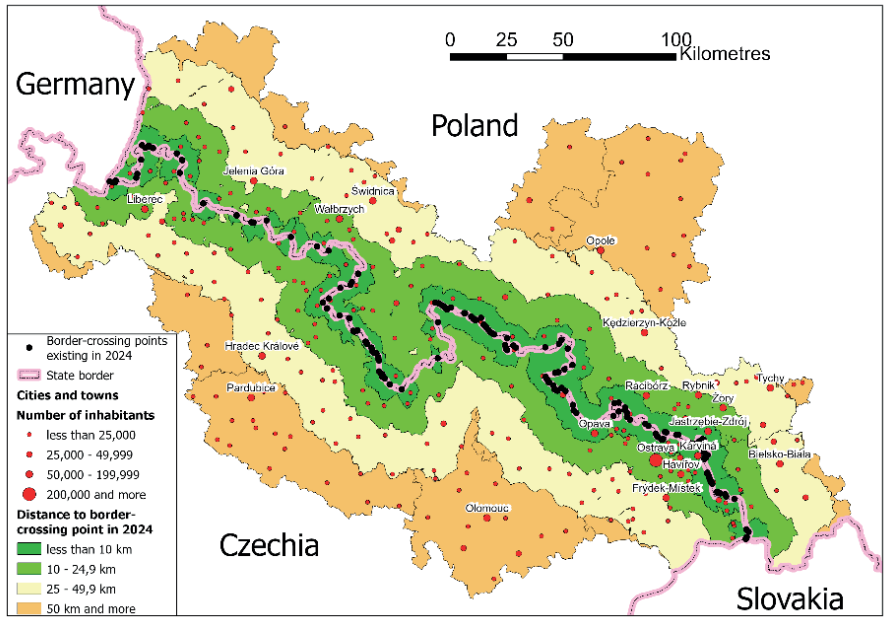


Fig. 10. Accessibility of Polish and Czech border areas through border crossing in 1991 (A – measured by the distance to the passport border crossing point accessible for cars) and in 2024 (B – measured by the distance to all roads crossing the border and accessible for public car traffic)

Source: prepared by K. Buryło.

After the border was opened, a motorway connection (as part of the TEN-T corridor) was built on the E75 route (A1 motorway) Ostrava (CZ) – Katowice (PL), with the border crossing Bohumín (CZ) – Gorzyczki (PL). It was opened to car traffic in 2012 and freight traffic from 2014. However, in general, after 2008 the border permeability did not improve significantly due to limited cross-border investments. Between 2015 and 2024, the construction of the S3 motorway was completed in Poland (route Legnica – Lubawka, plans for which appeared in Polish-Czechoslovak agreements as early as the 1960s). However, on the Czech side, its completion was planned later (Fig. 11).

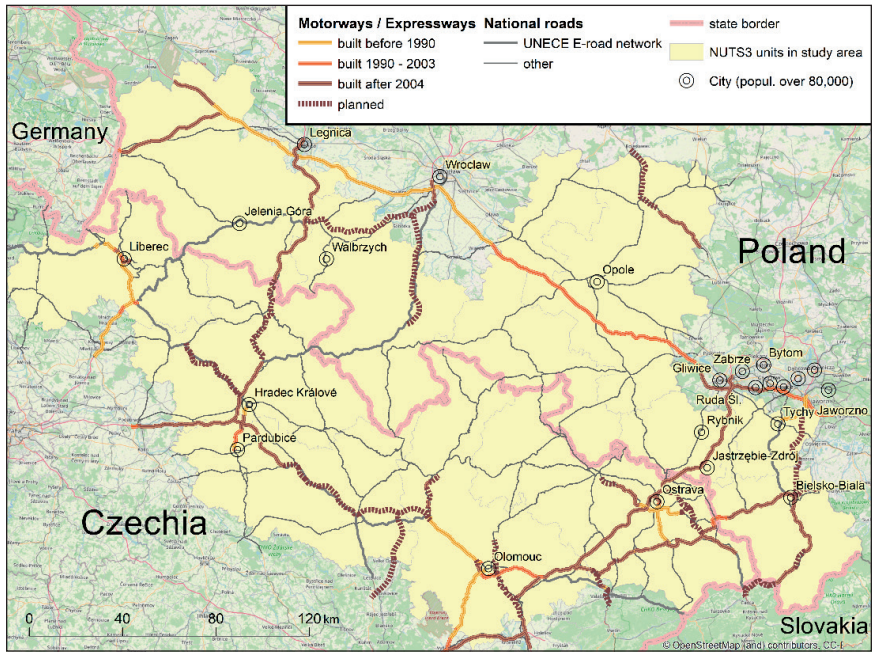


Fig. 11. Development of the Polish-Czech border road network before 2004 and in 2004–2024 (only the main international and national roads in the studied area were shown)

Source: prepared by I. Dostál, based on data from: General Directorate for Roads and Motorways, Poland; Roads and Motorways Directorate, Czechia; and OpenStreetMap.

6. DISCUSSION AND CONCLUSIONS

The presented analyses enables one to distinguish the following historical periods of development of the road network and cooperation in coordinating its expansion (answer to RQ1):

– Period 1945–1957: After the postwar period of chaos, the borders were gradually closed and protected by the Border Protection Army (existing until 1991 in Poland). Territorial Polish-Czechoslovakian disputes further hampered cooperation in spatial planning.

– Period 1958–1978: Under pressure from the Soviet Union, Poland and Czechoslovakia signed an agreement on the final demarcation of the border in 1958. As a result, in 1961, part of the Sudetes were included in the so-called convention on tourist traffic. However, only 7 to 10 public motor crossings were functioning. Many other local cross-border roads were gradually destroyed or blocked. In 1963, in both countries relatively coherent plans were created for the construction of two main cross-border motorways. However, the coordination of borderland spatial planning was very poor.

– Period 1979–1992: In 1979, the Intergovernmental Commission for the Development of Border Regions was formally established, and this time the development of cooperation between central planning institutions was initiated, which contributed to the first joint Polish-Czechoslovakian coordination document in 1985. However, apart from the preparation of a common document (although confidential), no significant infrastructure investments in cross-border roads were implemented and the border permeability for cars was not practically increased, except partial relaxation of movement restrictions for locals within the 'small border regime', especially after democratic transformation in both countries in 1989–1991. The number of standard motor vehicle border crossings remained largely unchanged until 1996.

– Period 1993–2007: After the peaceful division of Czechoslovakia into Czechia and Slovakia in 1993, Polish-Czech cooperation was developed in the field of spatial planning in border areas, resulting in the adoption of several common documents on borderland development (1993, 1996, 2000, and in 2006). The planning of cross-border connections continued to be coordinated at the central level. However, lobbying efforts by local governments of border municipalities, Euroregions, and regional self-government (since 1999 in Poland and since 2000 in Czechia) for the expansion of local cross-border transport links have become of great importance. In 2004, Poland and the Czechia joined the EU, which, however, initially did not significantly increase the border permeability for passenger traffic. During this period, a significant number of local border roads were repaired, subsidised by the PHARE pre-accession funds, and EU INTERREG funds.

– Period 2007 (December)–2024: After Poland and Czechia joined the EU Schengen area, the borders were fully opened (abolishing permanent passport controls) on 21 December 2007, significantly increasing the border permeability (from 31 motor, passport border crossings to about 80 open transborder roads). Central cooperation in planning border areas (in addition to coordinating major international roads) disappeared, with the planning dominated by regional authorities focused on their own areas. With the support of the EU funds, the cross-bor-

der connection within Corridor 6 Ostrava (CZ) – Katowice (PL) was completed in 2012–2014, as well as the Bielsko-Biała (PL) – Cieszyn/Český Těšín – Frýdek-Místek (CZ) expressway (S1 – originally as S52 – in Poland, D48 – formerly expressway R48 – in Czechia), and expansion and upgrade of many other local roads was carried out. However, no higher-category roads were completed in the Sudetes (the Polish S8 ends at the border and has no continuation in Czechia in 2024). The idea of CETC corridor in Czechia was not supported either (no planned motorway Moravská Třebová – Brno until 2030).

Planning processes also show a shift away from the coordination of border cooperation by central authorities and an increased role for regional authorities in planning the development of border areas, but this has reduced Polish-Czech coordination in planning cross-border roads in the long term and can negatively affect the overall efficiency of transport network in border areas.

In communist (socialist) times, cooperation in road network planning was poor and plans to build higher-category cross-border roads were not implemented at all in practice. The Polish-Czech borderland was a peripheral area for many years. The communist system of distributing goods and commodities and restrictions on the movement of citizens in the so-called 'Eastern Bloc' countries had a significant impact on the formation of national transport networks in this area of Europe, which mainly served the territories inside the country (Komornicki, 1999; Bański, 2010).

Only after the democratic changes at the beginning of the 1990s were the restrictions on crossing the borders significantly reduced, and border permeability significantly increased for the first time in 1996. The development of cross-border road infrastructure was initially limited mainly to opening connections on the existing local (historic) roads. The development of motorways and expressways was mainly parallel to the periphery of the studied area (predominantly in the west-east directions) and near large agglomerations. The north-south transit routes along this section of the border were considered secondary (with the exception of the Ostrava – Katowice route as the European Transport Corridor VI), especially in Czechia, which finally did not support the idea of Central European Transport Corridor. The significant investment increase in new higher category roads was observed only after both countries joined the EU Schengen area (2007), when border permeability increased considerably. However, so far north-south connections in the area seem to be more important for Polish, than for Czech development policy (answer to RQ2 and RQ4).

The research conducted by Magryś (2019) in Poland showed that those who crossed the border were most often the residents of localities up to 50 km from the border (66.2% of foreigners and 68.4% of Poles), and 48.2% of foreigners and 56.7% of Poles crossing the border lived in the strip up to 30 km from the border, so local and tourist rather than transit traffic dominated. This may indicate that the concentration of the road infrastructure development policy on the extension and

upgrading of local roads had a partial justification. In turn, it is a consequence of poor accessibility of the Sudetes mountains range (due to their nature as a mountain barrier), with long-distance passenger movements concentrated in high quality transport corridors outside this area.

Until 2006, all the joint documents did not include methodological analyses of trans-border car traffic that would support the planned development of the road network. In the authors' opinion, the presented analysis of historical planning documents indicates that the period under review lacked a rational analysis of the transportation network, based on scientific methods, following which the most effective transportation investments could be determined. The measures implemented were mainly the result of simple central expert planning and political agreements. The opening of local trans-border roads in the 1990s was a result of lobbying activities of local and regional authorities (answer to RQ3). Other authors also noted that the development of road network in the borderlands is mainly the result of physical-geographical conditions (rivers and mountains as barriers) and historical-political variables (national legal conditions and the state border as a barrier), rather than the result of rational and methodical planning for its development (Marada, 2003; Hełdak and Bykowa, 2017; Jedlička *et al.*, 2019). In Poland, in 1996, 2005, and 2015, basic road traffic intensity models were prepared based on traffic studies at selected points (including border crossings), but they focused on main roads inside the country, without special treatment of border areas (Suchorzewski *et al.*, 2020).

It is worth noting that nowadays, due to the high volume of traffic in Europe, higher category roads are no longer considered only explicitly as a positive economic locational factor in the development of the regions through which they pass (Zathey, 2009; Komornicki and Wiśniewski, 2017). Nowadays, much attention is paid to the environmental nuisances of routes with high automobile traffic and requirements to reduce their negative impact on biodiversity (Jaarsma, 1997; Papp *et al.*, 2022). The Hradec Králové (CZ) – Legnica (PL) – Szczecin route would also be of positive significance in alleviating the burden on the meridional routes running from southern European countries to the Baltic coast via Berlin in Germany and through the Upper Silesian Industrial District (Katowice) in Poland.

It would be beneficial to prepare preliminary planning documents in the future using a methodical analysis of the area accessibility (Wolny *et al.*, 2019; Suchorzewski *et al.*, 2020) and network models taking into account vehicle traffic data, including simulations of the predicted changes in flows depending on modifications to this network, such as using the scenario method (Kazak *et al.*, 2018; Kramarz *et al.*, 2020; Suchorzewski *et al.*, 2020). Calls for the use of network transport traffic models in road development planning have also been made by authors in other countries (Jaarsma, 1997) and by EU rules. This would help in more rational planning of the road network.

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APPENDIX 1

Main documents analysed in the article.

Document title	Cartographical materials in the documents
1) Common Polish-Czech documents	
Studium zagospodarowania przestrzennego obszarów przygranicznych PRL-CSRS: dokument wspólny / Studie územního rozvoje pohraničních oblasti ČSSR-PLR: společné znění (1985)	Attached schematic maps 1:200,000 and one overview map 1:1,000,000 covering only the border areas (Łysak *et al*., 1985).
Studium koordynacyjne rozwoju pogranicza polsko-czeskiego / Koordinační studie rozvoje česko-polského pohraničí (1993)	Attached handwritten markings on a 1:500,000 map background (Borsa *et al*., 1993)
Studium koordynacyjne rozwoju pogranicza polsko-czeskiego: polska wersja aktualizacji (1997)	No map in the analysed paper copy (Borsa *et al*., 1997)
Strategia rozwoju pogranicza Polsko-Czeskiego / Strategie rozvoje česko-polského pohraničí (2000)	Published as a supplement to *Biuletyn Pogranicza Polsko-Czeskiego*, 16 (3) from 2000 (Borsa, 2000)
• Polish-Czech Border Region Development Study: Synthesis of National Documents (Belof, 2006) • Spatial Development Study of the Polish-Czech Border Region. Synthesis of National Documents (Polański, 2006)	The two editions from the same year (Belof, 2006; Polański, 2006) differ slightly. Maps attached in the text.
Strategia zintegrowanej współpracy czesko-polskiego pogranicza 2014–2020	No maps (ARLEG, 2014)
2) Pan-European documents	
Declaration on the construction of main international traffic arteries. Geneva, 16 September 1950	No map found. (United Nations, 1951)
The European Agreement on Main International Traffic Arteries (AGR) done at Geneva on 15 November 1975	Map cit. per: United Nations (2007)
European Agreement on Main International Traffic Arteries (AGR). Consolidated Version 2008	Made available by United Nations (2008)
3) Czechoslovakian and Czech national documents	
Koncepce rozvoje dálniční sítě a místních komunikací SRSD, 1963	Only very schematic map of Czechoslovakia; Cit. per: Prášil (2007, p. 13)

Document title	Cartographical materials in the documents
Politika územního rozvoje České Republiky (2008)	Schematic maps without a given scale or kilometre division, made available by Ministry of Regional Development, Czechia (2008)
Politika územního rozvoje České Republiky (Úplné znění závazné od 1.03.2024)	Schematic maps without a given scale or kilometre division, made available by Ministry of Regional Development, Czechia (2024)
4) Polish national documents	
Uchwała Rady Motoryzacyjnej przy Radzie Ministrów z dnia 24 czerwca 1963 r.	Schematic map without a given scale or kilometre division; Cit. per: Rustecki (1965, p. 94)
Decyzja nr 28/72 Prezydium Rządu z 15 marca 1972 r. w sprawie prac przygotowawczych do budowy autostrad	Schematic map without a given scale or kilometre division; Cit. per: Kaliński (2021, p. 412)
Postanowienie nr 55/85 Prezydium Rządu z 14 czerwca 1985 r. w sprawie kierunkowego układu autostrad i dróg ekspresowych oraz prac przygotowawczych do ich realizacji	Schematic map without a given scale or kilometre division; Cit. per: Kaliński (2021, p. 420)
Rozporządzenie Rady Ministrów z dnia 28 września 1993 r. w sprawie ustalenia kierunkowego układu autostrad i dróg ekspresowych	*Dziennik Ustaw* 1993 No. 92 item 424
Studium układu dróg szybkiego ruchu w Polsce. Układ kierunkowy horyzont 2025 rok wraz z analizą podziału funkcjonalnego całej sieci drogowej Polski. Zadanie 10, etap VI. Raport końcowy.	Politechnika Wrocławska, Instytut Dróg i Mostów, Warszawa, 2008. Typescript made available by General Directorate for Roads and Motorways.
Rozporządzenie Rady Ministrów z dnia 24 września 2019 r. zmieniające rozporządzenie w sprawie sieci autostrad i dróg ekspresowych	*Dziennik Ustaw* 2019 item 1819
Rządowy Program Budowy Dróg Krajowych do 2030 r. (z perspektywą do 2033 r.) – Załącznik do uchwały nr 253/2022 Rady Ministrów z dnia 13 grudnia 2022 r.	Retrieved from: https://www.gov.pl/web/infrastruktura/rzadowy-program-budowy-drog-krajowych-do-2030-r-z-perspektywa-do-2033-r [accessed on: 07.01.2025]

APPENDIX 2

List of source data on passport border crossings available for passenger car traffic on the current Polish-Czech border:

– Zarządzenie Ministra Spraw Wewnętrznych z dnia 3 stycznia 1962 roku w sprawie ogłoszenia przejść granicznych lądowych przeznaczonych dla ruchu granicznego, rodzajów ruchu granicznego przez te przejścia oraz przez przejścia graniczne morskie i lotnicze, jak również w sprawie czasu otwarcia przejść granicznych (*Monitor Polski* No. 8/1962, Item 26);

– Zarządzenie Ministra Spraw Wewnętrznych z dnia 27 lipca 1968 r. w sprawie przejść granicznych przeznaczonych dla ruchu granicznego (*Monitor Polski* No. 8/1968, Item 237);

– Zarządzenie Ministra Spraw Wewnętrznych z dnia 6 sierpnia 1975 r. w sprawie przejść granicznych przeznaczonych dla ruchu granicznego (*Monitor Polski* No. 26/1975, Item 161);

– Zarządzenie Ministra Spraw Wewnętrznych z dnia 11 czerwca 1991 r. w sprawie ogłoszenia przejść granicznych, rodzaju ruchu dozwolonego przez te przejścia oraz czasu ich otwarcia (*Monitor Polski* No. 20/1991, Item 143);

– Umowa sporządzona w Warszawie dnia 22 listopada 1996 r. między Rządem Rzeczypospolitej Polskiej a Rządem Republiki Czeskiej o przejściach granicznych, przejściach na szlakach turystycznych przecinających granicę państwową oraz zasadach przekraczania granicy poza przejściami granicznymi (*Monitor Polski* No. 37/2003, Item 520). Initial version from 1996, and last version effective from 26 September 2007 (*Monitor Polski*, No. 43/2007, Item 383).

APPENDIX 3

Publicly accessible motor vehicle border crossings between Poland and the Czechia opened to traffic without constant control at the end of 2007 (local border traffic crossings and crossings on tourist routes are omitted).

No.	Border crossing	Road class/ road number CZ	Road class/ road number PL	Type: (P) – passenger, (F) – freight	Permissible vehicle weight up to	Other restrictions introduced after the opening of the border
1	Porajów – Hrádek nad Nisou	I/35	DP 2364D	P/F	3.5 tons	
2	Bogatynia – Kunratice	III/035 11	DW 352	P/F	3.5 tons	
3	Zawidów – Habartice	I/13	DW 355	P/F	3.5 tons	
4	Miłoszów – Srbská	III/291 8	DP 2467D	P	passenger cars	
5	Czerniawa Zdrój – Nové Město pod Smrkem	II/291	DW 361	P/F	3.5 tons	
6	Jakuszyce – Harrachov	I/10	DK 3	P/F	no restrictions	excl. dangerous goods
7	Przełęcz Okraj – Pomezní Boudy	II/252	DW 368	P	3.5 tons	
8	Lubawka – Královec	I/16	DK 5	P/F	6 tons	GVM up to 9 t. excl. dangerous goods
9	Golińsk – Starostín	II/302	DK 35	P/F	6 tons	GVM up to 6 t. excl. dangerous goods
10	Tłumaczów – Otovice	II/302	DW 385	P	6 tons	
11	Kudowa Słone – Náchod	I/33	DK 8	P/F	no restrictions	
12	Mostowice – Orlické Záhoří	III/311 3	DW 371	P/F	3.5 tons and buses	
13	Boboszów – Dolní Lipka	I/43	DK 33	P/F	no restrictions	GVM up to 9 t. excl. dangerous goods, vehicle height limit

Appendix 3 (cont.)

No.	Border crossing	Road class/ road number CZ	Road class/ road number PL	Type: (P) – passenger, (F) – freight	Permissible vehicle weight up to	Other restrictions introduced after the opening of the border
14	Nowa Morawa – Staré Město	II/446	DP 3230D	P/F	3.5 tons	
15	Paczków – Bílý Potok	I/60	DW 382	P/F	12 tons	
16	Kałków – Vidnava	III/457 7	DP 1635O	P/F	3.5 tons	
17	Głuchołazy – Mikulovice	I/44	DK 40	P	3.5 tons	no restrictions
18	Konradów – Zlaté Hory	II/445	DW 411	P/F	no restrictions	
19	Trzebina – Bartultovice	I/57	DK 41	P/F	no restrictions	
20	Pomorzowiczki – Osoblaha	II/417	local road	P/F	3.5 tons	
21	Pietrowice – Krnov	I/45	DK 38	P/F	3.5 tons	vehicles up to 3.5 t.
22	Pietraszyn – Sudice	I/46	DW 916	P/F	20 tons	
23	Owsiszcze – Píšť	II/466	DW 936	P/F	20 tons	
24	Nowe Chałupki – Bohumín	I/67	DK 78	P/F	no restrictions	
25	Chałupki – Bohumín	local road	DP 3532S	P/F	20 tons	no restrictions
26	Gołkowice – Závada	III/468 11	DP 5039S	P/F	3.5 tons	
27	Marklowice Górne – Dolni Marklovice	III/475 3	DP 2645S	P/F	3.5 tons	
28	Cieszyn – Chotěbuz (E 75)	I/48	S 52	P/F	no restrictions	
29	Cieszyn (most Wolności, most Przyjaźni) – Český Těšín (most Svobody, most Družby)	III/048 24	local road	P	no restrictions	

No.	Border crossing	Road class/ road number CZ	Road class/ road number PL	Type: (P) – passenger, (F) – freight	Permissible vehicle weight up to	Other restrictions introduced after the opening of the border
30	Leszna Górna – Horní Líštná	II/476	DP 2610S	P/F	7.5 tons	
31	Jasnowice – Bukovec	III/011 49	DW 943	P/F	3.5 tons	

Source: own work, based on *Umowa sporządzona w Warszawie dnia 22 listopada 1996 r. między Rządem Rzeczypospolitej Polskiej a Rządem Republiki Czeskiej o przejściach granicznych, przejściach na szlakach turystycznych przecinających granicę państwową oraz zasadach przekraczania granicy poza przejściami granicznymi* (*Monitor Polski*, No. 37/2003, Item 520) version effective from 26 September 2007 (*Monitor Polski*, No. 43/2007, Item 383); and data provided by the General Directorate for National Roads and Motorways (2023).

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PERCEPTION OF SPACE IN THE CONTEXT OF MODEL VISIONS OF SUSTAINABLE URBAN DEVELOPMENT: EVIDENCE FROM WARSAW

Abstract. In the presented article, the perception of urban space in the context of the concept of sustainable development (SD) is being addressed. It can be seen as an umbrella term encompassing various model visions of urban development, including green city, creative city, smart city, 15-minute city, just city, participatory city, happy city, inclusive city, and compact city. Based on qualitative research conducted in Warsaw, Poland, key narrative fields for each model have been identified. The article shows how the different model visions are revealed in the expectations and assessments formulated towards urban space. The key conclusions concern the need to change the dominant "flat" narrative of urban sustainability, which is accompanied by a relatively poor language and a one-dimensional view of complex multi-layered issues. The conclusion emphasizes the need to appeal more to the values that are the pillars of the individual model visions of urban SD, as well as issues that appeal to emotions.

Key words: urban space perception, urban development, sustainable development, urban conflict.

1. INTRODUCTION

The presented article addresses the perception of urban space in the light of the concept of sustainable development (SD). Although this term is reiterated in the discourse like a mantra, at the beginning of this article it is worth returning

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to the understanding the category of 'development' itself. It seems that urban development is colloquially regarded simply as a process of change over time that manifests itself in space. However, to deeply discuss development, an additional element is necessary: the reference of these changes to their approved direction. If the vector of change is consistent with this, then we are indeed dealing with development. If it is not, then we should rather speak of regress, decline, and anti-development, but in practice, in the context of an undesirable trajectory of urban change, we tend to speak of 'uncontrolled development' (Gugler, 1997; Cheshire and Hay, 2018), 'chaotic development' (Chen, 2009) or alternatively use the term 'shrinking cities' (Fol and Cunningham Sabot, 2010).

In this context, however, not every 'development' should actually be considered a 'development'. In order to be able to distinguish between them, we need a clear vision of the desired state we should be heading towards. Theoretical models, which are necessarily simplistic and somewhat detached from their context (Steger and Lakshmanan, 1967; Monteiro *et al*., 2022), perform an important function as a point of reference, but they enable us to compare the current condition of urban space with our aspirations (Almusaed and Almssad, 2019). Such points of reference are found in the concepts describing the model visions of urban development. Currently, the concept of SD is the most popular. "(...) many studies have been conducted to define sustainability and the sustainable city. However, many of these definitions suggest a range of contradictions, implying that the achievement of sustainability is elusive. The problem lies in setting unreasonable definitions of sustainability and in the various contradictions to these definitions, making sustainability seemingly unattainable" (Hassan and Lee, 2015).

These contradictions lose their significance when we consider sustainable city as a theoretical umbrella concept (model), encompassing many issues of interest of various model visions of city development, such as: green city, creative city, smart city, 15-minute city, just city, participatory city, happy city, inclusive city, and compact city. In each, the focus is on a different aspect of SD, hence the use of the plural in the title – the model visions of SD. They are primarily concerned with the qualitative dimension of changes occurring in a city, which is why this article consistently refers to the term 'urban development' and not 'urban growth,' which, in my opinion, emphasizes more strongly the quantitative dimension of the changes, or the fact that changes are occurring at all. The aforementioned visions are most often the results of various complementary elements: scientific concepts, publications, research, architectural and planning practices and the resulting demands, political agendas in relation to cities, media coverage, and local marketing activities (Belyaev and Pyatkova, 2023).

This article proposes to look at urban space from the perspective of how it is perceived by its users, and while this proposal is not new (Hall, 1966; Newman, 1972; Alexander, 1978; Whyte, 1980; Bentley *et al*., 1985; Gehl, 2011), what is novel in my work is the focus not so much on the mere 'sensory' perception of urban space but on its specific social conditions. The main argument of the arti-

cle is that the model visions of urban development influence the perception of urban space and the expectations formulated toward it. According to the concept of double hermeneutics (Giddens, 2003), concepts and terms that categorise social processes (in this case, models of urban development) diffuse and make their way from academic and political discourse into public debate, and finally – they are used by 'regular people' who begin to perceive their own spatial experiences through their lens. Changes in urban space are a way of implementing certain model visions of development and are interpreted through their lens.

This article is based on a secondary analysis of material from 96 interviews with participants of spatial conflicts in Warsaw. The scope of the study in the spatial dimension refers to Warsaw (as a whole, but also to selected districts, housing estates, streets, and even individual objects in the city), in the temporal dimension to the years 2014–2020, in the objective dimension to the perception of urban space from the perspective of various models of city development (green city, creative city, smart city, 15-minute city, just city, participatory city, happy city, inclusive city, and compact city), and in the subjective dimension to the participants of urban spatial conflicts. The main assumptions of the research state that (1) people think in constructs, and therefore model visions of urban development influence the perception of urban space and the expectations formulated toward it, and (2) participants of urban conflicts have at their disposal resources of knowledge, skills, and social competencies that can be used more widely in urban studies – not only to study the field of the category of 'conflict', but also the field of the category of 'development'.

2. LITERATURE REVIEW

The level of urban development, however defined, manifests itself in spatial changes. The same space will be assessed differently from the point of view of different development criteria. As said in the introduction, the currently dominant paradigm in the discourse is SD. "SD can be understood as a kind of mega-order, integrating social, economic, environmental, but also institutional and spatial order" (Mierzejewska, 2015). The way contemporary cities function is the result of the dynamic adaptation of space by people operating in an area under the conditions of specific social, economic, historical, cultural relations, etc. The concept of SD emerged from the observation of increasing pressure on limited resources, including spatial, energy, and biological resources (Kanchana, 2022). The problems arising from this are particularly apparent in cities, in the form of, inter alia, chaotic suburbanisation, threats to biodiversity, land occlusion, inefficient transport, etc.

The theory of SD fully emphasizes the coordination and sustainability among the three pillars: social, environmental, and economic (Basiago, 1999; Larimian

and Sadeghi, 2021; Liu *et al.,* 2020). While there is much discussion about the crucial balance between these pillars, it is not the balance itself that is the focus of urban space research in SD but rather the importance of space within each pillar. There are works focused on the social dimension (Cope *et al.*, 2022; Feng and Hou, 2023), the environment (Matlock and Lipsman, 2020), and those with economic issues as their main focus (Azapagic and Perdan, 2000). There is also a growing number of analyses that focus on a perspective of at least two pillars, such as the green economy (Birkmann *et al.*, 2022; Barbier, 2011; Brand, 2012).

Urban challenges to SD are most often interdisciplinary in nature and it is difficult to talk about one pillar in relation to cities without indicating the relationship to the others. These challenges cover a range of issues, including: 'liveability', sustainable mobility; the shaping of residential urban functions (mix-use); the shaping of compact urban structures; the creation of high-quality public spaces; the protection of historic and cultural heritage; the protection of the environment; and the use of modern technologies (UN, 2019). All the identified aspects can be referred to the spatial dimension of urban development.

SD in a city can be assessed by examining the evolution of its urban social space. Therefore, the two are highly interconnected in a close relationship. Urban space is a container that can be filled by sustainable urban forms, so that the sustainable city ceases to be a purely theoretical entity (Jenks and Jones, 2009). It is now generally accepted that a third generation of urban agglomerations is emerging, based on the idea of sustainability, and the transformation is compared to the changes that took place in the past when industrial cities replaced pre-industrial cities (Wehle-Strzelecka and Korczyńska, 2007). The primary goals of a sustainable city are to support the quality of life of the inhabitants, to reduce the environmental impact of urbanisation, and to develop a low or zero-carbon economy. Indeed, the changes visible in urban spaces, not only in the form of mega-infrastructure (Sturup and Low, 2019), but, for example, in the form of photovoltaic solutions on buildings, charging infrastructure for electric cars, roof gardens or flower meadows, which are evidence that cities are moving in this direction.

As E. Glaeser has suggested, "if the future is to be greener, it must be more urban" (Glaeser, 2012). This means that urbanisation can serve the goals of the broader environmental agenda, provided two conditions are met. First, if the overall geographical distribution of the population is concentrated in a relatively small area, respecting the principles of 'green urban planning' and the need to transform existing cities from fragmented to densely clustered. The idea is to optimise the use of space and the availability of urban infrastructure in order to minimise human interference in areas that are free of it. In particular, there is an emphasis on the use of brownfield before greenfield, i.e., the reuse of land, buildings or facilities that are given new functions rather than the creation of developments on 'greenfield' sites. Compact cities are being developed in this vein.

The second premise refers to the fact that in the concept of the sustainable city, the quality of urban space is linked to the availability of an adequate amount of natural resources (Smaniotto *et al*., 2008). Green-blue infrastructure is a specific resource in cities that positively influences the valorisation of space. Greenery in a city affects air quality, provides shade and contributes to water retention. Large green areas in cities mean a greater range of leisure activities (Lamond and Everett, 2019). Spatial changes towards improving quality of life in the urban environment are generally appreciated by city users. As a result, spatial changes bring the very idea of SD closer to city users' reality and make it more convincing. This creates an agenda of issues around which it is easier to build social consensus, which is not easy in the context of a wide range of economic, social, and political issues that need to be revalued, as well as a set of dilemmas and problems that are visible from the perspective of SD in the broadest sense (Breheny, 1992). Spatial change in line with the idea of the sustainable city can thus be seen as a kind of transformational vehicle that shifts the focus from the category of 'use' to that of 'co-responsibility'. This approach has the potential to fulfil the actual aspirations enshrined in the concept of SD.

The concept of the sustainable city promotes infrastructural measures that interfere directly with the form of space, but not only that. Promoting specific patterns of space use, e.g., the reuse of space (ESPON, 2020), is an important element of these activities. Space in a sustainable city should reflect the harmonious co-existence of the social, environmental and economic elements. This trend advocates a type of development with mixed functionality (housing and services), with access to green infrastructure.

One of the priorities of SD in relation to cities is the quality of space (especially in relation to public spaces) – including its accessibility, its connection to the wider ecosystem, but also its aesthetics. Space is supposed to provide stimulation for the senses, address the need for novelty, and at the same time meet residents' expectations of harmony in their surroundings. Urban landscapes, architecture, urban planning, and spatial order play an important role in creating living conditions for city dwellers, both current and potential (Szarek-Iwaniuk, 2021; Stratmann, 2020; Gorzym-Wilkowski, 2017; UN HABITAT, 2010), with a broad consideration of the needs of vulnerable groups (Cassarino *et al*., 2021; Hendricks and Van Zandt, 2021). For this reason, issues such as light pollution and advertising chaos, for example, are on the sustainable city agenda.

It seems that nowadays much is said about the quality of urban space in relation to places of consumption and entertainment, as well as 'third spaces' – places of rest, of 'disengagement' from everyday life and from non-family/professional social contacts. An important feature of third spaces is that they allow us to observe other people and present ourselves to them (Oldenburg, 1989). Third spaces are important for shaping the idea of neighbourhood and strengthening the sense of local identity. Through a change of perspective it is possible to boost individual creativity in them, as well as to increase distance from the social roles we identify with on a daily basis (Tran *et al*., 2021; Cilliers and Goosen, 2018).

In the model vision of SD, cities strive for internal social, economic and spatial cohesion. In the context of the last element, we see in many cities the challenge of large industries disappearing from city centres due to changes in the global economy, leaving their characteristic spaces. Abandoned port areas or post-industrial enclaves open up opportunities for transformation and the adaptation of infrastructure to the current needs of residents. Activities related to revitalisation which are promoted in them focus on the needs of disadvantaged neighbourhoods. These activities are implemented under the assumption that changes in space influence a more profound social change. For example, there are so-called small-scale, grassroots revitalisation projects, in which neighbourhood communities themselves conduct activities to improve their immediate surroundings, which often result in greater care, a stronger sense of local identity, and a greater willingness to cooperate and increased trust within the local community. However, revitalisation is accepted insofar as it does not drift towards excessive gentrification, which is a risk especially in huge-scale revitalisation projects.

Gentrification is "a class-based succession within the population structure of neighborhoods undergoing this type of spatial transformation" (Drozda, 2017). Several stages can be distinguished in this process. In the first one, the so-called gentrification pioneers (people with more cultural capital) emerge and begin the process of displacing the incumbent population. The pioneers are then replaced by advanced gentrifiers. They have more economic capital at their disposal and, thanks to this advantage, accumulate the symbolic capital generated by the pioneers. These are the advanced gentrifiers who conduct the final transformation of the urban space, but the process does not end there. Gentrification is multidimensional. The economic dimension refers to the fact that the range of locally available services changes; there are characteristic transformations in the real estate market. The spatial dimension refers, among other things, to the fact that aesthetics improve, functionality changes. The social dimension of gentrification focuses on the change in the population structure and its demographic characteristics (Litorowicz, 2012). To some extent, this is a desirable process, but due to the controversies that accompany it, the term itself has gained a negative connotation in the public debate. In recent years, the term gentrification has increasingly referred to the concept of urban green space availability – eco-gentrification, environmental gentrification (Gearin *et al*., 2023; Cole *et al.*, 2017).

The issues indicated above concern the spectrum of matters raised in discussions on sustainable development. In these discussions, the category of 'sustainable city' is often used interchangeably with the green city, compact city, the city 'for all', smart city, etc. – depending on (1) which aspect of sustainable development and the challenge associated with it we consider the most important, and (2) who is discussing and with whom. It is difficult to find a coherent, complete and summary list of model visions of city development in the literature, which is why the author's proposal is presented below in Table 1.

Table 1. Model visions of urban development, main priorities and reference to the pillars of SD

Model visions of urban development	Main priorities	Pillars of SD		
		Ecology and environmental responsibility	Social development	Economic development
Green city	green areas; climate challenges and pollution, biodiversity	•		
Creative city	creative industries, quality of life, innovation		•	•
Smart city	technology, intelligent management of urban systems, open data		•	•
15-minute city	sustainable mobility, spatial accessibility, decentralized development	•		
A just city	availability of resources, equal rights, distribution of responsibilities		•	•
Co-managed city	participation; governance, co-decision procedures		•	
Happy city	quality of life; transport accessibility, quality of public space		•	
Inclusive city	social inclusion, accessibility, valuing disadvantaged groups		•	
A compact city	densification of buildings; counteracting chaotic suburbanization , mixed-use of space	•		

Source: own work based on literature review.

3. METHODOLOGY

This article attempts to answer the main research question: how is urban space in Warsaw[1] perceived in the light of model visions of sustainable urban development? Two main research methods were used in the search for an answer.

[1] Warsaw is a metropolis of almost 2 million inhabitants in the alpha class of global cities. The European Cities SDG Index ranks Warsaw 31st out of 45 cities surveyed in terms of its level of sustainability (UN Sustainable Development Solutions Network, 2019).

The first was the analysis of available source materials, including academic literature and already published data. The second method was to conduct 96 interviews with various individuals who declaratively identified themselves as participants in urban conflicts in Warsaw. This purposeful sampling was dictated by the need to obtain respondents who were interested in, aware of, knowledgeable about and experienced in urban development issues. At the same time, they were not academics rooted in urban sociology who might use scientific jargon thinking that this is expected of them as 'experts.' This sampling was intended to result in an opportunity to interview 'regular' but nevertheless 'informed' residents.

The interviews were of a partially formal nature, conducted on the basis of a specially prepared questionnaire, with the possibility of freely formulating questions within a specific thematic scope. The questions concerned a range of issues, including the assessment of the quality of Warsaw's space, the city's spatial policy, the way space is used, and the conflicts in this context.

The sampling process occurred in stages. First, conflict situations that involved changes in the city space were identified. Conflicts were chosen based on their media coverage and manifestations in the urban space in the form of protests, pickets, performances, street fights, etc. The interviews discussed several local conflicts in Warsaw, which can be grouped into 3 main categories.

3.1. Quality of life of residents and ways of using the city

It contains interviews around conflicts between residents and the developer who sought to create a new investment (Sielce district), issues related to reprivatisation (Śródmieście district), organisation of sports marathons and closing some streets in the centre, as well as the issue of curfew in the context of the functioning of cultural and entertainment facilities (Powiśle district).

3.2. Assigning meanings and appropriating symbolic spaces

The interviews focused on art in the city (the artistic installation "Tęcza" by Julita Wójcik, the work "Guma" by Paweł Althamer and the installation "Pozdrowienia z Alej Jerozolimskich" (the popular "Palm") by Joanna Rajkowska and advertising chaos (Central Railway Station).

3.3. Infrastructure

The main topics of the interviews were discussions around the demolition, preservation, reconstruction and construction of specific buildings and spaces, e.g., Universam Grochów, Krasicki Bridge, Saski Palace, Plac Defilad Square or Vistula riverfront.

'0' respondent involved in a specific conflict was then selected and could be interviewed. The key criterion was their personal involvement in the conflict. This could have manifested itself in a variety of ways, for example by participating in protests, writing to the authorities, using legal tools or being active on social media. The sampling method was based on the so-called snowball or chain method, which involves identifying further respondents through their knowledge of other respondents. This method aimed to find people who could provide valuable information on the topic.

The interviews were conducted with residents of the Warsaw metropolitan area, both those with longer and shorter periods of residence (between 2 years and "the whole life"). The respondents included 56 men and 40 women aged between 20 and 61, with the majority between 20 and 30 years of age. All respondents were professionally active or studying, the largest groups consisting of students, NGO staff, and public officials involved in urban development. Most people had higher education (completed or ongoing). The characteristics of the respondents are presented in the Table 2.

Table 2. The number of the respondents in terms of gender, age and education

GENDER	**Women**			**Men**	
	40			56	
AGE	**20–29**	**30–39**	**40–49**	**50–59**	**60–69**
	57	18	11	9	1
EDUCATION	**Primary**	**Secondary**	**Higher**		
			Completed	**During studies**	
	0	14	36	46	

Source: own work based on empirical material.

The material was analysed using semantic field analysis, on the basis of which statements relating to particular model visions of urban development were identified. For example, smart city was affiliated with the following terms: smart; digital; technology; computer; information; mobile phone; remotely, and participatory city by the terms: participation; consultation; decision making; inhabitants' rights; vote.

4. RESULTS

Most often, respondents referred directly to the sustainable city model, as well as participatory city, and just city. This was followed by respondents' focus on happy city, inclusive city, 15-minute city, and green city. In the interviews, respondents devoted relatively little space to the topic of smart city or compact city. It can be noted that in the total number of statements classified as referring to particular visions of city development, almost three quarters referred to four models of city development: sustainable, co-managed, fair, and happy. A quarter of the statements referred to the other eight models.

The research showed that sustainability needs to be considered at various levels, including spatial, environmental, economic, social, etc. In this perspective, urban space is subject to a complex, multidimensional analysis, which caused some problems for the respondents. Only by referring to specific examples or asking questions to clarify the issue did the respondents find it easier to provide answers.

In the vision of sustainable city, irrespective of the key points of emphasis of the individual model visions of development, the needs of the residents, their quality of life, come first. This is the benchmark and criterion for assessing the quality of urban space.

I believe that the main, priority goal of Warsaw's development is to improve the quality of life and ensure the safety of its residents (M, age bracket 20–29).

The city is primarily about living, living and functioning (...) The city is for the people, that is my opinion (M, age bracket 30–39).

In the statements, quality of life most often appeared as a universal category. Often respondents used generalisation and considered that their needs and expectations regarding urban space were common to all residents. A few respondents noted that the expectations of different groups of residents differ. In one of the statements, there was a proposal in the context of the idea of a sustainable city, the balancing of the needs of different groups of inhabitants regarding the use of urban space should be considered. In particular, respondents raised the issue of urban mobility and the competition between different groups of residents for dominance over others.

Sustainability, i.e. balancing the needs of different groups of people. If we are only talking about adapting the city for cyclists, i.e. increasing the number of cycle paths and encouraging people to switch, then at that point you also have to consider the group of people who have no way to commute other than by car. So, at this point, a little bit broader perspective (...) more sensitivity to different needs, rather than focusing on more catchy, trendy slogans: eco, pedestrians, bikes. It's not a one-way street, you have to think about everyone (M, age bracket 30–39).

The research raised the question of the interdependence between spatial and social context. In this relationship, the economic dimension is important, conditioning to some extent the possibility of action, but also the issue of assigning

meanings and values and the motivation to take or not take grassroots action to improve the quality of space.

> We have economic conflicts due to the fact that a community would like to invest in their space, but is not quite able to simply provide the funds. Some communities are very poor and even though they would like to, they can only organize a tiny garden, which for them is a huge effort in terms of time and money. And large gated communities, for example, may have the urge and resources, but they don't do so (F, age bracket 30–39).

4.1. Green city

SD goals that relate to green cities are accepted as long as people and their needs are at the centre. Greenery is perceived as an important measure in the assessment of the quality of life, and its deficit affects the downgrading of urban space. There have been repeated opinions about the feeling of a significant deficit of urban greenery in the space of Warsaw.

> There is a scarcity of greenery in Warsaw, a scarcity of places where residents who want to get out of their crowded flats to be able to spend time surrounded by greenery. Such places are increasingly scarce as new housing estates are built (M, age bracket 30–39).

In the context of achieving pro-environmental goals, one respondent noted that there is a need for both infrastructural measures applied by the municipal authorities and measures to change the awareness of residents themselves and increase their sense of responsibility for the quality of the environment in which they live.

> It seems to me that we need to raise public awareness of how we can influence ecology and our city, because we have no other planet and most people have no other place to live than in Warsaw. We need to understand that we need to start taking care of it. (...) There definitely also needs to be more rubbish bins, because there are very few of them and this is actually a problem too (F, age bracket 20–29).
> I would encourage people to pay their taxes and not to use their cars in the city, which is important, and to be more pro-social (F, age bracket 30–39).

4.2. Creative city

The concept of creative city refers to the occupational structure of cities. The transformation of civilisation, and the disappearance and emergence of new professions are all reflected in the urban space. One respondent raised this point in his statement.

(...) various professions that were typical of the urban fabric 20 years ago will have to fall out. (...) others are coming back, for example barber-shops, after all there was no such thing. Crafts are coming back, more and more people want to go to a haberdasher, in a little while to an engraver, so this city may start living again the way it lived before the war. (...) in the city people can afford it, here you earn more, you live at a higher level of status, so some professions disappear, others return, new ones appear. This can show that such is the evolutionary wheel in the city, which will keep turning non-stop (M, age bracket 50–59).

With regard to the vision of the creative city, there are references to the changing population structure and the emergence of a subculture of hipsters who are gentrifying certain neighbourhoods.

Żoliborz is a rather exclusive district, or if less affluent people live here it is because they inherit these apartments simply. And the people who move here are certainly wealthy people. Well, and you know, it is said that hipsters live in Żoliborz and meet at Sunday breakfast picnics, where a portion costs no one knows how much. But it's all eco, too (F, age bracket 20–29).

4.3. Smart city

Few statements directly referred to the smart city vision. When the concept did emerge, it was related to other trends, such as the sharing economy or green infrastructure. One respondent emphasised its risks, such as the need to prepare appropriate legal and organisational instruments, which lag behind the dynamics of the spread of technological innovations.

One might think that on a philosophical level, sharing is super great. I mean, if we could exchange the excess of something we have and not generate pointless consumption, that would be good, that's the kind of real sustainability at the city level. We've all got used to using Veturilo bicycles by now. Also a cool thing, in a moment there will be cars available on the same principle, that you will be able to gather a group of 4 people, with a driving license, take this car and travel from place to place for the price of a tram ticket, that will be cool too. There will be forced carpooling, because only then it will be profitable. So you can see here that this whole trend of developing technology harnessed to make things better in cities, something called smart cities trend will be the future of cities. But conflicts will arise where the status quo will change (M, age bracket 50–59).

4.4. 15-minute city

It was noted that urban residents support a particular model of urban development freed from the dominance of cars because of their own convenience and *homo oeconomicus*-type motivations, rather than because of more abstract ideas or community values.

> There was a study done in Copenhagen. It was said that people there ride for environmental reasons, for health, something like that. It turned out that they ride bicycles primarily because it is the fastest. Costs – the Danes are one of the richest European societies – costs were listed as second, health and so on. Ecology was at the very end. This is the easiest. If getting anywhere by car is faster than by public transportation and than by bicycle, then people will choose the car, simply (F, age bracket 60–69).

In addition, as the respondents stressed, realizing the vision of a 15-minute city requires fighting the stereotype about public transportation.

> In addition to not wanting to be hit, it's the transportation, you know, it's for the poor, it's for people who can't afford a car, gasoline, and that's why they use it. And not, as I told you, in New York, where there is no such demarcation, it's just more convenient and that's it (M, age range 20–29).

One respondent directly addressed the need to have locally available services in close proximity and to make urban residents' functioning independent of cars.

> I would rather not create expressways to get to the centre of the city and then struggle for half an hour to find a parking spot, but rather create bicycle paths that would allow me to get to the centre in 15 or 20 minutes (...) So that there are not only Biedronka and Tesco shops and some other big chains around, but also small crafts and small stores could develop. So that it's like you don't have to go by car to the outskirts of the city to do your shopping, but to get all your needs satisfied in the area, locally, and that it's not some big luxury, right? That I can buy things for breakfast in some small neighbourhood store and not in some big corporation on the outskirts of the city, right? (M, age bracket 20–29).

4.5. Just city

Revitalization efforts and the accompanying gentrification make places symbolically inaccessible to certain groups of residents.

> (...) due to this situation, some kind of boundary has been created between those who were there and previously did shopping at Universam and what will happen there, that is, the developer and probably future residents (...) these will no longer be apartments for those people who settled this space before (M, age bracket 30–39).

Respondents noted that there are groups in the cities that are 'inconvenient,' who do not fit in with the modernisation trend.

> The developer is the most satisfied party and that part of the population that is in favour of the change (...) the standard of the place was at odds a bit with what the local authorities are now trying to introduce (...) maybe due to the fact that it wasn't the cleanest, there were sometimes people hanging around there that the public doesn't want, yes? It wants to get rid of them (M, age bracket 30–39).

The observation was made in the interviews that residents are not unanimous in the context of the catalogue of needs for the city's development.

> It would be important to note that there are people living in Warsaw who have different priorities and are interested in different ways of developing the city. The city is a certain community, a collective that is in such constant conflict with each other precisely because of these differences in priorities (M, age bracket 20–29).

According to the respondents, it is important not to allow excessive spatial segregation in cities.

> There will always be the rich and there will always be the poor, but ghettos of neither can be formed. You can't get out of neighbourhoods of poverty, society should be mixed (M, age bracket 20–29).

Respondents most often referred to fairness interpreted in economic terms and in relation to the power structure.

> History has already shown us, the rich have more rights. They can certainly afford more. Either they buy something for themselves, or they are from a higher social class, so they have access to more things. Some of the poor accept their fate or try to do anything about it. (...) Classes will be everywhere, in any regime, even if everyone is measured by the same measure, as the middle class, there will always be power. Hierarchy will be preserved in any country, at any time in various forms (F, age bracket 20–29).

4.6. Participatory city

In terms of stakeholders who should be involved in participatory processes, residents come first, but there are also other groups.

> Even developers are required to consult on their larger developments. And that's a good thing. My friends live near the Varso development and they were consulted on this investment (M, age bracket 40–49).
> It is impossible to strictly define who should decide. Each time, it's who else should be able to do it, sometimes it's the residents, sometimes it's the developers, it's important that it all goes in favour of Warsaw, so that it is somehow checked, so that these decisions are not typically emotional, but looking at the possibility of Warsaw developing further, but also not harming the residents themselves. It is worth it to often take people who are authorized to give their opinion, have information, have knowledge, simply are experts in a certain field (M, age bracket 20–29).

There were voices in the interviews that were critical of the very idea of participation.

> In the past the idea originated from the architect, urban planner, that is, a professional, a man educated in the field. Just as to cut a patient, to operate on an open heart, one does not call

a cobbler or a fish farmer, but a heart surgeon, so to plan a city, comfortable for people to live in, one also called a professional. Now there are public consultations. This cross-section of society is very scattered, and everyone has the right to have their own idea. So the effect is that sometimes these are very conscious, well-meant ideas, and sometimes this is just wishful thinking (...) it's time-consuming, because these procedures take time, and the results, however, are not always spectacular (F, age bracket 30–39).

4.7. Happy city

The interviews included references to Copenhagen's iconic vision of a happy city, which has an image of a place that puts the well-being of its residents first.

There are cities (...) Copenhagen or Oslo, Helsinki, that focus strictly on residents. And these are such leaders of this approach. Simply put, the welfare of the resident or the community is always put above the interests of the developer or anyone else (M, age bracket 20–29).

According to those surveyed, city development should take into account the user experience, including aesthetic impressions and those related to functionality.

First of all, in my opinion, there should be an action for creating the right impression (...) aesthetic expression also affects functionality. This is where the social factor comes in. If you do something unsightly, then from such a sociological point of view it becomes a dysfunctional place where people will not want to stay (M, age bracket 20–29).

One respondent noted the importance of the aesthetic layer, but at the same time stressed that, in her opinion, it was secondary to the functionality of urban infrastructure.

This is at the very end, because this is just the aesthetic sphere, more pleasing to the eye. I like the architecture of Warsaw, but actually some buildings are such that you just don't want to stay here. They are depressing, etc. Let me think…, parts of Żoliborz, or just Ursynów, Praga. There are a lot of buildings that could be renovated, and this is of course at the end of the priority list, because there are more important things to focus on, but in general this is also something I would improve to make it more pleasant to live here. I like the fact that Warsaw is not so standardized. You don't have every building looking exactly the same, but that it also maintains any kind of aesthetics, not so stripped down, etc. I also don't like the graffiti on the buildings (F, age bracket 30–39).

In the vision of a happy city, the opportunity to socialise within the framework of so-called third spaces plays an important role. One of the respondents focused on the possibilities to spend leisure time in Warsaw depending on the season and available resources.

It's also an economic problem – when I have some free time between classes, it's not much of a problem in the summer, because if I don't want to go to a café and spend 10 PLN on a coffee

every day, I'll go to the park, read a book and spend my time there. But in the winter you can see it – it's over, well it's over (F, age bracket 20–29).

One respondent made an interesting comment about the appreciation of everyday life and the small rituals associated with urban life, which she felt were more important to the quality of life in the city than large, impressive investments.

You asked about the main priorities for Warsaw and how it should develop. Here it seems to me that such a metaphor of ants and elephants is apt. We get excited about these elephants, that bam, they wave their trumpet and suddenly there's a second metro line or the Saski Palace, such a great investment that you can get excited about, that you can brag about, that you can feel some kind of pride in. I think that some people are like that, but I have this feeling that what we need is to stop fussing about elephants, but to appreciate the hard work of people, which in a way improves our everyday life (...) that there would be more such squares, gyms or just tables where neighbours could gather on warm days and sort of have a meal together and talk over Sunday breakfast (...).) such small, but crucial things of everyday life (...) Well, a lot of such trifles, very small things concerning such everyday life, that is, as if ants, which, as if braiding anew, rather than elephants, which with their great trumpets will build us the Saski Palace, for example, or another metro line. I mean, it's nice if there is a metro line, but if I have to choose between the metro and the development of backyards, well I'd rather the backyards develop (F, age bracket 20–29).

4.8. Inclusive city

In the context of an inclusive city, the issue of accessibility emerged as a chief issue in the interviews. It is treated broadly, both in spatial and economic or symbolic terms.

Everyone would like the city to invest in space for residents (...) one lady would like nice apartments to be built here, and she could live in one of them. It's like people feel that this is a different pool, that this will be a space no longer available to them. There will be apartments and banks here, and it will already be a private space (F, age bracket 20–29).

Respondents raised the problem of restrictions on the availability of space as a result of fencing off residential areas.

I was just a child brought up in a tenement. And we all played in the courtyard. It didn't occur to anyone to ask whether we were playing in a private yard, or a public yard, or a community yard, there are simply spaces where everyone should have free access. But we know that the developer trend, probably as early as the late 1990s began, to divide these spaces with fences, close them off with wickets with intercoms. I used to have free access to my elementary school friend. Whether today my grandson would have free access to his elementary school friend, I dare to doubt (F, age bracket 20–29).

The issue of the city's inclusivity problems with regard to sexual minorities arose in the interviews.

> I believe that the various social changes in the relationships between us are long-term. These are slow steps to change our tastes or habits. In the same way that smartphones entered the world and stayed, they didn't enter immediately, they entered gently, but nevertheless quickly (...) I think, it will still take about 100 years for this to completely disappear – homophobia, it won't be easy to overcome either (M, age bracket 30–39)

One respondent stressed that the idea of an inclusive city has broad fields of reference – economic, cultural, demographic, etc.

> (...) strong discrimination against minority groups, all sorts of racism, nationalism, i.e. considering one's own nation superior to other nations, homophobia, heteronormativity that is valid in these groups, often sexism, (...) this is very much linked to how people are treated, these are all forms of exclusion. And so certain people are excluded from the urban fabric, so poor people are excluded from the urban centre, people who don't have capital, people who have less opportunity to acquire that capital, often the elderly, the infirm, the sick. It's all a mesh of relationships (sex "other," age bracket 20–29).

4.9. Compact city

The vision of a compact city was often combined in interviews with the issue of spatial order and optimal use of urban infrastructure.

> I would like the space of Warsaw to be characterized by spatial order so that we could talk about harmonious development, which is a concentrated, compact development, in which high-rise buildings have their place and are located creating a certain concentration of such development (M, age bracket 40–49).

There were voices among respondents against mono-functional developments or quarters. The postulated solutions went in the direction of combining residential service and office functions.

> The city is very much influenced by fairly aggressive development, in terms of development assumptions, but towards offices and commercial spaces rather than new housing (F, age bracket 20–29).

Densification of development was often resisted by the residents in reference to the ventilation wedge argument.

> Now a great deal of these windward strips are being built up because of the developer's planning policy. That is, when there are vacant lots, they just build up (F, age bracket 30–39).

The need to define the centre of Warsaw and reconstruct transport corridors in the spirit of deprioritisation of cars was indicated.

> When something is broken, it creates more conflicts (...) broken is generally because there is no city, there just isn't (...) Warsaw is congested in the centre because there is no city street grid, we only have two arteries. When they've created a road, it's of the Chałubinskiego Street-type. The city doesn't need to have wide streets at all, it just needs to have a grid of streets so that it distributes traffic. And this flyover, God forbid, I don't know who had the idea to make a flyover in the centre of the city. And at the same time, no one thought to make many connections over the railway tracks (F, age bracket 20–29).

A caricatured image of suburbanisation appeared in the respondents' statements.

> A developer, I know it's a cliche, is someone who builds in empty fields where you can't get to by car, and when you get out of it you need wellingtons (F, age bracket 30–39).

To summarise this part of the work, Tab. 3 presents data on the main topics that emerged in the interviews regarding the various visions of the city's development, as well as individual statements that were atypical, but cognitively interesting.

Table 3. References to model visions of urban development (typical and atypical) in the context of the research

Model vision of city development	**Type of narrative resulting from interviews**	
	Typical statements	**Atypical statements**
Sustainable city (umbrella concept)	• Priority for residents' needs • Quality of life as a benchmark for evaluating urban space • Various levels, including spatial, environmental, economic and social • Vision widely endorsed	Need to balance the different expectations of different groups regarding space
Green city	• Anthropocentrism • Greenery is subservient to quality of life • A sense of scarcity of greenery and the threat of losing it	Need for action to increase residents' sense of shared responsibility for urban greenery
Creative city	• Revitalization resulting in the gentrification of specific neighbourhoods • Risk of exclusion of economically disadvantaged groups • Threat to spatial cohesion – increasing differentiation between neighbourhoods	Impact of changes in urban occupational structure on space

Model vision of city development	Type of narrative resulting from interviews	
	Typical statements	**Atypical statements**
Smart city	• Linked to other trends, such as the sharing economy and green infrastructure • Convenience of use thanks to new technologies as a parameter of space evaluation	Threats posed by lagging legal and organisational instrumentation in the face of the pace of technology development
15-minute city	• Need to free urban space from car dominance • Local availability of services • Need to promote public transport • Privileging pedestrians and cyclists	Need to fight the stereotype about public transport
Just city	• Recognising the needs of 'invisible', 'inconvenient' groups regarding space • Justice interpreted as access to power and capital that condition the use of space • Spatial segregation is a material form of injustice	Difficulty in operationally defining the vision of a just city
Participatory city	• Participation as an element of citizen control over spatial development policy • Presence of participatory tools and procedures improves image of city government in space management • Need to trigger co-management at the earliest possible stages of spatial planning • Key issue of information transparency in the spatial planning process	Risk of co-management by residents who lack competence and knowledge of urban planning considerations
Happy city	• Iconic image of Copenhagen's transportation spaces • User experience of urban space (aesthetics and functionality) • The importance of the quality of public spaces and accessible third places	The need to value the space of urban everyday life
An inclusive city	• The key issue of accessibility (spatial, economic, symbolic, etc.). • Fencing off the space	The issue of space accessibility in the context of gender
Compact city	• Opposition to chaotic suburbanisation • Spatial order • Optimise the use of urban infrastructure • Densification as a threat to residents' quality of life	Multifunctional housing

Source: own work.

5. CONCLUSIONS AND DISCUSSION

The reason for raising the subject of this article was the need for a deeper understanding of the phenomenon of urban space in the era of the sustainable development paradigm through the analysis of the opinions of stakeholders of urban conflicts. It is the appreciation of participants in urban conflicts in research on spatial development that I consider to be the greatest novel of the work. The analysis of the attitudes of conflict stakeholders, with their informational, motivational, and behavioural components, may lead to reflection on the category of urban development and the expectations associated with it. Although much attention is paid in the scientific community and in the political activities of participation in the management of urban space, conflicts as a type of non-consensus participation remain in the shadows. Expanding interest in the analysis of conflicts within urban governance processes could change the organisation of participatory processes. This change would aim to make greater use of the potential of bottom-up participation, which is present in the act of participation in conflicts.

The idea of linking spatial analyses to the category of SD is important to me for two reasons. First, in this optic urban space is not a static entity but a dynamic one, undergoing constant change, which often seems to be overlooked from a research perspective in analyses dedicated to the perception of space (Wojciuk *et al*., 2016). Second, referring to model visions of urban development appeals to the collective imaginary around what a city is and can be (Dunn, 2018). A sustainable city is (at least for today) a certain abstract model that has certain characteristics, but in its pure form it does not exist in reality. Despite this limitation, however, the concept of a sustainable city is useful because it enables different measures of urban development (including spatial changes) to be compared with each other against this characteristic.

The survey confirmed that spatial changes are perceived by respondents as an indicator of urban transformation towards a sustainable city (or evidence of failed policies in this regard). The issue is both the presence of sustainable urban forms and changes in the ways in which space is used (much less so than its co-creation in the spirit of shared responsibility). SD is perceived by respondents through the lens of various spheres – social, economic, ecological, spatial, etc. The respondents have observed that these spheres are interdependent. They paid much attention to transportation issues and sustainable urban mobility. They noted the need to build spatial order, effective urban planning, and care for aesthetics. They emphasised the need for places for entertainment, consumption, and recreation, referring to expected quality of life.

In light of the collected empirical material, in all the conducted interviews there were elements referring to at least one of the model visions of sustainable urban development presented in the theoretical chapter (green city, creative city,

smart city, 15-minute city, just city, participatory city, happy city, inclusive city, and compact city). The different visions represented, as it were, different aspects of SD and directed the attention of the respondents to social issues or more to environmental issues, and another time to economic issues. It was these perspectives that determined the field and criteria for evaluating urban space by the respondents. It seems that the leading criterion is the servitude of urban space to the aforementioned quality of life, which can be interpreted as the dominance of the social and economic aspect over the environmental in the perception of the respondents.

Almost all respondents referred directly to the category of SD but far less frequently to a specific vision of urban development. Elements of these visions had to be distilled from the respondents' statements of expectations (using key words and semantic field analysis). Each respondent had some vision and expectations for development, but these visions most often fell under the broad umbrella category of SD. Often elements of different visions appeared in a single statement, complementing or interpenetrating each other. The research practice revealed problems in attributing specific statements to specific visions, since some model visions of SD contain points in common. Such difficulties included the distinction between the visions of an inclusive city and just city.

Referring to different model visions of sustainable urban development shows how different public perception and understanding of the SD concept is. Different visions point to different priorities, and it is in the question of priorities that, in my opinion, the entire spectrum of the complexity of implementing the concept of SD is revealed. Lack of awareness of the vision (and thus of the priorities) being promoted could be the cause of communication difficulties and a potential breeding ground for conflict among various urban development stakeholders. Increasing this awareness could result in a deeper understanding of interests and actions – their own, as well as those of other conflict actors. In addition, moving the discussion from the 'interests level' to the 'vision level' provides an opportunity for substantive discussion in urban spatial conflicts.

The research revealed some contradictions between different model visions of sustainable urban development. The first example of such a contradiction is the simultaneous identification of suburbanisation as a significant challenge and concerns about overdevelopment in compact city. The second example of a contradiction is the high relevance of green city and environmental issues, but the simultaneous maintenance of primacy of human beings and their needs for the use of space in the context of quality of life. A third example of a contradiction is the indicated need to counter socio-spatial inequalities, for example through the revitalisation of specific areas, which is paradoxically accompanied by concern about the growth of such inequalities.

The category of SD functions, in light of the statements of the respondents, as two types of entities – a theoretical model, and a category for describing reality. An approach that treats the model of sustainable urban development (and the

model visions that contribute to it) as a theoretical reference point seems more justified. As civilisation changes, our approach and the way we define SD will change, which in itself opens up an interesting field for further scientific analysis. In my opinion, the two mentioned ways of understanding SD – as a model and the reality – although related, are two different things. The language around SD does not have the capacity to show this at the moment. "(...) sustainability is not a well-defined concept but a probabilistic expression of a latent idea. However, this supposed latent idea is not necessarily reached by aggregating its multiple applications (...) A discourse based on words with multiple and discordant meanings will be ambiguous and discordant" (Bova, 2022). In order to change the narrative about SD, we need a more expansive conceptual vocabulary.

The research showed that perhaps due to the lack of more precise terms in the discourse around SD there is a certain flattening of concepts, which is reflected in the level of knowledge and awareness around SD, which is not very sensitive to nuance, specific conditions, contradictions or dilemmas. This hypothesis requires further research. It may be that the model vision of a sustainable city can never be fully realised, and if certain goals can be achieved, sustainability will rely on maintaining them over time and in balance to other goals. However, this should not be an argument for abandoning efforts. Sustainability is – metaphorically speaking – like a healthy lifestyle. It means, first of all, understanding the cause-and-effect relationships of certain human activities, building good habits, and being willing to sacrifice short-term gratification for long-term benefits. SD in practice for me means precisely making better, more conscious choices – building habits is more important in this sense than achieving specific goals.

Finally, it's worth indicating how the results of the research presented in the article can support Education for Sustainable Development (ESD). First of all, the goal of ESD should not only be on increasing knowledge because this is not enough to change attitudes. It also needs to affect emotions to motivate attitude change (Cristóvão *et al.*, 2023; Ojala, 2014). To increase the level of emotional engagement, one needs to appeal in the narrative about SD to things that are relevant to the viewer. When talking about the SD Goals for cities, it is worth putting more emphasis on issues that are important values for urban residents, such as the issue of quality of life that appears in the research. It is also worth showing SD in the context of the dilemmas of spatial management, especially in relation to real case studies, where people and their stories appear. Against this backdrop, it is possible to gain a deeper understanding of the multidimensionality of SD and broaden awareness of the topic.

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REVIEW ARTICLES

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JUST GREEN TRANSITIONS: BETWEEN TERMINOLOGICAL INEXACTITUDES, CONCEPTUAL FRAGMENTATION, AND THE EXIGENCY FOR A THEORETICAL FRAMEWORK

Abstract. The European Green Deal is promoting a twinned transition which is expected to be just and green. Various related terminologies have gained ground without being precisely defined or commonly agreed upon. Following an interdisciplinary exploratory approach, this contribution discusses the terminological inexactitudes which could risk a common conceptualisation, operationalisation, and implementation of the so-called Just Green Transitions. Through a critical interpretative literature review, this contribution highlights the conceptual fragmentation of these three dimensions: just as a polylemma of socio-spatial-temporal justice, green as a non-replication of pseudo-fashionable labels, and transitions as meta, multiple, and multilevel paths of institutional and social changes.

Key words: Just Green Transitions, European Green Deal, EU governance, territorial governance, socio-spatial justice.

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1. INTRODUCTION

In 2019, the European Commission set its man-on-the-moon moment (European Commission, 2019b), an ambitious transnational roadmap mobilising the highest global levels of geopolitical assemblies and converging global climate governance (Coen *et al.*, 2020) towards a common goal of a carbon-neutral economy, achieving 55% of emissions reduction by 2030, to realise its once in a lifetime opportunity to become the world's first climate-neutral continent by 2050 (European Commission, 2019a). The European Commission has put into action a reform agenda intending to leave no one person or region behind and assuring that its Green Transition will either work for all and be *Just* or will not work at all (European Commission, 2019b).

"Green Transition(s)" and "Just Transition(s)" have been burgeoning in policy domains and academic literature, succeeding the 1950s syndrome (Pfister, 2010) of the European Coal and Steel Community (Marty, 2020), and the 1970s awakening of social transitions[1]. However, what seems new is their conceptual combination: Just Green Transitions (Shaker and Persico, 2024).

Recalling the New Deal[2] and the Green New Deal[3], the European Green Deal (EGD) constitutes institutional reforms, socio-technical changes, transitions, and/or transformations (European Commission, 2019a). These transitions are subject to deep core perceptions inevitably influencing the definitions and the conceptions behind the policies and decision-making (Ripberger *et al*., 2014), affecting their conceptualisation and operationalisation.

Despite the EU's financial investments, political convergence, and reform support, promoting *a transition* which ought to be green, just, fair, and inclusive (European Commission, 2019a), there is still no clear definition of what is considered sustainable or green (Spinaci, 2020), no clear definition of sustainable development (Holden *et al*., 2014), no blueprint (Tavares, 2022) and no consensus within the EU on the understanding of the Just Transition (Crespy and Munta, 2023). Furthermore, there is no commonly accepted taxonomy for the Green Transition (OECD, 2023), no single commonly agreed upon definition for Green Jobs, and, most crucially, there is no guarantee that the jobs lost in a region will be replaced in the same one (Janta *et al*., 2023).

Ergo, when it comes to studying these twinned transitions, the following theoretical polylemma (Sánchez-Pérez *et al*., 2021) arises: (a) how these compound notions and conceptual combinations are conceptualised and operationalised both at the EU level and of the 27 Member States, (b) whether Europe is going through

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[1] It is nearly 100 years of transitions, see: United Nation, 2019; Coen *et al*., 2020.

[2] Recalling Eisenhower's Deal, see: Shank, 2008; Adler *et al*., 2019.

[3] See French *et al*., 2009; Chohan, 2019; the Italian 'New Green Deal', also mentioned as Green Deal Italiano, and Green and Innovation Deal (Italian Ministry of Economic Development, General Directorate for Business Incentives, 2022).

a *transition* or a *transformation*, and (c) are we going through singularity (Transition) or plural paths (Transitions).

This contribution does not neither attempt to redefine what Just Transitions or Green Transitions are, nor does it attempt to reinvent the notions of social and spatial justice behind them. Our aim is not to put a spoke in the wheel of advancing the EGD but to provide a critical interpretation exposing the inconsistencies created by the terminological inexactitudes, the theoretical predicaments of the conceptual fragmentation, and attempting to open a discussion towards precision in the conceptualisation of the expected 'Just Green Transition(s)' as meta (Shaker, 2025 forthcoming), multiple (Tarasova, 2024), multi-level institutional changes which is not an attempt to find solutions or introduce new terminologies.

This brief introduction is followed by a critical interpretation of transdisciplinary literature, presenting a comprehensive exploration of terminological inaccuracies. Following this, Section 3 scrutinises the conceptual fragmentation of key notions. Section 4 discusses notions towards a possible conceptual and theoretical JGT framework, while Section 5 encapsulates the core issues at hand and outlines potential avenues for further research.

2. TERMINOLOGICAL INEXACTITUDES

This section provides an overview of the terminological inexactitudes delineated in different official and scientific publications with a shedload of terms indicating the expected JGT. This includes but is not limited to: 'decarbonisation' (IPCC, 2018), 'low-carbon future' (European Commission, 2018), 'green economy' (European Commission, 2024), 'low carbon investment' (EIB, 2023), 'clean energy transition' (European Commission, 2019a), 'Carbon-neutral Transformations', 'Transition towards net-zero', 'Transformation towards a net-zero' (European Commission, 2018), and 'Sustainability Transition' (EEA, 2020).

Terminologies such as Green Transition (European Commission, 2019a) and Just Transition[4], including their plural forms as Green Transitions (Besley and Persson, 2023) and Just Transitions (Stark *et al.*, 2023), are interchangeably used in the academic literature, official documents, and policies. Similarly, are such metonyms as Green Transformation[5], Just Transformation (Bennett *et al.*, 2019), Fair Transition (Council of the European Union, 2022), Sustainability Transitions (EEA *et al.*, 2019), Fair Green Transition (UNDP, 2023), and Clean, Just, and Competitive Transition (European Commission, 2024). In different cases, it is quite common to find

[4] On the origins of the Just Transition, see: Trade Union Congress, 2012.

[5] Between Green Transitions and Transformations, see: Scoones *et al*., 2015; Bąk and Cheba, 2023.

other combinations such as Green and Just Transition (OECD *et al*., 2022), Green and Just Transitions (Langthaler *et al.*, 2021), Just and Green Transition (Huq and Khan, 2023), Green Just Transition (EIB, 2021), and Just Green Transition (Tavares, 2022). These terminological ambiguities reflect different conceptions (Gerrard and Westoby, 2022), the EU has been promoting 'A Green Transition' terminologically singular, separated but connected – at least at a policy level – to 'A Just Transition', rendering a notion of singularity not only in the terminological and philosophical senses but also in the ideological and political ones (Shaker and Persico, 2024).

In various publications, two umbrella terms and near-synonyms are indifferently used to express almost the same expected "Transition(s)" and "Transformation(s)", both in their singular and plural forms. This triggers the question whether the roadmap to climate neutrality is set as a singular phase of transition or as a series of parallel or simultaneous phases of transition(s) to reach a state of a sea change which is expected to happen at a continental scale in the quarter of a century. Both terminologies are synonymously and supplementary used to denote institutional change; nonetheless, they are contradictorily used by various scholars (Child and Breyer, 2017) simply because they hold different interpretations across various disciplines and scholarships (European Parliament *et al*., 2023). This issue becomes even more pronounced when examining the conceptualisation of the JGT, as there remains a lack of coherence in the theoretical and practical application of both terms (Hölscher *et al.*, 2018), especially within the framework of the European Green Deal (European Commission, 2019a; Heyen *et al*., 2020). Additionally, the combination of the three terms 'Just,' 'Green,' and 'Transitions' into a compound concept has also created some research noise (Shaker and Persico, 2024), for that reason, it has been found relevant to investigate the semantic interpretations of different conceptual compositions as structured in table (1):

Table 1. Terminological Inexactitudes of various Conceptual Combinations related to the Just, Green, Transition

Composition	Denotation	Connotation
Green and Just Transition	The 'Green' is added to the concept of the 'Just Transition;' the Green and the Just as two separate but related aspects of a singular transition.	Prioritise the Just Transition but also ensure that it is addressed environmentally.
Green and Just Transitions	The 'Green' is added to the concept of the 'Just Transition;' the Green and the Just as two separate but related aspects of plural transitions.	Plural: prioritising the Just Transition but also ensure that it is addressed environmentally.
Just and Green Transition	The 'Just' is added to the concept of the 'Green Transition;' the Just and the Green as two separate but related aspects of a singular transition.	Prioritising the Green Transition but also ensuring that it is addressed justly.

Composition	Denotation	Connotation
Green Just Transition	The Green and the Just are two non-separated aspects of a singular transition; with more emphasis on the Green one.	Addressing the Green and Just dimensions in a mutually reinforced and integrated manner but through a singular transition path prioritizing the environmental dimension.
Just Green Transition	The Just and the Green are two non-separated aspects of a singular transition; with more emphasis on the Just one.	Addressing the Just and Green dimensions in a mutually reinforced and integrated manner but through a singular transition path prioritizing the Just dimension.
Just Green Transitions	The Just and the Green are two non-separated aspects of plural transitions; with more emphasis on the Just one.	Plural: both the Just and the Green dimensions are mutually and equally reinforced and integrated.

Source: own work.

Far from an exhaustive literature review, this table underscores the critical role of semantics in shaping the tendency to use terms and terminologies interchangeably, often under the assumption that their meanings are universally understood and self-evident. However, the inconsistent usage or continuous (re)invention of terminology without first establishing precise conceptual definitions paradoxically leads to unavoidable ambiguities affecting both theoretical frameworks (Moroni and De Franko, 2024) and policy implementation.

Policy formulation often relies on terminology that is semantically similar or inherently ambiguous. A single term can encompass multiple interpretations (Eddington and Tokowicz, 2015) and carry layers of ideology (Žižek, 2014). While transparency, accuracy, and linguistic simplicity (Moroni *et al*., 2020) are essential, interpretation must remain open, flexible, and adaptable to ensure broad societal comprehension and engagement. This necessitates a shared understanding of definitions and concepts, particularly given that notions of justice are inherently relatively shaped by diverse ideological, institutional, and geographical contexts (Webber, 2012). Consequently, achieving terminological convergence in the discourse on the JGT is not merely a matter of nomenclature, onomastics, or philosophical debate. Rather, it underscores the political imperative of aligning expectations with tangible outcomes (Campbell, 1971). However, persistent ambiguities and inconsistencies pose risks, potentially hindering effective communication, conceptual clarity, and the practical implementation of policies (Benson, 1971; Riggs, 1979).

In conclusion, while this section has revealed not only inexactitudes in the use of terminology but also some theoretical gaps, the following section probes the conceptual fragmentation caused by these inexactitudes to establish a common ground for various conceptions.

3. WHAT IS BEHIND: CONCEPTUAL FRAGMENTATION

This section critically examines the conceptual fragmentation surrounding the JGT. It not only engages with discourses on social, spatial, and environmental justice but also sheds light upon the ontological, epistemological, axiological, and etymological interpretations of 'Just' and 'Transitions' across various transdisciplinary scholarships.

To establish a shared conceptual foundation for the diverse interpretations outlined in the previous section, this study adopts an ontological stance of Bounded Relativism (Moon and Blackman, 2014). This perspective acknowledges the multiplicity of realities shaped by temporal and spatial contexts (Dọmingues, 1995), implying that notions such as Just, Green, and Transitions may be understood differently across time and space. Furthermore, the perception of a single reality varies across cultural, political, and ethical institutions, evolving in response to geographic, economic, and climatic conditions (Moon *et al*., 2016).

Examining the notion of justice, despite the vogue of social justice as a seemingly universal term (Huyser and Smit, 2015), it is a relatively recent construct compared to the broader concept of justice itself (Kraynak, 2018). The evolution of justice as a philosophical concept spans over two millennia, from its classical foundations in Plato and Aristotle to its theological and political refinement by Aquinas, Luigi d'Azeglio, and Serbati. Beyond Marx and Engels' accounts on justice (McBride, 1975; Gilbert, 1982), it took another century before the theorisations of Rawls (1971). Notably, another six centuries elapsed before the discourse on justice expanded beyond its social dimension to incorporate spatial considerations. This shift introduced new terminologies and conceptual frameworks, including territorial justice (Davies, 1968), territorial social justice (Smith, 2000), and spatial justice (Harvey, 1973a, 1973b), all of which remain active subjects of scholarly debate.

From a social standpoint, we are social as well as spatial and temporal beings (Soja, 2009); continuously constructing and reinforcing intricate networks of social relations (Velicu and Barca, 2020) within a space-time framework that is itself a socially produced construct (Harvey, 1990). From a spatial perspective, the notion of justice extends beyond mere spatial configurations, distributive mechanisms, and procedural fairness[6]. Neither societies nor spaces can be inherently just or unjust (Moroni and De Franko, 2024); rather, they emerge as dynamic arenas shaped by social interactions, power structures (Di Campli, 2018), and physical forms[7]. All these notions of justice or justness are more about how public institu-

[6] In the perspective of conceptualising the JGT, we think that the dimension of spatial justice ought to go beyond the theorisations on distributive and procedural justice. See: Soja, 2009; OECD and UNDP, 2020.

[7] Here, 'Space' is intended beyond its physicality, see: Lefebvre, 1974; Lefebvre and Nicholson-Smith, 2009.

tions define what is considered to be just (Rawls, 1971; Moroni, 2020, 2023a) and, accordingly, how to govern and to be governed; in other words, this is where the dimension of the governance[8] enters the equation.

Transitions in this context are institutional space-time changes; crucially fundamentally entailing ideological transformations within societies (Homer-Dixon *et al*., 2013). They encompass the paradox of 'unknown knowns' (Žižek, 2006), reflecting contested notions of justice (Tavares, 2022), and power dynamics. The complexity of defining these transitions – given their interwoven social, spatial, political, economic, and environmental dimensions – stems from their inherent non-linearity and uncertainties (European Parliament *et al*., 2023).

Transitions themselves cannot be judged as inherently just or unjust (Moroni and De Franko, 2024), nor can they be inherently green or *ungreen*. Rather, their operationalisation and implementation could be subject to relatively contextual monitoring and evaluation. From a Marxian perspective, transitions are expected to have socio-spatial-temporal products that might change over time (Holton, 1981; Acaroglu, 2020).

Transitions are socially produced in a specific time in a certain space and, therefore, are subject to social changes in space-time (Fuchs, 2019). Another crucial issue about transitions is that several approaches to the JGT have leaned towards rendering the dimension of justice as an institutionalised singular-pathed solution, leaving minor space to put into consideration the plural and multi-scalar nature of transitions (Kortetmäki *et al*., 2025).

Transitions could create or exacerbate existing socio-spatial inequalities (Velicu and Barca, 2020; Pesch, 2021), externalising the benefits from one context to another (Kanger and Schot, 2019) when considering that different individuals, communities, and regions could experience unequal access to essential services (OECD, 2018), amenities and opportunities[9]. This raises concerns about the notion of "leaving no one nor region behind," which is the 'polar star' of the JGT.

Socio-spatial and temporal disparities, including marginalisation (Bullard, 1990) and deprivation (Sen, 1999, 2009), persist across urban (Carmon and Fainstein, 2013) and rural (Nordberg, 2020) contexts due to differences in institutional capacity, infrastructure, public services, and resource distribution. Axiologically, the way JGT might be perceived today varies significantly depending on the context. What could be considered as *just*, and what could be operationalised and implemented in a capital city in Northern Europe differs markedly from a rural area on an island in the middle of the Mediterranean. In other words, this variation

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[8] The most tackling issue with advancing and achieving the JGT and the EGD is mainly about how these transitions are governed both at the EU level and that of the Member States. It is thus crucial to recall: Frantzeskaki *et al*., 2012; Morgan, 2006; Jones *et al*., 2020; Madanipour, *et al*., 2022.

[9] One risk in advancing JGT is creating or reinforcing social and territorial disproportions; see: Agyeman, 2008.

underscores the necessity of returning to foundational principles of justice and justness and critically assessing their relevance (Barry, 2005).

When not everything in the Green Transition is green (Osório, 2023), and not everything in the Just Transition is just (Schuster *et al*., 2023), conceptualising becomes an intricate process. From this perspective, we could assume that if everything is labelled as 'Just' and 'Green,' nothing is 'Just' or 'Green.' Drawing on Nietzschean determinate negation (1859), as interpreted by Žižek (2012), the very negation of a notion forms part of its identity – what is absent defines what is present. In this sense, JGT is not a universally accepted concept but rather a meta-concept. While the notions within JGT may serve as guiding principles and values[10], they do not fully encapsulate the substantive content of the concept itself (Pirie, 1983). Approaching JGT from a political philosophy (Moroni, 2025) perspective offers a critical lens through which one can examine the axiological and epistemological foundations of justice (Moroni and Weberman, 2016), good and bad governance, and the effects of the decisions we "decide to decide" (Miller, 2013) or those we "decide not to decide at all" (Dente, 2014).

Going beyond what is just and what is not – according to the revaluation of all values (*Umwertung aller Werte*) – values and principles ought to be first critically interpreted and questioned while considering the conditions and circumstances from which they have grown and under which they have developed and shifted[11]. Thus, conceptualising JGT requires interrogating values not as fixed truths but as historically and contextually contingent constructs shaped by the conditions under which they emerged and evolved (Phillips, 2023). In this respect, JGT can be set as the meta-narratives (Patterson *et al*., 2017) governing the operationalisation of the EGD through encompassing commonly accepted values of justice, ideally leading to operationalising green processes and hopefully just outcomes (Ansaloni and Tedeschi, 2016), in a utopic world, a just process steering a just product.

Under this light, JGT, could be seen at the same time as an objective, a process and a product of governance and decision-making processes. They pivot on multi-level transition governance (Crespy and Munta, 2023) and, more intriguingly, on a multi-level meta-governance framing (Jessop, 2004) where actors, interests (Taylor, 2009), and levels of decision-making within a specific geographic area or territory[12] are governed in a manner that aspires to be just. In conclusion, critically reflecting on their conceptual fragmentation is essential, particularly when shifting from conceptualisation to operationalisation. This applies not only to defining

[10] We advocate that JGT are ought to be a vessel of guiding principles rather than a set of indicators; see Abbott, 2014; Moroni, 2020.

[11] On "Nothing is True, Everything is Permitted" (*Nichts ist wahr, Alles ist erlaubt*), see Nietzsche, 1859.

[12] Connecting the notion of justice to both the territorial and governance dimensions; see Harvey, 1973a; Pirie, 1983; Bullard, 1990; Dikeç, 2001.

the term 'Just Green Transition' but also to recognising that multiple transitions are occurring simultaneously – none of which are entirely just, and all of which aspire to become genuinely green.

4. DISCUSSION: TOWARDS A THEORETICAL FRAMEWORK FOR THE JUST GREEN TRANSITIONS

After introducing the terminological inexactitudes and conceptual fragmentation, this section opens the discussion for some dimensions relevant to a possible theoretical framework for conceptualising the JGT and, accordingly, operationalising them.

As noted above, the term JTG is still undefined and needs to be explored transdisciplinary. Far from providing new definitions, we would prefer not to[13] use JGT as a synonym for existing concepts; we advocate reflecting on the different meanings and perspectives this possible meta-concept might have and the risks that its misuse might bring. The exigency to base the conceptualisation of JGT on a theoretical framework offers room to set the foundations before viewing the social, spatial, and governance dimensions of the JGT. It also helps to address the ontological and epistemological positionalities shaping and advancing the JGT.

A theoretical and conceptual framework of JGT ought to encompass the poly perspectivity and plurality associated with the broad spectrum of social and spatial contexts (Cedergren *et al*., 2022), we consider JGT as socio-spatial-temporal[14] that goes way beyond the frames of the Green Transition and the Just Transition. As mentioned, the growing attention on advancing the JGT by 2030 and achieving the EGD goals by 2050 in the absence of a unified operational framework is mainly caused by the variety of terminologies that have been introduced in the last years without clarifying the essential meaning of their notions, but rather it added to the existing complexities.

It is foundational to assert terminological distinctions reflecting the multiple realities of individuals, societies, communities, and regions, and precisely define what we intend by JGT: Just: according to whom it is Just, for who it is Just, and how far it is Just; Green: what truly is environmentally and ecologically friendly, and not just a replication of pseudo-fashionable labels; Transitions: considering the multiplicity and plurality (Davidoff, 2007) and the various paths to achieve the same goal, most importantly, defining whether JGT is a process or product, is it

[13] As from Melville, 1853, and according to Žižek (1992), "is not that the predicate is denied, it is that a non-predicate is asserted". See also: Desmarais, 2001; Whyte, 2009.

[14] Here the transitions are ought to be considered through their space-time circumstances as well: where they are taking place and when they are happening; see: Soja, 1980.

just a transitional phase – but towards what exactly – and/or is it a whole transformation. As an umbrella of multiple existing concepts, JGT is more than the sum of their parts. Yet, developing a theoretical framework for a notion that remains insufficiently conceptualised highlights the ongoing confusion, both in the conceptualisation of JGT and in its translation into policy frameworks.

One risk we see is related to the priorities these notions might imply. Indeed, sometimes the priority accent goes to the just dimension, sometimes to the green, and sometimes to transition(s), depending on the nature of the policies to be designed. Although these varieties, from a semantic perspective, can be understood as a way of enriching the concept, from an operative one, this could be counter-productive when addressing decision-making processes. In this respect, we advocate the importance of identifying a common combination, we suggest "Just Green Transitions" reflecting plurality, relativity, and inclusivity in policymaking. We propose the term JGT as a meta-concept, a concept of concepts (Marradi, 2012) crucial for rational abduction (Brogaard, 1999) that implies complex but possible transitional processes.

JGT embodies a rich tapestry of interconnected and concurrent concepts. From our perspective, it is characterised by a multi-faceted, simultaneous, multi-level, multi-sectoral, and multi-scale nature. The term 'multiple' encapsulates the coexistence of both 'just', 'green', and 'transitions' concepts. This implies that policies addressing these notions should collectively tackle the interconnected challenges, carefully considering potential hidden effects. The adjective 'simultaneous' reflects the reality that society confronts diverse challenges concurrently. Consequently, actions cannot be taken in isolation; instead, a tailored approach in both space and time is imperative. Furthermore, the terms 'multi-level,' 'multi-sectoral,' 'multi-actoral,' and 'multi-scale' emphasise the absence of a singular, universally applicable solution. Ultimately, tackling these challenges requires a multi-level meta-governance framework (Jessop, 2004) ensuring a multiplicity perspective while maintaining conceptual and operational coherence.

5. CONCLUSION

Through an exploratory approach, this contribution aimed at probing the terminological uses that might result in risking the conceptualisation and theorisation of the so-called JGT. A critical interpretive review cross-cutting academic and policy domains highlighted some terminological inconsistencies that have caused some 'research noise,' for which the operationalisation of the transitions might face difficulties both at a theoretical level and a practical one. The contribution explored the heterogeneity of the terms and concepts related to JGT, highlighting the importance

of a commonly agreed-upon definition of a JGT meta-concept. The notions contained under the umbrella of the JGT have been explored throughout their socio-spatial justice, and transitioning dimensions. Additionally, it analysed the importance of considering spatial and social justice in space and time while considering the JGT as an issue of governance and a matter of political philosophy. It reflected, as well, on the consequences of the relativity, multiplicity, and simultaneity of the transitions. Consequently, conceptualising JGT ought to consider the following dimensions:

– Just: socio-spatial-temporal justice matters; policies, programmes, plans, and relative actions should seriously "leave no one or region behind" through understanding the relativity and plurality of territorial and social circumstances.

– Green: there is no credible alternative in safeguarding all species, thus considering what is truly environmentally friendly and not replicating pseudo-fashionable terms.

– Transitions: there are multiple and simultaneous phenomena that ought not to be viewed from a singularity point of view but a holistic and multi-perspective approach is better considered.

In this contribution, our primary focus has been to critically examine the inaccuracies and fragmentation surrounding the conceptualisation of JGT. However, there remains a wealth of avenues for further exploration. At this point, it has become intriguing to (i) understand how to operationalise the JGT from a Pan-European perspective while considering the various Member States' levels of preparedness, institutional capacities, and socio-political and environmental challenges, and (ii) encompassing a multi-level meta-governance approach (Jessop, 2004) offering an inclusive governance perspective across scales, sectors, actors, and levels, of decision-making.

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CROSS-BORDER TRADE IN THE EUROPEAN ECONOMIC CONVERGENCE SYSTEM

Abstract. The article examines cross-border trade dynamics within the framework of European economic convergence, focusing on trade between Ukraine, Poland, Romania, Slovakia, and Hungary. It aims to shed light on trade trends, implications in the context of economic integration, and convergence efforts. The study provides a comprehensive analysis of trade channels, outlining the economic convergence goals and principles within the European context and highlighting the importance of trade. It explores specific trade channels between Ukraine and its neighbouring countries, analyses data, and assesses the impact on economic development and convergence efforts. The findings contribute to understanding the role of trade in promoting cohesion.

Key words: trade, economic convergence, neoconvergence, Ukraine, European Union.

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1. INTRODUCTION

In the context of globalisation and increasing integration processes, the development of the foreign trade sector plays a crucial role in enhancing the competitiveness of national economies. The foreign trade sector serves as a vital conduit for economic growth, facilitating the flows and exchange of tangible and intangible assets, natural resources, goods and services, and financial and intellectual capitals across borders (Feenstra and Taylor, 2021). By engaging in international trade, countries can utilise new markets, access resources and technologies, and foster economic interdependence (Krugman *et al.*, 2022). Moreover, a thriving foreign trade sector promotes job creation, fosters innovation, and encourages the development of domestic industries. It also enables the diversification of revenue streams and reduces reliance on a single market. Therefore, the act of prioritising the development of the foreign trade sector is essential for countries seeking to bolster their competitiveness in the global marketplace.

As globalisation progresses, the boundaries that once defined trade relationships between nations become increasingly fluid. The driving forces behind trade border blurring include advancements in technology, the liberalisation of trade policies, and the growth of global value chains (Baldwin, 2016). These factors have facilitated the integration of economies and the expansion of cross-border trade activities. The impacts of border blurring lie in economic, social, and political lenses, in particular the benefits of increased market access, enhanced competition, and the potential for economic growth (Ohmae, 2008). It depends on regulatory harmonisation, protectionism, and the erosion of national sovereignty that arise as a result of increased economic interdependence. Additionally, the convergence of cross-border trade depends on the role of international organisations, such as the World Trade Organization (WTO), in managing and governing the evolving landscape of global trade.

Overall, articles underscore the significance of implementing leading management practices to enhance cross-border trade between nations. They highlight the necessity of fostering collaboration among diverse stakeholders, such as governments, producers, researchers, and consumers, to address obstacles and capitalise on the opportunities presented by cross-border cooperation. Additionally, the articles indicate the substantial role of public policy in fostering economic activity and driving innovative approaches for managing cross-border trade flows. A comprehensive literature review demonstrates that the expansion of cross-border business activities across various domains is vital for ensuring sustainable economic development for participating countries. The studies reviewed underscore that integrating sustainable practices and advanced technologies to enhance the efficiency and sustainability of the real economy sector can motivate policymakers and stakeholders to formulate effective strategies for facilitating cross-border trade.

While existing literature has extensively explored the general dynamics of international trade and economic integration (e.g., Krugman *et al.*, 2022; Baldwin, 2016), there is a notable gap in research that would address the role of cross-border trade in the context of European economic convergence, particularly focusing on Ukraine and its neighbouring EU countries. This gap is especially significant given Ukraine's ongoing efforts towards European integration and the unique challenges and opportunities presented by its geographical and economic position. However, Ukraine's progress in implementing the Association Agreement with the EU, gaining candidate status for EU membership, and navigating modern geopolitical realities necessitates the development of robust mechanisms for organising horizontal cooperation with strategic partner countries.

The article aims to provide an in-depth analysis of the current state of economic cooperation between Ukraine and its neighbouring countries, particularly EU members, and assess the prospects for its further development. By examining recent trade data, policy developments, and economic indicators, this study provides novel insights into:

i. the specific trade channels and patterns emerging between Ukraine and its EU neighbours in the context of the Association Agreement and Ukraine's EU candidate status,

ii. the impact of these trade dynamics on economic convergence efforts and regional development, and

iii. the challenges and opportunities presented by cross-border trade for Ukraine's economic integration with the EU.

Furthermore, this research contributes to the literature by offering a timely analysis of how recent geopolitical events, including the war of 2022, have shaped cross-border trade patterns and economic convergence efforts in the region. By addressing these aspects, this article aims to provide policymakers, researchers, and economic practitioners with valuable insights into the role of cross-border trade in promoting economic convergence and regional integration between Ukraine and its EU neighbors. The findings of this study will contribute to a better understanding of the complexities involved in economic integration processes and inform strategies for enhancing cross-border cooperation and trade facilitation in the region.

2. BACKGROUND

The review of the theoretical perspectives which underpin cross-border trade and economic convergence covers a wide spectrum of economic theories. This extended analysis recommends combining traditional theories and classical ones with the recent advances in order to have a complete comprehension of the patterns of cross-border trade in the conditions of the European economic convergence. The foundations of

international trade theory, laid by Ricardo's (1817) comparative advantage and later expanded by the Heckscher-Ohlin model (Ohlin, 1933), continue to inform our understanding of trade patterns. However, recent research has extended these theories to account for the complexities of modern global trade networks. Holsti's comparative studies (1973) have shed light on the factors that contribute to unity and disintegration within alliances, offering a comprehensive analysis of the mechanisms that shape cooperation and its limitations. Liska's research (1968) focused on the interdependence of nations within alliances, exploring the boundaries and constraints that impact their cooperative efforts. Wolfers' essays (1962) delved into the discord and collaboration inherent in international politics, examining the multifaceted nature of conflicts and the possibilities for cooperation. Furthermore, they underscored the significance of transborder cooperation in addressing shared challenges and fostering positive diplomatic relations. The approaches presented in these papers contribute to the broader academic discourse on international relations, by deepening our understanding of cooperation in international alliances and transborder cooperation, and enhancing our ability to navigate complex global challenges and promote peaceful and productive relationships among nations. Guo (2015) has explored the theoretical foundations and methodologies of cross-border management, particularly in the context of globalisation and the development of cross-border cooperation, and delved into the challenges and approaches to effectively manage and foster development in transborder regions. Johnson (2009) focused on the concept of cross-border regions and territorial restructuring in Central Europe, in particular examined the potential for creating larger transboundary spaces and emphasized the importance of collaborative initiatives for regional development and integration. Löfgren (2004) examined the transformation of cross-border regions in Scandinavia, highlighting the processes of regional development, joint projects, and border crossings in these regions, shedding light on the dynamics and impacts of transborder cooperation.

The New Economic Geography (NEG) framework, pioneered by Krugman (1991) and further developed by Fujita *et al.* (1999), offers valuable insights into the spatial distribution of economic activities. Recent contributions by Brakman *et al.* (2019) have applied NEG concepts to analyse the effects of European integration on regional economic structures. Their work is particularly pertinent to understanding how cross-border trade affects economic convergence within the EU and its neighbouring regions. Recent global events, including the COVID-19 pandemic and geopolitical tensions, have highlighted the importance of economic resilience in international trade. Bonadio *et al.* (2021) have examined how global supply chain disruptions affect economic outcomes, providing insights into the vulnerabilities and strengths of different trade structures. Capello *et al.* (2018a, 2018b) have analysed the impact of cross-border cooperation programs in the EU, finding positive effects on regional growth and convergence. Their work provides a framework for understanding how similar initiatives might benefit Ukraine and its EU neighbours.

Campos *et al.* (2019), and Dobrzanski and Olszewski (2019) in their researches have arrived at a conclusion that the EU enlargement has proven advantageous for its Member States, particularly the nations of Central and Eastern Europe, as well as for Europe as a whole. They noted that this expansion has generated fresh prospects for addressing critical issues such as aging populations and intensified economic competition with the United States. Alexa *et al.* (2019) have explored the significance of regional competitiveness within the current era of globalisation. They argue that regional competitiveness plays a crucial role in bridging the gap between firm competitiveness, national competitiveness, and the overall prosperity of a country's citizens. In the context of economic growth, regions are viewed as the fundamental units for wealth creation and pursuing growth, particularly within the EU. Enhancing the competitiveness and innovation of regions is considered a vital step towards achieving social cohesion, prosperity, and the desired convergence. According to Kitson *et al.* (2004), the subject of regional competitiveness is not only academically debated but also holds significant importance in policy discussions and practical implementation.

Thu and Diep (2023) discussd the benefits and challenges associated with cross-border trade based on exchanging trade-related data and information on custom in Vietnam (exemption from the requirement to physically present goods; exemption from the need for written signatures; establishment of institutional and operational coordination with border agencies); in particular they have identified improved trade facilitation, reduced transaction costs, and increased transparency as potential advantages. However, they also acknowledged potential obstacles such as insufficient technological infrastructure, limited digital literacy, and data security concerns that need to be addressed.

Bilorus (2015) has emphasized that neoconvergence represents a complex global process of convergence, interdependence, and co-development among similar market-based systems with varying levels of civilization, economic, technological, and socio-cultural development. The processes of global integration and convergence involve the convergence of opposing political systems (capitalist and socialist) alongside the new economic neoconvergence of similar market systems at different developmental stages. The transition from industrial capitalism to the corporate-monopoly post-industrial stage has paved the way for contradictory phenomena such as market fundamentalism, globalisation, global integration, neoconvergence, and the establishment of a globally integrated system – the world-system of globalism. At the core of this global economic system lies the global financial system, giving rise to unprecedented processes of financialisation in economic development and malignant hyper-financialisation in global reproduction.

This expanded theoretical review synthesizes classical trade theories with recent developments in economic geography, convergence studies, and institutional economics. It provides a robust framework for analysing cross-border trade dynamics

between Ukraine and its EU neighbours within the context of European economic convergence. The integration of these theoretical perspectives offers a nuanced understanding of the complex interplay between trade, institutional quality, and economic development, crucial for informing policy decisions and future research directions.

3. METHODOLOGY

The main principles and content of Ukraine's foreign trade relations with its neighbouring EU member countries were revealed in the study using scientific methods. Various scientific methods of analysis, synthesis, induction and deduction, abstraction, search, comparison, and generalisation were used, as well as statistical and analytical methods of researching foreign economic activity, which are based on a statistical sample of the main agencies – the State Statistics Service, the State Customs Service, and the National Bank of Ukraine. When conducting an analytical study and analysis of trade between countries, the authors used methods of grouping, analysis and synthesis, graphic-economic, and statistical methods. The trends of development and foreign economic security of the country were determined by the methods of induction, deduction, comparison, observation, and measurement; analysis and synthesis, analytical and statistical – in a comprehensive assessment of the current state of export-import operations of countries; SWOT analysis was used to identified opportunities, threats, strengths and weaknesses of cross-border trade of Ukraine, provided recommendations for improving the foreign trade development strategy. To develop practical recommendations for improving the implementation of this strategy, the authors used a systematic method and tools of financial and strategic analysis. The applied methods made it possible to reflect the state's strategies for strengthening the export potential for the formation of foreign exchange revenues for the budget of Ukraine and to contribute to a further analysis of this issue, which requires constant monitoring, compliance, and response in connection with the worsening of the global economic and geopolitical situation.

4. PREREQUISITES FOR UKRAINE'S FOREIGN TRADE UNDER EUROPEAN CONVERGENCE: AN OVERVIEW

The period of systematic economic transformation of Ukraine is characterised by significant changes in foreign trade activity, which have diverse implications for economic security. The geographical proximity and cultural similarities provide a strong foundation for trade growth to Poland, Romania, Slovakia, and Hungary.

Hence, the analysis of trends and developments in the realm of foreign trade is of utmost importance for making effective managerial decisions and introducing well-founded corrections to the country's economic policy. Analysing the trade dynamics within Ukraine's trade relations with its neighbouring countries provides valuable insights into the current state of affairs and highlights areas for potential growth and collaboration, identifies various opportunities and challenges. Moreover, within the framework of implementing the Association Agreement between the European Union and Ukraine, the convergence of trade standards, liberalisation of customs policies, and investment in infrastructure development create a business-friendly environment. In the context of the diversification of Ukrainian production and expanding into the European market, which is related to number of challenges that country faces in achieving these goals, potential directions for solving the outlined problems and political recommendations for the effective implementation of the Association Agreement are necessary.

Within the European context, economic convergence refers to the process by which less developed economies within the European Union (EU) strive to narrow the gap with their more advanced counterparts. This goal is enshrined in the EU's principles and objectives, notably outlined in the Treaty on European Union. Here are some key goals and principles:

1. The Single Market is designed to facilitate the frictionless movement of goods, services, capital, and labour across borders. By eliminating trade and investment barriers, nations can take advantage of economies of scale, heightened competition, and improved specialization, ultimately resulting in economic expansion and convergence.

2. The Economic and Monetary Union (EMU) was formed through the Maastricht Treaty with the objective of introducing a single currency (the euro) and harmonising economic policies across Member States. Convergence criteria, including inflation rates, public debt, and budget deficits, were established to guarantee the stability of the eurozone and promote alignment among member economies.

3. Cohesion policy aims to reduce economic and social disparities among regions by providing financial assistance to less developed areas. Funds are allocated to support infrastructure development, innovation, education, and job creation, thus promoting economic convergence across the EU.

4. Cross-border trade and cooperation play a vital role in fostering economic integration and convergence within the EU. Collaborative initiatives, such as joint infrastructure projects, research partnerships, and trade agreements, can enhance economic ties between regions, promote specialisation, and facilitate the transfer of knowledge and technology.

5. Economic convergence should be pursued in a sustainable manner, considering environmental, social, and governance matters. Policies aimed at promoting sustainable growth, tackling climate change, and ensuring social inclusion can contribute to long-term economic convergence and prosperity.

Economic convergence within the European context is guided by the principles of market integration, policy coordination, financial assistance, structural reforms, and sustainable development. Cross-border trade and cooperation play a crucial role in this process by promoting economic integration, enhancing competitiveness, and fostering shared prosperity among EU Member States.

The net export balance plays a significant role in impacting a country's balance of payments, its foreign exchange market dynamics, exchange rates, and gross international reserves. It also influences the country's ability to maintain economic independence, sustain external debt at a safe level, and avoid reaching a critical level of borrowing on the global financial market. Consequently, it is crucial for state economic policy to effectively manage the export and import activities of economic entities at the macro level. This is necessary to maintain a rational product structure and achieve a favourable balance of foreign trade for the economy.

Cross-border trade of Ukraine remains relevant in modern realities and has great potential for development, especially in the context of the EU integration of Ukraine and was granted EU candidate status, changes in the geopolitical environment, and the Russia-Ukraine war. However, foreign economic activity of Ukraine is characterised by number of problems that complicate the development of export and import of goods and services in recent years. The main ones are: dependence on energy imports, insufficient export diversification, trade barriers, high transport costs, corruption risk, and political instability.

We consider it expedient to conduct a SWOT analysis of strengths and weaknesses in cross-border trade of Ukraine on its way to convergence to the EU, with subsequent identification of its development potential and potential threats (see Table 1).

Table 1. SWOT analysis in cross-border trade of Ukraine on its way to convergence to the EU

Strengths	Weaknesses
Geographical location of Ukraine, which provides access to various markets, significant transit potential; Ukraine shares its border with four EU nations: Poland, Slovakia, Hungary, and Romania; access to the Black Sea through the ports of the Odesa region	Outdated infrastructure development strategy, low operating efficiency of existing logistic infrastructure, limited capacity of border crossing points, the need to modernize the railway infrastructure to meet EU standards
Agriculture and the potential for export of agricultural products. The status of a key supplier of agricultural products to the EU markets due to the increasing share of crop production in exports from 25.8% (2019) to 32.4% (2023), and exports of fats and oils from 9.5% (2019) to 15.6% (2023)	Low competitiveness of industries. Decrease in the share of steel products in exports from 23.5% (2021) to 10.8% (2023), the high energy intensity of production, the technological lagging

Strengths	Weaknesses
Natural resources potential (land, water, forest, recreational resources, significant mineral deposits)	High dependence on foreign markets and the economic situation
Expansion of trade agreements and partnerships with other countries	Lack of a stable and predictable trading environment
Partial integration into the EU system, Association Agreement EU-Ukraine, EU candidate status for membership	Imperfection and frequent changes of public policy and legal framework
Established business relations between domestic business entities and partners	Unstable economic situation, high inflation and low purchasing power
Availability of qualified workforce and engineering and technical potential	Complexity of doing business, low Doing Business rating and high Corruption Perceptions Index
Opportunities	**Threats**
Increase the EU share in Ukraine's foreign trade to 56.0% (2023), introducing new products to the markets	Economic and political instability in neighbouring countries
Development of trade routes and infrastructure to facilitate the transportation of goods, the successful operation of the Ukrainian sea passage, the enhanced capabilities of the Danube ports, and the development of dry ports along the western border	High competition in international markets
Stabilisation of the situation on the international commodity markets and rising prices for basic export commodities of Ukraine	Changes in trade policies in EU countries
Opening of new opportunities for private business participation	Strengthening measures to restrict imports in target countries for various reasons
Process of market liberalisation of transport (railway, aviation, port, road infrastructure) and further tariff liberalisation	Shortage of qualified personnel due to forced population migration
Full integration with the EU market	Unpredictable climatic changes and other force majeure circumstances
Enhancement of e-commerce and digital markets, including the eCustoms project implementation with Romania (2023), development of electronic document management, and automation of customs procedures	Expansion of the hostilities in the Russia-Ukraine War across the territory of neighbouring countries, the growing conflict between authoritarianism and democracy and turning it into the Third World War

Source: own work.

5. DYNAMICS AND TRENDS OF UKRAINE'S CROSS-BORDER TRADE IN THE CONTEXT OF EUROPEAN ECONOMIC CONVERGENCE

In light of the global challenges and the external threats that Ukraine has encountered in recent years, the matters of fostering partnership relations with European Union (EU) countries and enhancing international economic cooperation and cross-border collaboration have become paramount priorities. Since Ukraine has strategically embraced the European trajectory for its economic development, it has embarked on a comprehensive reform agenda aimed at aligning its economic systems, regulations, and standards with those of the European Union. Furthermore, Ukraine has been actively participating in various EU integration initiatives and programs, seeking to enhance its economic cooperation with EU Member States. Through bilateral trade agreements, investment facilitation mechanisms, and joint research and innovation projects, Ukraine aims to deepen its integration with the European economic space and leverage the benefits of market access, technology transfer, and knowledge exchange.

5.1. Economic indicators and their impact on convergence processes and efficiency of cross-border trade

The economic landscape of Ukraine has experienced significant transformation over the past few years. Following a deep crisis in 2014–2015, the country has exhibited steady growth since 2016, evolving from a predominantly producing economy with a focus on competitive products in developing countries to one capable of competing in advanced markets. Ukraine has also enhanced its appeal for business development and investment opportunities. Regardless of encountering both external and internal challenges, the period between 2016 and 2018 witnessed a gradual recovery. However, economic growth has been subdued, with GDP in 2019 reflecting a 5.6% decrease compared to 2013. During a challenging period for the country, significant transformative changes occurred. The country faced external pressures such as military and trade aggression from Russia, while simultaneously grappling with internal contradictions that impeded progress. The pandemic's impact on industrial production in Ukraine has resulted in decreased demand for goods and raw materials from high-income countries and disruptions in value chains. These disruptions stemmed from delays in the supply of necessary components and supplies from more technologically advanced countries, restrictions on the movement of goods and people, challenges in worker mobility, and financial constraints affecting normal production processes. Neither the economy, government or society were adequately prepared for swift changes, resulting in a slowdown. Despite these challenges, Ukraine has initiated the process of economic recovery.

Ukraine's GDP (Fig. 1) in 2020 decreased by 3.8% due to the pandemic shock, but in 2021, it grew by 3.4% driven by strong consumer demand, increased investment, and a record harvest. However, several factors have hindered economic recovery, including high energy and raw material prices, supply shortages, the impact of a poor 2020 harvest, slow recovery in the service sector, limited production capacity due to renovations, and accelerated fiscal consolidation. Notably, public and private consumption have played a significant role in driving economic recovery, distinguishing this crisis from previous ones.

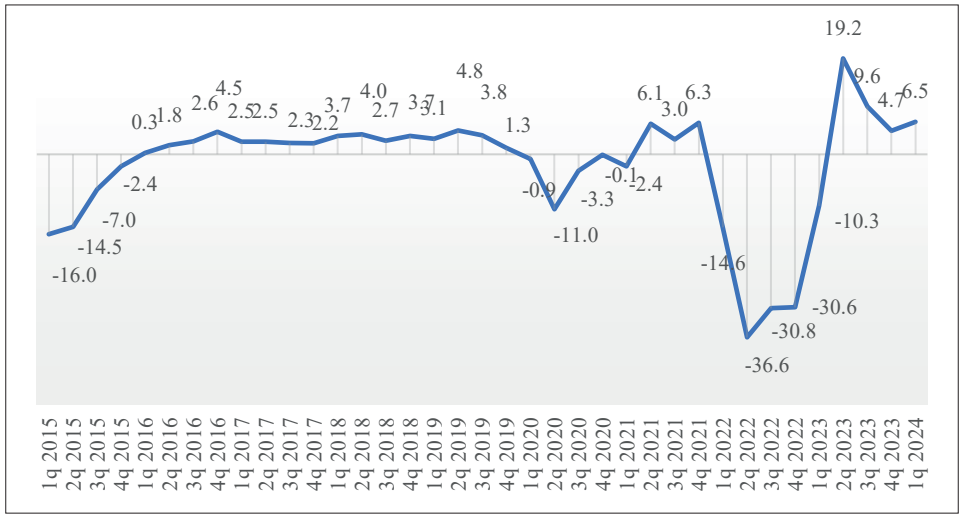

Fig. 1. Dynamics of Ukraine's real GDP from January 2015 to March 2024, %

Source: own calculations based on open data by State Statistics Service of Ukraine.

In 2022, Ukraine experienced a substantial economic contraction of nearly one-third. The primary contributing factors to this unprecedented recession included the aftermath of a large-scale invasion of Russian troops, which resulted in the devastation of infrastructure and production capabilities, disruption of logistical networks leading to decreased exports, diminished investment, weakened consumer demand due to significant migration, and notably reduced crop yields compared to the previous year.

In 2023, the economy rebounded with a 5.3% growth in real GDP, attributed to businesses and the population's adaptability to wartime conditions, along with a supportive fiscal policy backed by substantial international financing. Anticipated high budget expenditures and international aid at expected levels are predicted to drive a 3.6% growth in real GDP in 2024, though at a slower pace than in 2023 due to potential decreases in harvests and exacerbated labour market

disparities during wartime conditions. Subsequent years (2025–2026) are expected to see accelerated economic growth of 4–6% annually, driven by reduced security risks, improved consumer and investment sentiments, and the implementation of European integration reforms (NBU, 2024b). Post-war, the economy will continue to be supported by a soft fiscal policy, with a significant reduction in the budget deficit due to strengthened domestic resources.

5.2. Analysis of trade flows between Ukraine and neighbouring EU countries: structure and evolution

Below are the key statistics and details regarding Ukraine's trade performance for last years (Table 2). This information covers the country's export and import indicators, and specific changes compared to the previous years.

Table 2. The dynamics of trade indicators of Ukraine in 2000–2023, in millions USD

Indicators	2000	2005	2010	2015	2020	2021	2022	2023	*2023 to 2000, %*
Exports of goods	13,781.0	32,184.0	47,299.0	35,420.0	45,143.0	63,113.0	40,899.0	34,678.0	*151.6*
Exports of goods and services	18,358.0	42,626.0	65,626.0	47,862.0	60,707.0	81,504.0	57,517.0	51,093.0	*178.3*
Exports to GDP, %	56.7	47.8	46.5	52.6	38.8	40.8	35.8	28.6	–
Import of goods	13,907.0	34,377.0	56,896.0	38,875.0	51,921.0	69,755.0	55,551.0	63,473.0	*356.4*
Imports of goods and services	16,922.0	41,952.0	69,608.0	50,224.0	63,085.0	84,175.0	83,254.0	88,830.0	*424.9*
Imports to GDP, %	52.3	47.0	49.3	55.2	40.3	42.1	51.9	49.7	–
Net exports of goods	126.0	2,193.0	9,597.0	3,455.0	6,778.0	6,642.0	14,652.0	28,795.0	–
Net exports of goods and services	-1,436.0	-674.0	3,982.0	2,362.0	2,378.0	2,671.0	25,737.0	37,737.0	–
Net exports to GDP, %	-4.4	-0.8	2.8	2.6	1.5	1.3	16.0	21.1	–

Source: own calculations based on open data by Ministry of Economy of Ukraine, National Bank of Ukraine and World Bank.

In 2022, the EU remained Ukraine's largest trade partner, accounting for 53.6% of total trade, with exports to the EU at $30.6 billion (up by 1.1%) and imports falling 11.1% to $28.7 billion. Major imports included energy materials,

transportation equipment, and pharmaceuticals. Ukraine exported $9.2 billion in services globally, with the EU accounting for $3.4 billion (down by 22.3%), and service imports from the EU dropping 48.5% to $1.7 billion. In 2023, trade in goods with the EU accounted for 56.0% of Ukraine's total trade volume. The export of services to the EU in 2023 totalled $8.2 billion, representing 89.1% of the 2022 data, while the import reached $5.2 billion, amounting to 173.3% of the 2022 level, so the positive balance of trade amounted to $3.0 billion. Compared to the previous year, there was a decrease in export volumes of various goods in 2023: ferrous metals by 41.6%, electric machines by 34.9%, cereals by 8.8%, and fats and oils of animal or vegetable origin by 5.0%. Meanwhile, the import of means of land transport, except for railways, increased by 33.3%, ferrous metals and their products by 31.5%, nuclear reactors, boilers, and machines by 26.2%, and electric machines by 20.1%. The import of mineral fuels, oil, and products of its distillation decreased by 19.1%. Poland followed as Ukraine's second largest import partner (after China), holding a 10.3% share, equivalent to $6,347 million. Germany ranked next with $4,842 million (7.9%), followed by Turkey with $4,680 million (7.6%), while the United States contributed $2,842 million (4.6%). Other countries with notable imports included Bulgaria (3.6%), Italy (3.5%), Slovakia (2.7%), Romania (2.4%), and Spain (1.4%). Despite having smaller shares compared to the top three, these countries remained integral to Ukraine's international trade (Fig. 2). Additionally, in the first seven months of 2024, Ukraine's imports and exports gradually increased. The value of imports reached a record high in recent years, standing at $51.5 billion. However, despite this growth, exports only amounted to $32.3 billion, which is still below the level recorded in 2019.

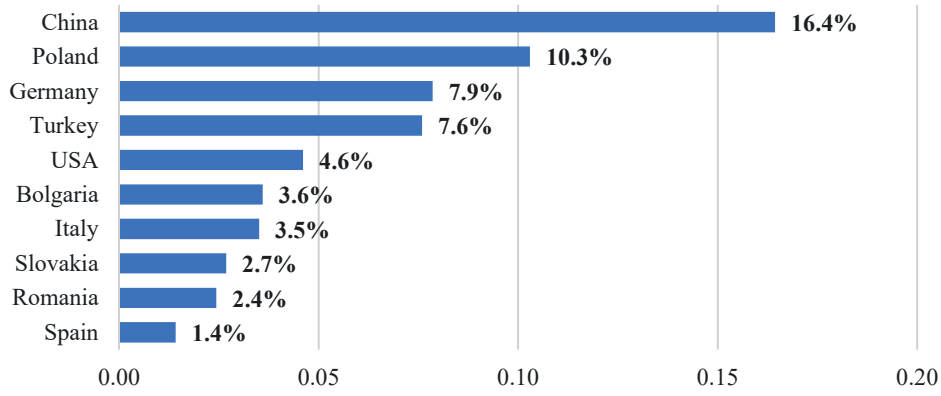

Fig. 2. Major importers of goods to Ukraine in 2023, as a percentage of the total volume

Source: NBU.

In 2023, the European Union further reinforced its position as one of Ukraine's major trading partners, comprising 47.5% of total imports, an increase from 44.5% in 2022. Imports from EU countries also experienced a substantial rise of $5.4 billion, marking a noteworthy 21.9% increase. Ukraine sustained its export momentum, making significant contributions to Poland (13.1% of total exports), followed by Romania (10.4%), and China (6.7%) (Accounting Chamber of Ukraine, 2024). This trend is expected to persist in the future. Instead of the projected growth of 3.8%, the export of goods decreased across all main product groups. According to the NBU and the Accounting Chamber, the share of food products and raw materials for their production in the total volume of goods exports increased from 57.2% in 2022 to 63.4% in 2023. Notably, sunflower oil, corn, wheat, soybeans, cake, rapeseed, and poultry meat were the primary products exported.

Between 2019 and 2023, there were significant shifts in Ukraine's export structure for major commodity groups, influenced by economic dynamics and external trade factors (Fig. 3).

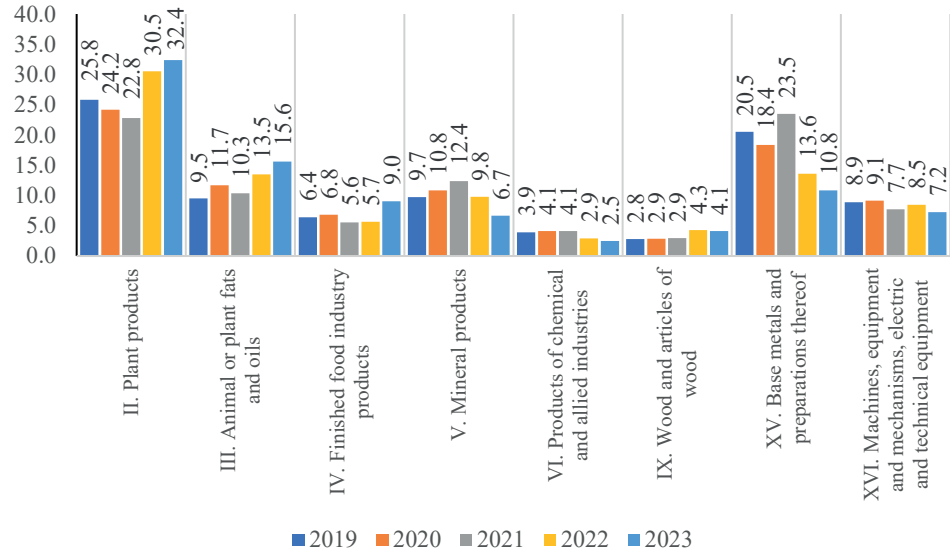

Fig. 3. Main commodity groups of Ukraine's exports in 2019–2023, as a percentage of the total volume

Source: State Statistics Service of Ukraine.

In 2023, Ukraine established the Ukrainian Maritime Passage to enable connections with the Black Sea ports of the Odesa region due to Russia's failure to fulfil its obligations under the Grain Agreement. Subsequently, there was a steady rise in grain exports and maritime exports of other goods, as well as a resumption

of growth in maritime imports. Nevertheless, Ukraine also encountered challenges from the Polish blockade of its land border in 2023, impacting Ukrainian exports and tax revenues from imported items.

The analysis aimed to examine the trade dynamics of goods imported and exported between Ukraine and its neighbouring countries (Poland, Slovakia, Hungary, and Romania) from 2019 to 2023. Furthermore, visual aids such as charts and maps were utilised to provide a clear representation of the geographical structure of imports and exports, illustrating the trade volume dynamics between these countries in 2019 and 2023 (Figures 4–7).

Based on the National Bank of Ukraine's data, in 2023, the balance of payments saw a remarkable improvement, with a surplus of $9.5 billion, as compared to a deficit of $2.9 billion in 2022. This improvement can be attributed to several key factors. Receipts from the IMF under the RFI Rapid Financing Instrument reached 3.3 billion SDRs, equivalent to $4.5 billion. Additionally, repayment of previous IMF loans amounted to $2.5 billion. In contrast, in 2022, receipts from the IMF under the RFI Rapid Financing Facility were 2.0 billion SDRs, equivalent to $2.7 billion, while loan repayments totalled $2.1 billion. This significant shift in financial dynamics exemplifies a positive trend in the economic landscape (NBU, 2024a).

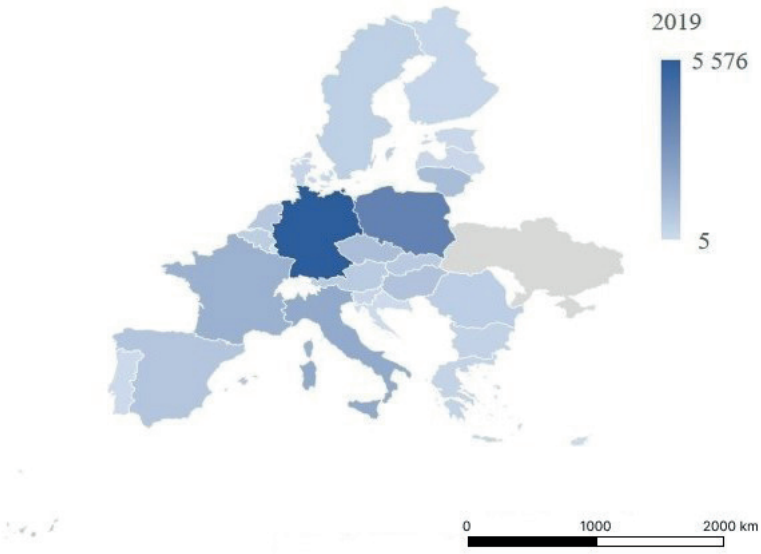

Fig. 4. Export of goods from EU countries to Ukraine in 2019, millions of USD

Source: own work based on open data by NBU.

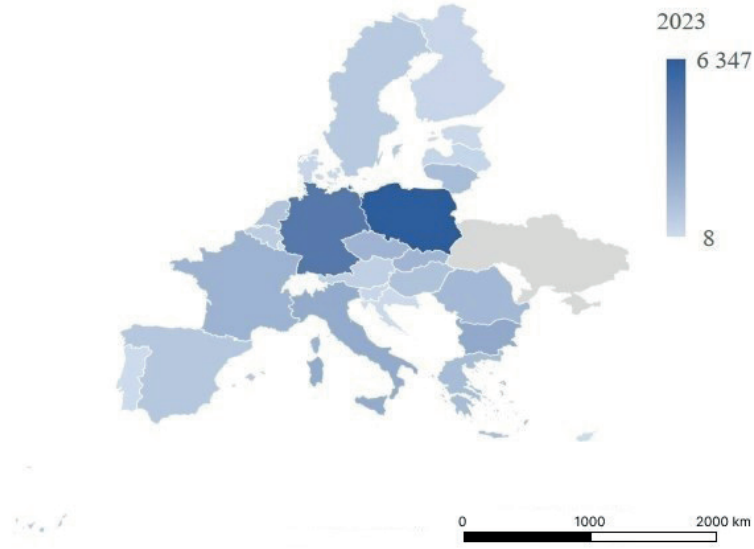

Fig. 5. Export of goods from EU countries to Ukraine in 2023, millions of USD
Source: own work based on open data by NBU.

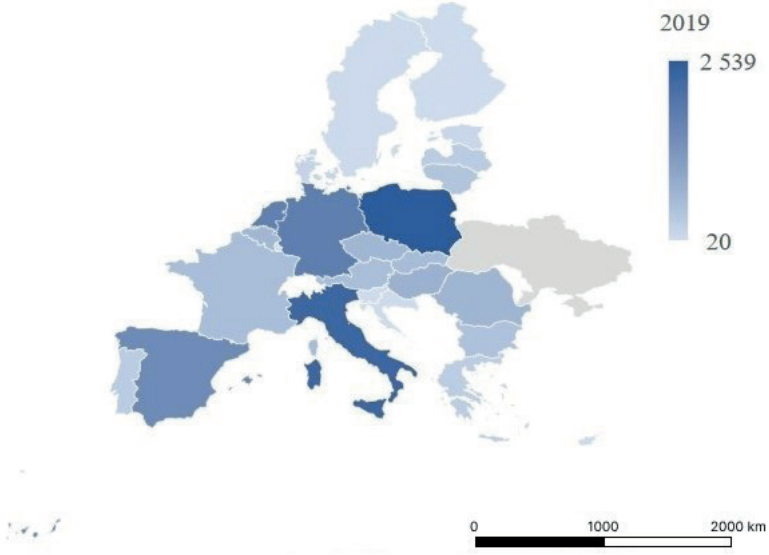

Fig. 6. Import of goods to EU countries from Ukraine in 2019, millions of USD
Source: own work based on open data by NBU.

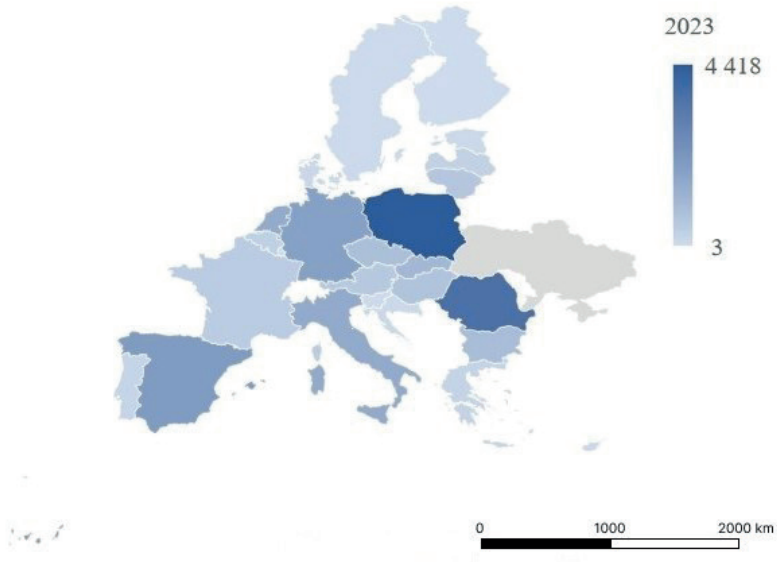

Fig. 7. Import of goods to EU countries from Ukraine in 2023, millions of USD
Source: own work based on open data by NBU.

In the last five years, an examination of Ukraine's trade ties with neighbouring countries shows noteworthy shifts in the expansion of exports and imports along with overarching trade volume trends (see Figures 8–11).

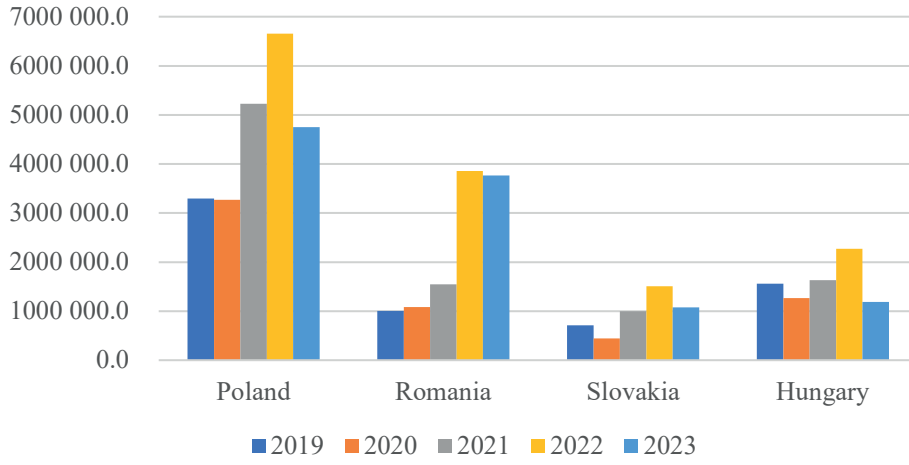

Fig. 8. Export of goods from Ukraine in 2019–2023 (thousands USD)
Source: own work based on open data by State Customs Service of Ukraine.

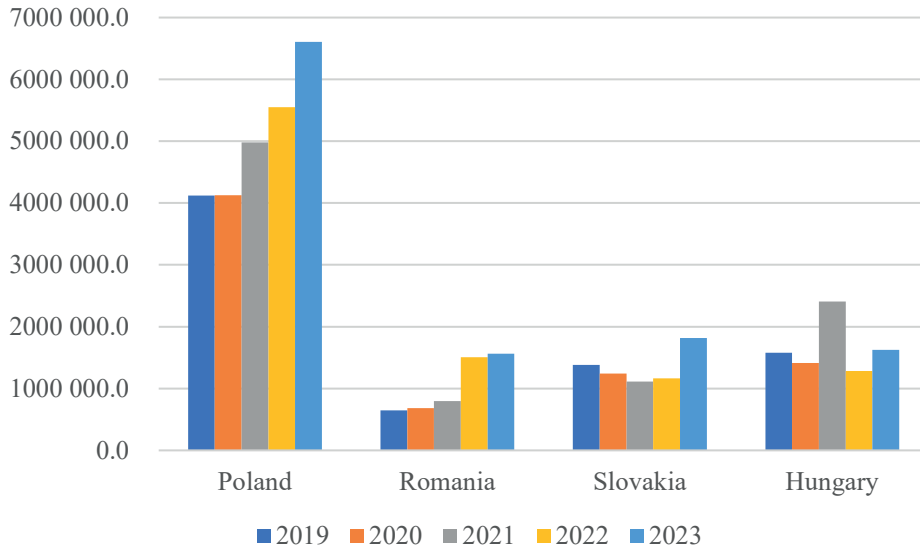

Fig. 9. Import of goods from Ukraine in 2019–2023 (thousand USD)
Source: own work based on open data by State Customs Service of Ukraine.

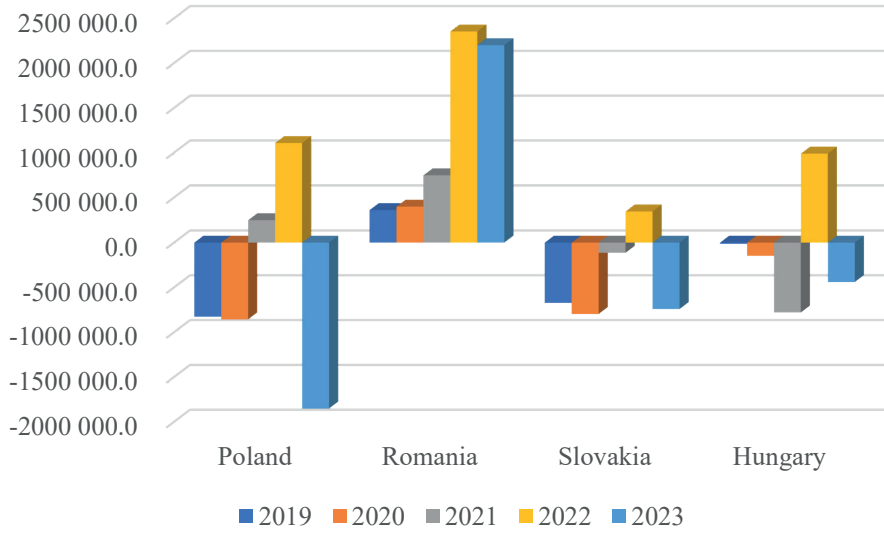

Fig. 10. Net exports of goods from Ukraine in 2019–2023 (thousand USD)
Source: own work based on open data by State Customs Service of Ukraine.

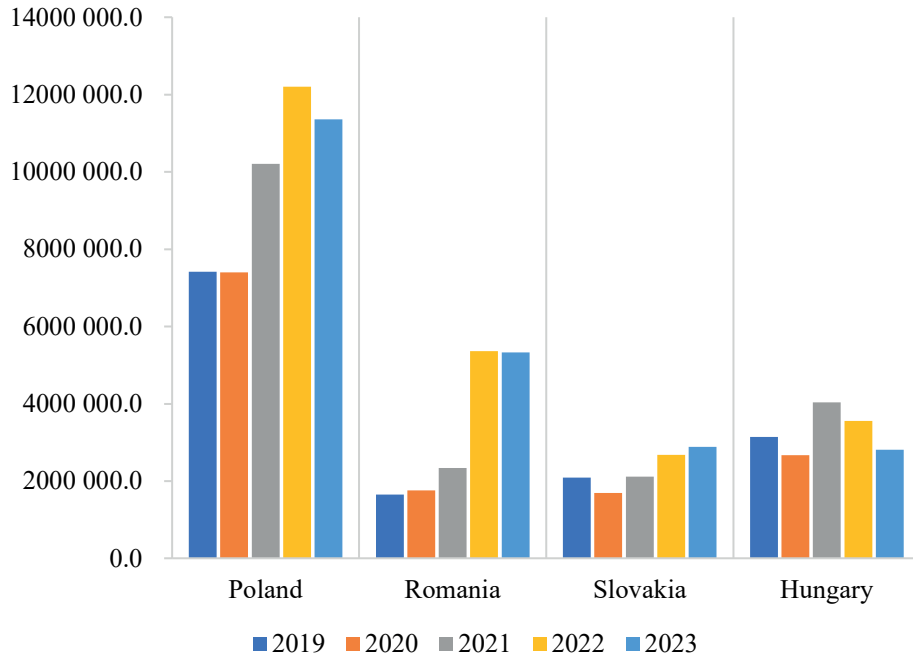

Fig. 11. Trade turnover in 2019–2023 (thousand USD)

Source: own work based on open data by State Customs Service of Ukraine.

The analysis of imports and exports between Ukraine and its neighbouring countries from 2019 to 2023 enables us to summarise the following trends:

1. Poland: Ukraine experienced a significant increase in exports, reaching a peak of $6.66 billion in 2022 but decreased to $4.75 billion in 2023. Imports showed steady growth, reaching $6.61 billion in 2023, with the trade balance remaining negative, recording a deficit of $1.85 billion in 2023. Trade turnover steadily grew to $11.36 billion in 2023.
2. Romania: Exports grew impressively from $1.00 billion in 2019 to $3.76 billion in 2023, while imports rose at a slower pace, reaching $1.56 billion in 2023. Net exports remained positive, reaching $2.19 billion in 2023, and the trade volume between the countries increased significantly to $5.33 billion in 2023.
3. Slovakia: Ukrainian exports increased less significantly from $709 million in 2019 to $1.07 billion in 2023, while imports also grew to $1.82 billion in 2023. Trade balance remained negative, with a deficit of $741 million in 2023, and trade turnover grew steadily to reach $2.89 billion in 2023.
4. Hungary: Exports grew to $2.27 billion in 2022 but decreased to $1.18 billion in 2023. Imports fluctuated, peaking at $2.41 billion in 2021, declining to

$1.62 billion in 2023. Trade balance was mostly negative, with a deficit of $440 million in 2023, and trade turnover fluctuated, reaching a peak of $4.04 billion in 2022 and declining to $2.80 billion in 2023.

On March 7, 2023, the State Customs Service of Ukraine and the Customs Administration of Romania launched a new eCustoms pilot project as part of the EU4Digital program funded by the European Union. The primary objective of the project is to streamline customs information exchange and implement advanced technologies for customs risk management. This pilot project will run from March to June 2023, and upon completion, recommendations will be made for the necessary legal, organisational, and technical changes to fully implement the program. The project makes use of innovative programs such as the Systematic Electronic Data Exchange (SEDE) program, which will enhance trade flow efficiency by identifying high and low-risk cargo, ultimately simplifying customs control and reducing border crossing times. Following the pilot launch and testing, the SEDE program will be customised to suit the specific requirements of each country (EUneighboursEast, 2023; EUforDigital, 2023).

The economic openness indicator is a crucial measure of a country's integration into the global economy through foreign trade, encompassing both exports and imports of goods and services. The indicator of economic openness is calculated using the following formula:

$$\text{Economic openness (\%)} = \frac{\text{Export} + \text{Import}}{\text{GDP}} \times 100$$

This indicator provides insight into several key aspects:

1. Level of integration with the global economy: a high score indicates heavy dependence on foreign trade, reflecting active engagement in both export and import markets.
2. Dependence on foreign markets: high reliance on exports and imports increases vulnerability to external shocks, such as fluctuations in global commodity prices, economic crises in other countries, or trade sanctions.
3. Domestic economy efficiency: in some cases, a high level of openness may reflect a weak domestic market or inadequate domestic demand, leading to the need to seek markets abroad.

As foreign economic security is integral to overall economic stability, the economic openness indicator plays a significant role. High openness can render an economy susceptible to various external risks, including global economic crises, exchange rate fluctuations, changes in global commodity prices, and political sanctions. Balancing openness and self-sufficiency is crucial. While openness offers the benefits of globalisation, excessive dependence on foreign trade can be precarious without adequate domestic reserves or stability measures.

To ensure foreign economic security, monitoring the balance of foreign economic relations, particularly the level of economic openness, is imperative. Additionally, ensuring that export and import operations do not result in a significant trade deficit is essential. Government agencies and analysts utilise this indicator to formulate strategies for economic development and safeguard foreign economic security. For instance, if the openness indicator is excessively high with heavy reliance on certain exports, the government might implement measures to diversify the economy, strengthen the domestic market, or reduce import dependence.

Consequently, the economic openness indicator is a critical tool for evaluating a country's foreign economic security and should be factored into economic decision-making processes.

The data in Figure 12 presents Ukraine's key economic indicators from 2008 to 2023, such as GDP, foreign trade, and the level of economic openness. The last indicator varied during this period, reaching the highest level of economic openness in 2011 (88.2%) and the lowest in 2023 (55.6%). This figure highlights the proportion of foreign trade turnover to GDP, indicating a significant reliance on international trade in 2023.

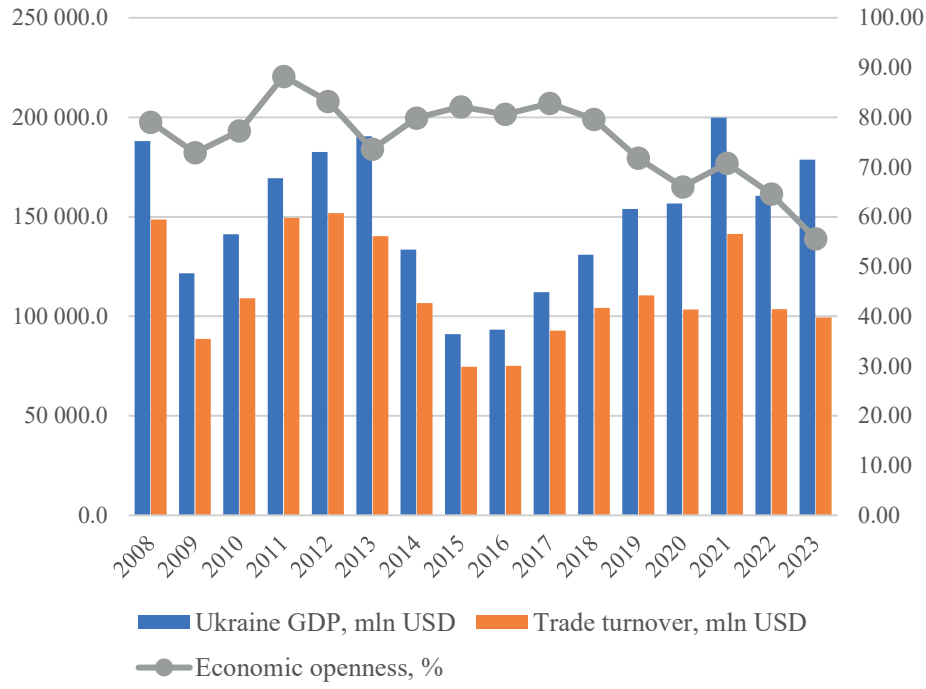

Fig. 12. Economic openness of Ukraine, %

Source: own calculations.

Ukraine acknowledges the importance of promoting cross-border cooperation with neighbouring EU Member States such as Poland, Slovakia, Hungary, and Romania, as a crucial element of their strategy for achieving successful European integration. This collaborative effort is viewed as vital for nurturing economic, social, and cultural connections, as well as for fostering mutual development and understanding between Ukraine and its neighbouring EU states.

The escalation of a full-scale war exacerbates cross-border challenges, resulting in a complex environment. Despite these challenges, it remains essential to create pathways for entrepreneurs to capitalise on emerging opportunities by developing and delivering essential products and services.

5.3. Strategic directions of cross-border trade development: challenges and opportunities for Ukraine

The examination of Ukraine's foreign economic trade with its four neighbouring countries – EU members (Poland, Romania, Slovakia, and Hungary) – enabled us to propose a series of organisational measures aimed at coordinating the efforts of the government, businesses, and society. Firstly, there is a need to promote the development of renewable energy and bolster national energy projects to reduce the reliance on energy imports. This would help to increase energy security for the country. Supporting domestic manufacturers and fostering the growth of high-tech industries is another important measure. This will enhance the value of exported goods and contribute to overall economic growth. Additionally, there needs to be a plan to expand into new markets and diversify exports to mitigate risks and lessen the dependence on individual markets. This will provide more stability and resilience to the economy. Trade barriers need to be diminished through specific measures and efforts will be made to regain positions in international markets. This will help boost the country's export potential and economic competitiveness. Furthermore, enhancing the transport infrastructure, particularly railways, highways, and ports, is crucial to optimise logistics and minimise the cost of goods transportation. This will make Ukrainian products more competitive in EU markets. Improving corporate governance and combating corruption are essential to bolster investor confidence and attract new investments to the country. This will create a more favourable environment for business and economic development. Lastly, ensuring the stability and transparency of the political environment is significant in boosting the trust of foreign partners and investors in the Ukrainian economy. This will contribute to a more conducive environment for foreign investment and trade relationships with neighbours.

Efforts are underway to enhance the capacity of the Danube region and create additional avenues for transporting grain. This involves the establishment of new transit points and dry ports along the western border with Poland and Romania.

Ukraine is also proactively devising alternative measures to consistently bolster global food security and sustain its exports. There is a possibility that the state budget will incorporate insurance coverage for ships transporting Ukrainian grain, enabling them to operate even in the absence of a "grain corridor."

Some additional effort would be useful in this regard, including the following (WorldBank, 2013):

a) Standardising international supply and use tables is essential, and this could be achieved by integrating a uniform industry and product classification into national statistics.

b) It is important to enhance classification systems to accurately recognise intermediate inputs in imported services and dual-use products, such as fuels.

c) Utilising firm-level data from the current economic census and industry surveys, as well as customs transaction level data, could improve the allocation of imported inputs (both goods and services) to sector users within the country.

d) There is a need to develop better estimates of bilateral trade in services.

The examination of Ukraine's cross-border trade development strategies should be approached through the lens of the neoconvergence theory and the club convergence models explored by Borsi and Metiu (2015). Their research revealed that EU countries organise into "convergence clubs," which are groups of nations sharing similar development characteristics and convergence trajectories. The neoconvergence theory posits that the alignment and harmonisation of institutional frameworks are essential prerequisites for achieving economic integration. This convergence facilitates smoother interactions among different economic systems, promoting cooperation and collaboration in economic activities. The initiatives aimed at modernising customs infrastructure, adopting European quality standards, and harmonising the regulatory environment are pivotal for facilitating Ukraine's integration into the institutional framework of EU countries, particularly regarding their advanced trade infrastructure. Borsi and Metiu (2015) have established that the structural similarities among economies play a crucial role in the emergence of convergence clubs. Research on club convergence indicates that the degree of market integration significantly influences the velocity of economic convergence among regions or entities. Therefore, the structural transformations in Ukraine, characterised by a shift towards higher value-added export products, deeper integration into European cross-border production networks, and the advancement of innovative economic sectors, are facilitating the country's progress towards convergence with more developed EU economies. A successful execution of these strategic directions should pave the way for Ukraine's gradual integration into the relevant EU convergence clubs and promote long-term economic integration. However, it is crucial to recognise the fact that, as highlighted by the research of Borsi and Metiu, the process of convergence is not automatic; it demands deliberate efforts from the integrating country.

6. DISCUSSION

The analysis of Ukraine's cross-border trade dynamics with its neighbouring EU countries (Poland, Romania, Slovakia, and Hungary) reveals significant trends and implications for economic convergence and regional integration. There has been a notable increase in trade volumes between Ukraine and its EU neighbours, especially Poland and Romania. This aligns with the findings of Campos *et al.* (2019), who emphasised the advantages of EU enlargement for Central and Eastern European countries. However, our research extends this understanding by highlighting the specific challenges and opportunities faced by a non-EU state in the process of economic integration. The fluctuations in trade balances and the varying degrees of trade intensity with different neighbouring countries underscore the complex nature of economic convergence, as noted by Borsi and Metiu (2015) in their study on club convergence patterns within the EU.

The observed shifts in Ukraine's export structure, particularly the increasing share of agricultural and food products, reflect a broader trend of specialisation and adaptation to EU market demands. This trend aligns with the observations of Alexa *et al.* (2019) regarding the importance of regional competitiveness in the era of globalisation. However, our findings suggest that this specialisation, while beneficial in the short term, may pose challenges for long-term economic convergence if not balanced with the development of high-value-added sectors. Initiatives such as the EU4Digital program or the eCustoms pilot project between Ukraine and Romania exemplify the type of cross-border cooperation crucial for promoting regional growth and convergence, as identified by Capello *et al.* (2018a, 2018b). Our research provides empirical evidence on how such initiatives are being operationalised in the specific context of Ukraine's European integration efforts.

The analysis of Ukraine's economic openness indicator offers insights into the country's integration into the global economy and its vulnerability to external shocks. The challenges identified in our SWOT analysis, such as infrastructure limitations and the need for export diversification, echo the findings of Shepherd (2016) on the importance of trade facilitation in promoting economic integration. Our research contributes to this discourse by providing a contemporary and country-specific perspective on these challenges in the context of Ukraine's unique geopolitical situation.

The strategic directions proposed for developing Ukraine's cross-border trade align with the recommendations of Dobrzanski and Olszewski (2019) regarding structural changes necessary for economic growth in Central and Eastern European economies. However, our study extends these insights by considering the specific constraints and opportunities presented by Ukraine's status as an EU candidate country and its ongoing wartime situation. The impact of recent geopoli-

tical events, including the Russia-Ukraine full-scale war and the establishment of alternative trade routes like the Ukrainian Maritime Passage, represents a significant contribution of our research to the existing literature. Future research could benefit from a more detailed analysis of sector-specific trade flows and the impact of specific policy interventions on economic convergence. Additionally, comparative studies with other EU candidate countries could provide valuable insights into the broader implications of the EU's expansion and integration processes.

The cornerstone of success lies in a consistent approach to implementing reforms and capitalising on the opportunities presented by European integration. The experiences of Central and Eastern European countries demonstrate that even within a prolonged accession timeline, it is possible to attain substantial progress in trade relations and economic modernization through a clearly defined strategic vision and effective execution of essential changes.

7. CONCLUSIONS

The analysis of trade relations between Ukraine and its neighbouring countries reveals promising trends and opportunities for economic growth and regional integration. Poland stands out as a key trading partner, with Romania, Slovakia, and Hungary also making significant contributions to Ukraine's trade dynamics. The positive trade balances and increasing trade volumes underscore the potential for further development and collaboration. To capitalise on these opportunities, policymakers should prioritise reducing trade barriers, promoting regulatory harmonisation, and enhancing market access. Additionally, efforts should be directed towards diversifying export markets and products, fostering innovation and competitiveness, and investing in infrastructure development. These measures will bolster Ukraine's economic resilience, attract foreign investment, and solidify the country's position as a vital player in the EU market.

By prioritising strategic policy interventions and fostering strong trade relations with neighbouring countries, Ukraine can fully leverage its trade opportunities, effectively address challenges, and achieve sustained economic growth and prosperity. The challenges and opportunities presented by diversifying Ukrainian production and expanding into the European market can be addressed through targeted policy interventions, unlocking Ukraine's economic potential, enhancing competitiveness, and facilitating effective integration into the European market. Implementing policy recommendations that prioritise innovation, entrepreneurship, infrastructure development, and market intelligence will contribute to the successful realisation of the objectives outlined in the Association Agreement with the EU.

Furthermore, the European trajectory has enabled Ukraine to diversify its export markets and attract foreign direct investment. By aligning its production standards and regulations with EU requirements, Ukrainian businesses can gain easier access to European markets and benefit from increased demand for their products and services.

In conclusion, Ukraine's strategic embrace of the European trajectory for its economic development has set the stage for comprehensive reforms, enhanced economic cooperation, and greater integration with EU countries. By aligning its policies and regulations with European standards, Ukraine aims to strengthen its position in the global economy and leverage the benefits of closer ties with the EU.

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BOOK REVIEW

THREE BOOKS, ONE MESSAGE: EUROPE'S FORGOTTEN REGIONS CAN BE INNOVATIVE, TOO

With a review of:

Filipe TELES, Carlos RODRIGUES, Fernando RAMOS and Anabela BOTELHO (eds), *Territorial Innovation in Less Developed Regions: Governance, Technologies, and Sustainability*, Palgrave Macmillan, London/New York 2023, 305 pages, Matthias KIESE, Rasmus BECK, Dirk FORNAHL and Christian KETELS (eds), *Beyond Innovation Hotspots: Clusters for Competitiveness and Transformation in Real Regions*, Edward Elgar Publishing, Cheltenham 2024, 216 pages, and María del Carmen SÁNCHEZ CARREIRA, Paulo Jorge Reis MOURÃO and Bruno BLANCO-VARELA (eds), *European Regional Policy and Development: Forgotten Regions and Spaces*, Routledge, Abingdon 2024, 220 pages

1. INTRODUCTION

Silicon Valley, Greater London, Bavaria... When it comes to regional innovativeness, one often comes across the same success stories. Notably, metropolitan regions with a diverse knowledge base and high-quality amenities are considered the breeding places of innovation. The traditional explanation is that such areas benefit from agglomeration economies, they are in demand by talents, and offer

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a well-functioning ecosystem of entrepreneurs, knowledge institutes and government actors. Modern urban scaling research, an interdisciplinary approach linked to the Santa Fe Institute, seems to support this view. Using extensive data sets, urban scaling scientists have demonstrated that there is a nonlinear relationship between metropolitan regions and innovativeness (Bettencourt and Lobo, 2016). For example, New York appears to produce twice as many innovations per capita as cities half its size. There is also an 'urban premium' for the US as a whole. This 'law of urban scaling,' as the regularity is called, also applies to European regions, although the metropolitan privilege effect is smaller than in the US.

As interesting and relevant as this research is, it also raises questions. Is innovation reserved for affluent metropolitan regions? And what can 'ordinary' regions that are less densely populated and less developed do with the findings? Should they resign themselves to the fact that renewal happens elsewhere and just not worry about innovativeness? The fact is that the literature on territorial innovation has traditionally been dominated by authors who themselves are based in metropolitan regions, such as Richard Florida (Toronto), Ed Glaeser (Boston), and Philip McCann (Manchester). Even in the small Netherlands – no more than a big city in the eyes of many foreigners – we see this 'metropolitan bias': many of my Dutch colleagues prefer to study the regions around Amsterdam, Utrecht, and Brainport Eindhoven rather than those on the edges of the country, such as Twente, Limburg, and Zeeland. Ironically, one could say that researchers are mainly guided by phenomena that occur on their doorstep. But is that the whole story? Does it do justice to the practice of regional innovation? In this essay, I will discuss three edited volumes that suggest the opposite: that also 'forgotten regions' can be innovative.

2. TOP LED, BOTTOM FED-POLICY

Edited by professors Teles, Rodrigues, Ramos and Botelho – all linked to the University of Aveiro – the first reviewed book contains a collection of papers following the Portuguese and EU-funded CeNTER (Community-led Networks for Territorial Innovation) − a research project on innovation policies in less developed areas. The central question is how regions that are less fortunate can be encouraged to innovate. The starting point is the idea that less privileged territories benefit from place-based and community-based innovation, i.e., an approach that starts with the local assets and considers the capabilities of the community. The book contains a total of 14 chapters divided into three parts, and features a diversity of authors. Many regional case studies from Portugal are included, but the volume also contains reflections of a conceptual and theoretical nature. Within the short scope of this review, it is not possible to cover all the contributions. Instead, I have selected a few chapters that struck me the most.

In their contribution to the first part of the book ('Models'), Morgan and Henderson argue that old industrial regions can indeed be innovative. However, innovation in these places must be understood in a broad sense: in areas with an industrial past it is often social innovation and renewal in the foundational economy that are important. Moreover, it should be recognised that such regions are not always optimally equipped in institutional and political terms to benefit from innovation policies. This calls for a highly spatially sensitive approach. I also found the chapter by Oliveira and her colleagues in the part 'Tools' of the book quite interesting. They describe their experiences with the CeNTER app, a digital platform to bring together actors in a regional innovation system, and show how this User-Centered Design tool has served well in Portugal's Centro Region to foster innovation. Apparently, also in this domain the virtual world can complement the physical one well. In the book's third part ('Policy and Actors'), the chapter by Almeida, Daniel and Botelho is inspiring. Using four Portuguese cases, they argue that local governments – contrary to the community-led perspective – can indeed be the driving forces in a regional ecosystem. The value of the local public sector lies in its ability to design and boost the system, among other things by providing funds and other incentives. Apparently, effective innovation policies in less developed regions require a subtle mix of top-down and bottom-up elements, resulting in a kind of 'top-led, bottom-fed' approach.

The other chapters in the book are well worth reading, too. Some contributions address the link between innovation and sustainability issues in less fortunate regions, while others deal with the role innovation might have within European cohesion policy and the importance of multi-level governance. The edited volume stands out for its strong interdisciplinary perspective, which is reflected in the variety of backgrounds of the authors: not only geographers, sociologists, and economists have contributed, but also numerous other social scientists and colleagues from technical fields. Innovation and innovation policy is simply too multifaceted to be left to one discipline. This is also one of the things that stays with me after reading the book: only through an interdisciplinary approach and dialogue between science, practice and policy is it possible to develop effective innovation policies for Europe's disadvantaged regions.

3. BEYOND INNOVATION HOTSPOTS

Since business strategist Michael Porter introduced the cluster concept in the early 1990s, numerous European regions have set up cluster policies. Initially, still referred to as 'industrial clusters', those groupings were soon seen as drivers of regional innovation because they were mostly geographical concen-

trations bringing innovative firms, suppliers, governments and knowledge institutions together. Are such 'innovative clusters' also valuable for regions facing economic challenges due to their peripheral location or industrial past? And if so, what can actors do to make them flourish? This is the question the book *Beyond Innovation Hotspots* – edited by the German cluster experts Kiese, Beck, Fornahl and Ketels – explores in nine chapters by analysing regions that are usually overlooked in the literature on territorial competitiveness. For instance, for some readers it will come as a surprise that Bulgaria has a dynamic fintech cluster and that the German Black Forest-area has many 'hidden champions in sleepy villages.' Besides, the book contains chapters on classic cases, such as the Ruhr Area and the success of Danish cluster policy. What new insights does the book offer on the cluster concept?

In this respect, three chapters stand out for me: chapters 2, 6, and 8. To start with, I enjoyed reading chapter 2 by Ingstrup, Morrison and Mayer on the decline of clusters in 'thin' regions, that is non-urban areas which, among other things, lack well-developed knowledge and innovation infrastructures. Referring to case studies of the forestry cluster in northern Sweden, the footwear cluster in the southern Italian region of Apulia and coal production in Slovakia's Nitra territory, the authors show that thin regions either need to diversify their economic structures or establish connections with the outside world in order to access new knowledge and technology. I also found chapter 6 by Weingarten an original contribution, because he introduces a surprising actor in the cluster debate, namely trade unions. Referring to the Ruhr Area, he highlights the importance of 'preventive cluster policy,' i.e., involving workers' organisations in thinking about the transformation and future of traditional industries. Of course, not everywhere in Europe trade unions are as influential as in Germany, but it is still a useful advice. It struck me after reading chapter 8 by Akpinar that clusters can also be well analysed with the help of stakeholder theory. Ultimately, as in other types of networks, in clusters it is crucial to build trust between parties who each have their own interests.

More than three decades after Michael Porter introduced the cluster concept, enthusiasm for it has somewhat waned in policy circles. But clusters are still useful for the competitiveness and innovativeness of regions, including those that are less fortunate. However, based on the cases in their book, the editors draw the conclusion that clusters and cluster policies should not be approached too rigidly. Flexibility of cluster partners, an open mind to the outside world and more attention for non-economic dimensions (such as the role of stakeholders, relationships, and cluster management) are prerequisites for cluster success, especially in less developed regions. To be relevant in addressing regional economic challenges, the authors argue, cluster strategies should be resilient, extravert and people-oriented. I entirely agree with this plea as well as with the call, also in the book, to do more systematic research on clusters beyond Europe's innovation hotspots. Expanding

research beyond disciplinary boundaries (e.g., paying attention to sociological and anthropological aspects) can enrich the perspective, if only because the real world does not care about the artificial silos academia has created.

4. EUROPE'S FORGOTTEN REGIONS

Like the previous two books, *European Regional Policy and Development: Forgotten Regions and Spaces* is an edited volume, in this case compiled by the economists Sánchez-Carreira and Blanco-Varela (University of Santiago de Compostela, Spain) and Mourão (University of Minho, Portugal). The book's premise is that there are still large interregional disparities within Europe and that lower performing regions – often sparsely populated, peripheral areas with low per capita incomes – do not get the attention they deserve. What are the opportunities and threats of these 'Forgotten Spaces' (with capital letters!), as the editors call them? More than 20 authors have reflected on this issue, using a range of methods such as spatial econometrics, network analysis, and planning techniques. The case studies cover all of Europe: next to Spanish and Italian examples, German, Danish and Swedish cases are featured, as well as experiences gained in Estonia, Poland, the Czech Republic, Slovakia, and Hungary.

Of the nine chapters, I discuss three that have inspired me the most. Firstly, the chapter in which Blanco-Álvarez and González-López, using a pseudo-gravity log model and data from Spanish regions, confirm what anecdotal evidence suggests: there is a brain drain of highly skilled workers from peripheral regions to metropolitan areas with knowledge-intensive jobs. In the case of Spain, Madrid and Barcelona are the 'winners.' However, Plüschke-Althof and Sept argue in their chapter that Forgotten Spaces are not empty-handed when their talents leave. Drawing on examples from Estonia and Germany, they show that small towns can use discursive strategies, such as promoting cultural heritage or joining a town network like Cittaslow, to draw positive attention to themselves. Obviously, such actions cannot stop the brain drain, but they highlight the places among highly educated groups. The book also sees local government as having a potentially important role in developing struggling areas. This is evident, for example, in Grimbert's and Zabala-Iturriagagoitia's chapter on Public Procurement for Innovation (PPI) in the Swedish city of Malmö. The redevelopment of the previously unattractive Western Harbour was a large-scale infrastructure project with positive effects. Next to improving the residential and living environment, the city's public procurement strategy led to new businesses, energy efficiency, and urban transformation. A key success factor in Malmö was that the government did not act independently, but worked closely with the local community.

Although the book is both interesting and relevant, coherence between the chapters is hard to find. For instance, chapter 4 by De Vita and three of his colleagues discusses the strategic plans of two Italian regions using textual network analysis, while Stawska examines in chapter 7 the determinants of monetary and fiscal policy in the countries of Poland, Hungary, the Czech Republic, and Slovakia. It is not clear what these chapters contribute to answering the main question of the book. This may also explain why the conclusions drawn by the editors in the final chapter are very general. Strategies to save Forgotten Spaces from oblivion, they argue, should consider the socio-economic and spatial context and be devised in close cooperation with local actors. In addition, the policies should be monitored and coordinated with other interventions. No one can really object to such recommendations.

5. FROM SILICON SOMEWHERES TO PLACES OF HOPE

In terms of their key message, the three books on territorial innovativeness I discussed are remarkably unanimous: Europe's forgotten regions can be innovative, too. But certainly in these areas, which often have to cope with lock-in phenomena and other barriers to renewal, innovation does not just happen – the stakeholders need to be stimulated, challenged, and encouraged to make it happen. Success is only possible if the specific circumstances of time and place are considered. And – not insignificantly at a time when community-led development is a popular credo – local governments can be crucial players in regional innovation systems, either as providers of funds and other incentives or as public procurement parties putting innovative projects out to tender. Besides, it is important to look beyond economic aspects – the particular spatial and social features of Europe's less fortunate regions also deserve attention to create the right conditions for territorial innovation. From actors this requires an open-mind and interdisciplinary approach, taking the complexity of the region as a starting point rather than the tunnel vision of 'Silicon Somewheres' (Hospers, 2006).

To be honest, when reading the three books, I had hoped to read more about two aspects that also seem to be important in less privileged regions. First, I see a crucial role of universities in innovation: they can act as local hubs connecting a 'thin' region to global pipelines, thus injecting external knowledge and new technologies into the system. Universities can also be facilitators in the collective learning process through which actors in a disadvantaged region go. Or, as Delbridge *et al.* (2025) found for the case of Wales: 'Universities may be able to provide a safe space in which public and private actors are able to convene, experiment and build skills and capabilities to address place-based challenges'

(p. 101). Second, I think a position as a forgotten region can also be an advantage. Economic geographer Gernot Grabher – well-known for his lock-in theory of old industrial regions – argues that marginality can also be a deliberate choice for a territory to foster creativity outside the mainstream pressures in urban centres. Referring to the Baukünstler movement in the Austrian region of Vorarlberg, he showed how self-chosen peripherality could lead to radical architectural innovation. In my view, such inspiring examples turn Europe's forgotten regions into places of hope.

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