

# SISTER CITY NETWORK'S DEVELOPMENT IN CENTRAL-EASTERN EUROPEAN REGIONAL CENTRES

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## Abstract

In recent years, the analysis of contact networks has become increasingly popular in academia. Originally built on cultural understanding and peace through civil diplomacy, twinning, however, is in a state of flux in today's society. This study aims to analyse the network of sister cities in the Central and Eastern European region. This co-operation emerged in Europe in the early 1900s and spread worldwide after the Second World War. The research seeks to answer the question: what kind of sister city networks have developed between Central and Eastern European cities in contemporary times? The analysis focuses on regional centres with spatial functions at NUTS2 level in ten regional countries, with a total of 95 cities with a population of between 100,000 and 1 million inhabitants. The research is based on the Eurostat Urban Audit and the database on twinning and partnership published on the official websites of the cities. The data were analysed using IBM SPSS Statistics 21 software and the network relationships were examined using the network graphing software Gephi 0.9.5. The research results revealed that twinning partnerships are concentrated mainly in small towns in the Central European geographical region of the continent, and within this region between Hungarian, Polish and Romanian cities. The development of twinning relations is seen as a major opportunity for cities of international importance and macro-regional centres to maintain their competitiveness.

**Keywords:** sister cities, network analysis, urban research, Central-Eastern Europe

## 1. INTRODUCTION

György Enyedi (1997) formulated the development of lasting external relations as the key to a successful city. One form of durable external co-operation is the twinning/town twinning partnership based partly on geographical proximity, which existed in earlier periods of history, but typically spread after World War II, in the 1950s (Pete, 2017).

The term 'sister city' is used in English for twin or sister city, in German for Partnerstädte, and in Russian for города-побратимы (Tózsza, 2021). That is, a formal and long-term co-operation between two municipalities in different countries (Zelinsky, 1991) (Kaltenbrunner, Aragon, Laniado & Volkovi, 2013). As Rechnitzer (2001) put it, 'twinning' or 'sister city' partnership arrangements are typically formed with a similar level of territorial unit in the 'friendly country'. According to Hartl (2017), these are grassroots initiatives between cities/municipalities and are based on a jointly developed co-operation agreement. As Keller, Svrznjak & Kaszás (2015) stated, several names for settlement twinning arose in different expressions such as: twin cities, friendship towns, partner towns, sister cities, brother cities). However, the essence of the co-operation remains the same everywhere. Twin cities are a form of co-operation between cross-border cities separated only by artificially created administrative borders (e.g. Komárom - Révkomárom, Esztergom - Párkány) (Hartl, 2017).

Sister city research is mainly conducted in the fields of law, international relations and economics, and is less common among geographers (Ramasamy & Cremer, 1998; Clarke, 2011; Hilbert, 2017). As sister city relations (SCR) represent a significant but less researched type of regional network between cities (Liu, Hu 2018), this paper aims to fill such a gap. It examines the sister city networks of regional centres (cities with a population of 100,000 - 1 million) in Central and Eastern Europe from the perspective of regional studies. Structurally, the study reviews the emergence and development of twinning co-operation, and then explores the twinning networks of regional centres in Eastern-Central Europe; first outside the continent and then in detail on the basis of agreements within the continent.

## 2. THE EMERGENCE AND DEVELOPMENT OF SISTER CITY AGREEMENTS

One of the first official records of sister city agreements in Europe is of the co-operation between the cities of Brugg (Switzerland) and Rottweil (Germany) in 1918 (Zelinsky, 1991), and the partnership between Keighley in Great Britain and Poix du Nord in France, 1920 (Handley, 2001). Subsequently, after the Second World War, the concept of sistering spread throughout the world. The concept of sister cities was used primarily as an effective tool in the peace and reconciliation process to link previously warring countries, such as the cities of Montbéliard (France) and Ludwigsburg (Germany) in the 1950s (Burger and Rahm, 1996; Brzozowska, 1998). In many cases, sistering is more of a symbolic form of partnership (Chen, 2009); primarily to build and strengthen cultural and sometimes economic links – e.g. such a relation can play an important role in attracting foreign direct investment (FDI) (Han et al. 2022; Zhang & Liu, 2023) – between geographically distant communities. and long term. All this in the spirit of the cohesion of European peoples and nations (Tózsza, 2021)

In 1951, the Council of European Municipalities (now the Council of European Municipalities and the European Council of Regions) was established to promote sister city co-operation. From 1956, US President Dwight Eisenhower's call for people-to-people contacts led to the spread of these agreements in the United States and the creation of the International Sister Cities Organisation in 1967 (Zelinsky, 1991; Schep et al., 1995).

While in Western Europe sister city agreements spread in the 1970s and 1980s, in Eastern-Central Europe, from the 1950s onwards, the communist authorities restricted all contacts for control and ideological reasons. However, sister city partnerships were also possible during the socialist period, although it was not possible to have frequent contacts. In addition to geographical proximity, of course, co-operation was usually organised around some kind of historical link (Pete, 2017). During the years of 'existing socialism', however, twinning (perhaps between counties on either side of a border) was largely formal, rarely going beyond the bounds of protocol and culture. The way to build up 'sister-county' or 'sister city' agreements was as follows: the leaders of one county decided to build a cultural partnership with a county or town on the other side of the border. They took this intention to the national party and government forums. If these central authorities considered the initiative to be a good one, they approached the party and government leadership of the neighbouring country through diplomatic channels to seek co-operation. If the party and government leaders of the neighbouring country thought that the initiative should be supported, they would, after informing the leaders of the neighbouring country, also give permission to the leaders of their own county/city to enter into the partnership. Thus, once both county/city leaders had received instructions from the centre, the great protocol procedure of establishing twin-county/twin city relations could begin. However, these have always depended fundamentally on the relationship between the two states (Tóth, 1996; Rechnitzer, 1999), and such sister-county/sister city co-operation has often been "banned" or discontinued (Süli-Zakab & Czimre, 2007).

Since 1989, the Council of European Municipalities and Regions (CEMR) has been providing more than 1,000 cities with more than 10 million Euros in grants for such co-operation every year (Tózsza, 2021). Cities in Central and Eastern Europe, on the other hand, have only been able to develop spontaneous and voluntary co-operation after the regime change (Koćwin, 1993; Furmankiewicz, 2001, 2005). Democratic partners have sought to encourage the development of free market economies in the post-Soviet region (Handley, 2001).

As a result of globalisation processes, new urban systems and networks have emerged (Taylor, 2004, Sassen, 1998, 2001, 2002). These include world cities, Eurocities or sister cities, sharing experiences and cultures leading to common spatial developments, social strategies and further co-operation within these networks (Buzar et al.) In addition to mutual student exchanges, exchange programmes,

visits by sportsmen, dance groups, choirs and other performers, twin towns have played an important role in marketing and creating a partner image. As Tózsza (2021) put it, it is a "magic mirror" that only the twin town can hold up to the municipality so that it can see itself in it, as it really is. Ideally, twin towns should operate on a nearly identical scale in terms of population and culture, i.e. they should face similar problems together and help each other to solve them by setting good examples (Gil, 2020). This is why it is unfortunate that "a city with the dimension of Budapest, for example, is twinned with a city with the dimensions of New York, Chicago, Moscow or St. Petersburg because there are differences in scale and dimension in urban governance; they face different problems. In short, they do not understand each other. It's as if the age difference between brothers and sisters is too great, which prevents an equal partnership with its benefits" (Tózsza, 2021:71).

### 3. DATA AND METHODS

The first methodological question is how to approach cities because, within the European Union, each country has its own set of criteria for defining cities. Horeczki & Egedy (2021) collected all the criteria and regulation of city status in the 20th century based on Kiss (1998). These criteria often include population size and density, but also more functional or historical criteria such as urban functions, the beneficiary of national urban policy funds, or the fact that a city was granted urban status at some point between the Middle Ages and the present day. Comparing cities between countries based on national definitions has proved to be a hopelessly difficult task and has often distorted comparability. To solve this problem, in 2011, the Organisation for Economic Co-operation and Development (OECD), in collaboration with the European Commission, created a new concept based on population size and density rather than on functions, funding and feudal history. Figure 1 summarises the distribution of cities on the continent, the European Union and the Central and Eastern European region in 2022 based on this categorisation (Dijkstra & Poelman 2012).

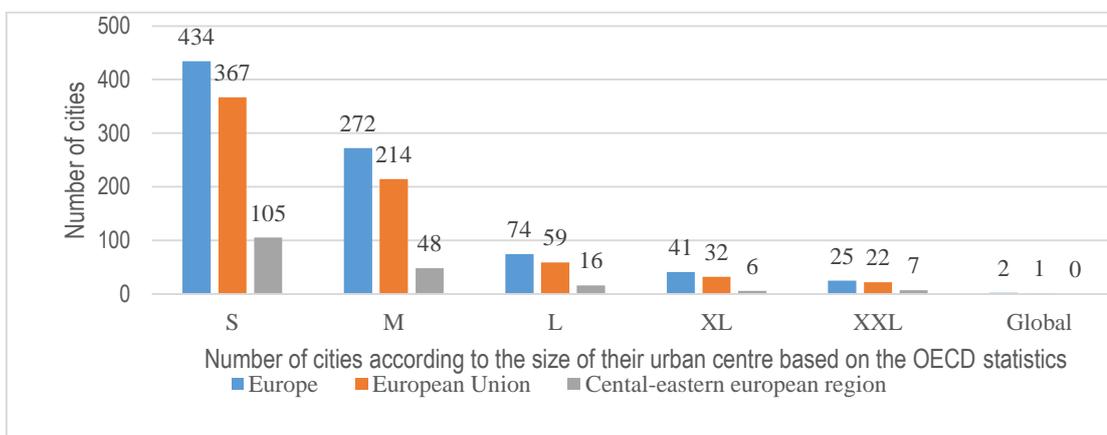


FIGURE 1 - CITIES ACCORDING TO DIJKSTRA & POELMAN'S (2012) CATEGORISATION SYSTEM IN EUROPE, THE EUROPEAN UNION AND CENTRAL AND EASTERN EUROPE (SOURCE: OWN COMPILATION BASED ON DIJKSTRA & POELMAN (2012))

In the Central and Eastern European region, the OECD definition of cities is dominated by cities of sizes S and M, and to a lesser extent by L, XL and XXL. The present study focuses on cities of size M, L and XL, according to the OECD city definition (Dijkstra & Poelman 2012). As a starting point for the analysis, the Eurostat Urban Audit (2019) database was used to identify 95 cities with a population of between 100,000 and 1 million inhabitants (M, L, XL cities according to the Dijkstra & Poelman 2012 categorisation system) in ten countries of the Central and Eastern European region (Austria, Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia and Slovenia) (Fig. 1).



FIGURE 2 - THE EXAMINED CENTRAL AND EASTERN EUROPEAN CITIES BY POPULATION (SOURCE: OWN COMPILATION)

Following but slightly differing from the OECD model, four main size categories were defined on the basis of city size since the present study is a partial study of the research project: GAZD K 128747<sup>1</sup> "The role

<sup>1</sup> In the OTKA research project GAZD K 128747 "The role of territorial capital and innovation milieu in the development of regional centres in Central and Eastern Europe", we treat the four categories of cities

of territorial capital and innovative milieu in the development of regional centres in Central and Eastern Europe", funded by the National Research Development and Innovation Office National Scientific Research Fund. Therefore, four categories of city size (small city, multi-regional centre, macro-regional centre and large city of international importance) were used throughout the research to group cities (Fig. 2,3), on the basis of which the cities and their sister city agreements were analysed.

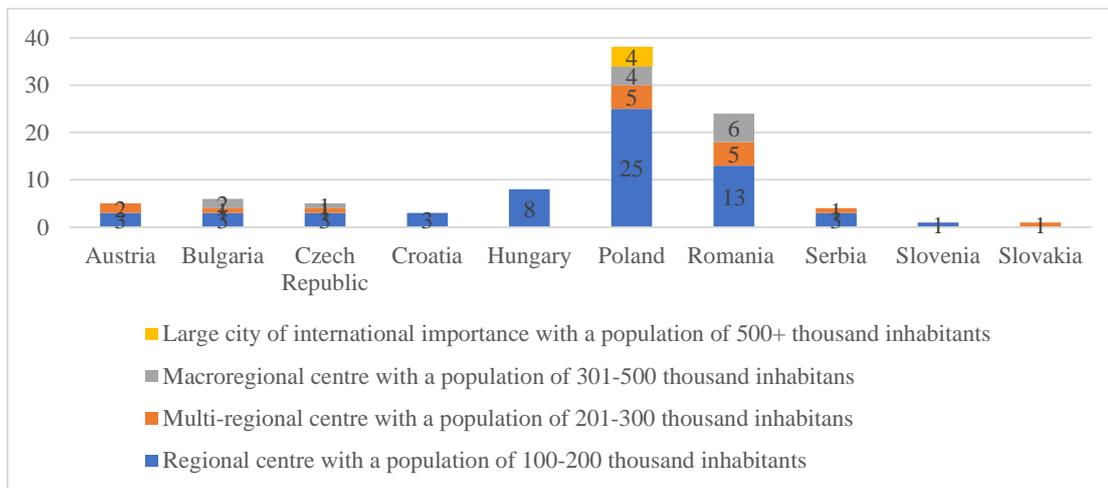


FIGURE 2 - CITIES OF THE CENTRAL AND EASTERN EUROPEAN REGION INCLUDED IN THE STUDY (SOURCE: OWN COMPILATION)

In the research on large cities in Central and Eastern Europe, we were looking for answers to the question: what kind of twinning networks have developed between these cities in the 21st century? In April 2022, we collected sister city agreements published in the official local government's web site, and built up a database of the sister cities. The database includes cities with which sistering or other co-operation agreements have been concluded. The study is primarily exploratory in nature, looking at the networks that have developed between cities. Data analysis was performed using IBM SPSS Statistics 21 software. One of the most suitable programs for the creation and analysis of networks of connections is Gephi, the prototype of which was created by Graphilter in 2006 (Lengyel, Pancsira & Füzesi, 2018). The basis for the calculations in the analysis of twin city networks are graphs; consisting of vertices and edges. As the world-renowned network researcher László Albert Barabási pointed out, the purpose of using graphs is to represent different relationships. The vertices (nodes) correspond to the data whose relations we are examining. Edges are generated when a real connection is found between the data under investigation (Barabási & Bonabeau, 2003). The investigation method is suitable for visualizing spatial processes and for mapping networks. The method was developed for the typical network schemas of Gephi users, i.e. it

uniformly: small cities with a population of 100,000 – 200,000; multi-regional centres with a population of 200,001 – 300,000; macro-regional centres with a population of 300,001 – 500,000 and cities of international importance with a population of 500,001 – 1,000,000.

is suitable for handling 10 to 10,000 nodes (Sikos & Szendi, 2021). Based on this, a representation of 1,125 twinning co-operation agreements was created using version 0.9.5 of the Gephi program. In addition to the nodes, the study considers the following variables for each twin city: country, whether it is a member of the 10 countries under study, geographical region within Europe, and continent.

#### 4. RESULTS

The number of official sistering agreements between the 95 Central and Eastern European cities included in the study reached 1,125 in April 2022 (Fig. 4), meaning that a random city entered into partnership with an average of 11.9 cities. These partnerships were established between a total of 868 cities. Of these cities, 43 cities have above average and 51 cities have below average twinning and twinning partnerships according to the information published on the websites of each city.

Out of the 195 countries accepted by the United Nations, a total of 87 countries are involved in sistering and signed a partnership with 95 regional centres in the 10 countries included in the study. The cities with sistership agreements in the most countries are Lublin (28); Plovdiv (21); Constanta (19) and Linz (18); Debrecen, Iasi and Split (17); Kosice and Krakow (16); Brasov, Cluj-Napoca, Szeged and Varna (15); Kecskemét, Kragujevac, Pitesti, Pleven, Plock and Székesfehérvár (14); Bielsko-Biala, Galati, Klagenfurt, Lodz, Poznan and Wroclaw (13); Czestochowa, Gdynia, Maribor and Ostrava (12), Graz, Koszalin, Miskolc and Pécs (11).

Fig. 4 illustrates the sistering partners of regional centres examined by continent. The majority of sister cities are located in Europe (834 cities), followed by Asia (198), North America (66), South America (14), Africa (12) and Australia (1).

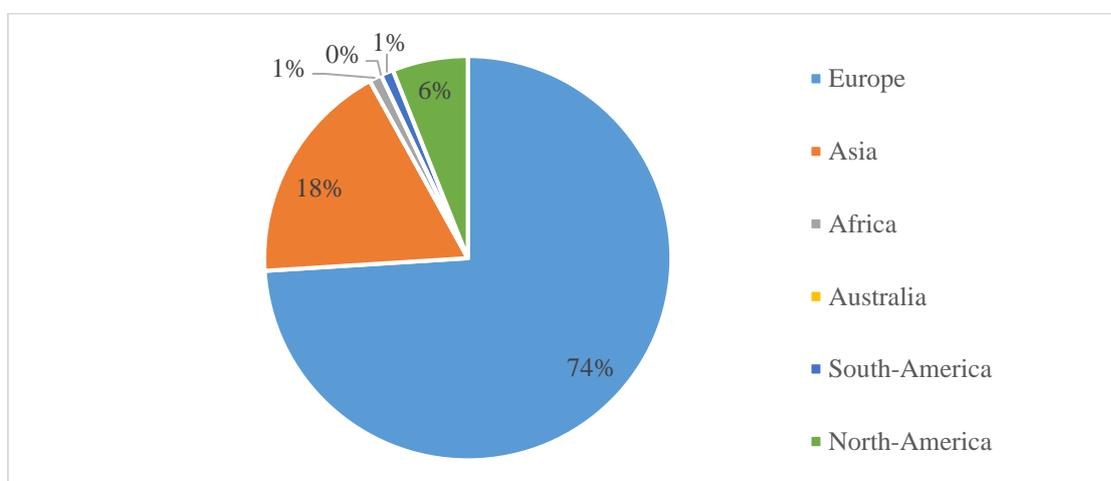


FIGURE 4 - PARTNER AND SISTER CITIES OF CENTRAL AND EASTERN EUROPEAN REGIONAL CENTRES (SOURCE: OWN COMPILATION)

#### 4.1. Assessment of town twinning by city categories

In the next part of the study, we reviewed the twinning relationships of the four categories of cities (regional centre, multi-regional centre, macro-regional centre and large city of international importance) already presented in the methodology (Fig. 5); firstly, on the basis of co-operation outside of the European continent and then on the basis of co-operation within the continent.

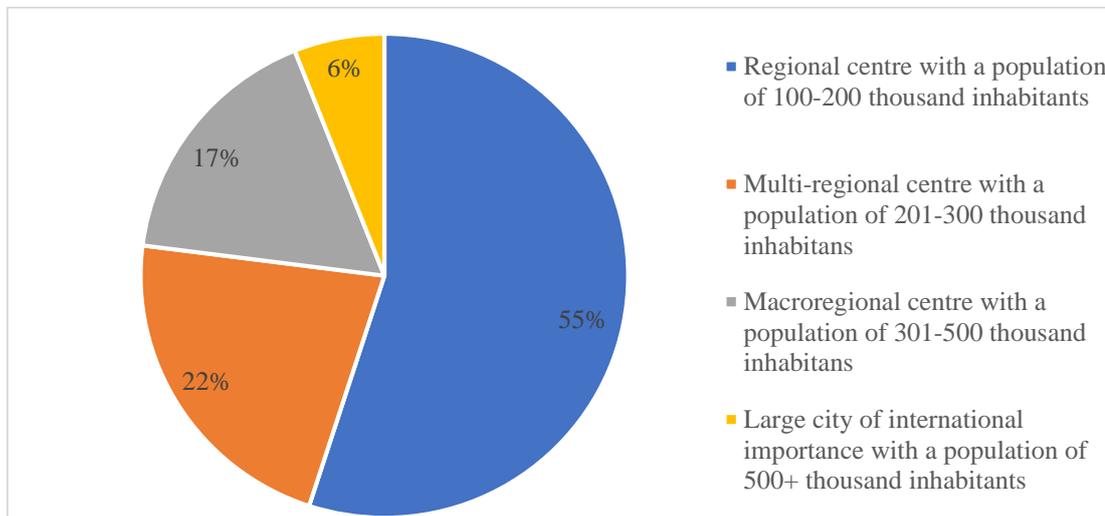


FIGURE 3 - SISTERING RELATIONS OF THE CENTRAL AND EASTERN EUROPEAN CITIES STUDIED; BY CATEGORY OF CITY (SOURCE: OWN COMPILATION)

Although the majority of co-operations (55%) are in the category of cities with 100-2000 thousand inhabitants, average number of sister cities are the lowest in this category with 10,0, while this number for the other three categories cumulated is 15,3. Thus bigger regional centres generally have more extensive partner networks.

#### 4.2. Sistering agreements outside the European continent

In the following, we will describe the twinning arrangements outside the continent, since a quarter of the co-operation is outside Europe.

##### 4.2.1. Asia

Outside Europe, co-operation agreements have been signed mainly in Asia with China, Russia, Israel and Turkey (Annex 1). In Asia, the most significant co-operation agreements are with Chinese cities (25% of all Asian partnerships), with a total of 52 until 2022, typically with small cities (Annex 1). Six cities in the region (Lodz, Lublin, Plovdiv, Rijeka, Gdynia, Pleven) have the most Chinese sister cities, with three each. Three Chinese cities: Ningbo, Shenzhen and Wuhan, which is the cradle of the coronavirus epidemic, has established twinning relations with small cities such as Győr, macro-regional centres such

as Galati and multi-regional centres such as Kosice. Similarly, Chengdu, Harbin; Huainan, Shanghai and Yantai have two cities each in co-operation.

The second highest number of contracts was with Russian cities, with three for Debrecen and Varna, and two for Plovdiv, Pleven, Burgas, Elblag and Győr. On the Russian side, Kaliningrad and St. Petersburg each have contracts with four cities in Central and Eastern Europe; the capital Moscow with three cities, the small cities Debrecen and Pleven and the macro-regional centre Varna. Yekaterinburg, Nizhny Novgorod, Volgograd and Vologda have co-operation agreements with two cities each.

The third largest number of agreements was signed with Israeli cities. Of Central and Eastern European cities, the macro-regional centre of Iasi has the most twinning relations with Israel (Haifa, Ashdod and Netanya). The multi-regional centre Brasov and the small town of Piatra Neamt have two twin cities. Among Israeli cities, Rishon LeZion has co-operation with three cities, Nahariya, Nazareth-Ilit and Netanya with two each. Turkish co-operation is also significant. Constanta has agreed, as a macro-regional centre, with most Turkish cities (Izmir, Silivri, Tepebasi and Tekirdag). Braila (Nilüfer and Denizli), Burgas (Yalova and Istanbul), Pécs (Istanbul and Kütahya) and Plovdiv (Bursa and Istanbul) have two Turkish sister cities. There are four co-operation partners with Istanbul (Plovdiv, Burgas, Pécs and Constanta),

Other significant links at all city levels are with Georgian (13), Japanese (9), South Korean and Palestinian cities (6), while for Vietnamese and Kazakh cities, only macro- and micro-regional centres have signed twinning agreements. In the case of Armenian and Filipino cities, co-operation is between small towns and macro-regional centres. Co-operation was found between cities in Mongolia, Iran, North Korea and Indonesia (2), and one for each of the other countries: Lebanon, Tajikistan, Palestine, India, Iraq, Jordan, Kazakhstan, North Korea, Pakistan, Saudi Arabia and Uzbekistan.

#### 4.2.2. North America

A total of 66 contacts were found in North America. Most of the twinning partnerships were mainly between small cities and US cities (52), but other categories of cities from Central and Eastern Europe are also represented. In Mexico, one co-operation is known from each category of cities, while in Canada only small cities (3) and one macro-regional centre have concluded an agreement. We can also include Costa Rica (Galati and Limon) and Cuba (Constanta and Havana). The cities that co-operate most with the region under study are also involved in three twinning partnerships: Cleveland in the United States, Columbia and Laval in Canada while Birmingham, Mobile, Seattle and Springfield have two partnerships each. Alpharetta, Atlanta, Brooklyn, Buffalo, Butte Silver, Cansas, Charlottesville, Dallas, East Lansing, Erie, Fort Lauderdale, Fort Wayne, Fresno, Gainesville, Grand Rapids, Hammond, Hartford, Havana, Hollywood, Houston, Louis, Toledo, Toluca, and Tucson each have agreements with one city.

**4.2.3. South America**

In South America, a total of 14 twinning partnerships were found, mainly with small cities in Central and Eastern Europe and macro-regional centres. Among them, four are with Venezuelan cities, three with Brazilian cities, two with Chilean cities, Colombian cities and Peruvian cities. Krakow is the only major city of international importance with a link to Cusco in Peru in South America, and Ploiesti is the only multi-regional centre with Maracaibo in Venezuela.

In all cases, the South American twin cities have only ever twinned with one city in Central and Eastern Europe. Other South American sister cities are Bauru, Callao, Caracas, Cartagena, Chacao, Coquimbo, Cusco, Grenada, Maracaibo, Punta Arenas, Santos, Sao Paulo, Valdivia and Valencia.

**4.2.4. Africa and Australia**

There are a total of 12 twin city links in Africa and only one in Australia (Split to Cockburn). Of the 52 African countries, the region has links with only seven: Angola, Egypt, Morocco, Tanzania, Zambia and South Africa. Sister cities on the African continent: Agadir, Alexandria, Cabinda, Cape Town, Casablanca, Dodoma, Fez, Kitwe, Singida, Zaire.

Co-operation partners in the Central and Eastern European region are mainly small towns (8), with macro-regional centres in Constanta and Varna; a single multi-regional centre in Linz and a single large city of international importance in Krakow. Linz, Salzburg and Pitesti are joined by two cities on the African continent.

Overall, it was found (Fig. 6) that the twinning of cities is concentrated largely in Europe; mainly in small towns.

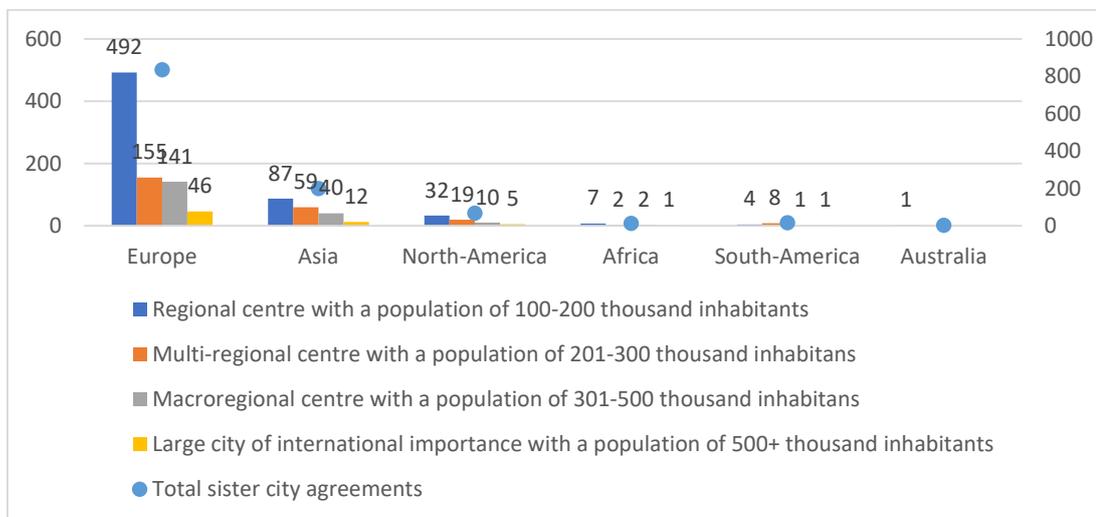


FIGURE 6 - SISTERING BY CONTINENT AND BY CATEGORY OF CITY  
(SOURCE: OWN COMPILATION)

#### 4.3. *Sistering co-operation on the European continent*

In Europe, we have identified a total of 834 partnerships, 76% of which (639 cities) belong to EU member states. In a total of 20 EU member states (Austria, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden) we found more than 10 partnerships. The other 196 twin cities are located outside the European Union. In the following, we have analysed the twinning relations on the continent by city category (Annex 1).

Next, we looked at the geographical region within the continent where the twin cities are located. There are six geographical regions on the European continent: Southern Europe, Northern Europe, Southeastern Europe, Eastern Europe, Central Europe and Western Europe. Along this division (Fig. 7), it can be seen that the twinning of the regional centres studied is concentrated mainly in Central Europe (311 cities). The proportion of twinning agreements in the Western and Eastern European regions is almost equal (131 and 134 twinned cities, respectively).

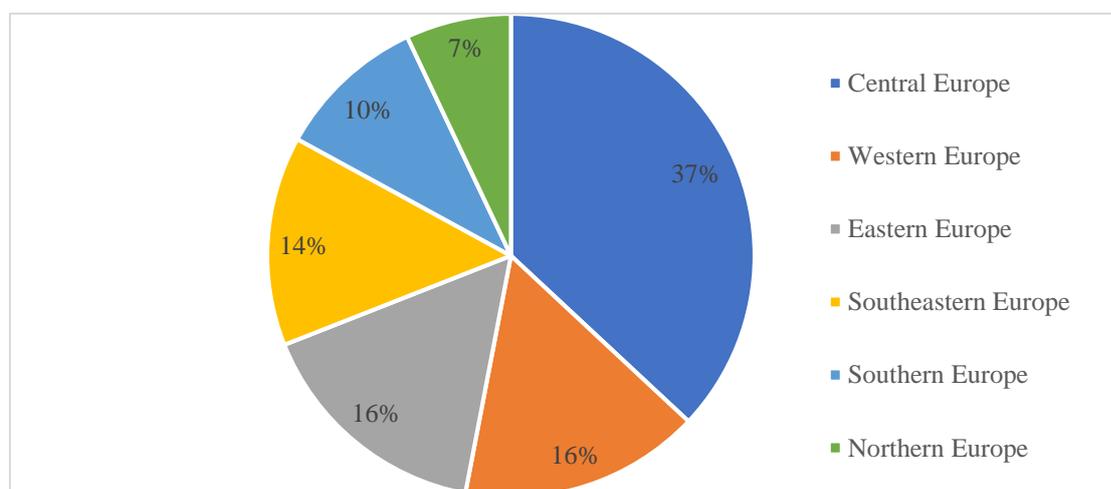


FIGURE 7 - EUROPEAN SISTERING BY GEOGRAPHICAL REGION (SOURCE: OWN COMPILATION)

City categories by geographical region (Fig. 6,7) showed that in three categories of cities (small cities, multi-regional centres and cities of international importance), twinning agreements were primarily in the Central European region, while macro-regional centres signed in Eastern Europe. Secondly, co-operation of cities of international importance were in the Eastern European region, multi-regional centres in the South-Eastern European region, macro-regional centres in the Central European region and small cities in the Western European region. Small and macro-regional centres are least likely to co-operate with a twin city in Northern Europe, while multi-regional centres are least likely to co-operate with cities in Southern Europe and cities of international importance with cities in South-Eastern Europe.

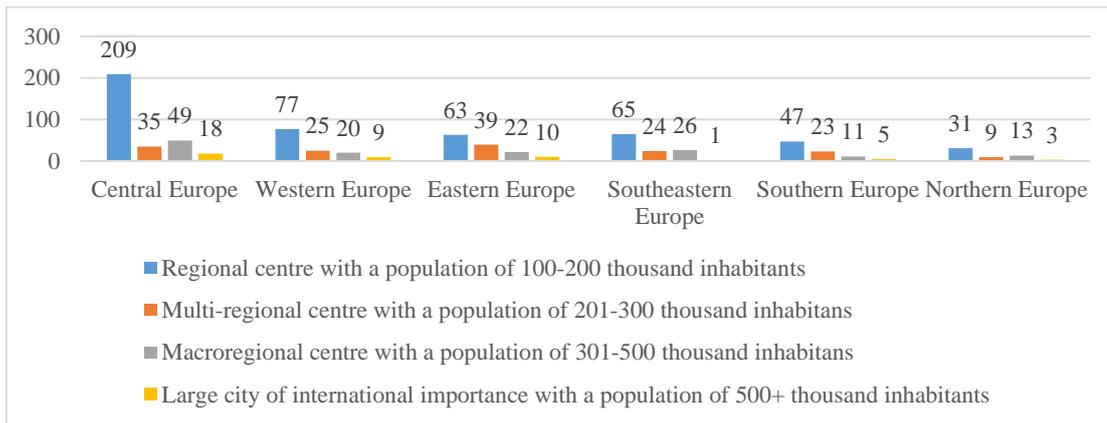


FIGURE 8 - EUROPEAN SISTERING BY CATEGORY OF CITY AND GEOGRPHICAL REGION (SOURCE: OWN COMPILATION)

#### 4.4. Sister city agreements between the Central and Eastern European regional centres examined

There are 242 partnerships between regional centres in the ten countries studied, with the largest number of twinning partnerships in Hungary (48), Poland (41) and Romania (30) (Fig. 9).

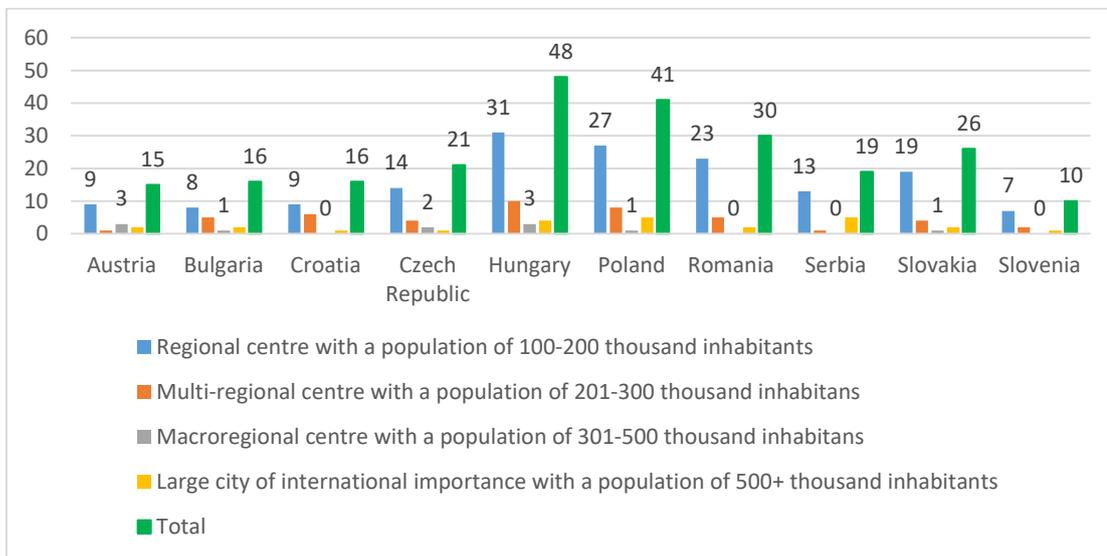


FIGURE 9 - PARTNERSHIPS AND TWINNING IN CENTRAL AND EASTERN EUROPEAN COUNTRIES BY CATEGORY OF CITIES (SOURCE: OWN COMPILATION)

In the countries of the Central and Eastern European region, when looking at the categories of cities, the greatest potential for twinning is seen in the large cities of international importance, with at least 15 cities having twinning agreements. Among them, Krakow (19), Lodz (16) and Poznan (15), i.e. an average of 16 partnerships. The macro-regional centres also see a high potential for twinning as they are involved in at least 11 co-operation agreements, such as Brno and Gdansk, and Lublin (43) (on average, 20 agreements). In the case of multi-regional centres, all cities have signed agreements with at least five cities (Oradea 5), but Kosice and Linz have reached 22 (on average, 12 twinning agreements).

Small towns have signed at least two co-operation agreements, like Botosani, but sometimes 22 agreements over the years, like Kragujevac (regional centre towns have signed an average of 10 agreements).

**4.5. Sistering networks between regional centres in Central and Eastern Europe**

But how closely do the 95 Central and Eastern European regional centres examined link up with each other? The research found that a total of 10.8% (122 partnerships) of the 95 cities co-operated with each other (Fig. 10), with the remaining 89.2% (1,003 partnerships) taking place outside these cities.

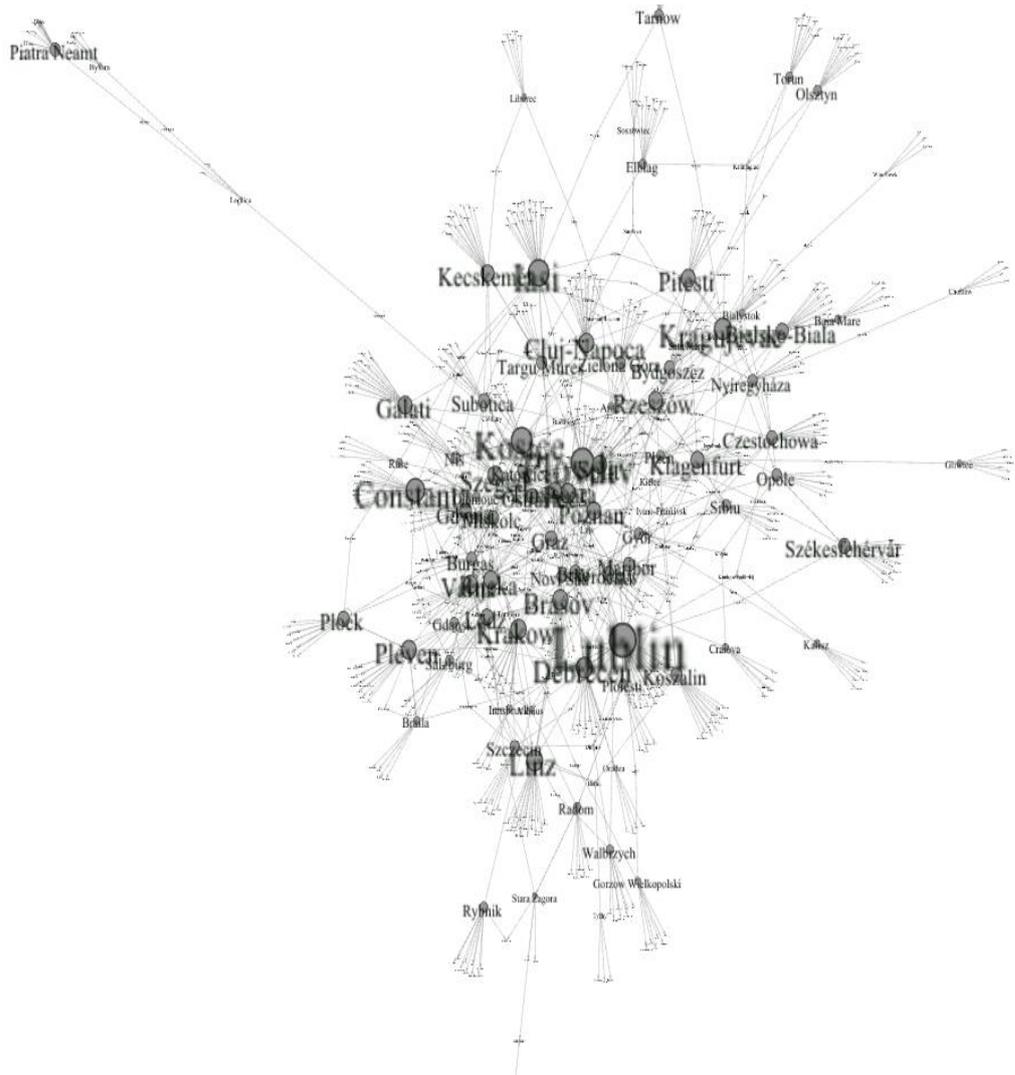


FIGURE 4 - SISTERING BETWEEN THE 95 CENTRAL AND EASTERN EUROPEAN CITIES (SOURCE: OWN EDITING WITH GEPHI 0.9.3.)

Figure 11 shows Central and Eastern European cities with at least 10 twinned cities per country (Polish - red, Hungarian - green, Austrian - purple, Czech - yellow, Romanian - grey, Serbian - light blue and Croatian - dark green).

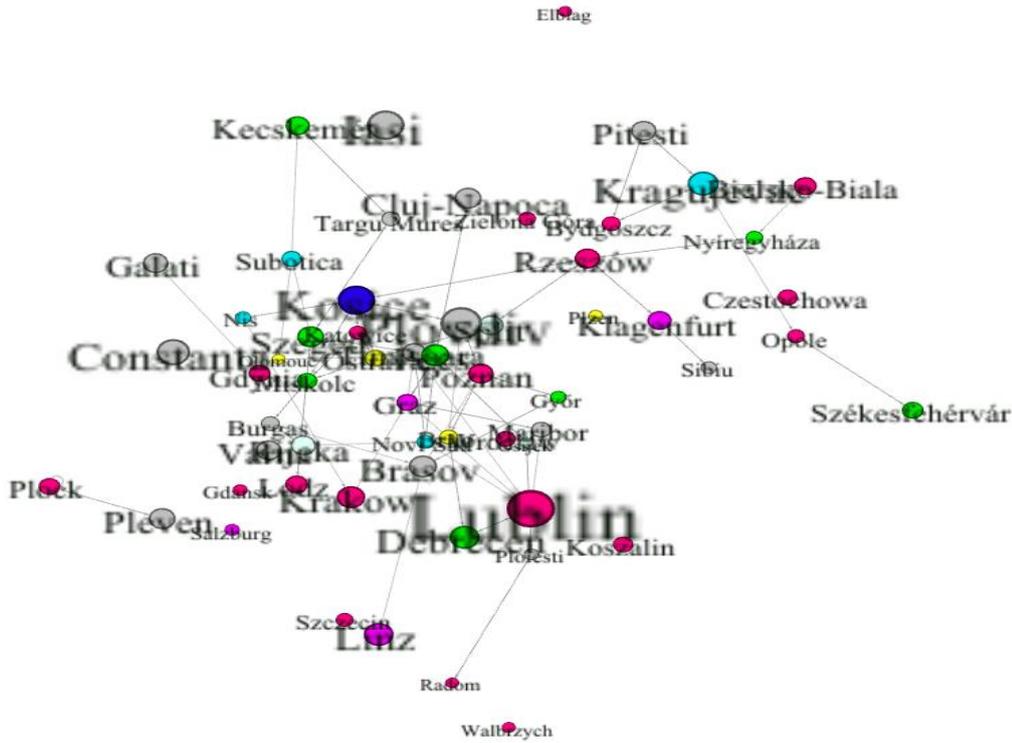


FIGURE 11 - CO-OPERATION BETWEEN CENTRAL AND EASTERN EUROPEAN CITIES WITH 10 OR MORE TWINNING LINKS PER COUNTRY (SOURCE: OWN EDITING WITH GEPHI 0.9.3.)

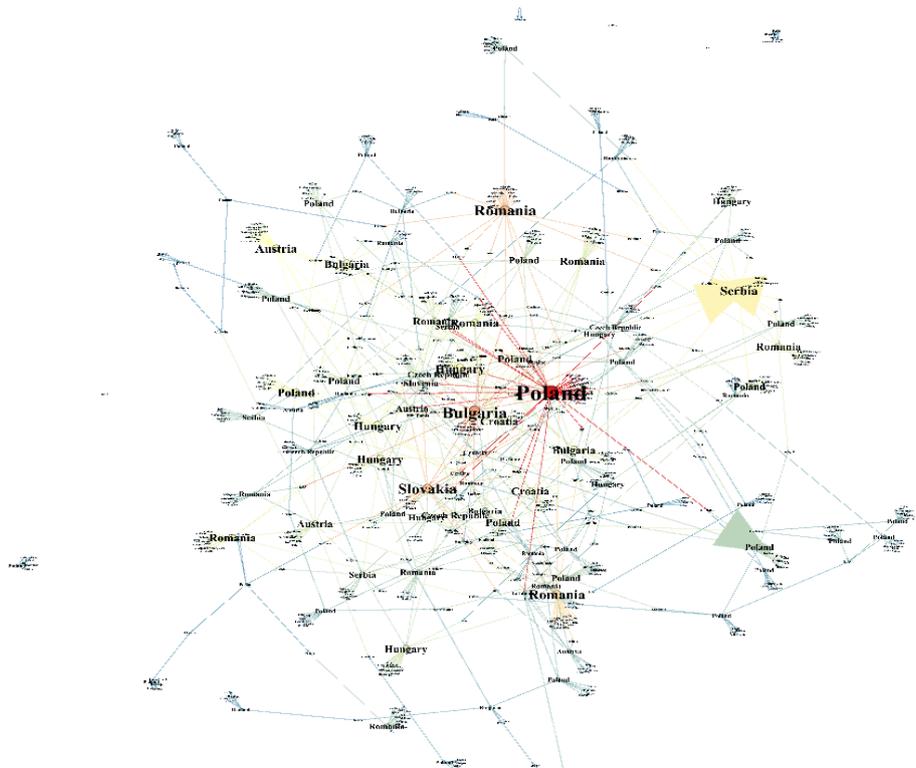


FIGURE 5 - THE 95 CENTRAL AND EASTERN EUROPEAN CITY TWINNING PARTNERSHIPS BY COUNTRY (SOURCE: OWN EDITING WITH GEPHI 0.9.3.)

Similar to Figure 11, the network of twinning relationships between the 95 cities (minimum 5, maximum 43) analysed per country is shown in Figure 12.

#### 4.6. Network of twinned Hungarian cities

For the eight large Hungarian cities included in the study, the proportion of twinning contacts is not directly proportional to the number of inhabitants. On 1 January, 2021, Budapest had a population of 1,723,836, and Debrecen: 200,974, Szeged; 159,074, Miskolc; 150,695, Pécs; 140,237, Győr; 132,735, Nyíregyháza; 116,554, Kecskemét; 109,651 and Székesfehérvár; 95,545 each (HSO, 2021).

Szeged has the highest number of contacts, followed by Pécs, Miskolc, Nyíregyháza, Debrecen, Székesfehérvár, and finally Kecskemét and Győr (Fig. 12). Figure 12 shows the position of Hungarian cities in the network of twinning contacts in Central and Eastern European cities.

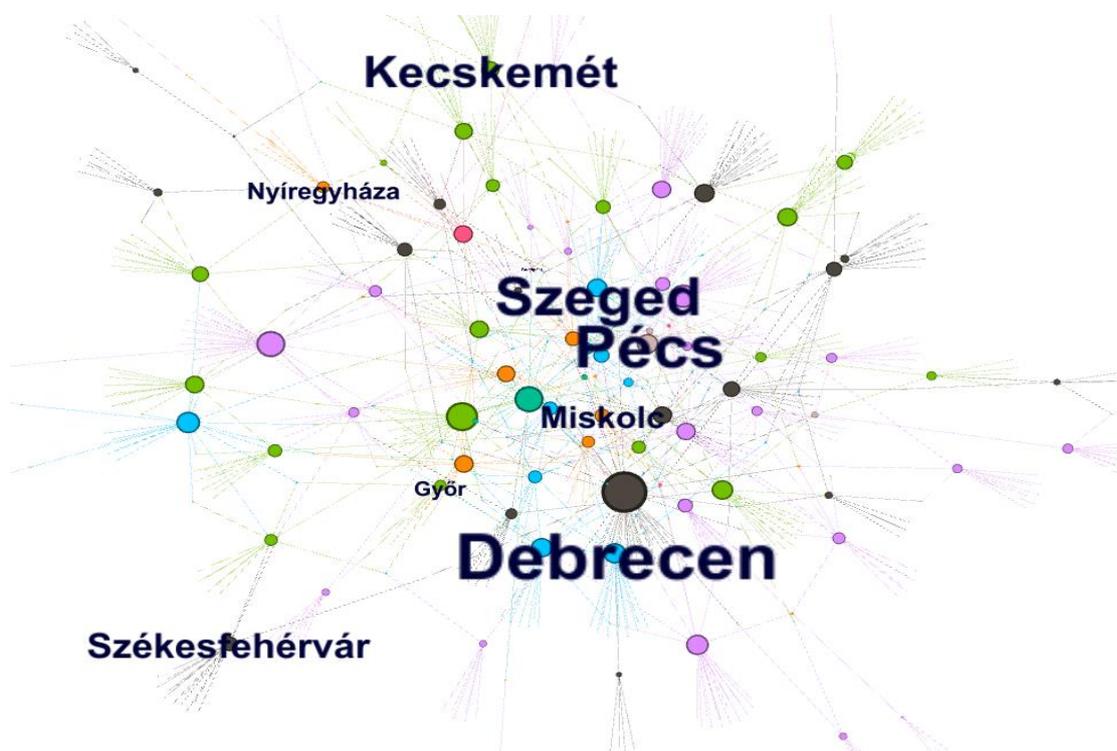


FIGURE 13 - THE SISTERING NETWORK OF HUNGARIAN CITIES IN CENTRAL AND EASTERN EUROPEAN NETWORK OF TWINNED CITIES PROGRAM (SOURCE: OWN EDITING WITH GEPHI 0.9.3.)

## 5. DISCUSSIONS AND CONCLUSIONS

This research looked at the practice of sistering from a network analysis perspective. Although there is no guarantee that the study covers all existing twinning relationships, it is certain that the results provide reliable insights into emerging network structures and country preferences. Since, for many cities, no distinction is made between a sistering and co-operation partnership, these are treated as together in this

study. In the case of metropolitan areas where a partnership agreement was established with a specific city district, the whole city was considered as a partner instead of the district. Furthermore, since the official web site of the examined cities do not uniformly indicate the date of the twinning agreement, i.e. when the partnership was established or to what extent it is active, these last two criteria are not examined in this study.

One of the challenges of urbanisation in the 21st century is that around 70% of people in the European Union live in urban areas. More than 70% of the EU's gross domestic product (GDP) is produced in cities (ESPAS, 2020). Another important challenge is that the population of the 27 European Member States was estimated at 446.8 million on 1 January 2019 (Eurostat, 2019). Similar to Hilbert's (2017) study, the present research provides the relevant conclusions for the CEE region in light of the appreciation and transformation of municipal and urban diplomacy on a global and EU level. This is because the international relations of a given municipality, such as twinning, contribute to the competitiveness of the municipality, such as the development of foreign businesses, investments and tourism (Koltai & Filo 2021). Cohen (2020) also demonstrated that twinning programmes have a positive impact on local tourism. Thus, it is important for policy makers and local municipal leaders to plan their twinning policies more effectively and consciously.

As Cross (2010) put it, meaningful twinning is an asset for all communities and nations. However, fully exploiting them requires skills and commitment that are talked about but often lacking in implementation. The increased emphasis on economic development as the primary driver of twinning offers opportunities but also risks as the political focus shifts from relationship building to pragmatic, shorter-term goals (Cross 2010).

Analysis has shown that there is a lack of conscious awareness and planned co-operation among twinning partnerships in Central and Eastern Europe. In the ten countries analysed, city sizes (categories) and the number of twinned cities increase in direct proportion to the number of inhabitants. Within the categories of cities, the highest number of partnerships is found in cities of international importance and macro-regional centres, so it can be said that these cities perceive twinning as an opportunity to maintain their competitiveness.

The above also indicates that sistering can play an important role in shaping urban development strategies, shaping their approach and direction as a whole, as well as shaping specific - and expanding - areas of expertise. Getting to know each other's cities, good practices, joint actions, and joint appearances can shape the interaction between cities and increase the competitiveness of participants. It should be stressed that meaningful links - which have not been analysed in the studies - need to be planned and consciously developed - not only to provide an opportunity for a sub-area or institutional

group to get to know each other and renew themselves, but also to shape the approach to urban development as a whole, and to exploit the potential of co-operation in a range of functions.

We have registered a wealth of twinning links between cities in Eastern and Central Europe. There is no close correlation between city size and the number of contacts, the research has shown that larger cities are more active in co-operation but location, economic character and activity, the persistence of different institutions, or even historical traditions and neighbourhood relations also shape the frequency of contacts with sufficient intensity.

The networks of co-operation are dense, with larger cities with international relations standing out from the urban population, and the centres with the most economic activity standing out even more so. The same was confirmed by the interrelationships between metropolitan areas with at least 10 co-operation partners where economic and historical similarities, differing educational levels, and tourism were even more pronounced.

In the case of co-operation, Europe is the dominant direction, followed by Asia (18%); often motivated by historical links or, more recently, economic co-operation, but in many cases, it is difficult to understand the possible content of the agreements.

The size of European relationships and the nature of the country make it easier to identify the identities sought, the links with the historical past, the economic, or perhaps the social or settlement structure. In addition to the greater weight of Western Europe, Eastern and Central European countries are also metropolitan; with small towns and cities dominating relations in Central Europe and, to a lesser extent, in other large regions. The other groups of cities analysed show even more spatial distribution. Hungary and Poland account for the majority of the relationships, with the former being dominated by small town relations, while the latter possessing a more moderate representation of higher city categories which is also a consequence of the frequency of occurrence of city sizes, various cultural and religious similarities or co-operation in terms of proximity. In the case of Hungarian centres, the twinned cities of Debrecen, Pécs, Szeged, and Kecskemét are dominated by the large Eastern and Central European cities, with which more active relations have been established.

How these relations are integrated into the development policies of the individual cities, in the interactions between their institutions, and whether some kind of co-operating cluster of cities is being created in Eastern and Central Europe, whether there are any possible and actual control centres for this is what we intend to examine in the next phase of the research.

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## Annex 1

COUNTRY	REGIONAL CENTRE WITH A POPULATION OF 100-200 THOUSAND INHABITANTS	MULTI-REGIONAL CENTRE WITH A POPULATION OF 201-300 THOUSAND INHABITANTS	MACROREGIONAL CENTRE WITH A POPULATION OF 301-500 THOUSAND INHABITANTS	LARGE CITY OF INTERNATIONAL IMPORTANCE WITH A POPULATION OF 500+ THOUSAND INHABITANTS	TOTAL
GERMANY	77	17	16	5	115
UKRAINE	37	29	6	6	78
ITALY	37	19	7	3	66
FRANCE	37	13	9	5	64
HUNGARY	31	4	10	3	48
POLAND	27	5	8	1	41
GREECE	21	9	8		38
ROMANIA	23	2	5		30
SLOVAKIA	19	2	4	1	26
FINLAND	14	3	5	1	23
CZECH REPUBLIC	14	1	4	2	21
NETHERLANDS	11	4	4	2	21
UNITED KINGDOM	12	5	3	2	22
LITHUANIA	7	5	4	4	20
SERBIA	13	5	1		19
SWEDEN	9	3	5	1	18
BULGARIA	8	2	5	1	16
CROATIA	9	1	6		16
AUSTRIA	9	2	1	3	15
MOLDOVA	9	5	1		15
ENGLAND	6	3	3		12
DENMARK	6	3	2		11
NORTH MACEDONIA	5	3	3		11
BELARUS	5		5		10
PORTUGAL	5	1	3	1	10
SLOVENIA	7	1	2		10
SPAIN	4	4	1	1	10
BELGIUM	8		1		9
SWITZERLAND	5			3	8
BOSNIA AND HERZEGOVINA	5	1	1		7
LATVIA	1		4		5
ALBANIA	1	2	1		4
MONTENEGRO	2	1	1		4
IRELAND	3				3
NORWAY	2		1		3
CYPRUS	1				1
ESTONIA			1		1
ICELAND				1	1
LUXEMBOURG	1				1
MALTA	1				1
TOTAL	492	155	141	46	834

Source: own compilation

## Annex 2. Sister city contact in Asia

COUNTRY	REGIONAL CENTRE WITH A POPULATION OF 100-200 THOUSAND INHABITANTS	MULTI-REGIONAL CENTRE WITH A POPULATION OF 201-300 THOUSAND INHABITANTS	MACROREGIONAL CENTRE WITH A POPULATION OF 301-500 THOUSAND INHABITANTS	LARGE CITY OF INTERNATIONAL IMPORTANCE WITH A POPULATION OF 500+ THOUSAND INHABITANTS	TOTAL
CHINA	24	14	10	4	52
RUSSIA	18	5	8		31
ISRAEL	11	5	4	3	23
TURKEY	11	7	7		25
JAPAN	4	2	2	1	9
PALESTINE	4	2	1		7
SOUTH KOREA	3	4	1		8
GEORGIA	2	5	2	4	13
MONGOLIA	2				2
PHILIPPINES	2	1			3
ARMENIA	1	2			3
INDONESIA	1	1			2
IRAN	1	1			2
LEBANON	1				1
TADIKISTAN	1				1
TAIWAN	1		1		2
INDIA		1			1
IRAQ		1			1
JORDAN		1			1
KAZAKHSTAN		2	2		4
PAKISTAN		1			1
SAUDI ARABIA		1			1
UZBEKISTAN		1			1
VIETNAM		2	2		4
TOTAL	87	59	40	12	198

Source: own compilation