European Spatial Research and Policy

Volume 23, No. 1
2016

European Spatial Research and Policy

David AMBORSKI Language Editor
Justyna WIKTOROWICZ Statistical Editor

Anna WOSIAK Maps and figures

PROOFREADING AND TYPESETTING
AGENT PR

Published by Łódź University Press
Publisher's sheets 8.3; printing sheets 8.75
W.07365.16.0.C
ISSN 1231-1952
e-ISSN 1896-1525

Łódź University Press
90-131 Łódź, Lindleya 8
www.wydawnictwo.uni.lodz.pl
e-mail: ksiegarnia@uni.lodz.pl
tel. (42) 665 58 63

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

CONTENTS

ARTICLES

REVIEW ARTICLES

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

https://doi.org/10.1515/esrp-2016-0001

ARTICLES

László FARAGÓ*, Krisztina VARRÓ*

SHIFTS IN EU COHESION POLICY AND PROCESSES OF PERIPHERALIZATION: A VIEW FROM CENTRAL EASTERN EUROPE

Abstract. The increasing dominance of neoliberalism as the key steering mechanism of the European Union (EU) since the early 1990s has implied the competitiveness-oriented reshaping of cohesion policy. The aim of this paper is to initiate a debate from a critical political economic perspective on the implications of this shift for Central Eastern European (CEE) member states. To this end, the paper discusses the formation of EU centre-periphery relations from a CEE point of view and formulates some preliminary suggestions as to how cohesion policy would need to be rethought in order to ensure the better integration of lagging CEE regions.

Key words: EU cohesion policy, EU integration, centre–periphery, Lisbonization, place-based development, Central Eastern Europe (CEE), Visegrad Group (V4).

1. INTRODUCTION

In the second half of the 1990s and in the early 2000s, several political economic analysts warned that the neoliberal restructuring of the European Union (EU) would enhance uneven development and, especially following the accession of Central Eastern European (CEE) countries, would institutionalize a deepening West-East division between richer and poorer countries and regions (see e.g. Budd, 1997; Agnew, 2001; Hudson, 2003). More than ten years after the Eastern enlargement of the Union these prophecies seem to have proven right: although there has

* László FARAGÓ, Krisztina VARRÓ, HAS Centre for Economic and Regional Studies, Institute for Regional Studies, Transdanubian Research Department, P. O. Box 199, H-7601 Pécs, Hungary, e-mail: farago@rkk.hu; e-mail: krisztinavarro@yahoo.com

been a partial national level convergence in terms of GDP across the Community, regional patterns of uneven development have clearly deteriorated (see e.g. Smith and Timár, 2010). Furthermore, cohesion policy, once conceived to address the regional problem at the EUropean scale, has gradually become reframed as a key instrument to achieve economic competitiveness objectives and, as such, it has further reinforced regional disparities.

This paper has been motivated by the observation that there is a lack of critical political economic studies that discuss the above trends from a specifically CEE perspective. The aim of the paper is then to start filling this gap by reviewing the underlying processes of CEE peripheralization in the light of the competitiveness-oriented reshaping of cohesion policy. In doing so, we draw mainly on our research on spatial policy in Hungary, but we also refer to developments in other CEE countries to provide a more general discussion that is valid for the whole region. Also, we formulate some preliminary suggestions as to how cohesion policy would need to be rethought in order to ensure the better integration of lagging CEE regions. Given that shifts in cohesion policy and CEE (regional) economic restructuring have already been widely discussed in the literature, we refrain from a detailed account of these issues. The paper is thus admittedly not a closely argued empirical study, but a piece intended to start a debate – one hopefully involving more contributions from CEE – on how cohesion policy should look like in order to tackle core–periphery differences within countries and across the EU.

2. THE EVOLUTION OF EU COHESION POLICY: FROM SELECTIVE REDISTRIBUTION TO GROWTH-ORIENTATION

In order to develop our argument, let us begin with sketching a concise overview of some key trends in cohesion policy in order to contextualize our assessment of the link between shifts in policy and processes of peripheralization. EU cohesion policy has played a crucial role in the process of EU integration. Its objectives, that is, the reduction of disparities between regions and countries can be traced back to the Treaty of Rome of 1957. The first policy instrument appeared with the creation of the European Regional Development Fund (ERDF) in 1975, but the institutionalization of a genuine 'EUropean' cohesion policy gained momentum only in the late 1980s following the accession of poorer Mediterranean countries and the prospects of adopting the single market programme (Bachtler and Mendez, 2007). The Single European Act of 1986 (Art. 130a.) identified economic and social cohesion as fundamental Community objectives, and in 1988 a major reform of the Structural Funds was undertaken. From then on, the regional problem has been

dealt with from a Community-wide perspective, within multi-annual integrated programmes and along a number of key principles.

While these principles (i.e. programming, subsidiarity, partnership, concentration and additionality) have remained in place throughout the past decades, one could witness a gradual change of objectives as well as a shift in the 'spatial perspective' of cohesion policy. As to the former, the original overarching aim of cohesion policy from the late 1980s was to secure a balanced growth between regions. In fact, the Structural Funds were meant to compensate for the impact on less developed areas of being part of a wider and integrated EUropean economy in which economic gains are divided unequally (Dunford and Perrons, 1994; Allen, 2005). Structural aid was thus selectively targeting lagging areas and areas with special needs in order to help creating the necessary institutional, infrastructural, social etc. preconditions for growth in these regions – often without sustainable results as the specific needs of territories were not taken into account. Nonetheless, cohesion policy (especially the Cohesion Funds) has significantly helped to close the development gap between wealthier and less developed member states and has thus greatly contributed to the overall territorial integration of the Community. Concerning the spatial perspective of cohesion policy, that was initially framed in regional terms. The Maastricht Treaty (Art. 198.) set up the Committee of the Regions, and regions became involved in the planning and decision-making processes related to Community Support Frameworks. In view of the new range of opportunities for regions it became commonplace to speak of the 'Europe of regions' (Borrás-Alomar *et al*., 1994) and many envisioned a federal Europe with the regions as the third level (Keating, 2008).

A (still ongoing) shift from this redistributive, regional approach has taken shape gradually in the context of globalizing pressures, EU enlargement and, most recently, the 2008 economic crisis. Following a series of positive assessments of the Structural Funds in successive Cohesion Reports in the late 1990s and early 2000, debates on the 2007–2013 Financial Perspective brought up concerns with the effectiveness of cohesion policy. In response, the Commission shifted the focus of the Structural Funds towards supporting the 2005 relaunch of the 'Lisbon agenda' to promote faster growth and more employment (Bachtler and Gorzelak, 2007). This has had three interrelated implications for cohesion policy. First, territorial solidarity and selective redistribution to less developed regions has been pushed in the background by an increasing emphasis on endogenous growth in all regions, and the focus on competitiveness, apparent already from the early 1990s (Vanolo, 2010), has become strengthened. Second, cohesion policy has acquired a more strategic orientation. The 2006 reform introduced the Community Strategic Guidelines and National Strategic Reference Frameworks, which were meant to provide a national framework for steering programmes towards Lisbon objectives (Mendez, 2011). On the whole, the 'Lisbonization' of cohesion policy has

implied the transformation of cohesion policy from a traditional regional policy field on a supranational scale into a set of instruments put at the service of general EU political-economic and governance objectives (Mendez, 2013). Third and concerning the spatial perspective of cohesion policy, attention has turned away from regions to cities and city-regions that are considered as key nodes of economic activity and growth in the globalizing space-economy (see e.g. Scott, 2001). The idea of 'Europe of regions' has thus faded away without having a significant impact on the spatial organization of EUrope.

The post-2013 reform of cohesion policy has brought about a revival of the territorial approach through the 'place-based narrative'. Principally, a 'place-based policy' refers to "a long-term strategy aimed at tackling persistent underutilisation of potential and reducing persistent social exclusion in specific places through external interventions and multilevel governance" (Barca, 2009, p. VII). While at first this suggested a return to the founding ethos of the 1988 reform, in its implementation, the place-based approach has fallen short of providing a coherent, 'territorially sensitive' framework (cf. Mendez, 2013). In the context of the Europe 2020 strategy, launched (after the failure of the Lisbon strategy) in 2010 to create the conditions for smart, sustainable and inclusive growth, cohesion policy has maintained an emphasis on competitiveness, a focus on cities and city-regions, and has remained subordinated to overall EU policy objectives (see CEC, 2014, p. XXXIII). In fact, "the increasing dominance of a master narrative on Europe 2020" (Mendez, 2013, p. 640) coupled with crisis-induced budgetary pressures have turned cohesion policy to a largely 'space-blind' policy field that is primarily managed at the national rather than subnational level. A key principle of the cohesion policy package for 2014–2020 is macro-economic conditionality, in order to ensure that the effectiveness of the five European structural and investment funds is not undermined by unsound macroeconomic policies. Furthermore, the Commission has formulated country-specific recommendations and has concluded a Partnership Agreement (PA) with each member state to define the commitments towards the Europe 2020 objectives. As it has been argued by Mendez *et al.* (2013), the dominant focus on Europe 2020 objectives and targets implies less attention to the territorial dimension; furthermore, the focus on the national level ignores the range of territorial differences within member states and hinders a place-based approach tailored to territorial needs and potentials.

The impact of these recent trends on patterns of regional disparities is especially worthwhile investigating from the point of view of the 'Friends of Cohesion Policy', i.e. member states that are net beneficiaries of cohesion policy (see Baun and Marek, 2014) and where heavy dependence on EU funding implies a stronger pressure to adapt to new policy frameworks. From the above coalition of countries this paper focuses on the new member states of CEE that form a distinctive group as in their case regional patterns of development have been

shaped both by processes of post-socialist economic transition and EUropeanization (Monastiriotis, 2001). This paper assumes that the specificities of economic transition are key to understanding the – as it will be argued, negative – effects of cohesion policy change in the CEE context. Hence the next section offers a succinct discussion of this issue.

3. THE "INTEGRATION" OF CENTRAL EASTERN EUROPEAN SPACE-ECONOMIES INTO EUROPE

While in the early 1990s hopes were high concerning the quick economic integration of CEE, towards the end of the decade it had become clear that the adhesion to neoliberal market principles had not led to convergence but to a new economic divide between the West and 'the rest' (see e.g. Agnew 2001). As analyses pointed out already in the early 2000s, foreign direct investment (FDI) has not provided a vehicle of regional development as appropriated surplus value has flown in an East-West direction. Similarly, trade liberalization and financial capital flows have favoured the old member states (Sokol, 2001). Indeed, the fact that "the integration" of CEE economies was steered from outside by the strategies of powerful financial, economic and political institutions such as the IMF, the World Bank, the OECD and the EU resulted in what Nölke and Vliegenthart (2009) have termed 'dependent market economies'. This means, above all, that the primary means of raising investments is linked to foreign direct investments (FDI) and foreign-owned banks, and that corporate strategies are adopted in foreign TNC headquarters (ibid.). The export rate of CEE countries into the EU-27 has not increased since their accession to the EU in 2004; since the outbreak of the financial crisis it has even diminished (Kengyel, 2014, p. 495). With their comparative advantage lying in their cheap and relatively well-qualified and productive labour force and (in international terms) average levels of technology transfer, CEE countries have practically become assembly platforms of transnational corporations (TNCs). TNCs generally import key technological and organizational innovations and know-how from abroad and are not motivated to develop intense R&D cooperation with local suppliers and universities (Ženka *et al.*, 2014).

The EU accession process was characterized by asymmetric power relations (and a willing attitude of CEE national political elites, see Balázs, 2014) and implied fitting candidate states into the 'Maastricht straight-jacket' (Budd, 1997). The imposition of fiscal and monetary discipline has substantially reduced the room for manoeuvre of economic policies and has further reinforced relations of dependence. In particular, low rates of domestic savings and fiscal constraints on government investment made CEE countries become more dependent on FDI.

Post-socialist transition processes and the way in which CEE economies have become incorporated into EUrope have produced radical changes in spatial development and have significantly redrawn the map of regional inequalities. More concretely, three main trends have been observable: the appearance of an East-West gradient, with Western parts of CEE countries outperforming Eastern parts; a growing divergence between well-performing urban regions benefiting from the bulk of FDI on the one hand and (peripheral) rural regions on the other; and a polarization between CEE countries' main metropolitan areas (usually the national capital) and 'the rest' (Ehrlich *et al.*, 2012). On the whole, even though there has been evidence that in terms of GDP per capita, the gap between Western European and CEE countries has been closing, this partial national level convergence has been coupled with the aggravation of sub-national patterns of uneven development (Smith and Timár, 2010). Or to refer to Monastiriotis (2011, p. 23), convergence dynamics have been coupled by processes of cumulative causation especially in early and, later-on, in more advanced stages of national development where the importance of agglomeration and, importantly, demand-side market-size effects is increasingly heightened. In concrete terms this has meant that (taking NUTS3-level data for the period 1990–2008), regional income disparities in all CEE countries rose on average by 80% (50%) between 1990 (1995) and 2007 (Monastiriotis, 2011, p. 5). As to the East-West divide at the Community level, only some capital regions in CEE member states do record a GDP per inhabitant in purchasing power parities terms that is above 75% of the EU average; the majority does not and qualifies thus as less developed. In 2011, from the 76 NUTS2 regions falling in this category in the whole EU, those 20 having a GDP per inhabitant less than 50% of the EU-28 average were all located in Eastern Europe (Eurostat, 2015).

4. SHIFTS IN COHESION POLICY AND EUROPEAN CENTRE-PERIPHERY RELATIONS

Trends of peripheralization and the related increase in regional disparities should not be seen simply as the result of structural economic "integration" processes but as being institutionally mediated by a range of policy interventions (Ehrlich *et al*., 2012). Ironically, the competitiveness-oriented reshaping of cohesion policy, which is explicitly meant to tackle the above trends, has in many respects reinforced them.

To be sure, the preparation for EU accession – especially through the Phare and twinning programmes – contributed to the institutional modernization of domestic regional policies and territorial administration systems in the (then) candidate states. However, the prospects of EU funding and the Commission's emphasis on compliance with EU guidelines implied a hastened introduction of

policy frameworks modelled at an alleged EUropean 'best practice' that did thus not consider the specificity of development problems in the context of transition (Bachtler and Downes, 2000). Also, the initial concern of the Commission with regional administrative capacity-building gave later way to a preference for governance arrangements ensuring absorption capacity (Grabbe, 2001; Bruszt, 2008). Coupled by various domestic political factors (see e.g. Varró and Faragó, 2015) this has meant that regional involvement in (spatial) development matters remained often weak and that 'regional strategies' have been rather funding-driven, pragmatic and ad hoc responses to EU policy requirements (Bachtler and McMaster, 2008; Dąbrowski, 2014). It is only in Poland that substantial decentralization to the regional level has taken place; elsewhere in CEE, centralization tendencies have prevailed.

By advancing an agenda of knowledge- and innovation-based growth, the 'Lisbonization' of cohesion policy further reinforced the lack of attention to the diverse nature of the EU's economies and industrial structures (Budd, 2007). Furthermore, coupled by the imperatives of fiscal and monetary discipline, this agenda diminished the room for elaborating genuinely *spatial* strategies in CEE member states. For example, in Hungary the increased emphasis on the contribution of cities to the Lisbon Agenda (CEC, 2005) brought about a revival of urban network policy and instigated new plans aiming at strengthening regional urban centres ('development poles') so as to lessen the socio-economic dominance of the capital (see Radvánszki, 2009). Eventually, however, due to the Commission's preference for the supply-oriented development of urban infrastructures, as well as the fact that the government of the time was under pressure to work out a convergence update, 'pole development' became reframed in terms of cluster development and university-business cooperation (see Varró and Faragó, 2015).

Surely, domestic factors, in particular aspects of (party) political struggle (Varró and Faragó, 2015) also contributed to the gradual diminishing of geographical concerns. Furthermore, in Hungary as in other CEE countries, policy actors have been too keen to uncritically adopt the notion of regional competitiveness and related concepts, disregarding thus the fact that CEE regions are 'plugged in' to the global economy through different sets of linkages than their Western European and North American counterparts where these concepts originate from. This has implied, among others, an excessive focus on the establishment and support of clusters and Regional Innovation Strategies, regardless of whether the necessary conditions for the development of these are given or not (Ženka *et al*., 2014).

Arguably, the above problematic aspects of EU cohesion policy will be further reinforced in the 2014–2020 period. The European Commission set the aim of ensuring a more effective spending of funds under the Community Strategic Framework (CSF) through a strong alignment with the policy priorities of the Europe 2020 agenda, i.e. macroeconomic and ex ante conditionality, thematic

concentration and performance incentives. As a result and in contrast to the Community Strategic Guidelines for the 2007–2013 period, the CSF does not include any territorial cohesion objectives; rather, CSF funds are now expected to become "a catalyst for growth and jobs" (CEC, 2012, p. 2). The 'territorial thinking' of the Commission became limited to formulating key country-specific challenges in 'Position Papers' that were sent to each Member State prior to the formal negotiations on the PA and Operative Programmes. Actually, however, country-specific challenges refer to national level economic policy interventions related to tackling budget deficits, job creation or innovation, among others, that are seen as necessary to comply with EU 2020 objectives. No notice has thus been taken of country-specific characteristics of (spatial) development implied by particular development trajectories or geopolitical relations.

Concerning CEE countries in particular, it has been ignored that the growth process of CEE regions is qualitatively different to that of the regional economies of older, more advanced capitalist economies and that despite their spectacular growth in the pre-crisis period, CEE economies are still in a phase of development and restructuring (see Monastiriotis, 2011). Also, although the share of new member states has slightly increased in the overall – in comparison to the 2007–2013 period, reduced – cohesion policy envelope, the introduction of a more rigorous capping to lower the level of accessible funds negatively affects slower growing CEE countries such as Hungary, Estonia, Latvia, and Lithuania (Ferry, 2015; see also Mrak *et al*., 2015). At the same time, in CEE countries the reliance on EU transfers to fund policy instruments is particularly strong and the limited availability of domestic funding has been exacerbated by co-funding requirements; in fact, most prominent domestic instruments have been subsumed into EU programmes (Ferry and McMaster, 2013). Added to the dependence of CEE economies on FDI, this reliance of the public domain on EU funding has actually created a state of 'double dependence' and has further strengthened centre-periphery relations.

A crucial issue is furthermore the 'space-blindness' of the current cohesion policy approach that implies a lack of attention to a set of (interrelated) *spatial* development challenges specific to the CEE region such as the weak position of second- and third-tier cities in national and European urban networks (Gál and Lux, 2014), the impact of the out-migration of qualified workforce to Western Europe (Borén and Gentile, 2007), or issues such as the spatial segregation of the Roma population and the regeneration of high-rise housing estates built during socialism.

The dominance of the EU 2020 discourse and the related strengthening of national level (economic) policy actors raises serious doubts concerning the room for genuinely place-based development, although this has figured as a key leitmotiv in post-2013 cohesion policy reforms (Mendez, 2013; Mendez *et al*., 2013). One of the main reasons for low levels of cohesion policy effectiveness in CEE countries

has been the lack of strategic planning. This has resulted partly from the Commission's strong emphasis on absorption and its attachment to rigid monitoring and evaluation processes (Ferry, 2015). On the other hand, as Dąbrowski (2014) argued in his study of three CEE regions – in Poland, Czech Republic and Hungary – a lack of strategic capacity at the subnational level in particular has been a key obstacle to implement place-based approaches to regional economic development. Given the prevailing emphasis on macroeconomic conditionality on the one hand and the lack of strategic guidelines tailored to the specificities of the CEE spatial context and geared towards bringing about long-term structural readjustment on the other, the effectiveness of the place-based approach in CEE countries remains questionable in the current programming period.

5. DISCUSSION

Key to the transformation of EUropean cohesion policy in the past decades has been the reframing of the notion of territorial cohesion as coherent with neoliberal competitiveness. However, contrary to what the currently dominant policy narrative suggests, territorial cohesion and competition are not easily reconciled; rather, they are contested terrains of political agency and public discourse (Vanolo, 2010). The aim of this paper is to emphasize the need to address the complementarities and trade-offs between the objectives of economic competitiveness and territorial cohesion from a specifically CEE perspective. Scholarship on economic development has repeatedly shown that the assumption that growth will trickle down from wealthier European regions to poorer ones does not hold (see e.g. Dunford and Perrons, 1994; Budd, 2007; Monastiriotis, 2011). Yet, cohesion policy seems to remain underwritten by a belief that the equalizing force of the market will help less developed CEE regions to catch up with their more prosperous Western (and Central Eastern) counterparts. According to the latest Report on Cohesion, competitiveness remains low in most CEE regions with the exception of capital city regions and for the most part these "do not *as yet* generate any measurable spillovers to benefit other regions" (CEC, 2014, p. XXX, emphasis added).

Addressing the link between competitiveness and cohesion implies making political choices. We would like to suggest that in order to strengthen the EU as a political community, cohesion policy should be remodelled as a more solidary and redistribution-oriented policy field; one that better acknowledges the gains from economic integration are divided very unequally across EU regions. Key to this approach would be the recognition of a variety of possible regional development trajectories and that these are shaped simultaneously by the historically evolved qualities and attributes of regions on the one hand and by

interconnections with other regions and extra-regional processes at different spatial scales on the other (Massey, 1979; 1984; 2001). To this end, cohesion policy should accord CEE regions greater room to devise strategies that 'correspond' better with their specific trajectory of development and that allow them to enhance their territorial capital as they see it fit. As one of the first steps towards this more flexible approach, CEE member states – and, possibly, other groups of countries with similar development challenges, such as Mediterranean states – should be given the freedom to formulate specific goals for one part of their indicative financial frameworks. Also, concerted efforts from both EU and national levels are needed to improve the administrative capacity at the sub-national level and to raise awareness of the benefits of strategic planning among local and regional stakeholders (cf. Dąbrowski, 2014).

Furthermore and crucially, given that more prosperous regions in the old member states tend to benefit more from the inter-regional flows of goods, services and people generated by integration processes, it would be imperative to replace the universality of spatial coverage by the selective targeting of less developed regions. This latter view has been dismissed by various arguments. Barca (2009, p. XIV), for example, argues that the Union needs to ensure that citizens, including those of rich regions, have an equal chance of benefiting from the opportunities and of avoiding the risks related to market integration. Similarly, Ferry (2015) contends that EU-wide coverage is necessary to ensure commitment to cohesion policy and to prevent it from being seen as a kind of welfare policy compensating less prosperous regions. As he further notes, maintaining a common policy framework facilitates sharing experience and knowledge exchange on regional development across the EU and this is particularly beneficial for CEE countries. Finally, concerns with absorption capacity also often imply an opposition of the selective privileging of lagging regions.

Yet there are several counterarguments that have been largely overlooked by the mainstream scholarly literature. To begin with, ensuring "continued interest in and commitment to the [i.e. cohesion] policy" (Ferry, 2015, p. 26) could (should) be possibly also ensured by a wider and more explicit acknowledgment of the fact that subsidies accorded to CEE regions do not only benefit the regions in question but also wealthier regions, and that they help enhancing economic and social integration across the whole Union. As a study evaluating the impact of the implementation of cohesion policy in the Visegrad Group countries (V4) in the EU-15 showed, economic growth resulting from EU-financed projects in the recipient countries creates additional demand for certain goods and services. Also, the increase in demand may lead to increased trade (exports) between countries of the EU15 and the V4 in specific economic sectors. In addition to this, there are also positive externalities in the form of increased potential for

innovation and science across the EU, increased ecological safety and the development of international transport networks (Ministry of Regional Development of Poland, 2011).

Second, the link between a common cohesion policy framework and knowledge exchange needs to be put in a more critical light. By now there have been more and more studies emphasizing the need to attend to the way in which spatial development knowledge is created, contested, mobilized and controlled across the governance architectures of the Union, and to how these processes are still characterized by the inequality of West-East relationships. According to Timár (2004), for example, since the early 1990s unequal political economic relations have engendered the formation of a Western hegemony of spatial knowledge production with so-called 'EU experts' as key actors who have often been practically ignorant of the region and the country which they are supposed to study. In spite of calls for the need of a more reciprocal approach in developing a "systematic exchange of [spatial] planning knowledge" (Pallagst, 2006, p. 264), the divide between agenda-setting 'Western' experts and 'executive' Eastern actors having little to no chance of substantial policy-shaping impact has largely prevailed. Surely, there is evidence of an increasing and more proactive involvement of CEE actors in spatial policy development (for example in the ESPON 2013 programme), yet their influence over the actual evolution of cohesion policy framework is still far from straightforward (Cotella *et al*., 2012). Given the previously discussed, persisting lack of consideration of CEE spatial development specificities in designing cohesion policy measures, it is far from obvious how the universality of eligibility criteria would contribute to more balanced West-East relations in policy knowledge creation. What is needed to achieve the latter is a long-term commitment to processes of institution-building, social capital creation, and the strengthening of civil society in CEE countries (Paraskevopoulos and Leonardi, 2004) – these would actually also contribute to enhancing administrative capacity. Furthermore, it would be crucial to design consultation and decision-making mechanisms that allow for drawing on to spatial knowledge that has been marginalized to date.

6. CONCLUDING REMARKS

The increasing hegemony of neoliberalism as the key steering mechanism of the EU since the early 1990s has gradually pushed concerns with redistribution in the background, and this has had particularly unfavourable consequences for the way in which CEE regions have become part of EUrope. Indeed, as Agnew (2001, p. 34) remarked, Eastern enlargement "has come at a particularly inauspicious time in the evolution of the EU". However, warnings that the attachment to neoliberal principles would lead to a fragmented Europe (Agnew, 2001) have found little

resonance in EU political circles. As Jean-Claude Juncker, the current President of the European Commission made clear in his opening statement to the European Parliament delivered as a candidate for the above post: "We do not necessarily all have to move at the same speed – the Treaties provide for that and we have seen that we can work with different arrangements. Those who want to move further, faster, should be able to do so" (Juncker, 2014, p. 12).

This paper has been based on the conviction that the above idea of a EUrope at various 'speeds' undermines the overall economic and geopolitical position of the EU in the long term, and that the strength of the EU as a political community depends on tackling the growing (West-East) centre-periphery gap. We argued that this necessitates a more solidary and redistribution-oriented cohesion policy that is sensitive to both the historically evolved particularities of regions and to the way regional development paths are interconnected.

In order to accomplish such a rethinking of cohesion policy, CEE member states will need to join forces to ensure a better representation of their common interests with regard to the future shaping of cohesion policy. Surely, in spite of their concerted action as the 'Friends of Cohesion Policy' for the preservation of the weight of cohesion policy expenditures, the reality of CEE cooperation in this regard appears not too promising. Following the covergence of national regional policy systems until 2006, one could witness an increasing divergence of policy-making trajectories across the region (Ferry and McMaster, 2013), as well as a diversity of standpoints concerning cohesion policy objectives (for example during the negotiations on the 2014–2020 multi-annual financial framework, see Mrak *et al*., 2015). Arguably, however, this divergence and diversity, and the failure to develop a more harmonized CEE standpoint cannot simply be explained by differences in institutional legacies, levels of own funds and different priorities, although these have certainly been key factors. What has also played an important role is the previously mentioned state of 'double dependence' in which CEE states have come to find themselves, where the disciplining force of EU policy imperatives has favoured quick national policy responses and has left little room for exploring synergies that contribute to macro-regional cohesion.

Recently, however, one can observe attempts to mobilize CEE policy-makers around the idea of a more self-reliant CEE region. For example, the so-called High Level Reflection Group, created by the Central European Policy Institute in Bratislava, and demosEUROPA, Centre for European Strategy in Warsaw issued an agenda-setting document focusing on the V4, arguing that "Central Europe should develop and cultivate its vision of its own region" and that "[t]he region also needs home-grown aspirations" (High Level Reflection Group, 2014, p. 6). Also, there have been calls from academics for more cooperation and the harmonization of national development and priorities (e.g. Káposzta and Nagy, 2015), and large-scale international research projects have been launched to formulate socio-economic

and political responses to regional polarisation in in CEE (see e.g. http://www.regpol2.eu/). It is a crucial task for especially (but not exclusively) CEE – scholars dealing with issues of spatial development in the EUropean context to keep up this momentum and to ensure that there is an ongoing critical and constructive debate on the implications of cohesion policy for the better integration of CEE regions into EUrope.

Acknowledgements. This article is based on research funded by the national Research, Development and Innovation Office (K 115870).

REFERENCES

AGNEW, J. (2001), 'How many Europes? The European Union, eastward enlargement and uneven development', *European Urban and Regional Studies*, 8, pp. 29–38.

ALLEN, D. (2005), Cohesion and Structural Funds: Competing Pressures for Reform?, [in:] WALLACE, H., WALLACE, W. and POLLACK, M. (eds), *Policy-making in the European Union*. Oxford: Oxford University Press, pp. 213–241.

ALLEN, J., MASSEY, D. and COCHRANE, A. (1998), *Rethinking the Region*. London: Routledge.

BACHTLER, J. and DOWNES, R. (2000), 'The spatial coverage of regional policy in Central and Eastern Europe', *European Urban and Regional Studies*, 7, pp. 159–174.

BACHTLER, J. and GORZELAK, G. (2007), 'Reforming EU Cohesion Policy', *Policy Studies*, 28, pp. 309–326.

BACHTLER, J. and MENDEZ, C. (2007), 'Who Governs EU Cohesion Policy? Deconstructing the Reforms of the Structural Funds', *Journal of Common Market Studies*, 45, pp. 535–564.

BALÁZS, P. (2014), 'Közeledés vagy távolodás?' *Közgazdasági Szemle*, LXI, pp. 350–362.

BARCA, F. (2009), *An Agenda for a Reformed Cohesion Policy. A place-based approach to meeting European Union challenges and expectations. Independent report prepared at the request of Danuta Hübner, Commissioner of Regional Policy*,http://www.europarl.europa.eu/meetdocs/2009_2014/documents/regi/dv/barca_report_/barca_report_en.pdf (Accessed 23 September 2015)

BAUN, M. and MAREK, D. (2014), *Cohesion Policy in the European Union*. London–New York: Palgrave Macmillan.

BORÉN, T. and GENTILE, M. (2007), 'Metropolitan Processes in Post-Communist States: an Introduction', *Geografiska Annaler*, 89 B, pp. 95–110.

BORRÁS-ALOMAR, S., CHRISTIANSEN, T. and RODRÍGUEZ-POSÉ, A. (1994), 'Towards a `Europe of the Regions'? Visions and Reality from a Critical Perspective', *Regional Politics and Policy*, 4, pp. 1–27.

BRUSZT, L. (2008) 'Multi-level governance—the Eastern versions: Emerging patterns of regional development governance in the new member states'. *Regional and Federal Studies*, 18, pp. 607–627.

BUDD, L. (1997) 'Regional integration and convergence and the problems of fiscal and monetary systems: Some lessons for Eastern Europe', *Regional Studies*, 31, pp. 559–570.

BUDD, L. (2007) 'A Cohesion pact for the regions', *Policy Studies*, 28, pp. 347–363.

CEC (Commission of the European Communities) (2005), *Cohesion Policy in Support of Growth and Jobs: Community Strategic Guidelines, 2007–2013*. Available at http://ec.europa.eu/regional_policy/sources/docoffic/2007/osc/050706osc_en.pdf (Accessed 23 September 2015)

CEC (2012) *Position of the Commission Services on the Development of Partnership Agreement and Programmes in HUNGARY for the Period 2014–2020*. Available at http://ec.europa.eu/regional_policy/what/future/pdf/partnership/hu_position_paper.pdf (Accessed 23 September 2015)

CEC (2014), *Investment for jobs and growth Brussels, Promoting development and good governance in EU regions and cities Sixth report on economic, social and territorial cohesion*. Luxembourg: Publications Office of the European Union.

COTELLA, G., ADAMS, N. and NUNES, R. J. (2012), 'Engaging in European Spatial Planning: A Central and Eastern European Perspective on the Territorial Cohesion Debate', *European Planning Studies,* 20, pp. 1197–1220.

DĄBROWSKI, M. (2014), 'Towards place-based regional and local development strategies in Central and Eastern Europe? EU cohesion policy and strategic planning capacity at the sub-national level', *Local Economy*, 29, pp. 78–393.

DUNFORD, M. and PERRONS, D. (1994), 'Regional inequality, regimes of accumulation and economic development in contemporary Europe', *Transactions of the Institute of British Geographers*. 19, pp. 163–182.

EHRLICH, K., KRISZAN, A. and LANG, T. (2012), 'Urban development in Central and Eastern Europe – between Peripheralization and centralization?', *The Planning Review*, 48, pp. 77–92.

EUROSTAT (2015) http://ec.europa.eu/eurostat/statistics-explained/index.php/GDP_at_regional_level (Accessed 23 September 2015).

FERRY, M. (2015), 'Synthesis Report: WP8. Cohesion Policy and its Components: Past, Present and Future', GRINCOH Working Paper Series, Paper No. 8, http://www.grincoh.eu/media/syhtnesis_reports/grincoh_wp8_synthesis_report_ferry.pdf (Accessed 23 September 2015)

FERRY, M. and MCMASTER, I. (2013) 'Cohesion Policy and the Evolution of Regional Policy in Central and Eastern Europe', *Europe-Asia Studies*, 65, pp. 1502–1528.

GÁL, Z. and LUX, G. (2014), *ET2050 Territorial Scenarios and Visions for Europe, Final Report 30/06/2014 Volume 8 – Territorial Scenarios and Visions for Central and Eastern Europe.*

GRABBE, H. (2001), 'How does Europeanization affect CEE governance? Conditionality, diffusion and Diversity', *Journal of European Public Policy*, 8, pp. 1013–1031.

High Level Reflection Group (2014)', *Central Europe fit for the future – Visegrad Group ten years after the accession*. Bratislava-Warsaw: CEPI-demosEuropa. http://www.demosservices.home.pl/www/files/demos_Central%20Europe_fit_web.pdf (Accessed 23 September 2015)

HUDSON, R. (2003), 'European integration and new forms of uneven development but not the end of territorially distinctive capitalisms in Europe', *European Urban and Regional Studies*, 10, pp. 49–67.

JUNCKER, J-C. (2014), *A New Start for Europe: My Agenda for Jobs, Growth, Fairness and Democratic Change Political Guidelines for the next European Commission Opening Statement in the European Parliament Plenary Session*. http://ec.europa.eu/priorities/docs/pg_en.pdf (Accessed 23 September 2015).

KÁPOSZTA, J. and NAGY, H. (2015), 'Status report about the progress of the Visegrad countries in relation to Europe 2020 targets', *European Spatial Research and Policy*, 22, pp. 81–99.

KEATING, M. (2008) 'A Quarter Century of the Europe of the Regions', Regional and Federal Studies,18, pp. 629–635.

KENGYEL, Á. (2014), 'Az európai uniós tagság mint modernizációs hajtóerő', *Közgazdasági Szemle*, LXI, pp. 493–508.

MASSEY, D. (1979), 'In what sense a regional problem?', *Regional Studies*, 13, pp. 233–243.

MASSEY, D. (1984), *Spatial Divisions of Labour: Social Structures and the Geography of Production*. Basingstoke: Macmillan.

MASSEY, D. (2001), 'Geography on the agenda', *Progress in Human Geography* 25, pp. 5–17.

MENDEZ, C. (2011), 'The Lisbonization of EU Cohesion Policy: A Successful Case of Experimentalist Governance?', *European Planning Studies*, 19, pp. 519–537.

MENDEZ, C. (2013), 'The post-2013 reform of EU cohesion policy and the place-based narrative', *Journal of European Public Policy*, 20, pp. 639–659.

MENDEZ, C., BACHTLER, J. and GRANQVIST, K. (2013), European Commission Perspectives on the 2014–2020 Partnership Agreements and Programmes: A Comparative Review of the Commission's Position Papers, *European Policy Research Paper*, nr. 84, Glasgow: European Policies Research Centre, University of Strathclyde.

Ministry of Regional Development of Poland (2011), *Evaluation of benefits to the EU-15 resulting from the implementation of Cohesion Policy in the Visegrad Group countries.* Warsaw: Ministry of Regional Development of Poland.

MONASTIRIOTIS, V. (2011), 'Regional growth dynamics in Central and Eastern Europe', *LSE 'Europe in Question' Discussion Paper Series*. London: The London School of Economics and Political Science.

MRAK, M., RICHTER, S. and SZEMLÉR, T. (2015), *Cohesion Policy as a Function of the EU Budget A Perspective from CEE Member States*. Research Report 400, May 2015, Vienna: The Vienna Institute for International Economic Studies.

NÖLKE, A. and VLIEGENTHART, A. (2009), 'Enlarging the Variety of Capitalism: The Emergence of Dependent Market Economies in East Central Europe', *World Politics*, 61, pp. 670–202.

PALLAGST, K. (2006), 'European spatial planning reloaded: Considering EU enlargement in theory and practice', *European Planning Studies*, 14, pp. 253–272.

PARASKEVOPOULOS, C. J. and LEONARDI, R. (2004), 'Introduction: Adaptational Pressures and Social Learning in European Regional Policy – Cohesion (Greece, Ireland and Portugal) vs. CEE (Hungary, Poland) Countries', *Regional and Federal Studies*, 14, pp. 315–354.

RADVÁNSZKI, Á. (2009), 'Old wine in a new bottle? The Hungarian approach to polycentric territorial Development', *Urban Research and Practice*, 2, pp. 308–318.

SCOTT, A. J. (2001) 'Globalization and the Rise of City-regions', *European Planning Studies*, 9, pp. 813–826.

SOKOL, M. (2001), 'Central and Eastern Europe a Decade After the Fall of State-socialism: Regional Dimensions of Transition Processes', *Regional Studies,* 35, pp. 645–655.

SMITH, A. and TIMÁR, J. (2010), 'Uneven transformations: Space, economy and society 20 years after the collapse of state socialism', *European Urban and Regional Studies,* 17, pp. 115–125.

TIMÁR, J. (2004), ''More than 'Anglo-American', it is 'Western': hegemony in geography from a Hungarian perspective', *Geoforum*, 35, pp. 533–538.

VANOLO, A. (2010) 'European Spatial Planning Between Competitiveness and Territorial Cohesion:Shadows of Neo-liberalism', *European Planning Studies*, 18, pp. 1301–1315.

VARRÓ, K. and FARAGÓ, L. (2016), The Politics of Spatial Policy and Governance in Post-1990 Hungary: The Interplay Between European and National Discourses of Space, European Planning Studies, 24:(1) pp. 39–60.

ŽENKA, J., NOVOTNÝ, J. and CSANK, P. (2014), 'Regional Competitiveness in Central European Countries: In Search of a Useful Conceptual Framework', *European Planning Studies*, 22, pp. 164–183.

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

https://doi.org/10.1515/esrp-2016-0002

Ana PERIĆ*

INSTITUTIONAL COOPERATION IN THE BROWNFIELD REGENERATION PROCESS: EXPERIENCES FROM CENTRAL AND EASTERN EUROPEAN COUNTRIES

Abstract. The topic of brownfield regeneration has been the focus of planning debate for years. However, the aspect of institutional cooperation and strengthening the institutional capacity in order to cope with a complex task of brownfield regeneration is considered a challenge. This is particularly true for the post-socialist countries and, hence, the Czech Republic, Hungary and Serbia are chosen as the case studies of this research. By implementing a concise survey of both the institutions and policies related to the topic of brownfield regeneration in the selected countries, the research aims at determining the form, extent and nature of collaboration between different sectors, disciplines, and institutions. Based on such insights, it is finally possible to provide the recommendations for more effective institutional design within specific political and socio-economic context.

Key words: brownfield regeneration, institutions, cooperation, capacity-building, the Czech Republic, Hungary, Serbia

1. INTRODUCTION

The implementation of the sustainability principle in contemporary planning practice has resulted in a trend towards brownfield regeneration (Grimski and Ferber, 2001; Adams and Watkins, 2002; Dorsey, 2003; Dixon, Raco, Catney and Lerner, 2008). However, the regeneration of brownfield sites, i.e. "any land or premises which has previously been used or developed and is not currently fully in use, although it may be partially occupied or utilized, (…) and which may also be vacant, derelict or contaminated" (Alker, Joy, Roberts and Smith, 2000, p. 49) is complex in its very nature. In fact, the immediate reuse of brownfields is not possible without an intervention that involves a wide variety of instruments: planning, social, political, economic, environmental, etc., all of which raise the complexity of the brownfield redevelopment process

* Ana PERIĆ, Institute for Spatial and Landscape Development, Swiss Federal Institute of Technology (ETH) Zűrich, Stefano-Franscini-Platz 5, 8093 Zűrich, Switzerland, e-mail: aperic@ethz.ch

(CABERNET, 2007; Broos, Ertel, Gray, Schug and Vegter, 2007; Perić, 2013). In this paper, the complexity mainly refers to the demanding cooperation among sectors, disciplines, and institutions involved in the process of brownfield regeneration (Garb and Jackson, 2010).

The topic of growing coordination and strengthening the institutional capacity in order to effectively solve the problems of urban redevelopment is emphasised also in some of the key strategic European documents. Thus, in the *Leipzig Charter on Sustainable European Cities* (IMMUDTC, 2007), the integrated approach to sustainable urban development was institutionalised. More precisely, brownfield revitalisation can be successfully performed only by the means of integrated developmental policies formulated through the cooperation of different institutional levels. Also, as a response to the complexity of brownfield regeneration, various forms of collaboration among participants in a given process are proposed. According to the report of the Organization for Economic Co-operation and Development (OECD, 2006), there are several reasons for such a collaboration: the creation of synergy effects, as well as the risk sharing between the partners participating in the joint process, then finding the additional sources of financing, and finally, the reduction of open conflict and creating an atmosphere for a decision-making based on consensus. According to the *Action plan for the EU Strategy for the Danube Region* (EC, 2010), the institutional strengthening can be achieved through stepping up the institutional capacity and cooperation – there is no need for new laws and institutions, but the links between different policies and stakeholders should be coordinated in an effective way.

The research subject therefore focuses on the institutions, their cooperation with each other and the complexity of the institutional system dealing with brownfield regeneration. More precisely, the research is directed towards elucidating: 1) the roles, responsibilities and limitations of the public sector actors, as well as 2) the extent, form and nature of their cooperation. Keeping in mind that institutional reform – establishment of legal, policy and knowledge structures as well as a growing coordination among multiple actors is an important factor for the success of brownfield regeneration (Dixon *et al*., 2008; Garb and Jackson, 2010), the research hypothesis is defined as follows: The problems of brownfield regeneration can be effectively solved only by the cooperation of the institutions belonging to different branches at various territorial/administrative levels. To be more precise, the central question is the locus of institutional support for brownfield regeneration – the point is not on the structure of institutions, but on their capacity to effectively address the brownfield regeneration problem. This is a particularly challenging task for the post-socialist countries, i.e. the states with the tradition of central planning and "top-down" decision-making. Hence, the research outcome is to identify

necessary measures for promoting the institutional cooperation as well as to highlight the lessons learnt in order for them to be further implemented in other post-socialist countries.

The general structure of the paper is divided into five parts. After introductory remarks, the institutional aspect of the brownfield regeneration process is elucidated both through theoretical and empirical overview. This refers to the conceptual understanding of institutional cooperation, on the one side, and to the specificities of the post-socialist planning systems and the challenges for brownfield regeneration on the other. The next part of the paper gives a brief information on the research methodology followed by a detailed overview of the institutional context of brownfield regeneration in the Czech Republic, Hungary and Serbia as the research case studies. The central section of the paper discusses the institutional cooperation in the mentioned countries observed through several parameters: extent, form, nature as well as the ways to mediate such cooperation. Finally, a critical summary of the current institutional capacities for dealing with the brownfield regeneration problem in the mentioned countries is drawn in the last part of the paper.

2. INSTITUTIONAL ASPECT OF BROWNFIELD REGENERATION: THEORETICAL AND PRACTICAL OVERVIEW

In order to better understand the topic of institutional cooperation in the brownfield regeneration process in Central and Eastern European (CEE) countries, it is useful to briefly provide a broader framework for examining this topic. Hence, the theoretical background on institutional arrangements based on cooperation will be explained. In the second part of this section, a short overview of the main social and planning conditions related to the topic of brownfield regeneration in the post-socialist states will be given.

2.1. Optimal Institutional Arrangements

The cooperation among various sectors and disciplines and, thus, the formulation of integrated policies is crucial for achieving effective urban transformation. In other words, it is not necessary to establish new institutions, but only to organise them efficiently in order to adequately approach the complex problems (Healey, 2007b). Namely, the cooperation between different institutional sectors makes the capacity for strategic action (Healey, 2007a). According to Innes and Booher (1999), the understanding of sustainable complex system as one which is adaptive

and self-organising is crucial. Only in this way is it possible for the system components to evolve, later to learn from the feedback and, finally, to experiment with new actions.

Building collaborative consensus requires using a "bottom-up" approach, which criticises the deductive model of determining the values and setting the goals. The establishment and preservation of a consensus among the different stakeholders cannot be independent of the 'hard infrastructure' – the socio-economic system and the key power holders (Healey, 1997, p. 287). Thus, the critical parameters that enable a collaborative planning process are (Healey, 1997, pp. 288–289):

– Recognising the abundance of and differences among stakeholders, as well as the complex relationships that may arise between them, as well as within them,

– Recognising the fact that many activities, usually exclusive to the domain of public administration, can also be performed outside of these institutions,

– Supporting the participation of all members of political organisations, while recognising their fundamental differences.

These parameters highlight the need for a clear determination of the jurisdiction of governmental organisations, experts, and other institutions, in addition to their mutual cooperation. More precisely, one of the basic forms of adaptation of an institutional organisation to a collaborative planning model is the decentralisation of decision-making, as well as in the implementation of planning policies (Healey, 1997, p. 98).

Therefore, it is important to strengthen vertical coordination to ensure the harmonisation of decisions made at different government levels (national, regional and local). Furthermore, compliance at the horizontal level of coordination, i.e. finding the agreement on the planning policies and decisions made among different sectors and disciplines, is considered a necessary prerequisite for an efficient collaborative planning process. Finally, in addition to cooperation among the same sectors at different government levels, much attention should be paid to cooperation between formal and informal institutions.

2.2. Brownfield Regeneration within Different Planning Systems

When it comes to the analysis of planning systems in Europe, the main differences occur as a result of the socio-political context in the past century. In this sense, we can talk about developed and developing European countries.[1] During the post-war period (the Second World War), which brought a wide

[1] The use of terms 'developed' and 'developing' countries is only one of many possible variations. The others that more deeply describe the political and economic context are: 'capitalist' vs. 'post-socialist' countries (Stanilov, 2007), or 'capitalist' countries vs. countries on the 'periphery of advanced capitalism' (Tasan Kok, 2004).

diversity of events and processes, Western European countries tended to establish sustainable procedures for resolving the conflicts between competitive land uses (Faludi, 2010; Healey and Williams, 1993; Janin Rivolin, 2008). On the other hand, in socialist countries of Central and Eastern Europe, the main task was to control the state organisation through centrally defined plans (Hirt, 2005; Maier, 1998; Nedović-Budić, 2001). Due to transformation of land ownership in recent two decades, most of the countries behind the so-called Iron Curtain suffered from inappropriate land use, especially in central city areas. The change of land ownership (in terms of replacing the state as the only land owner by the actors who were only land users in the past) caused various consequences in different countries (Stanilov, 2007; Begović, 2003).

The management of brownfields in Western and Eastern European countries was also different. Briefly put, competitiveness was the main characteristic of the developed countries' economic systems (Couch, Leontidou and Petschel-Held, 2007). In addition to this, the compact city development, awareness of environmental and public health protection and analogy between the lifestyles and the type of the settlement, contributed to the sustainable management of brownfield areas (Greenberg, Lowrie, Mayer, Miller and Solitare, 2001).

In contrast to this, central planning systems and unreasonable land management in Eastern Europe tended to retain industrial areas in the central city parts that, due to the privatisation process and the ownership change in the 1990s, became large misused city land. Nowadays, the consequence of planning institutions' inflexibility and irresponsibility for the built environment result in positioning the residential areas around the industrial zones, which, in turn, simply occupy central urban spots.[2] It is interesting to mention that a specific urban pattern appeared not only owing to the absence of the real estate or capital market, but it had also ideological origin. Namely, industrial production was the generator of social development, but it was used also to diminish the intellectual and religious character of the city (Garb and Jackson, 2010). Furthermore, the transformation of the central planning system was followed by a lack of expert knowledge and experience when tackling new urban problems, which were then pushed back due to the importance of macro-economic reforms (Stanilov, 2007). Finally, all the post-socialist countries were faced with the phenomenon of the privatisation and bankruptcy procedures, which were often used for the enrichment of a small number of people under the veil of a common interest for the city and state (Garb and Jackson, 2006).

[2] The absence of the real estate market led to the emergence of the so-called camelback within the diagram of urban zone activities (Zeković, 2007).

3. INSTITUTIONAL CONTEXT OF BROWNFIELD REGENERATION IN CEE COUNTRIES: DESCRIPTION

Before proceeding with the central parts of the paper (description and comparative analysis of the institutional framework of brownfield regeneration in CEE countries), the research methodology will be briefly explained. First, the reasons behind choosing the Czech Republic, Hungary and Serbia are given. Next, the methods for a description of the current institutional framework dealing with the topic of brownfield regeneration in the mentioned countries are provided. Finally, the appropriate parameters for the analysis of the institutional cooperation will be elucidated.

After the changes in the state organisation in the 1990s, both the Czech Republic and Hungary formulated many policies and strategies regarding brownfield regeneration (Vojvodíková, 2010; Barta, Beluszky, Czirfusz, Gyori and Kukely, 2006). Since the mentioned topic is the national priority (Stanilov, 2007; RESCUE, 2004; CABERNET, 2009), these states made a significant shift in planning and urban development practice. Although land-use management in Serbia in the past century was similar to that in the above-mentioned post-socialist countries, the socio-economic transition towards the market economy system in Serbia has lasted for years. The process of land privatisation started in 2009, and the restitution and denationalisation of the state property is still in its beginning phase.[3] An inability to perform the land transactions was the main obstacle to any other reform process and the progress of society (Begović, 2002; Vujovic and Petrovic, 2007). All this, in addition to the absence of inner urban development policy, creates the main barriers for successful brownfield regeneration in Serbia (Perić and Maruna, 2012a, 2012b).[4] Hence, based on the experiences from the Czech Republic and Hungary, one of the research goals is to define the guidelines for Serbia as a country with a lack of institutions and their fuzzy responsibilities.

The focus of the description (provided in Section 3 of this paper) is on the main public sector representatives responsible for the topic of brownfield regeneration. The most important actors in this research are in general defined as: national government (ministries and agencies), regional authorities and municipalities. The identification of the main actors is done through analysis of major

[3] Until 2009, when the new Planning and Construction Law (Official Gazette, No. 72/09) was approved, land was completely public property, which implied absence of the real estate market. The Restitution and Denationalisation Law (Official Gazette, No. 72/11) was approved in 2011, however the practical guidelines for its effective implementation are still lacking.

[4] The term brownfield has been recently defined. Actually, before the formulation of the *Spatial Development Strategy of the Republic of Serbia* (RASP, 2009) in the year 2009, where the brownfield site was defined as: "(…) the land, which was previously built and used, but in the meantime, due to financial or other economic reasons became abandoned", there was no clear definition regarding the mentioned sites.

documents, i.e. it was interesting to see which institutions are responsible for the formulation of the main legislative and regulatory acts related to the topic of brownfield regeneration. The analysis comprised both the primary (laws, spatial plans, spatial strategies) and secondary sources (studies and reports of the experts in the domain of brownfield regeneration in the Czech Republic, Hungary and Serbia). Thus, regarding the Czech case study the following primary sources were analysed: Planning and Construction Law (183/2006Sb), *The Strategic Framework for Sustainable Development in the Czech Republic* (GCSD, 2010a), *Spatial Development Policy of the Czech Republic* (GCSD, 2010b), and the *National Strategy for Brownfield Regeneration* (Ministry of Industry and Trade, 2008). For Hungary, the following documents were found relevant: Building Law (LXXVIII/1997), Law on Regional Development and Planning (LXXV/2004),[5] *New Hungarian Development Plan* (NDA, 2007), *National Sustainable Development Strategy* (NDA & MoEW, 2007), *Budapest Urban Development Concept* (The Municipality of Budapest, 2003), and *Medium-Term Urban Development Programme of Budapest – The Podmaniczky Programme 2005–2013* (The Municipality of Budapest, 2005). In Serbia, the most relevant documents are: Planning and Construction Law (Official Gazette, No. 72/09, 24/11), Law on the Spatial Plan of the Republic of Serbia from 2010 to 2020 (Official Gazette, No. 88/10), *Spatial Development Strategy of the Republic of Serbia from 2009 to 2020* (RASP, 2009) and *Regional Development Strategy for Serbia from 2007 to 2012* (Official Gazette, No. 21/07). The main method used in analysis of the documents is content analysis, with the aim of identifying the main actors in public sector and describing their roles, limitations, and responsibilities (which is presented in Section 3 of this paper).

Based on the overview, it is possible to critically analyse the various aspects of institutional cooperation. This analysis is structured according to the following parameters:

– Extent of cooperation (which can be measured through the number of jointly prepared documents),

– Form of cooperation (horizontal, vertical – "top-down", "bottom-up"),

– Nature of cooperation (cooperation prescribed by law or informal cooperation),

– Presence of the mediators in cooperation (i.e. specific expert body that facilitates the cooperation among other public sector actors).

The analysis is based on the personal interpretation of the author supported by other secondary sources in the domain of brownfield regeneration in the Czech Republic, Hungary and Serbia. The aim of the analysis is to present and understand the institutional dynamics related to complex urban transformations such as the brownfield regeneration process (presented in Section 4 of this paper).

[5] As these two laws are in the Hungarian language, their analysis is based on the interpretation by Pallai (2008).

3.1. The Czech Republic

3.1.1. Brownfields in the Czech Republic

In the Czech Republic, with a heritage of a centralised governance and planning system followed by the transition process, brownfield regeneration has been recognised as a priority in a number of planning policies since the 2000s. According to the analysis on the number and area of brownfields conducted by the CzechInvest agency in 2007, there are more than 10,000 brownfield sites, with over 2,000 of these in the larger size category (over 2 ha or over 500 m^2 of built area), with many of them in prime urban locations (Garb and Jackson, 2010). Moreover, there are 600 ha of regenerated land, with a built-up volume of 6,000,000 m^2, which indicates that brownfields are an important part of the Czech urban planning policy (Vojvodíková, Bergatt Jackson and Hermann, 2006). This „visibility" of brownfields in the main planning policies resulted from the international intervention of mainly UK and US expert agencies, in terms of local financing, followed by national research programmes organised by responsible ministries. The result of these activities can be seen in the formulation of various policy documents that, finally, led to legal changes, thus enabling the brownfields identification in the main planning documents (Vojvodíková, 2010). Vice versa, such an early awareness of the brownfield problem paved the way for the support of the brownfields reuse over the last decade (Garb and Jackson, 2010).

3.1.2. Institutional framework for brownfields

As the most important actors in the process of brownfield regeneration in the Czech Republic, the following institutions under the jurisdiction of public administration can be distinguished: the Ministry of Regional Development, the National Property Fund – a state agency responsible for the privatisation process that after the year 2005 was transformed into the Ministry of Finance, the Ministry of Environment, the CzechInvest – a government agency (funded by the Ministry of Trade and Industry) for promotion of investments in brownfield regeneration projects, and the Ministry of Finance. In addition to the national governance bodies, the roles of both the regional and local administrative levels will be briefly explained. The review of the institutional framework in charge of the brownfield issue is given in Table 1.

Table 1. Institutional Framework for Brownfields in the Czech Republic

Institution	Functions and Responsibilities
Ministry of Regional Development	Its role is providing support to cities and regions in better understanding of the brownfield problem, as well as in greater cooperation with the stakeholders involved in the brownfield regeneration process. Although this ministry does not have all the necessary information concerning the mentioned problem, it can choose outside consultants, with the possibility of involving foreign experts as well. It is closely linked with the local government in terms of providing technical trainings and guidelines for participation of municipalities in the brownfield regeneration process.
Government Council for Sustainable Development	This expert body is responsible for the preparation of the main national documents on spatial development, such as *Strategic Framework for Sustainable Development in the Czech Republic* (prepared in coordination with the Ministry of Environment) and Spatial *Development Policy of the Czech Republic* (prepared in coordination with the Ministry of Regional Development).
National Property Fund	It was founded to provide guarantees to potential private investors during the regeneration of brownfields that carry not only financial, but also environmental risk. Its role was to provide the financial cover for the clean-up costs of the brownfields that were found to be contaminated during the regeneration process (regulated through the document *Environmental Clearance Contracts*). The key to the success of this organisation was in the accurate reallocation of money, as well as the exploitation of financial resources only for brownfield regeneration and not for other state projects.
Ministry of Finance	It is a key stakeholder for the issue of brownfield regeneration. Firstly, the budget for the process initiation must be approved by this Ministry. Secondly, many aspects of the brownfield programmes, as well as the legislative reforms directly fall under its jurisdiction. Its most important task is taking the strategic actions to cope with the long-term costs of existing brownfield sites.
Ministry of Environment	It acted as a technical consultant and a supervisor for the National Property Fund. This ministry is responsible for the formulation of the *National Environmental Policy*, which, among others, deals with the brownfields issue.

Table 1. (cont.)

Institution	Functions and Responsibilities
	As the orientation of the Ministry of Environment is primarily focused on meeting the environmental demands, a lack of economic pragmatism can make the rigorous standards for environmental protection counter-productive. Nevertheless, in recent years this ministry has been actively collaborating with other sectorial institutions in the field of spatial development.
CzechInvest	The success of this agency is primarily based on technical assistance from the European Union in terms of cooperation with European development agencies, and financial support as well.[6] In recent years, CzechInvest was on the way to become a national brownfield support agency, due to knowledge and skills of its members related to the brownfields issue. Its main task is not only to make an inventory of brownfields of industrial origin, but also to reconsider their use in a broader urban context, i.e. to offer back the brownfields to the market.
Regional Development Agency	It coordinates the regional information system. Its urban planning sector has a role in preparing the register of brownfield sites and its update. The experts represent the key stakeholders in charge of timely providing the brownfield-related data to all the stakeholders in the brownfield regeneration process. Regional authorities are responsible for preparing the development strategies, compiling the planning documents and policies, and, finally, using the brownfield priorities in structural funding.
Local government	According to the Planning and Construction Law, municipalities are in charge of coordinating and collecting the GIS layers' information (one of 120 layers is considered as 'land suitable for reuse', which in fact relates to the brownfields). The national Czech government has an active role in providing the mechanisms for a direct communication between the local governments and citizens.

Source: Prepared by author on the basis of Garb and Jackson 2010, 2006, 2001; Vojvodíková, 2010; Vojvodíková, Begratt Jackson and Hermann, 2006; TIMBRE, 2012

[6] The CzechInvest has been awarded with 3 million euros for three brownfield regeneration projects in the Czech Republic (Garb and Jackson, 2001).

3.2. Hungary

3.2.1. Brownfields in Hungary

In Hungary, as in many other post-socialist countries, the origin and distribution of brownfield sites is conditioned by land use patterns inherited from the past. In a narrow sense, the state ownership of land and direct state (non-market) control over the spatial recourses of cities contributed to the fact that large industry zones are located in central urban areas. The growth of the cities was strictly determined by the city administration, so the anomaly in the density gradient, the so-called "camelback", is seen in many Hungarian cities (Tosics, 2006). Another form of brownfields, which is typical of most of the Eastern and Central European countries, originates from the former Soviet military complexes (barracks, airports) (Madarasz, 2007). According to the survey conducted by the Centre for Environmental Studies in 2005, approximately 120 km^2 of brownfields were registered, mostly in industrial regional centres of the North and Transdanubian regions of Hungary, as well as in Budapest area, where brownfields occupy 68 km^2, or 13% of the metropolitan territory (MTA RKK KETI, 2007). Another study states that 51% of brownfields are abandoned industrial sites, whereby 54% of these completely lost their previous use; also, 23% of municipalities have no brownfield regeneration policy (Madarasz, 2007).

3.2.2. Institutional framework for brownfields

When it comes to the topic of brownfield regeneration, several important institutions at different levels can be outlined (Table 2). The Hungarian National Development Agency is the important actor at the national level. At the regional level, the Regional Development Agency plays a significant role and, regarding Budapest brownfields, the Metropolitan Government of Budapest is considered as relevant. The local administration and district government, latter only in Budapest due to a two-tier local administration whereas districts operate as individual cities, are the most important players in the brownfield regeneration process at the municipal level.

Table 2. Institutional Framework for Brownfields in Hungary

Institution	Functions and Responsibilities
Ministry of Environment and Water Management	It is one of the first ministries that dealt with revitalisation of contaminated brownfield sites. Its revitalisation programme was presented in the document *Green Source*, published in 2004. This ministry has the main role in structuring the priorities and formulating the vision defined in the *National Sustainable Development Strategy*.

Table 2. (cont.)

Institution	Functions and Responsibilities
National Development Agency	It is a state agency responsible for preparation of crucial strategic documents. The agency is a supervisor of the *New Hungarian Development Plan* (NHDP) implementation. The considerable role of this agency is that of collaborating with a number of various representatives, such as: national authorities, regional development agencies, and expert institutions – mainly Hungarian Academy of Sciences and numerous scientific institutes.
National Development Council[7]	It is a governmental body responsible for spatial development questions. It has an important role in monitoring and evaluation of implementing the objectives (defined in the *National Spatial Development Concept* (NSDC) and then *New Hungarian Development Plan*, as a document based on NSDC). It is in charge of preparation of proposals based on changes of developmental policies and their direct distribution to the national government.
Ministry of Spatial Development	It has an important role in formulating the Building Law and Law on Regional Development and Planning.
Regional Development Council	Its role is to monitor the calls for application for the action period of NHDP and then to evaluate the follow-up applications. The significance of this authority lies in its intermediary role. On the one hand, the council forwards information to the Hungarian National Development Agency and, on the other, it is the institution with decision-making competences towards the local government.
Metropolitan Government of Budapest	All urban regeneration programmes are under the jurisdiction of the chief architect's department within the mayor's office of the municipality of Budapest. It prepared two leading strategic documents for the Budapest metropolitan area: *Budapest Urban Development Concept* (BUDC) and *The Podmaniczky Programme* 2005–2013.

Source: Prepared by author on the basis of Grisel and van de Waart, 2011; Ricz and Salamin, 2010; Pallai, 2008; Barta *et al*., 2006; NDA, 2007

[7] The National Development Council consists of the Prime Minister, representatives of the Regional Development Councils, delegates of the Economic and Social Council, as well experts and other ministers invited by the Prime Minister (NDA, 2007).

3.3. Serbia

3.3.1. Brownfields in Serbia

In the socio-economic transition to a market economy system, the issue of brownfields and their strategic regeneration has been unjustifiably neglected in Serbia. Moreover, the land ownership transformation offered the possibility for various malfeasances (Perić and Maruna, 2012a). Although the spatial planning and other experts were aware of the need to strategically deal with the brownfields, the monopolistic position of a small number of very rich private investors and their close relationship with the highest governmental levels blocked a proactive approach to brownfield regeneration.[8] Today, sustainable management of brownfields is not possible due to cooperation between the national government and foreign investors, whereby all other stakeholders have no say.[9] In addition to this, Serbian experts are not bold in their striving for sustainable brownfield regeneration.[10] According to recent data provided by Serbian Investment and Export Promotion Agency – SIEPA, the brownfields in Serbia occupy more than 3,500 ha with 454 brownfield sites.[11] In addition to this, the Serbian Army made a survey on non-used barracks, complexes, and airports – there is around 22,000 ha of brownfield land with ex-military use (SKGO, 2011).

3.3.2. Institutional framework for brownfields

The Serbian institutional structure in charge of brownfield regeneration is not clearly defined. However, major participants in the public sector concerned with brownfields are: the Ministry of Regional Development (abolished in 2014), Privatisation Agency, Serbian Investment and Export Promotion Agency – SIEPA, the Ministry of Construction, Transport and Infrastructure, the Ministry of Agriculture and Environmental Protection, Republic Agency for Spatial Planning, and local authorities. A brief overview of their roles and responsibilities is shown in Table 3.

[8] In 2005, the Law on Privatisation was approved in Serbia. According to that law, it was possible for a few tycoons to buy the bankrupt enterprises. As the land was still owned by the state, the tycoons became the owner of the buildings only. However, after 2009, due to the new Law on Planning and Construction, the building-ownership right was transformed into land-ownership right. This was the opportunity for the private investors to accomplish their private profit.

[9] Brownfield regeneration in Serbia today is a tool for the national government to gain political points, by promoting cooperation with foreign investors instead of allowing domestic tycoons to get richer. The problem here is that there is no transparent debate with all other interested parties (experts, citizens) in order to define sustainable brownfield regeneration strategy.

[10] There are only two handbooks for practitioners: *Brownfield Revitalisation in Serbia* (2007) resulting from the collaboration between Serbian and Czech experts and *Reactivation of the brownfields in Serbia – System approach or ad hoc solutions?* (2011), prepared within the project financed by the Swiss Agency for Development and Cooperation (Perić, 2014).

[11] Furher data are available at http://serbia-locations.rs/locations-srb/index.php.

Table 3. Institutional Framework for Brownfields in Serbia

Institution	Functions and Responsibilities
Ministry of Regional Development	Its role was the promotion of domestic production, export, and foreign direct investment. Facilitation in restructuring large business entities towards the international market requirements was always prepared by this institution. The ministry was responsible for the implementation of Integrated Pre-accession Assistance Programme (IPA), which includes specific measures aimed at brownfield redevelopment. Some of the most important activities of this ministry were: 1) the initiative for the preparation of a national brownfield strategy, and 2) the incentive for the creation of a unified database on brownfields. This ministry was responsible for the preparation of the *Regional Development Strategy for Serbia from 2007 to 2012*, which indirectly indicated the importance of brownfield regeneration through introducing „clean technologies" in devastated industrial clusters.
Privatisation Agency	It has the main role in regard to brownfields which result from former state-owned enterprises bankruptcy. It manages and sells shares and interests in accordance with the Law on Privatisation. It provides trainings to a number of bankruptcy trustees who will be then able to implement the desired procedures in a reasonable timeframe.
Serbian Investment and Export Promotion Agency (SIEPA)	It is a state agency responsible for promoting investment opportunities and helping foreign investors start business in Serbia. The agency provides the service of: finding the brownfield sites, assistance in administrative procedures, mediating communication with relevant national and local institutions, and updating the location database on brownfields. It also coordinates direct investment for brownfield projects in the manufacturing sector, international trade service sector and strategic projects in tourism, by a means of grants.[12]
Ministry of Construction, Transport and Infrastructure	There are two main sectors indirectly dealing with the topic of brownfield regeneration: 1) Department of spatial planning, which mainly collaborates with the Republic Agency for Spatial Planning, and 2) Department of urban development planning, which cooperates with other sectors at various levels (both national and local), as well as with international experts.

[12] Grants are awarded in the amount of 4,000 to 10,000 euros per new job created, for a period of three years (SIEPA, 2011).

Table 3. (cont.)

Institution	Functions and Responsibilities
Ministry of Agriculture and Environmental Protection	Its role is to identify, coordinate and develop the goals of environmental policy in order to achieve sustainable development. The important role within this ministry was assigned to the Environment Protection Agency, which formulated several reports related to the topic of soil contamination.
Republic Agency for Spatial Planning	It is a state agency responsible for preparing, coordinating and monitoring the development of all spatial plans in Serbia. This institution also provides technical assistance to local governments while preparing planning documents. The crucial role of the agency for brownfield regeneration is to bind state authorities with representatives of the scientific community (academy and research institutes). The agency also prepared the most important documents with regard to the topic of brownfield regeneration: *The Spatial Development Strategy of the Republic of Serbia from 2009 to 2020* (in 2009) and *The Spatial Plan of the Republic of Serbia from 2010 to 2020* (in 2010).
Local authorities	Local authorities have no proactive role in dealing with the brownfield problem. They often lack accurate information on the percentage of building land which can be identified as a brownfield site; they do not have a development vision, in terms of understanding brownfield regeneration as a process that brings long-term profits; they lack expertise in brownfield regeneration. Local government has limited jurisdiction and must be coordinated by higher government levels.

Source: Prepared by author on the basis of Danilović and Damjanović, 2011; SKGO, 2011, Perić, 2014; Begović, 2002

4. INSTITUTIONAL CONTEXT OF BROWNFIELD REGENERATION IN CEE COUNTRIES: COMPARATIVE ANALYSIS

This section provides a comparative analysis of the institutional cooperation related to the brownfield regeneration topic in CEE countries. As previously described, the case studies of the Czech Republic, Hungary and Serbia are analysed according to the following parameters: the extent and form of cooperation, mediators in cooperation, and the nature of cooperation. Each parameter is elucidated in the following subsections.

4.1 Extent and Form of Institutional Cooperation

The extent of collaboration among the institutions responsible for brownfield regeneration in the Czech Republic varies depending on the institutional level. Horizontal collaboration is the most conspicuous at the national level, whereas the Ministry of Regional Development has the mediatory role among other sectorial institutions, i.e. ministries and agencies (Perić, 2014). In addition to this, the cooperation between the Ministry of Environment and the CzechInvest was established in order to make the standards for environmental protection less rigorous (Vojvodíková, 2010).

However, it is interesting to elucidate major conflicts among the national bodies. The conflicts between the CzechInvest and other ministries, especially the Ministry of Finance, led to the failure of the *Czech Brownfield Regeneration Strategy* formulation. In 2005, the national government of the Czech Republic decided to start the preparation of the brownfield regeneration strategy, and for this purpose several ministries were invited – the Ministry of Environment, the Ministry of Regional Development, and the Ministry of Industry and Trade. Nevertheless, the CzechInvest cultivated the mentioned document for a long time (Garb and Jackson, 2006; Garb and Jackson, 2010). More precisely, experts from the CzechInvest had specific skills and knowledge needed in the process of brownfield regeneration (built on the cooperation with international experts). However, they considered only their own resources, i.e. there was no cooperation with other institutions, particularly with the Ministry of Regional Development. These conflicts in authority slowed down the process of the strategy approval by the government (Garb and Jackson, 2010). Nevertheless, according to the Czech planning experts, the failure of such a strategy adoption turned out to be good. More precisely, what is needed is the integration among the institutions with urban knowledge, which falls within the responsibility of the Ministry of Regional Development, while the CzechInvest poses brownfield know-how, but without any spatial remit (Vojvodiková, 2010). Therefore in 2008, the document titled the *National Strategy for Brownfield Regeneration* (prepared by the Ministry of Industry and Trade) was adopted.[13]

The regional level of governance and planning in the Czech Republic was re-established at the beginning of the new millennium, with the general employment structure formed mainly of urban and spatial planners, as well as experts with various professional backgrounds (Vojvodíková, 2010). At the regional level, cooperation among regional development agencies, as well as their collaboration with other stakeholders is particularly significant (Perić, 2014). On the other

[13] In addition to this strategy, there are also a few documents which indirectly deal with the issue of brownfield regeneration, such as: *Economic Growth Strategy of the Czech Republic*, *Regional Development Strategy of the Czech Republic* and *State Environment Policy of the Czech Republic* (TIMBRE, 2012).

hand, the process of brownfield regeneration at the local level is often influenced by politics (TIMBRE, 2012). Namely, the greatest decision-making power in the brownfield regeneration process at the local level lies in the hands of the mayor.[14] However, it should be stressed that the most successful brownfield regeneration projects resulted from the collaboration of municipalities with regional authorities, on the one hand, as well as with international expert agencies in the field of spatial development on the other (Perić, 2014).

Vertical coordination in the Czech Republic is mainly "top-down" – the role of a mediator is again assigned to the Ministry of Regional Development, which provides support to regions and municipalities. This ministry offers the technical expertise for facilitating the communication between local government and local communities in the brownfield regeneration process, by providing appropriate qualifications among local government employees (Vojvodíková, Bergatt Jackson and Hermann, 2006). In terms of supranational cooperation, a particularly important role is assigned to the CzechInvest, which closely cooperated with the European Union (EU) development agencies (Perić, 2014).

Although some Hungarian experts agree that there is no guiding national strategy for the brownfield problem (Foldi, 2006; Kauko, 2010), institutional cooperation is to a great extent achieved at the national level, where the main role of a coordinator is assigned to the National Development Agency (Ricz and Salamin, 2010). The institutions at the regional level have weak competence when it comes to sustainable brownfield regeneration, which is in accordance with their general competence. Hence, there is a need to define a linkage to other regions and sectorial policies. At the level of municipalities and districts, the great obstacle to a better cooperation lies in the fact that many of them are led by different political parties, which is then followed by incompatible development policies (Kauko, 2010). Also, at the level of municipality, brownfield regeneration projects are realised through collaboration between municipality experts and the private sector, on the one side, and international partners on the other. The latter seems to be more successful owing to the fulfilment of the requests for public interest (Grisel and Van den Waart, 2011).

Vertical cooperation in Hungary, i.e. collaboration between different planning levels responsible for sustainable brownfield regeneration, can be achieved just by fostering the regional government bodies. A good example is Regional Development Agency, which still needs the improvement of specific mechanisms for the efficient implementation of the national planning policies at the local level.

---

[14] According to the same source, based on the analysis of brownfield regeneration practice at local level in the Czech Republic, there are several roles assigned to the local government: a) the role of an initiator, b) the marketing role, c) the information gathering role, g) the negotiating role, d) the role in decision-making, as well as other roles that have importance in facilitating the brownfield regeneration process (Klusáček, Krejči, Kunc, Martinat and Novakova, 2011, p. 26).

In the practice of brownfield regeneration in Serbia, the extent of institutional collaboration varies. At the national level, cooperation between several sectors in order to create the developmental documents is not effective, which stems from their unclear responsibilities in a given process. However, the national body tending to achieve a higher degree of horizontal collaboration with other institutions is the Republic Agency for Spatial Planning. On the other hand, there is no effective cooperation and exchange of experience among the local authorities. Hence, there is a distinct need for the municipalities, which already developed brownfield regeneration policies (e.g. Niš, Subotica), to share their experience with other municipalities with low levels of understanding the brownfield regeneration effects (SKGO, 2011). The networking of activities, as well as the promotion of brownfield revitalisation contributes to the improvement of abilities, skills, and motivation of employees in the public sector (Perić, 2014).

A vertical institutional collaboration in Serbia is not developed to its full potential due to the absence of the regional administrative level. Therefore, in Serbia, despite the Local Self-Government Law (Official Gazette RS 129/07), local authorities or their associations do not participate in the preparation of the regulation related to sustainable land use as one of the priorities of the municipal development. All the brownfield regeneration initiatives are driven by the national government.

4.2. Mediators in Institutional Cooperation

The greatest advantage of the Czech system is seen in the institution that brings together both the representatives of ministries and experts. Namely, the Ministry of Regional Development is mostly made up of experts in the field of spatial planning and development (Perić, 2014). This is a proof of a fast institutional transition from the late 1990s. In this period, the brownfield issue was within the responsibility of the institutions in the financial sector, i.e. the CzechInvest and the Ministry of Finance (Garb and Jackson, 2006). However, during a short period of time, the topic of brownfield regeneration gained national importance and became a theme that integrates almost all other relevant institutional bodies. Although the Ministry of Regional Development has a national responsibility, this ministry recognises the importance of the regions and provides guidelines for their activities it terms of brownfield regeneration.[15]

Similarly to the previous case study, the most important documents in the domain of spatial development in Hungary (*New Hungarian Development Plan* and the *National Sustainable Development Strategy*) are coordinated by national expert

[15] One of the most significant projects in recent years was CENTROPE, within which the Czech regions actively participated in order to achieve sustainable spatial development in Central Europe (Perić, 2014).

institutions (National Development Council, National Development Agency). More precisely, the mentioned national bodies act like supervisors for placing emphasis on the brownfield issue among other relevant sustainable development topics (Ricz and Salamin, 2010). However, in Hungary there is a strong influence of non-governmental expert agencies (e.g. VATI) as a support in defining the brownfield regeneration policies (Pallai, 2008). Also, similarly to the Czech experience, the key documents on brownfield regeneration at both the regional (Operative programmes for regional development) and the local level (local initiatives for sustainable development) result from collaboration with international expert agencies (Grisel and Van de Waart, 2011).

When in comes to the position of the Serbian expert agencies in the process of brownfield regeneration, the Republic Agency for Spatial Planning deals with the preparation of strategies and spatial development plans in accordance with the policies of sustainable land use. The agency is a crucial coordinator among several institutions, i.e. various ministries, numerous governmental agencies and researchers – form both the academia and scientific institutes. The role of an intermediary is also appointed to the Agency for Foreign Investments and Export Promotion (SIEPA). It provides an assistance in the administrative procedures at all the levels, as well as in the mediation with relevant institutions, both national and local. However, spatial plans and strategies are general in their nature, so Serbia lacks professional expertise in the field of brownfield regeneration. This is seen primarily in the absence of the national body responsible exclusively for brownfield regeneration, as well as in a lack of cooperation with international expert agencies (Perić, 2014). This is a remarkable difference from the previous case studies that approached effectively the brownfields issue through various foreign funding programmes.

4.3. The Nature of Institutional Cooperation

Collaboration and joint decision-making in the field of spatial development is stipulated by the Czech Planning and Construction Law. More precisely, institutional collaboration is needed between the local and regional planning levels. Also, the law prescribes cooperation between various parties (primarily the public and the private sector) at the local planning level (PLUREL, 2010). Therefore, it is considered that appropriate legal background for the cooperation exists, but the mechanisms for improving the cooperation among different sectors are required. This would contribute to effective brownfield regeneration (Perić, 2014).

The cooperation of institutions responsible for physical development in Hungary is regulated by two laws. The Building Law prescribes cooperation of different sectors at the local level, but local government is responsible also for the involvement of local stakeholders in a joint formulation of urban development

policies. The Law on Regional Development and Planning prescribes cooperation between regional and local authorities (Pallai, 2008). Also, one of the priorities in the document *Medium-Term Urban Development Programme of Budapest – The Podmaniczky Programme 2005–2013* is cooperation of private and public sector at the local level (The Municipality of Budapest, 2005). However, what is missing in this document are the instruments for effective cooperation. Thus, success in brownfield regeneration at the local level strongly depends on the proactive and innovative approach of local, particularly district authorities (Perić, 2015).

Finally, the Law on the Spatial Plan of the Republic of Serbia from 2010 to 2020 (Official Gazette RS 88/10) clearly stipulates not only cooperation between different institutions responsible for spatial development, but it also supports cooperation between various sectors, primarily the public and private. However, the practice of brownfield regeneration shows two inconsistencies. On the one hand, only a few local authorities see public-private partnership as a form of cooperation that contributes to the brownfield regeneration effectiveness. On the other hand, in case that public-private partnership is recognised as a mechanism for brownfield regeneration, there is often unequal cooperation between the private sector, which has great financial power, and the public sector, which is characterised by inadequate professional power, thus resulting in its inability to control the brownfield regeneration process (Perić, 2014). Along with the institutional collaboration, the Law on the Spatial Plan of the Republic of Serbia from 2010 to 2020 (Official Gazette RS 88/10) prescribes the improvement of informal cooperation in the decision-making process, particularly emphasising the collaboration with the civil sector. However, non-institutional instruments for stimulating public participation do not exist. This indicates a non-transparent way of policy formulation in the domain of spatial planning and development.

5. CONCLUDING REMARKS

The topic of institutional cooperation in the brownfield regeneration process – its nature, extent and form – is particularly relevant for countries without the tradition of decentralised planning and decision-making. Depending on the stage of the socio-economic transition, we can observe critically the success of institutional reforms and their consequences in the domain of spatial development. In addition to the final summary, the following lines provide some recommendations for further strengthening of institutional cooperation in the Czech Republic, Hungary and Serbia.

The Czech Republic made a great shift, from non-recognition of the brownfield issue at the beginning of the 1990s to building the institutional capacities, policies, legal framework and financing instruments by the end of the first decade of the new millennium. This shift resulted from an overall transition and maturing of the

real estate market. In this context, brownfield regeneration is seen as a complex socio-economic and strategic planning challenge involved with engaging a broad coalition of different stakeholders. However, there is a constant progress concerned with the mentioned topic – the evolution of the existing institutions and the establishment of new ones. In addition to this, the Czech Republic is a successful pioneer in developing new policies on brownfield regeneration. Moreover, recent documents contain policies concerning not only one aspect of brownfield regeneration. The newly formulated policies intend to cover a range of urban problems that can be interconnected with the brownfield issue. Some future actions to be taken in order to increase effectiveness in the brownfield regeneration are as follows:

– Appointment of a direct governmental responsibility or a specific body in charge of collaboration with different sectors,

– Assignment of an authority in the field of urban and spatial planning to the mentioned body,

– Provision of expertise and know-how in the field of brownfield regeneration to the appointed body.

The transformation from Hungary as a post-socialist country to Hungary as an EU member state resulted in a number of new methods towards sustainable spatial development, and, thus, brownfield regeneration. One of the most important instruments aimed at achieving sustainable development was the fostering of the collaboration within the same, but also between various strategic planning levels. It is worth mentioning the collaboration between the ministries and non-profit expert organisations. This is a key to success, especially in order to satisfy the demands for the achievement of public interest. Finally, Hungarian national level institutions responsible for spatial development are organised fully in accordance with the requests of the EU funding organisations. There are some further actions which should be taken in terms of institutional strengthening:

– Greater involvement of the ministries in charge of spatial development; nowadays they have only a role of the supervisors for the already prepared documents,

– Introduction of the competent managers as a liaison between the private investors and district authorities,

– Compatibility of brownfield regeneration policies on both the municipal and district levels.

In Serbia, there is an obvious lack of appropriate institutions regarding brownfield regeneration at both the national and local levels. This is the main difference from the previously analysed countries. However, similar to other countries, the national-level institutions are the most responsible for the topic of brownfield regeneration in Serbia. Nevertheless, there is only one expert institution in charge of sustainable development in contrast with the previous case studies, where many institutions participate in policy-making. When preparing the basic concepts for formulation of the most important documents, the Regional Agency for Spatial

Planning is a crucial player in coordination between several institutions with different profiles. In addition to the horizontal coordination, the role of the agency is reflected in the vertical cooperation as well – the spatial development documents to be implemented at the local level need to be previously approved by the agency. The activities of local governments towards brownfield regeneration are minimal, which makes the main difference from previous case studies. Some future actions can be defined as follows:

– Implementation of European documents in the field of brownfield regeneration should become a liability,

– There is a need to deepen the cooperation with international expert agencies,

– The role of local governance should be strengthened – they must develop mechanisms for boosting the collaboration with public, private and civil sector,

– Public promotion of brownfield regeneration and, more importantly, planning education should obtain system support.

An insight into the institutional structure of the selected case studies places emphasis on the necessity for a proper expertise in planning the brownfield regeneration process. More precisely, the planners of the future should be able to recognise the complexity of the brownfield regeneration issue and then to embed it into a spectrum of other land management problems. Having also the challenge of overcoming the language barriers in mind, we should be aware of the importance of promoting the transfer of international expertise – capacity-building on good practices and know-how covering efficient decision-making. Such networking activities contribute to improve skills, competence and motivation of staff in the public sector. Hence, the establishment of the cross-border cooperation in the spatial planning domain is essential for the balanced European development.

REFERENCES

ADAMS, D. and WATKINS, C. (2002), *Greenfields, Brownfields and Housing Development*, Oxford: Blackwell Publishing.

ALKER, S., JOY, V., ROBERTS, J. and SMITH, P. (2000), 'The definition of brownfield', *Journal of Environmental Planning and Management*, 43 (1), pp. 49–69.

BARTA, G., BELUSZKY, P., CZIRFUSZ, M., GYORI, R. and KUKELY, G. (2006), *Rehabilitating the Brownfield Zones of Budapest (Discussion Papers no. 51)*, Pecs: Centre for Regional Studies of Hungarian Academy of Sciences.

BEGOVIĆ, B. (2002), 'Ekonomski aspekti upravljanja lokalnom zajednicom: ka povećanju ekonomske efikasnosti (The economic aspects of the local community management: towards the increase of economic efficiency)', [in:] BEGOVIĆ, B., VACIĆ, Z., LAZAREVIĆ BAJEC, N., RAIČEVIĆ, B., ROGANOVIĆ, M., SIMIĆ, A. M., STOJANOVIĆ, D. and HIBER, D. (eds.), *Principi modernog upravljanja lokalnom zajednicom (The Principles of Modern Local Community Management),* Belgrade: CLDS, pp. 112–128.

BEGOVIĆ, B. (2003), 'Reforma zakonodavstva o gradskom zemljistu, planiranju i izgradnji (Legislative reform of urban land, planning and construction)', [in:] VACIĆ, Z. and MIJATOVIĆ, B. (eds.), *Strategija reformi (The Strategy of Reforms)*, Belgrade: CLDS, pp. 196–208.

BROOS, L., ERTEL, T., GRAY, A., SCHUG, B. and VEGTER, J. (eds.) (2007), *European Brownfield Revitalisation Agenda,* http://www.eubra.eu (12.06.2012).

CABERNET (CONCERTED ACTION ON BROWNFIELD AND ECONOMIC REGENERATION NETWORK). (2007), *CABERNET Network Report: Sustainable Brownfield Regeneration,* Nottingham: University of Nottingham.

CABERNET (CONCERTED ACTION ON BROWNFIELD AND ECONOMIC REGENERATION NETWORK). (2009), *Sustainable Brownfield Regeneration*, http://www.cabernet.org.uk (10.12.2008).

COUCH, C., LEONTIDOU, L. and PETSCHEL-HELD, G. (eds.) (2007), *Urban Sprawl in Europe: landscapes, land-use change and policy*, Oxford: Blackwell Publishers.

GREENBERG, M., LOWRIE, K., MAYER, H., MILLER, K. and SOLITARE, L. (2001), 'Brownfield redevelopment as a smart growth option in the United States', *The Environmentalist*, 21, pp. 129–143.

DANILOVIĆ, K. and DAMJANOVIĆ, D. (2011), 'Mogucnosti ozivljavanja braunfilda u Srbiji (The possibilities of brownfield revitalization in Serbia)', paper presented at the conference *Susreti urbanista (The Meetings of Urban Planners)*, Novi Becej, Serbia, 22–23.09.2011, http://www.vuu.org.rs (26.11.2011).

DIXON, T., RACO, M., CATNEY, P. and LERNER, D. N. (2008), *Sustainable Brownfield Regeneration: Liveable Places from Problem Spaces,* Chichester, GBR: Wiley.

DORSEY, J. W. (2003), 'Brownfields and Greenfields: The Intersection of Sustainable Development and Environmental Stewardship', *Environmental Practice*, 5 (1), pp. 69–76.

EC (EUROPEAN COMMISSION). (2010), *Action plan for the EU Strategy for the Danube Region,* Brussels: European Commission.

FALUDI, A. (2010), 'European Spatial Planning: Past, Present and Future', *Town Planning Review*, 81 (1), pp. 1–22.

FOLDI, Z. S. (2006), *Neighbourhood Dynamics in Inner-Budapest. A realist approach* (doctoral dissertation), Netherlands Geographical Studies, No. 350, Utrecht: Utrecht University.

GARB, Y. and JACKSON, J. (2001), 'The search for brownfield leadership in Central European Cities: Overview and case study of the Czech Republic', paper presented at the ITDP brownfield seminar *Recycling Urban Land*, Prague, http://www.brownfields.cz/wp-content/uploads/2008/04/brownfield-leadership-in-ceec-2001.pdf (05.12.2008).

GARB, Y. and JACKSON, J. (2006), 'Central Europe's Brownfields: Catalysing a Planning Response in the Czech Republic', [in:] ALTROCK, U. *et al.* (eds.), *Spatial Planning and Urban Development in the New EU Member States – From Adjustment to Reinvention,* Hampshire: Ashgate, pp. 271–286.

GARB, Y. and JACKSON, J. (2010), 'Brownfields in the Czech Republic 1989–2009: The long path to integrated land management', *Journal of Urban Regeneration and Renewal,* 3 (3), pp. 263–276.

GRIMSKI, D. and FERBER, U. (2001), 'Urban Brownfields in Europe', *Land Contamination & Reclamation,* 9 (1), pp. 143–148.

GRISEL, M. and VAN DE WAART, F. (eds.) (2011), *Multilevel Urban Governance or the Art of Working together – Methods, Instruments and Practices*, The Hague: European Urban Knowledge Network.

GCSD (GOVERNMENT COUNCIL FOR SUSTAINABLE DEVELOPMENT). (2010a), *The Strategic Framework for Sustainable Development in the Czech Republic*, Prague: GSDC.

GCSD (GOVERNMENT COUNCIL FOR SUSTAINABLE DEVELOPMENT). (2010b), *Spatial Development Policy of the Czech Republic,* Prague: GSDC.

HEALEY, P. (1997), *Collaborative Planning – Shaping places in fragmented societies,* London: MacMillan Press.

HEALEY, P. (2007a), 'Re-thinking Key Dimensions of Strategic Spatial Planning: Sustainability and Complexity', [in:] DE ROO, G. and PORTER, G. (eds.), *Fuzzy Planning: The Role of Actors in a Fuzzy Governance Environment,* Abingdon, Oxon, GBR: Ashgate Publishing Group, pp. 21–41.

HEALEY, P. (2007b), 'The New Institutionalism and the Transformative Goals of Planning', [in:] VERMA, N. (ed.), *Institutions and Planning,* Oxford: Elsevier, pp. 61–90.

HEALEY, P. and WILLIAMS, R. (1993), '*European Urban Planning Systems: Diversity and Convergence*', Urban Studies, 30 (4/5), pp. 701–720.

HIRT, S. (2005), 'Planning the Post-Communist City: Experiences from Sofia', *International Planning Stuides*, 10 (3–4), pp. 219–240.

IMMUDTC (Informal Ministerial Meeting on Urban Development and Territorial Cohesion). (2007), *Leipzig Charter on sustainable European cities.* Agreed on the occasion of the Informal Ministerial Meeting on Urban Development and Territorial Cohesion, Leipzig 24.05.2007, http://ec.europa.eu/regional_policy/archive/themes/urban/leipzig_charter.pdf (11.06.2012).

INNES, J. E. and BOOHER, D. E. (1999), 'Metropolitan Development as a Complex System: A New Approach to Sustainability', *Economic Development Quarterly*, 13, pp. 141–156.

JANIN RIVOLIN, U. (2008), 'Conforming and performing planning systems in Europe: an unbearable cohabitation', *Planning Practice &* Research, 23 (2), pp. 167–186.

KAUKO, T. (2010), 'Where have all the planners gone? The Law of the Wolf in an Era of Ignorance', paper presented at the *Regional Studies Association Conference*, Pecs, Hungary, 24–26.05.2010, http://www.regional-studies-assoc.ac.uk/events/2010/may-pecs/papers/kauko.pdf (10.05.2011).

KLUSÁČEK, P., KREJČI, T., KUNC, J., MARTINAT, S. and NOVAKOVA, E. (2011), 'The Post-Industrial Lanscape in Relation to Local Self-Government in the Czech Republic', *Moravian Geographical Reports*, 19 (4), pp. 18–28.

Law on the Spatial Plan of the Republic of Serbia from 2010 to 2020. Official Gazette, No. 88/10.

Local Self-Government Law. Official Gazette RS 129/07.

MADARASZ, T. (2007), *Brownfield redevelopment status and lessons from Northern Hungary*, http://www.nicole.org/publications/Akersloot/madarasz_t_casehu.pdf (20.02.2012).

MAIER, K. (1998), 'Czech planning in transition: Assets and deficiencies', *International Planning Studies*, 3 (3), pp. 351–365.

MINISTRY OF INDUSTRY AND TRADE. (2008), *The National Strategy for Brownfield Regeneration*, Prague: Ministry of industry and trade.

MTA RKK KETI (MAGYAR TUDOMANOS AKADEMIA, REGIONALIS KUTATASOK KOZPONTJA). (2007), *Regionalis Fejlesztes Operativ Program (ROP 2.2.): A varosi teruletek rehabilitaciojat celzo intezkedesek ertekelese*. Budapest: MTA RKK, http://www.nfu.hu, (05.12.2012).

NDA (NATIONAL DEVELOPMENT AGENCY). (2007), *New Hungarian Development Plan*, Budapest: NDA.

NDA & MoEW (NATIONAL DEVELOPMENT AGENCY & MINISTRY OF ENVIRONEMNT AND WATER). (2007), *National Sustainable Development Strategy*, Budapest: NDA.

NEDOVIĆ-BUDIĆ, Z. (2001), 'Adjustment of Planning Practice to the New Eastern and Central European Context'*, Journal of the American Planning Association*, 67, pp. 38–52.

OECD (ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT). (2006), *Competitive Cities in the Global Economy – Horizontal Synthesis Report,* Bilbao, Spain.

PALLAI, K. (2008), 'Hungary', [in:] RYSER, J and FRANCHINI, T. (eds.), *International Manual of Planning Practice (IMPP),* The Hague: International Society of City and Regional Planners (ISoCaRP), pp. 156–166.

PERIĆ, A. (2013), 'The Review of Planning Practice in Brownfield Regeneration – Some European Experiences', *Journal of Applied Engineering Science,* 11 (1), pp. 1–8.

PERIĆ, A. (2014), *Brownfield Regeneration in the Danube Macro-Region: Institutional Dynamics*, Saarbrucken: LAP Lambert Academic Publishing.

PERIĆ, A. (2015), 'The role of local governance in the process of brownfield regeneration: European planning practice', *Serbian Architectural Journal,* 7 (3), pp. 263–284.

PERIĆ, A. and MARUNA, M. (2012a), 'Predstavnici društvene akcije u procesu regeneracije priobalja – slučaj braunfild lokacije „Luka Beograd" (The Representatives of Social Action in Waterfront Regeneration − the Case of the Brownfield Site "Belgrade Port")', *Sociologija i prostor,* 50 (1), pp. 61–88.

PERIĆ, A. and MARUNA, M. (2012b), 'Brownfield Regeneration versus Greenfield Investment – Is Serbia on the Way to Integrated Land Management?', *Journal of Urban Regeneration and Renewal*, 6 (1), pp. 79–90.

PLUREL (Peri-Urban Land Use Relationships – Strategies and Sustainability Assessment Tools for Urban-Rural Linkages). (2010), *National spatial planning policies and governance typology*. (Deliverable Report 2.2.1), http://www.plurel.net. (25.05.2011).

Planning and Construction Law. Official Gazette, No. 72/09, 24/11.

RASP (REPUBLIC AGENCY FOR SPATIAL PLANNING). (2009), *Spatial Development Strategy of the Republic of Serbia from 2009 to 2020*, Belgrade: RASP.

Regional Development Strategy of the Republic of Serbia from 2007 to 2012. Official Gazette, No. 21/07.

Restitution and Denationalisation Law. Official Gazette, No. 72/11.

RESCUE (REGENERATION OF EUROPEAN SITES IN CITIES AND URBAN ENVIRONMENTS). (2004), *Guidance report for the management of the Brownfield Regeneration Projects.* (Work Package 6, Deliverable 6.1), http://www.rescue–europe.com (26.11.2008).

RICZ, J. and SALAMIN, G. (eds.) (2010), *Handbook for the National Implementation of the Territorial Agenda of the European Union – The Case of Hungary*, Budapest: The Ministry for National Development and Economy, Republic of Hungary.

SIEPA (SERBIAN INVESTMENT AND EXPORT PROMOTION AGENCY). (2011), *Lokacije – SIEPA baza investicionih lokacija (Locations – SIEPA base of investment locations),* http://serbia-locations.rs (25.11.2011).

SKGO (STALNA KONFERENCIJA GRADOVA I OPŠTINA – STANDING CONFERENCE OF TOWNS AND MUNICIPALITIES). (2011), *Reaktiviranje braunfilda u Srbiji – Sistemski pristup ili ad hoc rešenja? (Brownfield Reactivation in Serbia – System Approach or Ad-hoc Solutions?),* Belgrade: SKGO.

STANILOV, K. (ed.) (2007), *The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism,* Dordrecht: Springer.

TASAN KOK, T. (2004), *Budapest, Istanbul, and Warsaw: Institutional and Spatial Change,* Delft: Eburon.

THE MUNICIPALITY OF BUDAPEST. (2003), *Budapest City Development Concept*, Budapest: The Mayor's Office.

THE MUNICIPALITY OF BUDAPEST. (2005), *The Podmaniczky Programme 2005–2013: Medium-Term Urban Development Programme of Budapest, Summary*, Budapest: The Mayor's Office.

TIMBRE (TAILORED IMPROVEMENT OF BROWNFIELD REGENERATION IN EUROPE). (2012), *Report on results of survey on brownfield regeneration and statistical analysis information,* Brno: IOG.

TOSICS, I. (2006), 'Spatial restructuring in post-socialist Budapest', [in:] TSENKOVA, S. and NEDOVIC-BUDIC, Z. (eds.), *The Urban Mosaic of Post-Socialist Europe*, Heidelberg: Psysica-Verlag, pp. 131–150.

VOJVODÍKOVÁ, B. (ed.) (2010), *Brownfields-Handbook: Cross-disciplinary educational tool focused on the issue of brownfields regeneration – Educational tool for Latvia and Lithuania,* Ostrava: Technical University.

VOJVODÍKOVÁ, B., BERGATT JACKSON, J. and HERMANN, G. (2006), 'Drive Towards Sustainable Urban and Rural Development Skills', http://www.socialpolis.eu/index.php?option=com_docman&Itemid=199&task=doc_download&gid=71 (05.12.2008).

VUJOVIC, S. and PETROVIC, M. (2007), 'Belgrade's post-socialist urban evolution: Reflections by the actors in the development process', [in:] STANILOV, K. (ed.), *The Post-Socialist City: Urban Form and Space Transformations in Central and Eastern Europe after Socialism,* Dordrecht: Springer, pp. 361–384.

ZEKOVIĆ, S. (2007). 'Prostorno-planska politika i industrijski braunfildi u gradovima Srbije (Spatial Planning Policy and Industrial Brownfields in Serbian Cities)', [in:] DANILOVIĆ, K. *et al*. (eds.), *Oživljavanje braunfilda u Srbiji* (*Brownfield Revitalisation in Serbia*), Belgrade: PALGO centar, pp. 61–70.

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

https://doi.org/10.1515/esrp-2016-0003

Oto HUDEC*, Slávka KLASOVÁ*

SLOVAK CREATIVITY INDEX – A PCA BASED APPROACH

Abstract. The article aims at transferring the European Creativity Index (ECI) assessment from the country to regional comparison basis, focusing on the case of Slovakia. The newly created Slovak Creativity Index (SCI) has the power to assess the creativity potential found in the Slovak regions. The Principal Component Analysis has been chosen as an advanced method for establishing a well-designed overall Index and six sub-indices to show differences and variability according to all dimensions of the creative potential. The research also explains several relations between creative performance of the regions by several factors such as urbanisation, cultural environment, human capital and tolerance.

Key words: Slovak creativity index, urbanisation, principal component analysis
JEL codes: R11, C21, A13

1. INTRODUCTION

A strategic viewpoint on the global economy resides in the question how to develop unique resources to stimulate competitiveness. Competitiveness is no longer based only on conventional production factors such as labour, capital, equipment and raw materials (Maskell *et al*.,1998) but also on creating and diffusing knowledge more rapidly than other competitors. While some authors (Lundvall and Borrás, 1997; Johnson *et al*., 2012) consider the post-industrial economy as knowledge-driven, R. Florida stresses the factor of creativity instead (Florida, 2002). Creativity is considered as a fundamental attribute of human existence, and all human beings are creative by nature and possess an untapped creative potential. In contrast to natural resources, people working in creative jobs (creative class) are considered as a highly mobile growth factor, and the quality of place (region, city) is crucial for life and work of creative individuals. Creative industries also tend to cluster in certain places, and benefit from agglomeration and urbanisation economies (De Propris *et al*., 2009; Tremblay and Chicoine, 2011; Rehák, 2014). Hence, the field of cultural and

* Oto HUDEC, Slávka KLASOVÁ, Faculty of Economics, Department of Regional Science and Management, Technical University of Košice, Boženy Němcovej 32, 040 01, Košice, e-mail: oto.hudec@tuke.sk, e-mail: slavka.klasova@tuke.sk

creative geography is associated with a creative spawn that exists in a place thank to its cultural tradition, economic development and existing demand.

This invokes a question why some places attract more creative people than others and what are the factors that enable some places to stimulate creativity. The pioneering work comes from Richard Florida (2002) who has proposed to embrace Technology, Talent and Tolerance factors to explain the development of the cities and regions (3T concept). He combined all the three dimensions into one composite measure named Creativity Index and ranked the creative potential of more than 40 metropolitan regions in the USA.

Florida´s creativity concept also received a high degree of critical attention. The critique is focused on the apparent fuzziness of some definitions, causal logic between gay index and high-tech index (Peck, 2005) or impossibility to clearly distinguish creative and non-creative occupations (Markussen, 2006; Clifton *et al*., 2013). Additionally, North America, where the concept of 3 T´s model was developed, shows a substantial difference in comparison to Europe in their attitudes to social outcomes, economic growth processes, priorities in political area (Clifton *et al*., 2013) and life preferences (Marlet and Woerkens, 2005). Europe is typical by more conservative and regulated market structures. Moreover, USA benefits from common institutional setting and language while European countries vary in respect of language, culture, education system, technology policies, labour market, etc. In this European context, personal networks, relationships, available jobs, tax regimes and other hard factors can play a more important role in the decision making process of creative actors to settle in a specific urban region than so-called soft conditions proposed by Florida (e.g. diversity, tolerance) (Musterd and Murie, 2010).

The original 3T model was therefore extended and modified for the European environments as the Euro-Creativity Index (Florida and Tinagli, 2004). The Euro-Creativity Index was applied on the 14 European countries, Slovakia was not included in the sample. Additionally, KEA European Affairs (KEA) argued that definition of creativity used in Euro-Creativity Index is too broad and a large number of indicators to depict the creativity are science-based, e. g. patents, R&D expenditures, number of scientists (KEA, 2009). Consequently, KEA established a novel, repuTable statistical framework for measuring the interaction of diverse factors that contribute to the growth of creativity in the European Union. Their European Creativity Index (ECI) has brought a new dimension into a discussion on ranking countries, reflecting more arts and culture, education in art schools, cultural employment, cultural participation, etc. ECI comprises together 32 indicators grouped into six pillars, namely Openness and Diversity, Human Capital, Cultural Environment, Technology, Institutional Environment and Creative Outputs.

Creative industries play a positive role in regional and local development, but a little attention has been paid to the spatial dimension of their distribution and

an assessment on a regional basis is rare, because of lack of regional data. This is the reason, why this article makes efforts to find a way how the respected framework and philosophy used in the construction of the ECI can be shifted from the country to the regional basis. It aims at direct transfer of the country evaluation to the regional assessment, respecting the European context and having same explanatory power as the ECI. Even lower territorial level is hardly possible because of availability accessibility of the data, so the analysis of urban centres requires a different approach.

2. PILLARS OF CREATIVITY ACCORDING TO THE EUROPEAN CREATIVITY INDEX

Table 1 provides the list of 59 variables and their sources categorised within six sub-indices in the same way as the European Creativity Index of KEA.

Table 1. Composition of Slovak Creativity Index

A: OPENNESS AND DIVERSITY SUB-INDEX		
Attitude in population index		Data Source
Percentage of population that express tolerant attitudes toward minorities	The share of respondents in the total number of respondents who answered NO to the question: Would you mind if foreigners become part of your family? (Q_1)	European Social Survey, 2004
	YES to the statement: Gay men and lesbians should be free to live their own life as they wish (Q_2)	European Social Survey, 2004
	YES to the statement: In Slovakia should live people from different cultures, it would enrich us. (Q_3)	European Social Survey, 2004
	Scale to statement: To what extent do you think Slovakia should allow people of races or ethnic groups other than most Slovak people to come and live here? (Q_4)	Eurobarometer, 2007
	Number of marriages with foreigners per 1000 marriages in the region (FOR_MAR)	Statistical Office SR, 2012
Share of population interested in arts and culture in other European countries	Number of exhibitions (gallery, museum) + performances (theatre) of foreign ensembles per 1000 performances and exhibitions (FOR_EXHIB)	Ministry of Culture SR, 2012

Table 1. (cont)

Market data index		
Market shares of non-national European films	Number of copies of books in languages other than Slovak language per 1000 copies (BOOKS)	Ministry of Culture SR, 2012
	Number of foreign-born residents per 1000 population (FOR_RES)	Statistical Office SR, 2012
Level of Media Pluralism	Number of radio stations (RADIO) and television broadcast stations at regional and local level (TV) per 1000 population.	Statistical Office SR, 2012
Non-national share in cultural employment	Number of foreign employees per 1000 employees (FOR_EMPL)	Central Office of Labour, Social Affairs and Family, 2012
B: HUMAN CAPITAL SUB-INDEX		
The potential of culture- and arts-based education to help foster creative talents		
Number of hours dedicated to arts and culture in primary and secondary education	Number of civic association (CO) with a specific purpose: artistic and cultural activities, foundation (FOUND) with the purpose of: cultural and non-profit organization (NPO) with the purpose of: development and protection of cultural and spiritual values cultural per 1000 population	Ministry of Culture SR, 2012
Number of art schools per million population Number of state universities + state art schools (secondary) + free time centres + elementary art schools + conservatories per 1000 population (AS_ STATE)	Number of private universities + private art high schools + free time centres + elementary art schools + conservatories per 1000 population (AS_PRIV)	Ministry of Education, 2012
	Ministry of Education, 2012	
The level of creative talents coming out of tertiary education and in cultural employment		
Tertiary students by field of education related to culture	State tertiary students by field of education related to culture per 1000 population (STUD_ST)	Ministry of Education, 2012
	Private tertiary students by field of education related to culture per 1000 population (STUD_PRIV)	Ministry of Education, 2012
Cultural employment in total employment	Cultural employees per 1000 population. (C_EMPL)	Statistical Office SR, 2012

C: CULTURAL ENVIRONMENT SUB-INDEX		
Cultural participation		
Cultural expenditure per household	Average annual cultural and recreation expenditure per one member of household (EXP)	Statistical Office SR, 2012
Participation in cultural activities	Number of people participating in theatre (PART_T), dancing, (PART_D), music (PART_M) and other (PART_O) ensemble per 1000 population.	Ministry of Culture SR, 2012
Cultural offer		
Number of public theatres per capita	Number of public and private theatres per 1000 population (THEAT_PU), (THEAT_PR)	Ministry of Culture SR, 2012
Number of public museums per capita	Number of public museums per 1000 population (MUS)	Ministry of Culture SR, 2012
Number of public concert halls	Number of educational and cultural organizations per 1000 population (CO)	Ministry of Culture SR, 2012
	Number of libraries per 1000 population (LIBR)	Ministry of Culture SR, 2012
	Number of galleries per 1000 population (GAL)	Ministry of Culture SR, 2012
Number of cinema screens by country	Number of cinema screens per 1000 population (SCREEN)	Ministry of Culture SR, 2012
D: TECHNOLOGY SUB-INDEX		
Households who have personal computers and video game consoles	Percentage of households who have internet at home (INT)	Statistical Office SR, 2012
Broadband penetration rate Number of R&D employees per 1000 population (R&D_EMP) Percentage of households who have personal computers at home (COMP)	Research and development expenditure per 1000 population (R&D_EXP)	Statistical Office SR, 2012
	Statistical Office SR, 2012	
	Statistical Office SR, 2012	
E: INSTITUTIONAL ENVIRONMENT SUB-INDEX		
Financial support		
Tax break for artists or people who work in the creative sector: no regional differences		
VAT rates on books, press, sound recordings, video, film receipts, freelance authors, visual artists: no regional differences		
Tax incentives concerning donations and sponsoring	Receiving of 2% income taxes per 1000 population (TAX)	www.rozhodni.sk, 2012

Table 1. (cont)

Direct public expenditure on culture	Current and capital expenditure of region per 1000 population (CU_EXP), (C_EXP)	Ministry of Culture SR, 2012
State funding for cinema	Expenditure of audio-visual fund per 1000 population (AVF)	Audio-visual fund, 2012
State funding for public TV	Expenditure of Regional Operational Programme (ROP) „Integration of Natural and Cultural Potentials“ and average year expenditure of European Capital of Culture project (2011–2013) programme per 1000 population (ROP)	Ministry of Culture SR, 2012
	Expenditure of Ministry of Culture per 1000 population (MOC)	Ministry of Culture SR, 2012
Intellectual Property		
Level of rights collected by authors in music per capita: **not available**		
F: CREATIVE OUTPUTS SUB-INDEX		
Economic contribution of creativity		
Value added of creative industries as % of GDP	Values added of creative industries as % of GDP of region (GVA)	Financial Administration, 2012
Turnover in music industries per capita	Turnover in music industries per 1000 population (TO_M)	Financial Administration, 2012
Turnover in book industries per capita	Turnover in book industries per 1000 population (TO_B)	Financial Administration, 2012
Turnover in cinema industries per capita	Turnover in cinema industries per 1000 population (TO_C)	Ministry of Culture SR, 2012
Other outcomes of creative activities		
Feature films produced	Number of theatre performance, gallery and museum exhibition per 1000 population (EXHIB)	Ministry of Culture SR, 2012
Recordings released per capita: **not available**		
Books published per year and capita	Number of books published per 1000 population (BOOK)	Ministry of Culture SR, 2012
Design applications	Number of design applications per 1000 population (DESIGN)	Patent Office SR, 2012

Source: Elaboration reflecting on KEA index (2009).

A. Openness and Diversity

Creativity cannot be accelerated without a creative climate characterised by diversity, tolerance and openness to different ethnic, racial and lifestyle groups (Jacobs, 1993; Clifton *et al*., 2013; Florida 2002). Similarly, the openness to the immigration (Ottaviano and Peri, 2005) and to the gay community (Florida, 2002) have become tools in the pursuit of new elements of growth (Karppi, 2012). Places more open to diversity are likely to attract creative people as a key driver of regional economic growth (Carta, 2009; Sen, 1993). Table 1 provides an overview of five indicators for Openness and Diversity index proposed by KEA. Given the difficulty of providing the same data at the regional level in Slovakia and their meaning (e.g. market shares of non-national European films) they are replaced by meaningful indicators. As a suitable measure of tolerant attitudes, the indicator of a number of marriages with foreigners is included.

B. Human capital

Learning and education are important factors reflecting the level of human capital in any society (OECD, 2001; Barro, 2001). The human capital is conventionally measured as the share of the population with a bachelor's degree. As culture plays a central role in developing the creative side of human capital, KEA (2009) has limited the educational variable only to students of music, dance, arts, design, theatre, film, crafts, new media, culture fashion and architecture, etc. Human capital dimension originally included five indicators in total (Table 1). The number of hours dedicated to arts and culture in primary and secondary education proposed by KEA had to be replaced as the number of hours is set by Slovak government equaly.

C. Cultural environment

The cultural infrastructure (museums, galleries, theatres, libraries, etc.) provides a basis for the development of creative activities. Various studies have shown that museums are places where creativity can flourish, because they encourage people to think differently and expose their creative ideas and solutions. Similarly, an active participation in cultural activities supports personal development and creative personality traits (Jeanotte, 2003). Index of Cultural Environment consists of two areas, cultural participation and cultural offering. Each of the proposed indicator by KEA could have been measured at regional level in Slovakia.

D. Technology

Human creativity is considered as the engine of the technological progress and innovation (Florida, 2002). Conversely, the rapid development of digital technology provides for all the people an opportunity to express their individuality and gives stimuli for the emergence of new forms of creative activities in the areas such as computer animation, music composition, digital graphics etc.

E. Institutional environment

The creative economy is established and managed by a set of institutions named social structure of creativity (Florida, 2002). A proper coordination and implementation of cultural policy is important to build institutional environment stimulating creativity and covering various areas of creative industries. The creative environment can be boosted by adopting institutional parameters conducive to creativity such as appropriate infrastructure, effective intellectual property regime, tax incentives, public investment in arts and culture, etc.

F. Creative outputs

The post-industrial era reflects the transition from mass production to the production of personalized or unique products. The creative industries are shifting to mainstream economics and belong to the most innovative sectors in the economy. KEA used several indicators of creative industries performance reflecting creative potential of a country. At the regional level, the Creative Outputs sub-index employs the indicators of turnovers of the creative industries and the outputs in number of books or design applications.

3. METHODOLOGY

In this research, the Principal Component Analysis (PCA) has been chosen as a more advanced technique suitable for highly correlated variables, when the distributions of the variables are not normal and outliers are presumable. The main criterion for the number of examined variables to be lower than the number of observations for each part of the sub-index is fulfilled. Thus, the PCA approach is suitable for constructing Slovak Creativity Index (SCI). The newly proposed SCI aims at measuring the interaction of different factors contributing to creativity growth, as well as for identifying regional strengths and weakness in more details by comparing sub-indices and their variables. In comparison to ECI, SCI is

composed by using more sophisticated methodology useful in comparing regions (instead of countries) from the perspective of their creativity potential. The benefit of the SCI is also in its database consisting scarcely accessible variables.

PCA technique can reduce the original number of observed variables to a smaller number of their linear combinations (principal components), which are already independent – uncorrelated and ordered according to decreasing variance. Only the first few *(j)* of the principal components representing the most of the variation present in the whole original data set retain (Jolliffe, 2002).The data was first normalized to zero mean and unit variance (Li *et al*., 2012) and then PCA was applied separately on each part of the sub-index to get the eigenvalues λk for each component. The composite value for each sub-index *(i)* and region *(n)* can be determined as:

$$SI_{i,n} = \frac{\sum_{k=1}^{j} F_{n,k} * \sqrt{\lambda_k}}{\sum_{k=1}^{j} \sqrt{\lambda_k}}$$

i=1,2,….6, *n*=1,2,……8 (1)

$F_{n,k}$ – coordinate of the region n in the component *k*,
λ_k – eigenvalue of the component *k*,
j – number of retained components.

The values of sub-indices *SI*i,n provide the information about the regional potential strengths or weakness in six pillars of interest: Openness and Diversity, Human capital, Creative Outcomes, Institutional Environment, Technology, and Cultural Environment. In general, the higher is the sub-index value of region, the better is regional performance. The SCI index is built up according to equation (2).

$$SCI_n = \frac{\sum_{k=1}^{j} F_{n,k} * \sqrt{\lambda_k}}{\sum_{k=1}^{j} \sqrt{\lambda_k}}$$

n=1,2,……8 (2)

$F_{n,k}$ – coordinate of the region n in the component *k*,
λ_k – eigenvalue of the component *k*,
j – number of retained components.

A key step in PCA is to identify the number of retained components that account for the most of the variability in the original data set. A standard approach requires selecting components which together explain at least 60% of the total variation and at the same time each component must explain at least 5% of total variation (Jolliffe, 2002). Subsequently, the Kaiser-Meyer-Olkin (KMO) measure of the sampling adequacy was calculated for each variable and also for the overall sub-index (KMOc), to test whether data are likely to factor and which variables to drop from the model because of their high multicollinearity. The sample is adequate, if KMOc is greater than 0.5 (Jona, 2015). The choice of variables is tested by the Bartlett test of sphericity, testing whether the correlation matrix is an identity

matrix, implying that all of the components are uncorrelated. The composition of the retained components for each sub-index, as well as the values of KMOc statistic and the p-values of the Bartlett test are in the Table 2.

Table 2. Components of Slovak Creativity Index

Components of sub-index Technology		
	Comp.1	Comp.2
COMP	0.455	0.889
R&D_EXP	0.625	–0.356
R&D_EMP	0.634	–0.288
% variation	77.5	21.8
KMOc	0.5626718	
Bartlett test	χ^2=18.2729, df=3, p-value=0.0003864	
Components of sub-index Openness and Diversity		
	Comp.1	Comp.2
BOOKS	0.598	–0.522
Q_2	0.681	0.042
FOR_EXHIB	0.422	0.850
% variation	44.69	31.88
KMOc	0.5172006	
Bartlett test	χ^2=0.5377, df=3, p-value=0.09005	
Components of sub-index Cultural Environment		
	Comp.1	Comp.2
MUS	0.489	0.089
LIBR	–0.473	0.026
THEAT_PU	0.470	0.032
THEAT_PR	0.508	0.185
PART_D	–0.109	0.711
PART_O	–0.215	0.661
% variation	58.97	29.77
KMOc	0.5898246	
Bartlett test	χ^2=30.8475, df=15, p-value=0.009207	
Components of sub-index Creative Outputs		
	Comp.1	Comp.2
TO_M	0.360	–0.534
TO_C	0.453	0.023
TO_B	0.436	–0.140

EXHIB	0.426	0.208
BOOK	0.454	0.025
DESIGN	0.298	0.799
% variation	79.6	12.85
KMOc	0.7282174	
Bartlett test	χ^2=50.7252, df=15, p-value=9.161e-06	
Components of sub-index Institutional Environment		
	Comp.1	Comp.2
CU_EXP	0.362	0.903
MOC	0.499	0.396
AVF	0.556	0.132
TAX	0.558	0.100
% variation	76.8	17.99
KMOc	0.6505544	
Bartlett test	χ^2=37.0822, df=6, p-value=1.697e-06	
Components of sub-index Human Capital		
	Comp.1	
C_EMPL	0.502	
STUD_PRIV	0.488	
STUD_ST	–0.487	
AS_PRIV	0.522	
% variation	77.89	
KMOc	0.585649	
Bartlett test	χ^2=14.3006, df=6, p-value=0.02645	
Components of Slovak Creativity Index		
	Comp.1	Comp.2
TECHNOLOGY	0.392	0.233
OPENNESS AND DIVERSITY	0.065	0.956
CULTURAL ENVIRONMENT	0.462	0.082
CREATIVE OUTPUTS	0.454	–0.045
INSTITUTIONAL ENVIRONMENT	0.424	0.025
HUMAN CAPITAL	0.451	–0.139
% variation	87.08	10.67
KMOc	0.685249	
Bartlett test	χ^2=17.3286, df=6, p-value=0.0207e-03	

Source: authors' elaboration.

Each sub-index contains appropriate variables what is confirmed by KMO statistic (KMO is higher than 0.5 for each sub-index) and the components explain high percentage of variability, between 77.89 (Human capital) and 99.30 (Technology). Also in the case of total SCI, 97.75% of variability is explained by two components. The linear combination of the original variables employed together in a component can partly explain the overall component meaning. For instance, the first component Cultural Environment sub-index dimension is positively correlated with the number of theatres and museums. The second component is positively correlated with the number of people participating in dancing and other ensembles, thus it has a meaning of cultural participation.

4. RESULTS AND DISCUSSION

Table 3 presents the results of the overall score in SCI as well as regional performance in each dimension, and Table 4 provides ranking of Slovak regions. Each column has a zero mean value, and the plus sign values mean the position above the average value. The SCI shows a unique position in creativity performance in the Bratislava region (3.548) followed by Banská Bystrica (BC) and Košice (KI) regions. First two ranks fit with the size of the largest cities in Slovakia (Bratislava and Košice), although the city size is not always the main factor of higher creative performance. BC region displays the lowest level of Openness and Diversity and Technology, but still belongs to three top regions in terms of overall SCI because of its Human Capital and corresponding Creative Outcomes.

Table 3. Slovak Creativity Index – scores

Region	**SCI**	Openness and Diversity	Human Capital	Creative Outputs	Institutional Environment	Technology	Cultural Environment
Bratislava (BL)	**3.548**	1.653	1.378	4.016	3.148	2.249	3.073
Banská Bystrica (BC)	**1.266**	–1.094	2.376	0.393	–0.331	–1.007	–0.348
Košice (KI)	**0.731**	0.447	1.555	–0.379	0.040	–0.948	–0.265
Žilina (ZI)	**0.038**	–0.186	0.572	–0.430	–0.482	0.478	–0.254
Nitra (NI)	**–0.150**	–0.403	0.550	–0.905	–0.578	–0.420	–0.100
Prešov (PV)	**–1.601**	0.353	–1.771	–1.133	–0.368	–0.993	–0.630
Trnava (TT)	**–1.816**	–0.458	–1.921	–0.651	–0.846	0.268	–1.425
Trenčín (TC)	**–2.016**	–0.311	–2.740	–0.910	–0.583	0.372	–0.050

Source: authors' elaboration.

Table 4. Slovak Creativity Index – ranks

Rank	Openness and Diversity	Human Capital	Creative Outputs	Institutional Environment	Technology	Cultural Environment
1.	BL	BC	BL	BL	BL	BL
2.	KI	KI	BC	KI	ZI	TT
3.	PV	BL	KI	BC	TT	NI
4.	ZI	ZI	ZI	PV	TC	ZI
5.	TT	NI	TC	ZI	NI	KI
6.	NI	PV	NI	NI	KI	BC
7.	TC	TC	TT	TT	PV	PV
8.	BC	TT	PV	TC	BC	TC

Source: authors' elaboration.

Previous reasoning opens up the question of an impact of urbanisation on the creative potential. Creative industries have a tendency to cluster and to exploit agglomeration and urbanisation economies (Acs and Megyesi, 2009; De Propris *et al*., 2009). Urbanisation rate calculated as a proportion of the regional population living in areas with a population density of more than 500 inhabitants per km^2 can be tested for correlation with the creative performance measured by the SCI. Higher proportion of creative workers in the total regional employment is generally positively related to a higher degree of urbanisation. Figure 1 exhibits the position of regions in the relationship between urbanisation rate and overall SCI values.

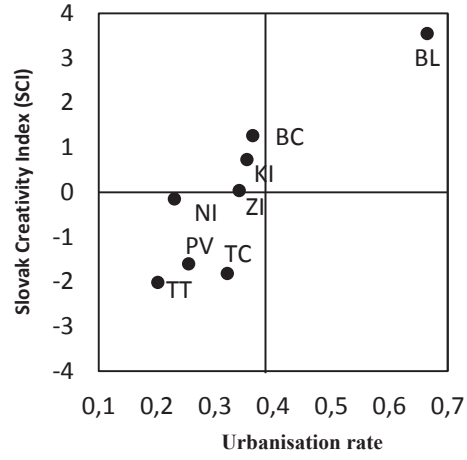

Fig. 1. Relationship between SCI and urbanisation rate

Spatial distribution of the regions according to Slovak Creativity Index and it sub-indices is depicted in Figure 2.

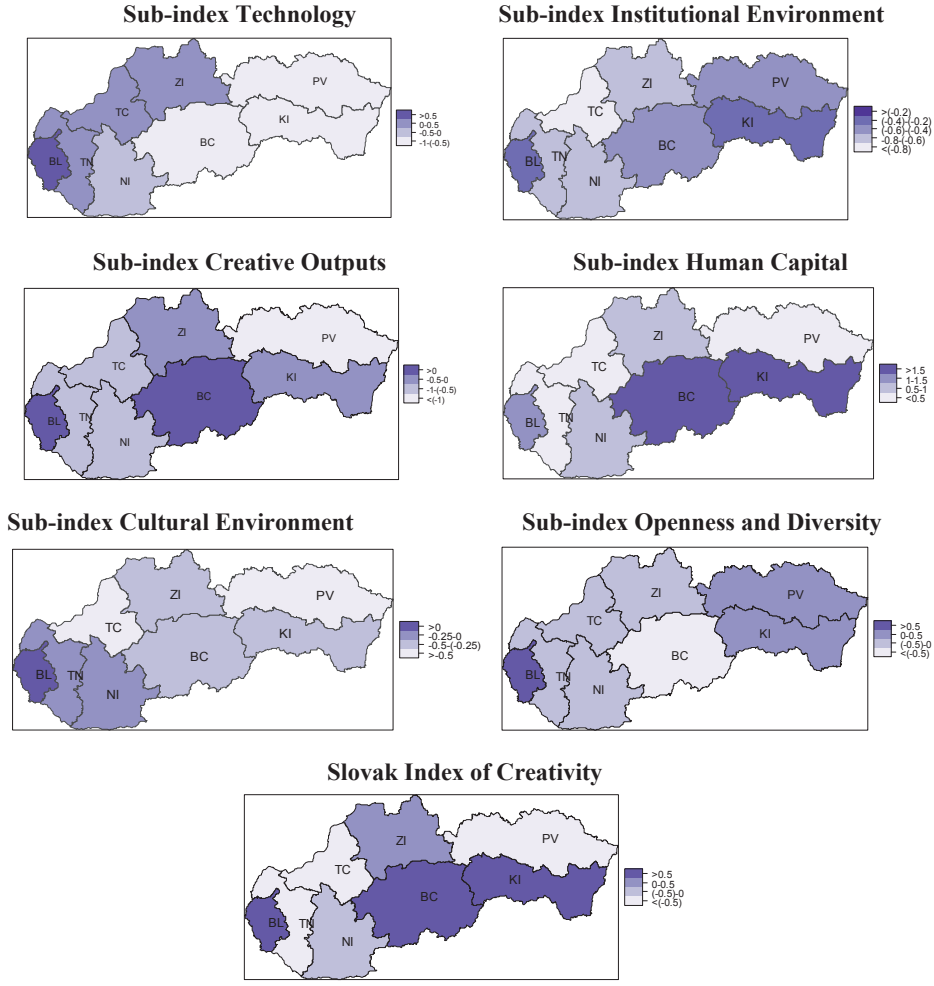

Fig. 2. Spatial distribution of the Slovak Creativity Index and its sub-indices

The Sub-index Technology is the only sub-index replicating existing economic disparities in the country. The metropolitan region of Bratislava and the Western regions are in a long time economically more advanced (Žudelová and Urbančíková, 2015), while the more eastern and rural regions are lagging behind. The ECI index transferred as SCI index to Slovak regions is more focusing on cultural aspects of creative economics, and it has discovered yet unknown creative potential of the BC region, its talent and human potential and corresponding higher creative output.

A more detailed view on the variables of the Human Capital sub-index shows the highest value of the level of creative talents in the BC region consisting of the variables on students in arts and culture and a number of cultural employees (The Figure 3). The Figure 4 confirms the closeness of the Human Capital factor and the creative performance.

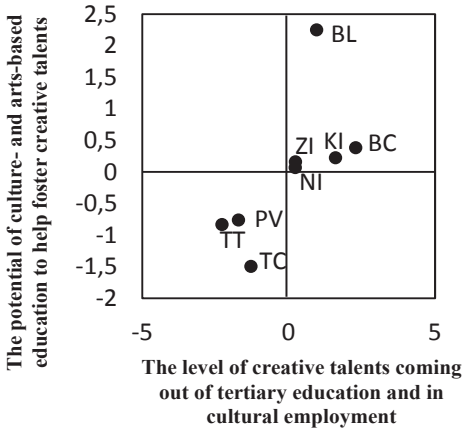

Fig. 3. Decomposition of Human Capital sub-index

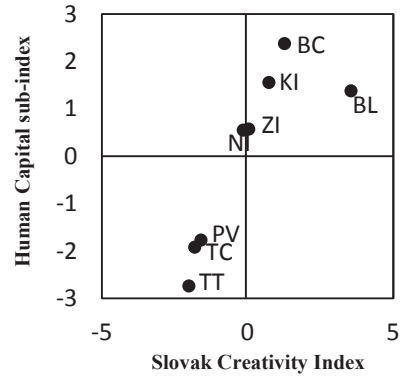

Fig. 4. Decomposition of Human Capital sub-index

Florida and other authors suggest considering also Tolerance (here named Openness and Diversity) as a factor of prosperity in a society, together with Technology dimension. Figure 5 therefore explores the relationship between the Technology and Openness and Diversity sub-indices. The Tolerance is represented by the key measures of tolerant attitudes in population toward minorities – foreigners, gay and lesbians, the different races or ethnic groups (see the description of the variables in the Table 1).

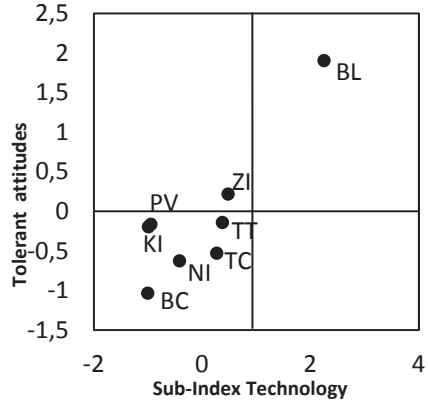

Fig. 5. Relationship between Tolerant attitudes and sub-index Technology

The position of the capital Bratislava region relates to its significantly higher tolerant attitudes than in the rest of Slovakia, what can be explained by the degree of urbanisation and more cosmopolitan character. The region of Banská Bystrica, which is comparatively well performing in human capital and creative outputs, is losing in Tolerance and Technology dimensions.

5. CONCLUSIONS

The main goal of the article was to develop a composite index applied on the Slovak regions to assess their creative potential and to ensure the philosophy and concept of the European Creativity Index. Finally, the Slovak Creativity Index comprises 59 indicators aggregated into six areas. The regional index reached the quantity as well as the quality of the indicators and the Principal Component Analysis has been used to reduce the number of variables due to the partial correlations. This made possible a coherent and solid construction of the index, using a technique that is novel in comparison to previous constructions of the simple weighted indices. The results are thus more reliable, credible and comparable to the concept of KEA.

There has been no doubt about the exclusive position of Bratislava region in the index measuring the regional creative potential. The results clearly confirmed the hypothesis about the impact of urbanisation on providing attractive conditions for the creative class, talents and creative industries. SCI in comparison to previous studies (e.g. Murgaš and Ševčíková, 2011) discovers Banská Bystrica as the region of cultural human capital, having established the network of art schools and producing relatively high creative output, however in a contradiction to 3T concept has the lowest score in Openness and Diversity sub-index. This is subject to its mixed urban/rural character, but from the other side, the lower tolerance attitudes show the way of policy interventions for the development of creative potential in the region. The first three regions in terms of SCI (Bratislava, Banská Bystrica and Košice) have a valuable creative and cultural potential that should be further developed when considering their pros and cons in terms of sub-indices.

Proximity to creative centres is not an unambiguous factor of creative performance. Economic development spread from Bratislava to neighbouring regions visible in the Technology dimension does not result in higher creative outputs or better cultural environment. Generally, the primary setting of the European ECI index and its pillars can be confirmed at the Slovak regional level, showing substantial differences and variability according to all dimensions, justifying the

important role of all of them. The SCI index and the PCA technique tested on the Slovak regions have brought a possibility to transfer the European comparisons to the regional level.

Acknowledgements. This article was supported by the Slovak Research and Development Agency under the contract No. APVV-0101-10.

REFERENCES

ACS, Z. and MEGYESI, M. (2007), Creativity and Industrial Cities: A Case Study of Baltimore. *Jena Economic Research Paper*.

BARRO, R. (2001), Education and Economic Growth., [in:] HELLIWELL, D. J. (ed.), *The Contribution of Human and Social Capital to Sustained Economic Growth and Well-Being*, Canada: Human Resources Development.

CARTA, M. (2009), Culture Communication and Cooperation, Three Cs for a Proactive Creative City, *International Journal of Sustainable Development*. 12 (2), pp. 124–133.

CLIFTON, N., COOKE, P. and HANSEN, H. K. (2013), Towards a Reconciliation of the Context-less with the Space-less? The Creative Class Across Varieties of Capitalism: New Evidence from Sweden and the UK, *Regional Studies*, 47 (2), pp. 201–215.

DE PROPRIS, L., CHAPAIN, C., COOKE, P., MACNEILL, S. and MATEOS-GARCIA, J. (2009), *The Geography of Creativity*. London: NESTA Interim Report.

FLORIDA, R. (2002). *The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community, and Everyday Life*, New York: Basic Books.

FLORIDA, R. and TINAGLI, I. (2004), *Europe in the Creative Age*, London: Demos.

JACOBS, J. (1993), *The Death and Life of Great American Cities*, New York: Random House Publishing Group.

JEANOTTE, M. S. (2003), *Just Showing up: Social and Cultural Capital in Everyday Life*, Quebéc: International Comparative Research Group.

JOHNSON, B., LORENZ, E. and LUNDVALL, B. (2012), Why all this Fuss about Codified and Tacit Knowledge? *Industrial and Corporate Change*, 11 (2), pp. 245–262.

JOLLIFFE, I. T. (2002), *Principal Component Analysis*. New York: Springer.

JONA, G. (2015), Determinants of Hungarian Sub-regions´ Territorial Capital, *European Spatial Research and Policy*, 22 (1), pp. 101–119.

KAISER, H. F. (1960), The Application of Electronic Computers to Factor Analysis, *Educational and Psychological Measurement*, (20), pp. 141–151.

KARPPI, I. (2012), Open Innovations and Living Labs: Promises or Challenges to Regional Renewal, *European Spatial Research and Policy*, 19 (2), pp. 65–86.

KEA (2006), *The Economy of Culture in Europe. A strategy for a Creative Europe*, Brussels: KEA European Affairs.

KEA (2009), *The Impact of Culture on Creativity*. Brussels: KEA European Affairs.

LI, T., ZHANG, H., YUAN, CH., LIU, Z. and FAN, CH. (2012), A PCA-based Method for Construction of Composite Sustainability Indicators. *The International Journal of Life Cycle Assessment*. 17 (5), pp. 593–603.

LUNDVALL, B. A. and BORRÁS, S. (1997), *The Globalising Learning Economy: Implications for Innovation Policy.* Brussels: Report to the DGXII, TSER.

MARKUSSEN, A. (2006), Urban Development and the Politics of a Creative Class: Evidence from the Study of Artists. *Environment and Planning*, 38 (10), pp. 1921–1940.

MARLET, G. and WOERKENS, C. (2005), *Tolerance, Aesthetics, Amenities or Jobs? Dutch City Attraction to the Creative Class*. Discussion Paper Series Nr. 05–33.Utrecht School of Economics. Tjalling C. Koopmans Research Institute.

MASKELL, P., ESKELINEN, H., HANNIBALSSON, I., MALMBERG, A. and VATNE, E. (1998), *Competitiveness, Localised Learning and Regional Development: Specialization and Prosperity in Small Open Economies*. London: Routledge.

MURGAŠ, F. and ŠEVČÍKOVÁ, M. (2011), Geografický prístup k meraniu kreatívneho kapitálu. Prípadová štúdia: Index kreatívneho kapitálu Slovenska. *Creative and Knowledge Society*, 1 (2). pp. 37–56.

MUSTERD, D. and MURIE, A. (2010), *Making Competitive Cities*. Chichester: Wiley-Blackwell.

OECD (2001), *The Wellbeing of Nations – The Role of Human Social Capital*. Paris: OECD.

OTTAVIANO, I. P. and PERI, G. (2005), Cities and Cultures. *Journal of Urban Economics*, 58 (2), pp. 304–307.

PECK, J. (2005), Struggling with the Creative Class. *International Journal of Urban and Regional Research*, 29 (4), pp. 740–770.

REHÁK, Š. (2014), Kreatívna trieda a kreatívne mestá. Teoretický koncept a jeho limity, *Sociologia*, 46 (5), pp. 599–619.

SEN, A. (1993), Capability and Well-Being, [in:] NUSSBAUM, M. and SEN, A. (eds.), *The Quality of Life*, Oxford: Clarendon Press, pp. 30–53.

TREMBLAY, R. and CHICOINE, H. (2011), Floribec: The life and Death of a Tourism-Based Transnational Community, *Norsk Geografisk Tidsskrift*, 65 (1), pp. 54–59.

UNCTAD (2011), *Strengthening the Creative Industries for Development*. Geneva: United Nations.

UNCTAD (2004), *Creative Industries and Development*. Geneva: United Nations.

ŽUDELOVÁ, M. and URBANČÍKOVÁ, N. (2015), *Labour Migration and Mobility in the Districts of the Slovak Republic*, [in:] 5th Central European Conference in Regional Science: International Conference Proceedings Košice, pp. 1198–1208.

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

https://doi.org/10.1515/esrp-2016-0004

Christian FERTNER*, Juliane GROßE*

COMPACT AND RESOURCE EFFICIENT CITIES? SYNERGIES AND TRADE-OFFS IN EUROPEAN CITIES

Abstract. Cities are the main consumers of energy and resources but at the same time are considered as centres for innovation which can provide solutions to unsustainable development. An important concept regarding energy and resource efficiency on the scale of the city and city-region is the compact city. Compact cities and compact urban development are thought to decrease energy and resource demand per capita and increase efficiency. At the same time trade-offs and potential rebound effects of increased resource efficiency question certain achievements of a compact urban structure. This paper reviews aspects of resource and energy efficiency in compact city development in a European context. We conclude that, if the idea of the compact city should have any effect on resource and energy efficiency, accompanying measures have to be implemented, such as e.g. efficient public transport systems to offer alternative travel modes. Also the allocation of efficiency gains due to compact urban development has to be taken into account in order to avoid direct and indirect rebound effects.

Key words: compct city, resource use, spatial structure, urban form, energy efficiency.

1. INTRODUCTION

Transforming cities' resource use to address the threats of climate change and resource scarcity is one of the main future challenges in urban development (Droege, 2011). Striving towards energy self-sufficiency, implementing regional resource cycles, retrofitting of the built environment as well as decoupling urban development and resource use are crucial for a city's future vulnerability and resilience against changes in general resource availability. The challenge gets more complex as resource and energy efficiency in a city are deeply interwoven with other aspects of urban development, such as social structures as well as the geographical context (DG Regio, 2011).

* Christian FERTNER, Juliane GROßE, University of Copenhagen, Department of Geosciences and Natural Resource Management, Section for Landscape Architecture and Planning, Rolighedsvej 23, 1958 Frederiksberg, Denmark, e-mail: chfe@ign.ku.dk, e-mail: jg@ing.ku.dk

In Europe this is high on the political agenda through the Europe 2020 strategy (European Commission, 2010) and its priority of "Sustainable growth", dealing with climate change and energy efficiency. As cities are the main consumer of energy and resources they are both problem and solution to tackle issues of efficiency and saving (Lewis, Hogain and Borghi, 2013). Furthermore, through innovation in green technologies and the removing of bottlenecks in network infrastructure, cities can enhance their competitiveness.

One widely used principle in sustainable urban development is the concept of the compact city. Compact cities are thought to decrease travel needs and increase resource efficiency due to shorter distances and higher densities. Different interrelations have been discussed in literature for several decades, both in conceptual and empirical studies. In this paper a short review of aspects related to resource efficiency and compact cities, including likewise potential drawbacks, is provided.

The compact city concept is applied in different forms – from the 'original' single-centred compact city to polycentric interpretations. These variations can be related to historical urban development, lifestyles, geographical context, city size, options to change urban form, as well as various specific development patterns taking place under the umbrella of global urbanization. In this paper we look at the compact city from a European perspective. Europe is characterized by predominantly polycentric settlement structures which attributes the city-region and the embedment of cities in a functional urban system (Nordregio *et al.,* 2005).

2. DEFINING RESOURCE EFFICIENCY AND THE COMPACT CITY

As a framework for this review we define the terms 'resource efficiency' and 'compact city' as follows: Resource efficiency means the ratio of services generated from resources to resource input. It means "getting the most out of every unit you buy" (Herring, 2006 regarding energy efficiency). Thus, resource efficiency does not necessarily imply a reduction in resource consumption as long as the overall economic activity is still increasing. However, many policy-related uses of the term go further, including the sustainable use of resources or an absolute decoupling of resource use compared to economic growth (European Commission, 2011; UNEP, 2013).

The EU's "Roadmap to a Resource Efficient Europe" (European Commission, 2011) considers the following resources: fossil fuels, material and minerals, water, air, land, soils, ecosystems/biodiversity, marine resources and waste. Some of these are in particular relevant in the context of a compact city discussion – especially regarding transportation, housing and infrastructure.

Regarding the use of resources it is important to include the city's functional urban area, which means looking at the city-region rather than at the city alone. A city's metabolism is deeply dependent on its urban-rural relationships and many resources which are used in the city are located or supplied in its surrounding region (e.g. water, land/soils, construction material, and possibilities for waste treatment). Furthermore many functional-dynamic relations as e.g. commuting are not limited to the core city but take place in a city's functional urban area. These functional relations form the city-region and describe cross-scale interactions.

The compact city is a very illustrative term and concept. However, providing a general definition of a compact city is not an easy task. Compactness or density is a matter of scale. Built-up structures can be compact on the plot level, the neighbourhood or district level or also the city level. Compactness on one of these levels does not equal compactness on the other levels. Also, a densely built-up structure does not mean the city can necessarily make benefit out of that. Different resource types are more or less relevant on each of the levels. For instance, district heating works often on district scale, while transportation issues (e.g. commuting) are very much related to the compactness of the whole city or city-region.

This paper does not provide a review on the various understandings of a compact city, but mainly focuses on a recent publication of the OECD (2011). The report summarizes key elements to consider when planning for a compact city, reflecting the complexity of the concept (table 1), and emphasizing that the compact city is more than density. To get the compact city work as it is intended – facilitating to increase resource efficiency and reduce consumption – it is important to secure public spaces, a dense public transport system and a mixed land use on the local scale.

Table 1. Three key elements of compact cities (OECD, 2011, p. 15)

Dense and contiguous development patterns	Urban areas linked by public transport systems	Accessibility to local services and jobs
Urban land is densely utilised Distinct border between urban and rural land use Public spaces are secured	Effective use of urban land Public transport systems facilitate mobility in urban areas	Land use is mixed Most residents have access to local services either on foot or using public transport

In this sense the compact city idea is not only translated into proximity but rather reflected in accessibility as well as mix of uses, which allows a more broad interpretation of the concept (Westerink *et al.*, 2013). It even gets more

difficult when the definition should be empirically applicable, as very different urban forms can appear as compact cities. Furthermore, urban form needs to be adapted to the local geographical context as well as it is dependent on earlier development as e.g. existing transportation corridors. Also, polycentric urban development can fulfil the requirements for compact city development if it is realized as decentralised concentration (Anderson, Kanaroglou and Miller, 1996).

Finally, compact city development is not only an issue of resource efficiency but can have high impact on the social and economic development of a city and its neighbourhoods. Thus, there is no simple, empirically applicable definition of a compact city. However, this also allows many cities to work with the concept and adapt it to their own context and needs.

3. THE RELATIONSHIP OF SPATIAL STRUCTURE AND RESOURCE USE

Urban form and spatial structure are strongly related to resource use. The arrangement of land use directly affects energy consumption, primarily in the transport and space heating/cooling sectors (Owens, 1986). As Salat and Bourdic (2012, p. 1) state, urban form "constrains cities' functioning (individual spatial behaviours, land use) and cities' flows (travel, energy, water) and, retroactively, their functioning modifies both their morphology and their structure." The enormous physical expansion of our cities in the last century and its implied problems especially regarding transport infrastructure and land consumption led to a renaissance of the compact city as an in ideal in urban planning. The debate often distinguishes between "urban sprawl" versus the idealised "compact city" as two opposite urban forms (Schwarz, 2010). Compact and dense urban development is supposed to directly translate into lower energy use and carbon emissions per capita, less air and water pollution, and generally lower resource demands compared to less dense, less compact cities (Beatley, 2003). The key to a more efficient use of resources lies in the 'heavy' or intense use – in terms of build-up density and activity – of a limited area.

The main benefits of compact cities, which are broadly investigated in the academic literature, are related to efficient land use and limited travel needs (Williams, Burton and Jenks, 2004). Additionally, a compact or dense city structure provides remarkable benefits in the energy supply of a city, both regarding energy distribution and network as well as energy consumption, e.g. for heating or cooling (Williams, 2004).

There are also a lot of arguments put forward to support the idea of compactness going beyond the issue of resource use. This includes more generally the reduction of transaction costs, enabling e.g. social interaction and integration or the support of the creative economy (OECD, 2011).

However, the relationship of compact urban structure and energy efficiency comprises also controversies, which are described as the compact city dilemma (e.g. de Roo, 1998, 2000) and address the conflicts between "environmental intrusive activities" like noise and air pollution and environmentally sensitive functions like recreation (de Roo, 1998, p. 1030). We will get back to that in section 4. In the following we discuss three potential benefits of compact cities related to resource efficiency:

– Compact cities save land, e.g. agricultural area

– Compact cities save resource (energy) use for transportation, including

– Save total transport needs (in km), and thereby reduce resource use for transport

– Strengthen more resource efficient modes of transport, e.g. public transport

– Compact cities increase efficiency of infrastructure and reduce resource consumption, e.g. by enabling the use of district energy systems

In terms of resources (according to the above mentioned EU Roadmap), those three benefits relate mainly to the use of fossil fuels and land, to a lesser extent to material and minerals, water, air, land, soils, ecosystems/biodiversity, marine resources and waste, although, depending on the energy system (e.g. district heating from waste) some of those are also directly related.

3.1. Compact cities save land

The most obvious effect of compact cities is the reduced need of urban land. The general trend in Europe, as in the rest of the world (Angel, Parent, Civco, Blei and Potere, 2011), is still a progressing dispersion of urban land. Although population is concentrating in metropolitan areas, urban land in these areas is growing at proportionally higher rates. Between 1990 and 2006 Europe's population grew by 7%, while the urban area in the same time grew by 37% (Fertner, 2012). Land is used less efficiently than before; we are consuming more and more land per capita. Although this is a general trend in Europe, the current land consumption per inhabitant can be very different between countries (Figure 1).

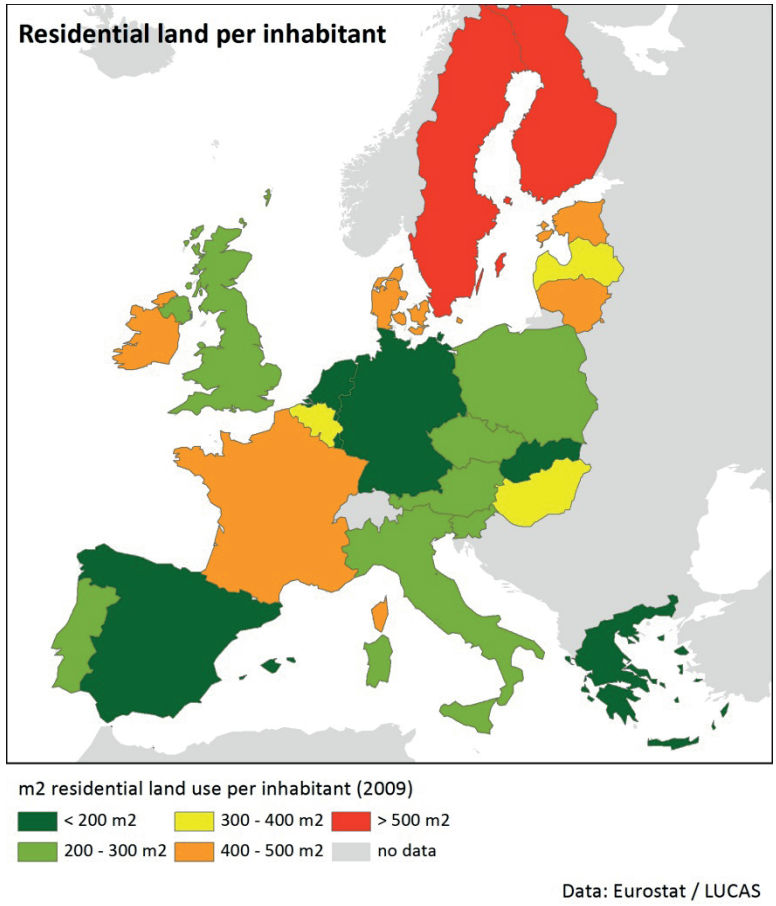

Fig. 1. Residential land (m^2) per inhabitant in 2009 in Europe

An important issue thereby is which kind of land gets urbanised. Cities are typically located in areas with the most fertile soils. Most areas getting converted to urban areas are agricultural land (European Environment Agency (EEA), 2006). Urban growth thereby directly affects urban-rural relationships as e.g. the local provision of food or resources. Higher densities of dwellings, jobs and other activities can reduce the (relative) need for new urban land. Decoupling of land consumption in relation to population or economic growth is a key issue. Furthermore, compact city development can reduce the fragmentation of the remaining areas, supporting more efficient agricultural practices, better connected nature areas and higher recreational potentials.

This process to achieve a compact city is described as 'urban intensification' by Williams *et al*. (1996), acknowledging the need for density and intensity of uses and activity likewise. Thus, intensification induces a sustainable management of

land (Williams, 2004). Urban regeneration ("recycling") is a key strategy towards compact and intense urban development and sustainable land use when e.g. applied in the dispersed suburbs. It refers to regeneration of land that was previously developed (European Commission, 2012). However, more often we can see a reuse of urban land for a different urban function, e.g. former industrial areas which get converted to housing areas. This 'brownfield development', especially in the inner urban areas, is an essential element of sustainable management of urban space. Even more as it does not only minimize new land take, but also contributes to the revitalization of inner city zones and creates mixed use development. Germany, for instance, considers the development of the city centres as key instrument in city development strategies ("Flächenrecycling"). The average new land take of 117 ha per day between 1993 and 2008 shall be reduced by means of this strategy to 30 ha per day in 2020, which corresponds to a targeted share of 3:1 of central compared to decentralized development (Lieber and Preuß, 2010).

More efficient use of land can be caused by geographical limitations (e.g. cities in valleys or limited by water areas) but also by general policies on urban development. In the European context ambitions towards management of spatial development are present at all policy levels from the structural and territorial cohesion polices at EU level to the national, regional and local levels. The first urban growth management policies go back as far as to 1900 when the first green belts were designated (Ali, 2008), following the garden city movement as well as the preservation of green areas around major European cities (Konijnendijk, 2010). Today some variety of growth management is part of a 'standard mode of operation' in spatial planning. There are, however, large national and regional differences regarding competences, administrative delineations, systems and public interests between different parts of Europe. Although, the need to control urban sprawl is widely accepted (Nuissl and Couch, 2008; van den Berg, Braun and van der Meer, 2007), except for a few cities, sprawl stays a general challenge in Europe (European Environment Agency (EEA), 2006; Reckien and Karecha, 2008).

Building densities are not only related to land consumption, but also to general energy consumption. Theoretical calculations show clearly, everything else being equal, detached houses can require as much as three times the energy input of intermediate flats (OECD, 1995). Such a trend would imply generally higher net densities, thus, there are also implications for the urban scale. Regarding energy for transport and heating the following two sections present some evidence.

3.2. Compact cities save transport energy

Another main argument for compact cities is the reduction of energy use (especially fossil fuels) for transportation. Compact cities can reduce the average travel distance by supporting mixed used development in neighbourhoods allowing

short distances between different activities. Furthermore, compact cities also allow a more sustainable modal split, favouring "green" modes of transport. Highly attractive public transport systems as metro lines can only work efficiently in areas with a minimum density of attractions (households, jobs …). So energy use is reduced through saving transport energy (by reducing length) and more efficient use (by using more energy efficient modes of transport).

Empirical studies show a correlation between urban form and transport behaviour. Newman and Kenworthy's study from 1989 is the most well-known, showing a relation between population density in cities and gasoline consumption per capita (Newman and Kenworthy, 1989). The study got though criticized for methodological flaws. A main problem is the difficulty of comparing across different contexts and bounding conditions (Stead and Marshall, 2001). This includes the question if it is possible to control for preferences people have in their travel behaviour. For example, we could assume that a person who likes to bike also prefers to live in an area where this is possible (e.g. the inner city) and is more reluctant to move to more car-dependent areas than persons with other transport preferences. Furthermore it is difficult to separate effects caused by other factors, like socio-economic factors (especially income), which are difficult to consider comprehensively in a study, but might be more significant for transport behaviour than parameters of urban form (Echenique, Hargreaves, Mitchell and Namdeo, 2012). Another concern is if the right elements of the urban form are represented in empirical studies. For example available parking space is crucial for the choice of transport mode, but is seldom included in empirical studies. This however can make a considerable difference in older and newer compact urban developments.

However, other studies focusing on single cases or cases within similar context come up with similar conclusions as Newman and Kenworthy. Clark (2013) found that per capita vehicle distance, vehicle energy use and vehicle emissions are inverse to population density in metropolitan areas in the USA. Stead's (2001) study from the UK shows that "socioeconomic characteristics typically explain around half of the variation in travel distance per person across different wards, whereas land-use characteristics often only explain up to one third of the variation in travel distance per person." An in-depth study by Næss (2006) of the metropolitan region of Copenhagen showed, while controlling for many non-urban structure variables, that energy use for transport is higher for residents living further away from the centre than of those living close to or in the centre.

In another study, Næss and Jensen (2004) showed that urban structural variables influence travel behaviour, even in a small town of around 30 000 inhabitants. On the micro scale, the neighbourhood scale, Schwanen *et al*. (2002) showed that high population and employment densities are positively related to the use of public transport. On a global scale, most recent a study across

cultural contexts including a dataset of 274 cities (Creutzig, Baiocchi, Bierkandt, Pichler and Seto, 2015), shows that economic activity, transport costs, geographic factors, and urban form explain 37% of urban direct energy use and even 88% of urban transport energy use.

Finally it has to be considered that some of the discussed effects might decrease or even inverse when reaching a certain city size (Morrill, 1970). E.g. the advantage of proximity is decreasing the larger a (single-centred) compact city becomes. Capello and Camagni (2000) argue, with a perspective on economics, that at a certain urban size, diseconomies of scale apply as congestion effects take place, decreasing the efficiency of an urban location. Also, one of the main criticisms against addressing transport needs from an urban form perspective is the slow rate of change in the urban form, which allows significant changes in travel demands only in the long term (Williams, 2004).

3.3. Compact cities increase efficiency of infrastructure and reduce resource consumption

Besides saving land and transport energy, compact cities can also increase the efficiency of infrastructure in general (e.g. by the more intense use of infrastructure) and contribute a reduction of resource consumption (e.g. in infrastructure construction, where less meters of infrastructure is necessary to supply the same amount of users). Particular technical infrastructure needs a minimum density of activities/users, as for example high level public transport or district heating systems. However, infrastructure investment and maintenance costs per person might also be cheaper in compact cities. Conversely, the provision of infrastructure services in less dense or sprawled regions is comparatively expensive and less efficient.

Salat and Bourdic (2012) write that "a city four times denser consumes four times less land and sixteen times less network infrastructure." They consider complex urban structures (e.g. redundancy in infrastructure networks) as structurally more efficient and resilient than simple ones. Compact city structures provide the necessary conditions to establish these complex urban structures. Higher densities also facilitate the implementation and introduction of sustainable technologies, like district heating (Williams, 2004, p. 45). Empirical evidence is however difficult to establish as there are many other factors influencing costs for infrastructure. Also, the increasing complexity of infrastructure development in densely built-up areas has to be considered, even though per capita resource use for construction and maintenance might still be lower than in less dense areas.

Spatial structure and urban form, like the general layout and orientation of buildings, have considerable influence on the heating and cooling demand of buildings. Futcher *et al*. (2013) found that compact urban development on neighbourhood/

building scale saves energy for heating and cooling in the single buildings, mainly through shading and insulation effects and influence on the micro climate. Næss (1997) names building types, local climate conditions and the grouping of buildings the most important spatial planning factors related to heating. Tereci *et al*. (2013) found that for a given urban site, compact, multi-family apartment blocks provide the lowest CO2 emissions per capita. However, they also found that shading, as a consequence of increased building density, can increase heating demand in heating dominated climates.

Large scale heating and cooling systems play an important role in several European countries. In the Scandinavian and Baltic States, district heating covers 40–60% of the heating demand (Connolly *et al.,* 2014). Often operating with Combined-Heat-Power (CHP) plants, these systems are only feasible at particular minimum densities because of the infrastructure costs. Furthermore, because of energy transportation losses, the low-grade energy (e.g. heat) has to be produced relatively close to the end users. Also, efficient district heating/cooling systems need a mixed user structure, which both asks for low-grade energy (heat, hot water and steam) and electricity demand (OECD, 2011). This could be different kinds of industries, hospitals, hotels and residential areas, having not only different demands of the type of energy but also regarding the use pattern over the day, helping to smooth peaks of usage in the system. At the same time, district heating systems provide secure and efficient energy supply, with high flexibility in fuel use (e.g. Christensen and Jensen-Butler, 1982).

Regarding resource consumption, an important issue in district heating is the handling and conversion of energy. Introduction of CHP often is connected to a switch from high quality fuels to lower quality fuels, such as coal or biomass (OECD, 1995).

4. TRADE-OFFS AND REBOUND EFFECTS

There are a number of potential adverse effects of compact cities in environmental, social as well as economic terms (OECD, 2011; Westerink *et al*., 2013). These trade-offs regarding compact city development and resource use are not fully explored and subject to concrete planning measures because of their local complexity. They include:

– Potential negative effects on energy consumption, e.g. increase in energy consumption for cooling caused by urban heat island effects or inefficient energy use due to traffic congestion;

– Increased need of transportation and big infrastructure due to the reduced potential of on-site activities, e.g. farming on-site, waste treatment on-site, local water run-off, recreation on-site.

– High costs for infrastructure construction (e.g. underground metro instead of on surface).

Thus, the main problem is the definition of a compact city and that effects can be evaluated very differently depending on the applied scale. However, Næss (1997) concludes that there is, with goal-oriented and integrated planning, more complementarity than conflict between compact development on city (transport) level and on building (mainly heating) level.

Despite resource use there are other trade-offs with compact city development regarding social constraints. This includes housing affordability (Clark, 2013) but also issues related to quality of life, as traditional, local, environmental qualities. It can be questioned if it is possible to densify without destroying valuable nature or cultural heritage (Næss, 1997). Strategies that are often applied to deal with those "sustainability trade-offs" include urban renewal, limitations on car use, mixed land-use and life cycle residential strategies (Westerink *et al.,* 2013). Also, there are some critiques of the idea that compact urban form really makes a difference. Other factors might be much more significant for resource use, e.g. the influence of the socio-economic factors on travel behaviour (Gordon and Richardson, 1997).

Looking at trade-offs from a broader perspective it is also important to consider rebound effects and how efficiency gains (e.g. in terms of money or time available for each citizen) through e.g. a higher use of public transport can actually effect (increasing) resource use in other sectors. For example, a study from Finland showed that people living in compact urban settings tend to have a high use of summer houses (Strandell and Hall, 2015). The lack of open space increases the need of people to travel further for recreational purposes. Similar 'compensation effects' have been observed in Sweden. Axelsson (2012) showed that in the bigger cities like Stockholm, the ecological footprint of transport activities is only half than in many other places. However, for other activities as recreation and culture, the average Stockholmer has a much bigger ecological footprint than the average Swede. The impact of direct energy use (e.g. transport) is transferred to indirect energy use by consuming activities and products.

5. CONCLUDING PERSPECTIVES

Urban form and spatial structure is related to resource use, especially in regard to land use, transport energy and energy for heating/cooling. However, for a number of resources spatial structure and urban form play only a minor role. This includes especially consumption patterns related to lifestyle and economic wealth, like consumer goods use per person (including resource use for their production) or consumption of electricity for household appliances. Some resources might be indirectly connected

to urban form but are not further elaborated in this text. These include water use per person (might be connected to urban form and housing structure), and production of food. Compact urban development as e.g. in the form of urban growth management might ease the development pressure on agriculture and foster local production of food. However, dense urban structures can also complicate the cultivation of food in the city because of spatial limitations and shading effects.

Furthermore, urban density cannot be the only measure. If the idea of the compact city should have any effect on resource efficiency (and limit its trade-offs) other elements have to be implemented, as e.g. efficient public transport systems to offer alternative travel modes and cope with congestion.

This, however, does not mean we should not take action. Although and because the spatial structure of a city changes only very slowly, spatial planning has an important responsibility to avoid the risk of lock-in effects in the future. Buildings, communication and transport infrastructure as well as socio-technical systems have a long lifetime. Spatial planning can ensure a certain flexibility and farsightedness in urban development to be prepared for changes in the energy use (Næss, 1997). So, even though we implement behavioural measures (e.g. price incentives) which have immediate effect, the physical structures have to be included from the start, even if (or because) they cannot change that fast.

Regarding spatial planning principles, the example from Copenhagen (Næss, 2006) shows that to be energy-saving, sustainable and environmentally friendly, (1) most construction should be densification within existing urban area, (2) priority should be given to apartment buildings and terrace housing instead of detached single-family housing, (3) road and parking capacity should not be increased, but public transport strengthened and (4) densification should take place in areas already affected by technical infrastructure, to keep the urban green structure. To avoid potential trade-offs of compact city structures and to achieve the desired efficiency improvements, integrated, coordinated and tailor-made planning processes are necessary.

Finally, because of the different contexts cities are functioning in, it is important to see resource efficiency as a relative concept: that means not to be absolute efficient, but to become more efficient. In that regard it is very similar to how we work with the term sustainability. Still, even when we consider resource efficiency as a relative concept, eventually it needs to induce a decrease in the total resource and energy consumption in order to address the threats of climate change and resource scarcity. The allocation of efficiency gains has to be taken into account in order to avoid rebound effects. Indicators can play an important role to monitor progress when they also cover a temporal and systemic dimension to evaluate change.

Acknowledgements. This review was done in the framework of the EU-FP7 project PLEEC (GA no. 314704) and partially during a guest scientist visit of the first author at the European Environment Agency in 2013.

REFERENCES

ALI, A. K. (2008), Greenbelts to Contain Urban Growth in Ontario, Canada: Promises and Prospects. *Planning Practice and Research*, *23*(4), 533–548. http://doi.org/10.1080/02697450802522889

ANDERSON, W. P., KANAROGLOU, P. S. and MILLER, E. J. (1996), Urban Form, Energy and the Environment: A Review of Issues, Evidence and Policy. *Urban Studies*, *33*(1), 7–35.

ANGEL, S., PARENT, J., CIVCO, D. L., BLEI, A. and POTERE, D. (2011), The dimensions of global urban expansion: Estimates and projections for all countries, 2000–2050. *Progress in Planning*, *75*(2), 53–107. http://doi.org/10.1016/j.progress.2011.04.001.

AXELSSON, K. (2012), *Global miljøpåverkan och lokala fotavtryck – analys av fyra svenska kommuners totala kunsumtion [Global environmental impact and local footprint – analysis of the total consumption in four Swedish municipalities]* (No. 978-91-86125-39-4). Stockholm Environment Institute, Cogito. Retrieved from _www.sei-international.org_

BEATLEY, T. (2003), Planning for Sustainability in European Cities: A Review of Practices in Leading Cities, [in:] WHEELER, S. M. and BEATLEY, T. (eds.), *The sustainable urban development reader* (Vols. 1–4.3, pp. 249–258). London: Routledge.

CAPELLO, R., and CAMAGNI, R. (2000), Beyond Optimal City Size: An Evaluation of Alternative Urban Growth Patterns. *Urban Studies*, *37*(9), 1479–1496.

CHRISTENSEN, D. A. and JENSEN-BUTLER, C. (1982), Energy and urban structure: Heat planning in Denmark. *Progress in Planning*, *18*, 57–132. http://doi.org/http://dx.doi.org/10.1016/0305-9006(82)90008-3.

CLARK, T. A. (2013), Metropolitan density, energy efficiency and carbon emissions: Multi-attribute tradeoffs and their policy implications. *Energy Policy*, *53*, 413–428.

CONNOLLY, D., LUND, H., MATHIESEN, B. V., WERNER, S., MÖLLER, B., PERSSON, U., NIELSEN, S. (2014), Heat Roadmap Europe: Combining district heating with heat savings to decarbonise the EU energy system. *Energy Policy*, *65*(0), 475–489. http://doi.org/10.1016/j.enpol.2013.10.035.

CREUTZIG, F., BAIOCCHI, G., BIERKANDT, R., PICHLER, P. P. and SETO, K. C. (2015), Global typology of urban energy use and potentials for an urbanization mitigation wedge. *Proceedings of the National Academy of Sciences*. Retrieved from http://www.pnas.org/content/early/2015/01/07/1315545112.abstract.

De ROO, G. (1998), Environmental Planning and the Compact City. A Dutch Perspective. *Studies in Environmental Science, 72*, 1027–1042.

De ROO, G. (2000), Environmental conflicts in compact cities: complexity, decisionmaking, and policy approaches. *Environment and Planning B: Planning and Design*, *27*(1), 151–162. http://doi.org/10.1 068/b2614.

DG Regio. (2011), *Cities of tomorrow: Challenges, visions, ways forward* (10.2776/41803 No. 978-92-79-21307-6). Brussels: European Commission.

DROEGE, P. (2011), One Hundred Tons To Armageddon: Cities Combat Carbon, [in:] BRIDGE, G. and WATSON, S. (eds.), *The New Blackwell Companion to the City* (Vols. 1–10, pp. 108–120). Blackwell.

ECHENIQUE, M. H., HARGREAVES, A. J., MITCHELL, G. and NAMDEO, A. (2012), Growing Cities Sustainably. Does Urban Form Really Matter? *Journal of the American Planning Association, 78*(2), 121–137.

European Commission. (2010), Europe 2020 – *A strategy for smart, sustainable and inclusive growth*.

European Commission. (2011), *Roadmap to a Resource Efficient Europe*.

European Commission. (2012, December 4), Guidelines on best practice to limit, mitigate or compensate soil sealing. Commission Staff working document.

European Environment Agency (EEA). (2006), *Urban sprawl in Europe – The ignored challenge* (Report No. 10/2006). Copenhagen.

FERTNER, C. (2012), Urbanisation, urban growth and planning in the Copenhagen Metropolitan Region with reference studies from Europe and the USA. *Forest & Landscape Research*, *2012*(54), 1–151.

FUTCHER, J. A., KERSHAW, T. and MILLS, G. (2013), Urban form and function as building performance parameters. *Building and Environment*, *62*(0), 112–123.

GORDON, P. and RICHARDSON, H. W. (1997), Are compact cities a desirable planning goal? *Journal of the American Planning Association*, *63*(1), 95–106.

HERRING, H. (2006), Energy efficiency – a critical view. *Energy*, *31*(1), 10–20.

KONIJNENDIJK, C. C. (2010), The Role of Forestry in the Development and Reform of Green Belts. *Planning Practice and Research*, *25*(2), 241–254. http://doi.org/10.1080/02697451003740270

LEWIS, J. O., HOGAIN, S. N. and BORGHI, A. (2013), *Building energy efficiency in European cities*. Saint-Denis: URBACT.

LIEBER, M. and PREUSS, T. (2010), Flächenrecycling – neue Ergebnisse aus der REFINA-Forschung. *Informationen Zur Raumentwicklung*, *1*, 59–70.

Morrill, R. L. (1970), *The spatial organization of society*. Belmont, California.

NÆSS, P. (1997), *Fysisk planlegging og energibruk*. Oslo: Tano Aschehoug.

NÆSS, P. (2006), *Urban Structure Matters: Residential Location, Car Dependence and Travel Behaviour*. London: Routledge.

NÆSS, P. and JENSEN, O. B. (2004), Urban structure matters, even in a small town. *Journal of Environmental Planning and Management*, *47*(1), 35–57.

NEWMAN, P. W. G. and KENWORTHY, J. R. (1989), Gasoline Consumption and Cities. *Journal of the American Planning Association*, *55*(1), 24–37. http://doi.org/10.1080/01944368908975398

Nordregio *et al*. (2005), *ESPON 1.1.1: Potentials for polycentric development in Europe, Project report.* Stockholm/Luxembourg: Nordregio/ESPON Monitoring Committee.

NUISSL, H. and COUCH, C. (2008), Lines of Defence: Policies for the Control of Urban Sprawl, [in:] COUCH, C., PETSCHEL-HELD, G. and LEONTIDOU, L. (eds.), *Urban Sprawl in Europe – Landscape, Land-Use Change & Policy* (Vols. 1–8, pp. 217–241). Oxford: Blackwell. Retrieved from _http://www.blackwellpublishing.com/book.asp?ref=9781405139175_

OECD. (1995), *Urban Energy Handbook*. Paris.

OECD. (2011), *Compact City Policies: A Comparative Assessment – Final Report*. Working Party on Territorial Policy in Urban Areas.

OWENS, S. (1986), *Energy, planning and urban form*. London: Pion.

RECKIEN, D. and KARECHA, J. (2008), Sprawl in European Cities: The Comparative Background, [in:] COUCH, C., PETSCHEL-HELD, G. and LEONTIDOU, L. (eds.), *Urban Sprawl in Europe – Landscape, Land-Use Change & Policy* (Vols. 1–2, pp. 39–68). Oxford: Blackwell. Retrieved from _http://www.blackwellpublishing.com/book.asp?ref=9781405139175_

SALAT, S. and BOURDIC, L. (2012), Urban Complexity, Efficiency and Resilience, [in:] MORVAJ, Z. (ed.), *Energy Efficiency – A Bridge to Low Carbon Economy* (Vols. 1–2). InTech. Retrieved from _http://www.intechopen.com/books/energy-efficiency-a-bridge-to-low-carbon-economy_

SCHWANEN, T., DIJST, M. and DIELEMAN, F. M. (2002), A microlevel analysis of residential context and travel time. *Environment and Planning A*, *34*(8), 1487–1507.

SCHWARZ, N. (2010), Urban form revisited – Selecting indicators for characterising European cities. *Landscape and Urban Planning*, *96*(1), 29–47.

STEAD, D. (2001), Relationships between land use, socioeconomic factors, and travel patterns in Britain. *Environment and Planning B: Planning and Design*, *28*(4), 499–528.

STEAD, D. and MARSHALL, S. (2001), The Relationships between Urban Form and Travel Patterns. An International Review and Evaluation. *European Journal of Transport and Infrastructure Research*, *1*(2), 113–141.

STRANDELL, A. and HALL, C. M. (2015), Impact of the residential environment on second home use in Finland – Testing the compensation hypothesis. *Landscape and Urban Planning*, *133*(0), 12–23.

TERECI, A., OZKAN, S. T. E. and EICKER, U. (2013), Energy benchmarking for residential buildings. *Energy and Buildings*, *60*, 92–99.

UNEP. (2013), *City-Level Decoupling: Urban resource flows and the governance of infrastructure transitions* (No. 978-92-807-3298-6). A Report of the Working Group on Cities of the International Resource Panel. Swilling M., Robinson B., Marvin S. and Hodson M.

Van den BERG, L., BRAUN, E. and van der MEER, J. (2007), Synthesis, [in:] VAN DEN BERG, L., BRAUN, E. and VAN DER MEER, J. (eds.), *National Policy Responses to Urban Challenges in Europe* (Vols. 1–19, pp. 399–432). Adlershot: Ashgate.

WESTERINK, J., HAASE, D., BAUER, A., RAVETZ, J., JARRIGE, F. and AALBERS, C. B. E. M. (2013), Dealing with Sustainability Trade-Offs of the Compact City in Peri-Urban Planning Across European City Regions. *European Planning Studies*, *21*(4), 473–497. http://doi.org/10.1080/09654313.2012.722927

WILLIAMS, K. (2004), Does Intensifying Cities Make them More Sustainable, [in:] WILLIAMS, K., BURTON, E. and JENKS, M. (eds.), *Achieving Sustainable Urban Form* (pp. 30–45).

WILLIAMS, K., BURTON, E. and JENKS, M. (1996) Achieving the Compact City through Intensification: An Acceptable Option? [in:] JENKS, M., BURTON, E. and WILLIAMS, K. (eds.), *The compact city, a sustainable urban form?* (pp. 83–96). E & FN Spon: London.

WILLIAMS, K. BURTON, E., and JENKS, M. (2004), Achieving Sustainable Urban Form: Conclusions, [in:] WILLIAMS, K., BURTON, E. and JENKS, M. (eds.), *Achieving Sustainable Urban Form* (pp. 347–355).

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

https://doi.org/10.1515/esrp-2016-0005

Anna WOJNAROWSKA*

MODEL FOR ASSESSMENT OF PUBLIC SPACE QUALITY IN TOWN CENTERS

Abstract. Public space is an important element of urban structure, playing various spatial, social and economic roles in towns/cities. Its quality influences the quality of life of the inhabitants and the attractiveness of the town as a whole. Public space located in town center is the most representative of its identity and image, and also serves multiple functions and activities. The quality of urban space depends on different factors, which have been discussed in professional literature for the last few decades. The author of this paper developed a model for assessment of the quality of public space in town centers based on studies of methods already used in Poland and abroad, and the analysis of trends and ideas which should be taken into consideration while constructing a set of criteria for assessment methods. The main goal of this paper is to present the methodology of research on the quality of public space in town centers using this model. An important element of the model is the proposed method of delimiting the research area – the town center – based on identification of *key public space* of a town. The model comprises three methods, which can provide valuable information on the quality of public space, and also serve as a basis for constructing ratings of towns in each of these methods and the model as a whole. The research conducted using this model in chosen medium-sized towns of the Łódź region showed that the results of ratings obtained using particular methods and the whole model coincide with subjective opinions on public space in town centers given by its users and professionals evaluating it.

Key words: public space, key public space, quality of public space, town center, assessment model

1. INTRODUCTION

The main goal of this paper is to describe the model for assessment of the quality of public space of town centers, worked out by the author and tested on a group of middle-sized towns of the Łódź region. It presents the methodology of research, using the outcomes of research in one of the examined towns to illustrate the model and the three methods constituting it. A very important element of the proposed model is delimitation of the research area – the town center. The author's delimitation method

* Anna WOJNAROWSKA, Department of the Built Environment and Spatial Policy, University of Łódź, 90-142 Łódź, ul. Kopcińskiego 31, Poland, e-mail: annawojnarowska365@gmail.com

is based on the new concept of *key public space* of town. The definition of *key public space* and criteria for its identification, the delimitation method and three methods used in the assessment model are presented further below.

Quality is recently becoming an increasingly important topic of research in various fields of urban development. One of the causes of this trend is wide implementation of the sustainable development principle as the basis of human civilization, with improvement of the quality of life as the fundamental goal. This affects the increased interest of researchers and local authorities in the quality of urban space, influencing the quality of life of the inhabitants. Another currently popular topic in planning and managing the development of urban areas is the attractiveness of town/city, often with consideration for the needs of different groups of users – inhabitants, investors and tourists. Improvement of attractiveness is not a goal in itself, but is aimed at increasing the competitiveness of towns, to strengthen their future growth possibilities. A concept connected with attractiveness of towns is the quality of place, which embraces some specific attributes of town, including so called *soft factors*, such as cultural heritage, unique architecture, cultural and recreational offer, and values of townscape and natural landscape. This is directly connected with the quality of urban space, and its most characteristic and legible element of the functional and spatial structure, especially of its center part – public space.

Public space is an important element of urban structure, playing various spatial, social and economic roles in a town or city. Public space located in the town center is the most representative of its identity and image, and also serves multiple functions and activities. Its quality influences the quality of life of the inhabitants and the attractiveness of the town as a whole. Therefore it is important to evaluate the quality of public space in the town center, and to identify the particular factors influencing it, to enable town authorities and other actors to plan further steps to improve it. It is necessary to notice here that competition between towns cannot take on the negative form of wrongly conceived rivalry. Co-operation is crucial in this area, and the ranking of towns generated by the proposed model is seen as an instrument of learning good practices from the leaders, not as a way of stigmatizing the followers.

In order to take into account in all three methods the elements important for assessment of the quality of public space, the author has analyzed the ideas, concepts and processes which influence – or should influence – the planning and designing of public space: sustainable development, sustainable urban development, quality of life, attractiveness of town, quality of place, sustainable urban regeneration, quality of space and quality of public space. Although concerning different spatial scales – of town, its further spatial context, or its particular areas – all of them can directly or indirectly influence the quality of public space located in the town center. Each of these concepts or processes is measured or described by sets of indicators or features. The quality of urban space and the quality of public space has been discussed in professional literature in Poland and abroad for the last few decades. It is seen as an important element

reinforcing public safety, as well as social and economic vitality of towns. There are sets of criteria or characteristic features of the quality of urban space and public space proposed by different authors, which should be taken into consideration in planning, designing and assessment of public space (Lynch, 1960; Jacobs, 1961; Whyte, 1988; Sternberg, 2000; Carmona and Sieh, 2004; CABE, 2004; London Borough, 2004; ETCP, 2005; Chmielewski, 2005; Natland, 2007; Zeren Gülersoy *et al*., 2009; Szewczyk, 2009). A review of these concepts provides material for identifying factors considered in evaluation of these processes or in implementation of the ideas. In the course of synthesis, groups of factors have been recognized to be incorporated into the three proposed methods of the assessment model. Because of the limited volume of this paper, only the final set of factors or criteria is presented here, and not the whole set of analyzed elements. It is necessary to mention that when dealing with indicators or criteria one has to be aware of the fact that science does not offer an objective method of creating one and only proper set of indicators or criteria for measuring the particular phenomenon (Černe, Kušar, 2010, p. 12–13). Therefore every proposed set of indicators is a subjective choice, aiming at creating an easy in handling, effective set of the most important features, adequate for the examined problem.

Each method of the model can give valuable information on the quality of public space, and also serve as a basis for ratings of towns in each method and in the whole model. All the methods are conceived in such a way that they translate qualitative and quantitative elements and features of public space into numbers, enabling quantification of quality factors. The research conducted using this model in chosen medium-sized towns of the Łódź region verified it, showing that the results of ratings in particular methods and in the whole model are convergent with subjective opinions about public space in the town center expressed by its users and professionals evaluating it.

The author's assumption is that the proposed model can be treated only as a starting point in discussions among professionals, practitioners and users, and in further work: theoretical research concerning methods and criteria, and a testing model in the field.

2. PUBLIC SPACE OF TOWN CENTER[1]

Town or city is a system – urban structure, which is composed of distinct spatial and functional elements, bound together as a whole by means of transport and technical infrastructure sub-systems (*Studium ...Wrocławia* 2010, p. 16). Division into systems and determination of their boundaries depends on the aims of

[1] This paper concerns with the physical structure of public space and activities taking place there, not the abstract public space such as the public sphere or public media.

specific analysis, where every system is an element of a bigger one, and itself can be divided into sub-systems[2] (Regulski, 1980, p. 12). Public space is often discussed as a system, being an integral part of urban system (Chądzyńska, 2012, p. 68), which suggests that it is an element of urban structure as a set or sets of elements bound together in units, realizing as a whole a certain paramount function or a set of such functions. This is necessary to define the notion of public space itself and the *key public space,* which is the author's own proposal. Public space is the denotation which occurs in Polish in scientific publications in two different meanings, which have not yet been clearly defined. We can observe the ambiguity of use of plural or singular form by different authors: even in the same text they use it intuitively in one of both forms, adequately to the topic discussed. So the author of this paper proposes to define public space in these two aspects. On the one hand, as the element of urban structure, system, network and certain entity, then used in singular form – *public space*. In this meaning public space is uncountable. On the other, as the elements constituting structure, system or network, manifesting themselves as specific areas of urban space – *public spaces* – plazas, squares, streets, parks, paths, promenades etc. In this case this notion is used in plural form, as a set of particular elements being parts of the whole system/structure/network of public space.

In literature, public space is usually defined on the grounds of functions it serves, land ownership form and spatial form. The fundamental feature of public space is its character of open area, accessible for all users, spatial form as urban interior and potential for different kinds of activities and interactions (Gruszecka *et al*., 2009, p. 49). In the research on the quality of public space of town center, the author assumed that public space includes only **open urban areas** (Wejchert, 1984; Chmielewski, 2001), not the accessible for public use interiors of public utility buildings, as the interpretation by some authors suggests (Lorens, 2007; Mierzejewska, 2011).

We can recognize two categories of public space: **technical public space** and **cultural public space** (Gehl, 2001, [in:] Chmielewski, 2001, p. 204). Technical public space fulfills transportation functions, and owing to this fact there is a continuity of network structure of this category of public space, due to the continuity of the road system. Because cultural public space is closely related to the pedestrian movement, we can acknowledge as the elements of cultural public space these parts where pedestrian movement dominates. B. Hiller claims that the natural flow of pedestrians is determined by an adequate configuration of public space, interpreting natural flow of pedestrians as such which

[2] J. Regulski (1980, pp. 15, 21) describes spatial development as an adequate adjustment of a place to the needs of a certain activity, changing in a permanent way the physical features of the land surface. Town or city as a system consists therefore of two sub-systems: sub-system of functions and sub-system of spatial development.

can come about without certain generators of flow and attractions which can activate it (Hiller, 1996, p. 161, [in:] Szewczyk, 2009, p. 77). From this point of view, a feature of outstanding value is continuity of urban interiors, which creates connected sets composed of streets and squares, encouraging walking (Wejchert, 1984, p. 146).

In the central area of town public space plays a particular role because of the concentration of functions of local and supra-local level and multifold human activities. It also has an important share in creating the image of the city. We may state that town center is largely composed of public space areas of different form, spatial development and function, and the elements of public space situated in this area have *key* significance[3]. It is necessary to mention that in many scientific papers the downtown area, or center was stipulated as the *key area* of a town.

The author of this study made an assumption that the elements of cultural public space, which create a continuous network and are situated – at least in part – in old town zone[4] and downtown, encompassing the elements of the public space system of utmost importance for the town, offering the richest mixture of functions and enjoying the biggest number of users, can be recognized as the ***key public space*** of a town. *Key public space* has a character of network structure – it consists of linear and areal elements – *axes* and *nodes* (where *nodes* are not interpreted as points but areas). *Axes* are: streets, boulevards, promenades, alleys, paths, walkways or waterfronts, while *nodes* are: squares, plazas, areas near public utility buildings, parks and green or recreational areas, playgrounds, and sport utilities. *Nodes* can be comprised of more than one functional element. They can contain several areal elements, for example: square plus green area or areas, playground, sports facilities and recreational area, all creating together a multi-functional complex (Wojnarowska, 2015, pp. 36–37). Another inspiration for the idea of the axial-nodal structure of the *key public space may* be found in concepts of elements of urban landscape creating the image of the city – of K. Lynch (1960) or K. Wejchert (1984), or the latest concept of nodes and axes of *Netzstadt* by F. Oswald and P. Baccini (2003).

Depending on the size of a town or city, *key public network* can have a simple or complex form. We may speak of *stemming* of network structure of *key public space* by adding new nodes and new axes, joining them to the existing structure. In small and medium-sized towns *key public space* usually has simple structure,

---

[3] A notion of downtown areas as *key areas* occurs in the paper of D. Kochanowska (2002) entitled: *Śródmiejskie przestrzenie publiczne – współczesne przekształcenia*, [in:] Kochanowski, M. (ed.), *Przestrzeń publiczna miasta postindustrialnego*, Wydawnictwo Politechniki Gdańskiej, Gdańsk, p. 27–59. Town center is named the *key area of urban space* also by A. Wolaniuk (Wolaniuk, 2008, p. 303).

[4] The role of the stability of localization of town center in urban structure for its cultural and social values was strongly underlined by A. Wallis (1977, 1979).

often with only one node – a historic town center comprising a market square, nevertheless in some of them it evolved already into multi-nodal and multi- axial structures. In big cities there can occur fragments of continuous network outside the old town and downtown area, being the expression of a multi-center spatial and functional structure of these cities.

In research on the quality of public space in centers of medium-sized towns it was assumed that identification of *key public space*, including the most significant elements of the cultural public space system, enables delimitation of town center. This assumption was based on the following features of town, town center and public space:

– City (or town) is a cultural existence, culture is an essence of the city. Its presence is manifested by patterns of cultural behaviors and features of urban form (Zuziak, 2008, p. 27);

– Town or city center is as a rule identified as its most important part, focusing the urban life and being the area of the highest attractiveness (Wallis, 1977, p. 208);

– Town or city center is usually the place of location of the majority of elements which foster the cultural life of the city. Usually, it contains within its space the oldest part of the city and the most important material monuments of culture (Nowakowski, 1990, p. 13);

– Town or city center is a place of unique concentration of functions and activities as well as economic, social and cultural life, which attracts the biggest number of users, who in turn contribute to arising in public space of multiple social and cultural interactions;

– Town or city center is a place of unique value for its identity, a place where the most representative public spaces, monuments and symbols are located, creating the image of the city;

– Town or city center is an area in the city which is most visited by inhabitants (besides place of residence and workplace) and visitors (Chmielewski, 2001, p. 204). This is a meeting place for people from inside and outside the city, used by them for different activities, at the same time serving inhabitants for identification with their city;

– Dominating form of traffic in city center is pedestrian movement (Juchnowicz, 1965, p. 45). We can observe that this form of traffic is at the same time specific to the cultural public space – streets and passages with the greatest congestion of services are intended for pedestrians.

– Experiences of many cities and towns demonstrate that well-functioning downtown areas are those where pedestrian movement is prevailing, concentrated in cultural public spaces (Chmielewski, 2001, p. 266);

– It is a big advantage of a city when public space forms explicitly continuous sets of urban interiors of cultural value, whose ideal pattern is home as well as shrine (Wallis, 1979, p. 13);

– Central parts of big cities were places of implementation of urban regeneration programs as an instrument of increasing their attractiveness – on this basis the idea of urban marketing has arisen. Today also small and medium-sized towns are following this pattern, implementing revitalization programs in their centers, aiming at improvement of the quality of public space located in town center as a measure of increasing the attractiveness of the town as a whole.

3. A PROPOSAL FOR DELIMITATION OF TOWN CENTER AS A RESEARCH AREA

The goal of the research was an assessment of the quality of public space of chosen medium-sized towns in the Łódź region. To fulfill this aim a model of assessment was worked out. The assumption was made, considering the presumptions listed above, that the representative public space for a town is its *key public space*, where *key public space* is interpreted as the continuous network consisting of *nodes* and *axes*, situated in the central part, and encompassing its old town area. The author proposes that the area structured around the *key public space* should be recognized as the center of town.

The methods of town center delimitation used this far were based on numerical data, describing land use and its intensity, transport relocations and economic value (Juchnowicz, 1965; Parysek *et. al.*, 1995, pp. 33–37). In all these methods it was necessary to obtain detailed data, specific for each method, and on their basis to identify the city center area. It should be noted that all delimitation methods were quantitative, not qualitative, so they neglected the question of qualitative differentiation of phenomena, which are of fundamental significance while analyzing the city center and public space located there. These methods, while optimal for the needs of geographical or economic research, and in some cases also for town planning, in the author's opinion were not adequate for description of the quality of public space. For the needs of assessment of the quality of public space in the town center it was necessary to figure out a delimitation method which would take into consideration all elements of public space and adjacent areas which influence this quality.

As J. Parysek claims, nowadays one of the most important research or rather methodological problems regarding town centers is working out the unified, and the same time easy and effective method of delimitation of these areas (Parysek *et al*., 1995, p. 31]. In his considerations on methodology of delimiting town centers J. Parysek takes as a starting point the concepts of centrality and peripheral areas, being the subject of spatial and economic research, such as J. H. von Thünen's agricultural location theory, W. Christaller's central place theory, or economic

region theory, finding there analogies for the relation center – town. Each of these theories points out a certain area which is its core (node) and the rest of the area, which is defined as peripheries. In relation to urban area, delimitation of the center is therefore a procedure of delineation of the center and peripheries, and the basis for their distinction is possession of certain features by the center and lack of these features in peripheries (Parysek *et. al.*,1995, pp. 25–27).

Delimitation of a city center, which means the delineation of its borders, is a procedure of classification, in which we accomplish the division of a set of objects into sub-sets, which generalizes features of objects in such a way that the objects which compose one class are more similar to each other than to objects from other classes. Classification is not an arbitrary division, but one which fulfills the conditions of adequacy and decoupling (Parysek, 1982; after: Parysek *et. al.,* 1995, p. 26). Within the frame of this procedure the following phases can be indicated:

– *selection of objects,*
– *identification of their qualities and measurement of them,*
– *choice of classification criteria (similarity function),*
– *selection of classification methods and*
– *interpretation of similarities and identification of classes* (Parysek *et. al*., 1995, p. 26).

Objects of classification aiming at delimitation of town or city center are spatial units – urban blocks, which are delineated by streets adjacent to a given urban block. For such units sets of characteristic features must be obtained by determining and measurement of their qualities (Parysek *et. al*., 1995, p. 26).

In the author's research on the quality of public space in town center, the method of town center delimitation was based on the identification of *key public space*, which was recognized in field research and studies on urban structure of towns, in line with assumptions described above. The area of the center was delineated according to the following criteria:

– As *key public space* in each town was recognized the network of axes and nodes of the public space system, which, in addition to the transport function, serve also other functions. It means that such areas have to perform also social, cultural and/or economic roles (compare – *center as the cultural area*, Wallis, 1979). *Key public space* should be characterized by a significant share of pedestrian movement, which enables establishing social contacts and contributes to different kinds of activities and events, as well as use of services. Characteristic forms of traffic organization in such public space areas are therefore different kinds of solutions friendly for pedestrians: calmed traffic zones, *woonerf* and *winkelerf* zones, pedestrianized streets, plazas and squares, paths, and sidewalks of commercial streets, open areas and sidewalks in the vicinity of public utility buildings.

– Urban blocks adjacent to *key public space* were included into the delimited town center area. It was assumed that buildings adjacent to *key public space* should at least in basements have *downtown functions* – trade, services, administration, gastronomy, finances, culture, entertainment (Juchnowicz, 1965; 1971). The required share of these functions in basements was determined as 100% of the length of house fronts adjacent to *key public space*. There can occur discontinuities in development (undeveloped plots, temporarily unused buildings or basements, buildings under construction or renovation). The development does not need to have continuous frontage line character, especially in the case of public utility buildings located on bigger plots.

– Green and recreational areas were also included in the town center area in cases where they were directly adjoining *key public space*, urban blocks or plots adjacent to *key public space* (this criterion was formulated differently by M. Nowakowski (1982), who proposed not to consider large, independent green areas as a part of the town center area).

– The border of town or city center was delimited by the axes of streets being the borders of urban blocks (Parysek *et al.*, 1995, p. 39), green or recreational areas adjoining *key public space*, urban blocks or plots adjacent to *key public space*, along the borders of plots adjoining *key public space* or along borders of downtown or non-downtown land use forms.

– In the case of elongated plots adjacent to *key public space*, the border of the center was led parallel to the buildings' frontages in such a way that the most rear buildings were included. Undeveloped parts of plots were not included in the center area.

– The border of thus delineated center runs along the axes of streets being the border of urban block (Parysek *et al*., 1995, p. 39) or green/recreational area adjacent to *key public space*, along the borders of adjoining plots, and also along the borders of downtown and non-downtown forms of land use.

– If areas with different forms of land use listed above as downtown functions (like housing, education, health care) were surrounded from all sides by downtown functions and/or *key public space*, they were included into the delimited area of the town center. If such areas were not surrounded from all sides, they were not included in the center area.

4. THE QUALITY OF PUBLIC SPACE

Quality of public space is closely related to the quality of life of the inhabitants of a city. Streets and plazas which are full of different forms of human activities and interactions not only can sustain the economic and social life of the city, but also add positively to public safety (Jacobs, 1961; Whyte, 1988; Crowe, 2000).

Attractive public space is also an important instrument in competition between towns or cities, because open spaces of high quality, like parks, gardens, squares, plazas, are so called *soft locational factors* important for location decisions of investors and workers. For this reason the city's material heritage which is its unique and unmistakable characteristic also has great value:

> Cities try to enrich their aesthetical identity of areas of high symbolic value, especially their centers. They try to find stable traditions, which can be continued in the future – as the retrospection of the past, and the way of defining their future (Lorens, 2007, p. 84).

Nowadays, a town (or city) center has to cope with growing competition not only with other towns, but also within the town itself, with new commercial, recreational and cultural centers, offering attractive conditions of customers' handling (Gachowski, 2004; Dziubiński, 2014). This is also the case with medium-sized towns in Poland, in which during the last years such commercial centers were often located. To manage this challenge, a town center has to be provided with well designed, well cared for, and living public space. Designers and managers of big malls, taking into consideration elements which should be provided by the town center, provide new commercial centers with elements and features which decide of their unique attractiveness, threatening central zones of towns. Big malls offer better parking possibilities, shelter from atmospheric inconveniences, higher level of service and trade organization, higher level of conveniences (e.g. clean public restrooms), better adjustment of the offer to clients' needs, additional attractions, modern outfit and aesthetical surroundings (Domański, 2001; Gachowski, 2004, p. 89).

The instrument of counteracting the competition from commercial centers can be urban regeneration process of the town center area. High quality of public space increases the economic efficiency of the town center, therefore investments in improvement of the quality of public space often form the basis for revitalization strategies for these areas. Well developed, of high aesthetic value and well managed public space increases the number of visitors to the center and contributes to the growth in the number of clients for business entities operating there. The outcomes of research conducted in Great Britain show that on average the revenue in commerce grows about 40%, and private investments, too, increase as a result of well implemented urban regeneration programs in city centers, aimed also at revitalization of public space located there. These programs should include creation of attractive pedestrian zones, introduction of new development with elements of small architecture, legible and aesthetical signage and monitoring system (CABE 2004, p. 5).

Latest reports on city centers show that the growing sector in these zones is gastronomy (Dziubiński, 2014, p. 121). It is followed by the arrangement of public space so as answer such needs, e.g. making it friendly for pedestrians, with coffee gardens

and arcades – so called *soft edges* of public space (Gehl, 1980, p. 12; Dziubiński, 2014, p. 127). An important factor for augmentation of the vitality of public space is a proper mixture of functions. In urban regeneration programs for old towns centers in Germany, there were specific requirements concerning the desirable mixture of functions in such zones and instruments to achieve it, assuming that it is impossible to solve this problem only by market forces, which are insufficient in the case of degraded areas [SES 2003]. Poland still is lacking such solutions – some cities introduce certain provisions regarding limitation of some functions in central zones in local development plans (like Wrocław), but they do not suggest preferable services in such areas, which could have a positive effect on creation of the character of public space and stimulation of everyday activities (Dziubiński, 2014, pp. 129–132).

Another important group of factors influencing the quality of public space is related to the sustainable development idea. To create sustainable urban environment means in a large degree to arrange a city's open spaces in a way that allows meeting the needs of all groups of users, with concern for inclusiveness and respect for the environment.

We should also notice that public space – especially the areal elements like plazas or squares – should be ready to house a large number of users in case of different events, concerts, fairs or demonstrations – so there is a need to have open empty spaces, dedicated only to pedestrians, without permanent forms of development (Hołub, 2002, p. 19), with flexibility to fit different forms of activities and functions.

5. A MODEL OF ASSESSMENT OF PUBLIC SPACE QUALITY

For assessment of the quality of public space in the town center, a model is proposed, consisting of three elements:

– graphical valorization method,
– checklist valorization method,
– interview method.

This model was used in research on the quality of public space in town center, encompassing the center area delineated in the course of implementing the proposed delimitation method. But it is necessary to stress that such a model can be used for evaluation of different elements of the public space system, e.g. particular *nodes* or *axes* of public space, like commercial streets, plazas, squares or parks.

In all three methods it was assumed that semi-public spaces which were available for public use, and private areas – visible from public space – were taken into account in assessment of the quality of public space. Semi-public spaces were interpreted as those situated between the public and private zone, used by private persons, but

also accessible for foreigners (Cegłowska, Matykowski, 2010, p. 244). It was also acknowledged that, according to arrangements adopted by *Karta Przestrzeni Publicznej* (2009), decisions of private investors also influence the quality of public space, shaping the urban landscape by fencing the plots, building fronts or different forms of spatial development of private outer spaces (Mierzejewska, 2011, p. 89).

It is necessary to explain the use in the model of three different methods. The main cause of such a structure of the model was the need to consider different kinds of factors in the process of assessment of public space quality. Qualitative elements play the main role in the assessment, and the area indicated for research is the individually delineated town center. No data concerning the subject of the research (spatial composition, cultural values, technical condition and aesthetic value of public space development) is available, so it was necessary to obtain such data directly in the field, on the basis of criteria and research tactics worked out for each of the three methods listed above. Carrying out the research according to the checklist and graphical valorization methods requires a certain level of professional knowledge in urban or spatial planning – experience in valorization of urban composition, quality of different forms of development not only in respect of their technical and functional values, but also aesthetic, cultural and social characteristics. So these two methods can be employed by students of architecture and town planning or spatial economy, or professional planners. These methods mainly provide information on objective factors of the quality of public space. The interview method can be used by non-professional (in the field of urban planning) contractors, e.g. public opinion research companies. The group of respondents to the questionnaires consisted of non-professionals – everyday users of public space in the town center. Their opinions provide information on subjective elements of the quality of public space.

As the final result in all three methods scores for each town examined are obtained, which enables making a rating in each method (in interview method on the basis of second part of it), and the final result of the model are final ratings of towns. Of course the outcomes of each method provide a lot of research material, which should be studied from many points of view, considering certain features of public space. The rating of towns can also be analyzed using different criteria, which may influence a high or low position of a town – a proposal of such criteria is given in conclusions of this paper.

6. THE GRAPHICAL VALORIZATION METHOD

This valorization method creates a possibility to assess the quality of public space of different towns using the same criteria and procedures, and as a final result to obtain a synthetic indicator (index) of the quality of public space of a given town center, and on this basis to construct a rating of towns. This method also

facilitates monitoring the state of public space of a town – by obtaining comparable numerical data for all elements of valorization (features) at different points in time, as well as an index. The index enables rating the towns in respect of the quality of public space. The other goal is to obtain a clear visual image of the situation, which is legible even for unprofessional viewers thanks to its simple graphic form, thus allowing its use as the material for public discussions on the quality of public space of the analyzed area. The graphical valorization method, despite subjective assessment made by researchers, has an objective character of space valorization. All elements taken into account are numerical and represent the existing state of development, and even some qualitative values are translated into quantitative scores, giving countable numerical result.

The graphical valorization method was worked out using the analogy to the method used in Germany in urban regeneration programs, called *diagnosis of deficits and conflicts* (Kozłowski, Wojnarowska, 2011, pp. 34–35). Such diagnosis is prepared in written and graphical form, and the map of deficits and conflicts in the analyzed area is produced. It often serves as valuable material in public discussions and workshops in revitalization programs. In the proposed graphical method the analogy mainly exists in the general way of identification of spatial elements and sometimes their graphical way of recording, and the difference stems from the range of problem encompassed by the analysis. This method employs research tools traditionally used in urban planning for preparing the inventory of existing spatial development of the area. The graphical symbols are partly color codes used in urban planning, some based on the diagnosis of deficits and conflicts mentioned above, and some proposed by the author of this paper. The difference from the diagnosis mentioned above is that the aim of the graphic valorization method is to identify not only negative, but in the first place – positive features of an area.

The graphical valorization method consists of following phases:

1. Identification of *key public space* of a town – on the basis of field research and studies of urban structure of the town;
2. Delimitation of the center part – as the research area – on the basis of proposed delimitation method, on maps (in GIS format, then exported to the AutoCAD program);
3. Preparing material for field research: printing maps of delimited centers of towns and a set of the graphic code used;
4. Field research – graphic record of existent state of development according to the adopted graphic code;
5. Transducing graphic record of field research to the AutoCAD program;
6. Preparing a chart serving juxtaposition of numerical outcomes of research;
7. Measuring and counting areas, lengths and amounts of certain factors – *stimulants* and *destimulants*, putting the results into the chart;
8. Translating obtained values for examined factors to indicators, according to adopted rules (described further below);

9. Calculating indices (synthetic indicators) for towns by summing up the values for given indicators;

10. Making a rating of towns on the basis of indices.

An example of a graphical valorization map for a chosen town – Wieluń – is presented below (Fig. 1).

Fig. 1. An example of a graphical valorization map of Wieluń, made on the basis of field research in Wieluń in June 2015
Source: own research

Data are accumulated in two groups: *stimulants* (boosters) – factors of the positive effect for the quality of public space and *destimulants* (inhibitors)- factors of the negative effect.

Positive factors *(stimulants)* are denoted with symbols S1 to S16:

– S1 Historic development zone (encompassing plots and areas with buildings erected before 1945) – area of the zone in square meters;

– S2 Residential buildings – aesthetical value and technical condition – built area in square meters in specific categories of quality (Good/Medium/Bad);

– S3 Public utility buildings – aesthetical value and technical condition – built area in square meters in specific categories of quality (Good/Medium/Bad);

– **S4** Interiors of downtown urban blocks and backyards accessible for public, with services (gastronomy, commerce, services) – number of them;

– **S5** Pedestrian zones – plazas, squares, calmed traffic zones, pedestrianized streets, pathways, sidewalks – aesthetical value, spatial development and technical condition – built area in square meters in specific categories of quality (Good/Medium/Bad);

– **S6** Public green areas (parks, open recreational areas) – area in square meters in specific categories of quality (Good/Medium/Bad);

– **S7** Sports areas and playgrounds for children and adult people – area in square meters in specific categories of quality (Good/Medium/Bad);

– **S8** Commerce and services in basements of residential buildings – length of fronts in meters;

– **S9** Spatial and functional dominants (buildings) – number of them;

– **S10** Landmarks – characteristic spatial elements other than buildings (monuments, statues, obelisks, expositions etc.) – number of them;

– **S11** Viewing axes – number of them;

– **S12** Recreational and cultural utilities and objects – (amphitheaters, temporary stages, skate parks, climbing walls, fixed places for organizing feasts or fairs) – number of them;

– **S13** Elements of water (ponds, fountains, watercourses, waterfronts, water axes etc.) – the number of them;

– **S14** Coffee gardens – number of them;

– **S15** Stops or stations of public transport means (bus, tram, trolleybus, metro) – the number of them;

– **S16** Public parking lots – number of them;

Negative factors *(destimulants)* are denoted with symbols D1 to D8:

– **D1** Empty buildings – built area in square meters;

– **D2** Wastelands, brownfields, unbuilt plots – area in square meters;

– **D3** Degraded or neglected private or semi-public/semi-private areas, visible form public space – area in square meters;

– **D4** Deficits in parking solutions – undeveloped lots used for parking – area in square meters;

– **D5** Functional gaps in building fronts (unused basements for public utility functions) – length of fronts in meters;

– **D6** Spatial gaps in frontages, blind side walls of buildings visible from public space – length in meters;

– **D7** Transportation barriers (main arteries of big nuisance) – length in meters;

– **D8** Disharmonizing elements (spatial or functional) – the number of.

Graphic codes for both *stimulants* and *destimulants* are shown in the valorization table (Fig. 2).

	GRAPHIC SYMBOL	STIMULANTS															DESTIMULANTS								
	DESCRIPTION	HISTORIC ZONE- AREA IN M2	RESIDENTIAL DEVELOPMENT - AREA OF BUILDINGS IN M2 IN QUALITY CATEGOR.	SERVICE DEVELOPMENT - AREA OF BUILDINGS IN M2 IN QUALITY CATEGOR.	ACCESSIBLE SEMI-PUBLIC INTERIORS WITH SERVICES - NUMBER OF	PEDESTRIAN ZONES - AREA IN M2 IN QUALITY CATEGORIES	PUBLIC GREEN AREAS - AREA IN M2 IN QUALITY CATEGORIES	PLAYGROUNDS AND SPORT FACILITIES - NUMBER OF	TRADE AND SERVICES IN BUILDINGS - LEHGHT IN METERS	SPATIAL AND FUNCTIONAL DOMINANTS (BUILDINGS) - NUMBER OF	CHARACTERISTIC ELEMENTS OTHER THAN BUILDINGS - LANDMARKS - NUMBER OF	VIEWING AXES - NUMBER OF	RECREATIONAL OR CULTURAL UTILITIES - NUMBER OF	COFFEE GARDENS - NUMBER OF	PUBLIC TRANSPORT STOPS - NUMBER OF	WATER ELEMENTS - NUMBER OF	AUTHORIZED PARKING LOTS ACCCESSIBLE FOR PUBLIC - NUMBER OF	UNUSED BUILDINGS - AREA OF BUILDINGS IN M2	UNDEVELOPED, UNUSED PLOTS - AREA IN M2	DEGRADED PRIVATE PLOTS VISIBLE FROM PUBLIC SPACE - AREA IN M2	HAPHAZARD , UNAUTHORIZED PARKINGS - AREA IN M2	LACK OF SERVICE FUNCTION IN BASEMENTS - LENGHT IN M2	INCONTINUITY OF FROTNAGES, BLIND WALLS VISIBLE FORM PUBLIC SPACE - M	TRANSPORTATION BARRIERS - LENGTH IN M	SPATIALLY OR FUNCTIONALLY DISHARMONIZING ELEMENTS - NUMBER
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	D1	D2	D3	D4	D5	D6	D7	D8
OZORKÓW		55573	3571 4943 5908	2030 2946 0	5	9224 9640 0	0 10730 0	0	715	1	2	2	0	0	2	1	150	0	2408	0	4323	0	0	0	460	-4
PIOTRKÓW TRYB.		102472	10940 13717 392	16771 5559 0	7	16497 3622 0	13671 12819 3809	0	1606	7	5	6	1	13	2	1	148	2945	0	4323	0	403	206	650	-3
WIELUŃ		54344	12927 9299 0	12050 3001 0	11	12837 0 0	63334 5859 0	4	1168	7	12	4	1	3	2	1	313	0	0	0	0	0	42	968	-7
BEŁCHATÓW		20516	1763 1010 0	18220 2308 0	7	16855 0 0	3484 1263 0	1	156	6	3	3	1	7	2	2	252	117	0	470	0	28	21	557	-3
ZDUŃSKA WOLA		26739	1343 4650 1172	4776 1566 155	0	2998 4404 0	4134 0 731	0	463	1	2	3	0	1	2	0	75	52	4497	7535	600	0	502	760	-11
RADOMSKO		44383	3645 12380 700	3353 6110 0	7	1790 9756 243	1993 3973 0	0	1188	2	5	3	0	1	3	2	140	0	3398	12070	0	0	608	818	-14

Fig. 2. Example of a chart with measured (from maps) values for *stimulants* and *destimulants* in graphical valorization method
Source: Own research

Stimulants can – in some cases – obtain negative values, depending on the assessment of the quality of particular factor as *bad*, or '0' while assessment is *medium*. *Destimulants* can get only negative values. Each factor in both groups (*stimulants and destimulants*) was measured in adequate measurement units (meters, square meters or numbers). All factors should be counted in the program, in which the graphical valorization map is prepared (e.g. the AutoCAD).

Because all numerical values obtained from calculation are of different order of magnitude – quantitative factors have values from single units to hundreds, while linear and areal ones are expressed in thousands, and even dozens and hundreds of thousands (meters and square meters), to obtain the same order of magnitude of indicators, it is necessary to adopt certain principles of calculation from values of factors to indicators:

– Historic zone areas (S1) were divided by 10 000,

– Areas of residential development (S2) and services (S3), pedestrian zones (S5), green areas (S6), and recreational and sport areas (S7) were divided by 1 000,

– Lengths of frontages of buildings housing commerce and services in basements (S8) were divided 1 000,

– Areas of unused buildings (D1), undeveloped plots (D2), degraded areas (D3) and haphazard parking (D4) were divided by 1 000,

– Lengths of functional deficiencies in frontages (D5),lengths of blind walls (D6), lengths of transportation barriers (D7) were divided by 1 000,

– Number of parking lots (S16) was divided by 100.

– Values of remaining factors were divided by 1.

The matrix of the chart to calculate the indicators and then the sum of points for each town is shown below (Fig.3).

Because towns are very differentiated regarding their delimited center part, it is necessary to count the graphical valorization index regarding the size of the delimited town area – the sum of points of graphical valorization is therefore divided for each town by its area in hectares (Fig. 4).

Town	Graphic valorization score (points)	The area of delimited center (ha)	Graphic valorization index (points/ha)	Rank
Town 1				1
Wieluń	**146,9**	**21,2**	**6,93**	**2**
Town 3				3
Town 4				4
Town 5				5
Town 6				6

Fig. 4. Ratings of towns on the basis of the graphic valorization method with exemplary values for Wieluń
Source: Own research

	STIMULANTS																DESTIMULANTS								SUM S	SUM D
GRAPHIC SYMBOL		G/M/B	G/M/B		G/M/B	G/M/B			●	★		R/C	CG	B		10 PL										
DESCRIPTION	HISTORIC ZONE- AREA IN M2	RESIDENTIAL DEVELOPMENT - AREA OF BUILDINGS IN M2 IN QUALITY CATEGOR.	SERVICE DEVELOPMENT - AREA OF BUILDINGS IN M2 IN QUALITY CATEGOR.	ACCESSIBLE SEMI-PUBLIC INTERIORS WITH SERVICES - NUMBER OF	PEDESTRIAN ZONES - AREA IN M2 IN QUALITY CATIEGORIES	PUBLIC GREEN AREAS - AREA IN M2 IN QUALITY CATEGORIES	PLAYGROUNDS AND SPORT FACILITIES - NUMBER OF	TRADE AND SERVICES IN BASEMENTS OF BUILDINGS - LEHGHT IN METERS	SPATIAL AND FUNCTIONAL DOMINANTS (BUILDINGS) - NUMBER OF	CHARACTERISTIC ELEMENTS OTHER THAN BUILDINGS - LANDMARKS - NUMBER OF	VIEWING AXES - NUMBER OF	RECREATIONAL OR CULTURAL UTILITIES - NUMBER OF	COFFEE GARDENS - NUMBER OF	PUBLIC TRANSPORT STOPS - NUMBER OF	WATER ELEMENTS - NUMBER OF	AUTHORIZED PARKING LOTS ACCCESSIBLE FOR PUBLIC - NUMBER OF	UNUSED BUILDINGS - AREA OF BUILDINGS IN M2	UNDEVELOPED, UNUSED PLOTS - AREA IN MZ	DEGRADED PRIVATE PLOTS VISIBLE FROM PUBLIC SPACE - AREA IN M2	HAPHAZARD , UNAUTHORIZED PARKINGS - AREA IN M2	LACK OF SERVICE FUNCTION IN BASEMENTS - LENGHT IN M2	INCOTINUITY OF FROTNAGES, BLIND WALLS VISIBLE FORM PUBLIC SPACE - M	TRANSPORTATION BARRIERS - LENGTH IN M	SPATIALLY OR FUNCTIONALLY DISHARMONIZING ELEMENTS - NUMBER OOF		
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	D1	D2	D3	D4	D5	D6	D7	D8		
OZORKÓW 22,5 pkt	5,6	-2,3	2	5	9,2	0	0	0,7	1	2	2	0	0	2	1	1,5	0	-2,4	0	0	-0,1	-0,2	-0,5	-4	29,7	-7,2
PIOTRKÓW TRYB. 97,6	10,3	10,6	16,7	7	16,5	9,9	0	1,6	7	5	6	1	13	2	1	1,5	-2,9	0	-4,3	0	-0,4	-0,2	-0,7	-3	109,1	-11,5
WIELUŃ 146,9 pkt	5,4	13	12,1	11	12,8	63,3	4	1,2	7	12	4	1	3	1	1	3,1	0	0	0	0	0	0	-1	-7	154,9	-8
BEŁCHATÓW 72,9 pkt	2	1,8	18,2	7	16,9	3,5	1	0,2	6	3	3	2	7	2	2	2,5	-0,1	0	-0,5	0	0	0	-0,6	-3	77,1	-4,2
ZDUŃSKA WOLA 5,9 pkt	2,7	0,1	4,6	0	3	3,4	0	0,5	1	2	3	0	1	2	0	0,8	0	-4,5	-0,8	-0,6	0	-0,5	-0,8	-11	24,1	-18,2
RADOMSKO 9,0 pkt	4,4	2,9	3,4	7	1,6	2	0	1,2	2	5	3	0	1	3	2	1,4	0	-3,4	-12,1	0	0	-0,6	-0,8	-14	39,9	-30,9

Fig. 3. An example of a chart with indices for towns and sum of plus and minus points (shown under the names of towns in red colour)
Source: Own research

It is important to consider possible objections to this method. One has to be aware of the fact that it is difficult to compare the quality of spatial or functional elements of different towns, and even elements of the same kind in one town are incomparable. This solution – transducing quality values into numbers, the quantification of them – was chosen to facilitate translating the research result into comparable sets of numbers. Because of that, quantitative interpretation of certain features of urban space, like viewing axes, dominants or landmarks, does not reflect their specifics or beauty. But for the quality of space also the quantitative aspect is important – the number of elements having positive or negative influence on the observer and user of public space. Also the third dimension – which stands for the unique value of townscapes – is lacking in this method. All these shortcomings are the result of the necessity to adopt simplifications for the clearness of the method, but as they apply to all examined towns, there is no difference in the evaluation of them. In many assessed elements the qualitative aspect was taken into consideration, such as aesthetics and technical condition. All elements of the graphical method were described clearly near their graphic and letter symbols. Only the extent of the historic development zone needs specifying – it was assumed that the border of such a zone should go along the frontages of historic buildings and encompass all the plots where such buildings are located. In the situation when such a zone is present on both sides of the street, this street is also incorporated into it. It is also necessary to explain why S4 indicator – interiors of downtown urban blocks and backyards accessible for public, with services (gastronomy, commerce, services) – are only counted in numbers, neglecting their quality. This is because of the assumption that all such areas have positive effect on public space, which means that their existence enriches it in economic, social and spatial terms – giving more possibilities for location of trade and services, new kinds of social interactions, and also creation of unique spaces of special character, increasing the aesthetic and compositional values of public space of the center part of the town, providing new ways and new interiors for the pedestrians and opening new viewing axes.

7. THE CHECKLIST METHOD

The second element of the proposed model is the checklist valorization method. The form of the table and evaluation system was based on the proposal of J. Natland (2007), who used it for valorization of the quality of public space of a commercial street in New Westminster, USA. A similar system of evaluation of public space was already used in Poznań in Poland (Cegłowska,

Matykowski, 2010). The evaluation criteria were taken from the synthesis mentioned above in this paper, and from the analysis of methods already used in Poland and abroad, as well as the author's own proposals based on the practice of urban regeneration programs.

In this method criteria were formed in the checklist, grouped in six areas:

– **C:** composition/legibility/image/character/continuity and enclosure;
– **V:**vitality/flexibility/adaptability/use and activities/diversity;
– **N:** comfort/fulfillment of needs/convenience;
– **A:** accessibility/permeability/linkages/ease of movement;
– **S:** safety/control;
– **SD:** consistency with sustainable development idea.

In each area 7 criteria/factors were included, each of them assessed with adopted system of evaluation, shown in the table below (Fig. 4.). Each criterion could obtain from 0 to 5 points, depending on the degree in which it was fulfilled, where 0 score meant complete lack of fulfillment of criterion, and 5 points score meant excellent fulfillment (Natland, 2007). Therefore, the maximum amount of points possible to obtain in one area was 35.

Evaluation system

0	1	2	3	4	5
Complete lack of fulfillment of criterion (0%)	Very small degree of fulfillment of criterion (1 to 20%)	Small degree of fulfillment of criterion (21 to 40%)	Moderate degree of fulfillment of criterion (41 to 60%)	Good degree of fulfillment of criterion (61 to 80%)	Excellent degree of fulfillment of criterion (81 to 100%)

Criteria

C: COMPOSITION/LEGIBILITY/IMAGE/CHARACTER/CONTINUITY AND ENCLOSURE

Ind.	CRITERIA/FEATURES	Score
C1	Legibility of space simplifying orientation in the area and finding the right way, thanks to specific features and character of spatial elements, including unique places and buildings	
C2	Emphasizing local identity – continuation of historic form of development, urban structure, detail, highlighting of townscape and natural landscape	
C3	Open spaces closed by buildings or other structures (like greenery), frontages, urban blocks. Attractive use of spaces in front of buildings in case of withdrawn frontage line, spaces of public and private character explicitly defined	

Ind.	CRITERIA/FEATURES	Score
C4	Viewing axes, closed by landmark, characteristic building or other interesting object	
C5	Corner buildings of urban blocks designed in unique way (architectural form, detail)	
C6	Attractiveness, durability and detail – seen from afar and closely – wealth of lines, textures, colors. Rich impressions by different sensual experiences: images, touch, smells, sounds	
C7	Quality of directional and other signage – to facilitate orientation in the area and emphasize legibility and identity	
	SUM:	

V: VITALITY/FLEXIBILITY/ADAPTABILITY/USE AND ACTIVITIES/DIVERSITY

Ind	CRITERIA/FEATURES	Score
V1	Mixture of functions, mutually complementing and stimulating, fulfilling needs of inhabitants and attractive for visitors, additional attractions	
V2	Buildings constructed of materials economic in maintenance. Buildings and areas enabling adaptation for new functions	
V3	Big open area without fixed spatial development, which enables organization of different events for large groups of users	
V4	Coffee gardens, playgrounds, water, recreational places which enliven the space and allow different activities to be undertaken	
V5	Diversity of trade and services offer of varying standard for different social groups	
V6	Diversity of cultural and entertainment offer of varying standard for different social groups	
V7	Revitalization and reuse of cultural and postindustrial heritage	
	SUM:	

N: COMFORT/FULFILLMENT OF NEEDS/CONVENIENCE

Ind.	CRITERIA/FEATURES	Score
N1	Awnings, sunshades, canopies, trees and other elements of spatial development providing shade and shelter from unfavorable atmospheric conditions	
N2	Noise level low enough to allow conversation	

Ind.	CRITERIA/FEATURES	Score
N3	Small elements improving the comfort of using the space, like trash bins, bicycle racks, seats, benches and ledges arranged in space in convenient places and at appropriate intervals	
N4	Diversity of seats: movable and fixed benches, chairs, stairs to seat, in different configurations – convenient for conversation or enabling isolation of user	
N5	Tables and benches arranged near seats, places to play table games	
N6	Arrangement of seats in proper relation to generators of activities in the area, directed to interesting views, landmarks or connected with pedestrian movement system	
N7	Public spaces designed with consideration for needs of elderly and disabled people	
	SUM:	

A: ACCESSIBILITY/PERMEABILITY/LINKAGES/EASE OF MOVEMENT

Ind.	CRITERIA/FEATURES	Score
A1	Good accessibility by public transport, stops near important destinations	
A2	Adequate number of accessible parking lots, not colliding with pedestrian and bicycle traffic	
A3	Pedestrian movement having priority over car traffic, no physical or perceptive barriers for pedestrians, streets easy to pass by pedestrians	
A4	Bicycle routes safe and easy to use. Good permeability of the area for pedestrians and bicycles	
A5	Pedestrian routes and public spaces visually and physically linked with adjacent areas, such as entrances to buildings and commercial areas	
A6	Equal and integrated access for people of different physical ability	
A7	Multiple routes to choose, which is important because people prefer to have alternative, different routes which are not boring. This stimulates activity and enhances the attractiveness of townscape	
	SUM:	

S: SAFETY/CONTROL

Ind.	CRITERIA/FEATURES	Score
S1	All areas have designated uses, visibility of property ownership structure and control of space. There are no degraded or unused areas or buildings	

Ind.	CRITERIA/FEATURES	Score
S2	Pedestrians can see all fragments of the area, there are no nooks or places hidden from view	
S3	Adequate lighting of streets and pedestrian routes, frontages of buildings, plazas and squares and other elements, people and their activities after dark	
S4	Natural surveillance by passers-by and inhabitants of adjacent apartment blocks, having a view into the street	
S5	Presence of facilities and services providing monitoring and protection, giving the sense of safety but not being oppressive, also by their design, which should correspond with the character of place	
S6	The area makes a good first impression as aesthetic, clean and well cared-for	
S7	No persons endangering public safety and hygiene are present in the area (aggressive, dirty or drunken persons)	
	SUM:	

SD: CONSISTENCY WITH SUSTAINABLE DEVELOPMENT IDEA

Ind.	CRITERIA/FEATURES	Score
SD1	Sustainable public transport, good accessibility by public transport, calmed traffic solutions, pedestrian and bicycle routes creating continuous systems	
SD2	Parking systems – underground or parking buildings	
SD3	Air and noise – elimination of burdensome issuers of noise, division of loud and silent functions, shelter from strong wind by screens or greenery	
SD4	Greenery – for improvement of urban climate, aesthetics, composition, identity, recreational functions. Maximum infiltration –pedestrian routes and parking lots with surfaces penetrable for water, use of domestic species of greenery, adequately planned places for trees	
SD5	Water – as an element improving urban climate, attractiveness of space, identity, used for different forms of activity and functions	
SD6	Energy saving solutions (lighting, monitoring and other utilities powered by renewable energy sources)	
SD7	Adequate insulation and aeration of public spaces	
	SUM:	

Fig. 4. Checklist method of assessment of the quality of public space
Source: Own research

This assessment method also yields numerical data – scores in certain areas and an index for the whole checklist (sum of points given in each area). This again – as in the graphical method – makes possible monitoring changes in public space in each town, or making a rating of towns and comparison between towns in particular areas (Fig. 5).

Town	Composition	Vitality	Fulfillment of needs	Accessibility	Safety	Consistency with SD
Town 1						
Wieluń	**67,52%**	**70,98%**	**62,83%**	**67,82%**	**80,15%**	**50,98%**
Town 3						
Town 4						
Town 5						
Town 6						

Fig. 5. Results of the checklist method assessment – example of Wieluń (percentage of maximum scores in each evaluation area)
Source: Own research

The maximum score for each town is 600%, which means 100% for each of the six valorization areas. The index is obtained by dividing the sum of results obtained in all evaluation areas by maximum score (600%). The bigger the result, the higher the town's position in the ranking (Fig. 6.).

Town	Sum of results obtained in all evaluation areas (in %)	Maximum score (in %)	Index	Rank
Town 1		600		
Wieluń	**400, 31**	**600**	**0,67**	**2**
Town 3		600		
Town 4		600		
Town 5		600		
Town 6		600		

Fig. 6. Chart showing final results of the checklist valorization method with values for Wieluń as an example
Source: Own research

8. THE INTERVIEW METHOD

The interview method is designed to obtain the opinions of non-professional users of public space. Besides, it is necessary to note that the graphical and checklist methods provide the assessment of existing elements of spatial development of public space, while bringing no information on lacking elements or functions. The interview method fills this gap, giving respondents an opportunity to point out the shortages in existing development and suggest changes. It is important to stress that the information on different social groups of users (gender, age, education, employment) was gathered only for general orientation, and was not regarded as a criterion in analyzing the survey results. This was also the case with the division into internal (inhabitants) and external users (tourists and visitors), which is often used in research on attractiveness of cities or quality of place (Piotrowska, 2010, p 222). The reason for such an approach was the assumption that public space should be planned and function in a way that serves all groups of users and fulfills their expectation and needs, not depending on their social characteristics.

The survey questions were formulated as multiple choice questions of conjunctive character (answers do not exclude one another, so it is possible to choose more than one answer), which enabled respondents to mark more than one answer regarding the existing and proposed way of public space development. The questionnaire was structured into six parts – main questions, whose objective was to determine some crucial issues concerning public space of the town center. The first part of the interview was designed to establish which area of public space in the town center is the most visited one: the main market square, main commercial street, green areas located in town center or other places. The second part of the interview was concerned with some specific features of public space of the town center, such as accessibility by different means of transport, aesthetics, safety, cleanliness and organization of different events. This part of the questionnaire was planned to give an overview of the respondents' opinions regarding main features of public space. The sum of percentile results of positive answers – *very good*, *good* and *satisfactory* – for each town made it possible to assign ratings to towns concerning the main features of public space (Fig. 7), which was the third element of the model, serving along with the ratings of two previous methods to calculate the final ranking. As these features were generally similar to those being research areas in the checklist valorization method, there is also a chance to compare how particular areas, like accessibility, aesthetics (composition) or safety are assessed by professional town planners and everyday users. The sum on the right shows the level of satisfaction with particular features in all towns and allows a comparison between them to be made.

	Town 1 (%)	**Wieluń (%)**	Town 3 (%)	Town 4(%)	Town 5 (%)	Town 6 (%)	**Sum**
Pedestrian accessibility		**99**					
Bicycle accessibility		**88**					
Car accessibility		**81**					
Public transport accessibility		**92**					
Aesthetics		**100**					
Safety		**98**					
Cleanliness		**100**					
Organized attractions		**75**					
In total		**733**					
Percentage of positive answers		**91,6**					
Rating		**1**					

Fig. 7. Positive percentile results of specific features of public space, with results for Wieluń as an example
Source: Own research

The next four parts of the questionnaire were aimed at identifying functions, activities and factors attracting users to the center, negative features impeding it, as well as desirable elements of spatial development and functions which could increase the attractiveness of the town center. These questions did not have an evaluative character, but their goal was the identification of behaviors and preferences of public space users, providing valuable information about preferred functions and elements of public space development. Such information could be useful for investments or other activities planned and implemented by local authorities or other actors operating in public space of town centers.

9. CONCLUSIONS

Research made using the model of assessment of quality of public space of town center brings a lot of information regarding positive features and shortcomings of public space. This information enables the diagnosis of existent state of

development and functions, and formulating proposals aiming at increasing the quality of public space of town center.

As the final result of research using the model of assessment of quality of public space, the final rating of towns is obtained (Fig. 8).

	Town 1	Wieluń	Town 3	Town 4	Town 5	Town 6
Graphical method rating		**2**				
Checklist method rating		**2**				
Interview method rating		**1**				
Sum		**5**				
Total rating		**2**				

Fig. 8. Chart showing ratings of towns in all three methods of public space quality assessment
Source: Own research

Assessment of public space for one town made at determined time intervals may enable the monitoring of changes in various respects, while assessment for different towns gives a possibility to track similarities and differences concerning both the existing state and the state desired by public opinion. It also facilitates ratings of towns concerning the quality of public space in the town center – the aim is not just classification, but rather establishing which towns are leaders and what features which determine their high position. This can be a significant clue for towns which are striving to improve the quality of their public space.

The results of the research can be analyzed using the following criteria:

1. Age of town – new or old town;
2. Size of town (in the group of medium-sized towns) – number of inhabitants;
3. Location of central town in region – distance to it;
4. Size of delimited town center;
5. Size of historic zone in delimited center;
6. Size of green areas in town center;
7. Revitalization of town center – whether implemented and to what extent.

This analysis makes it possible to identify features affecting the quality of public space in town centers. Some of them are stable, e.g. as the age of town, its location in region, or the size of historic zone. Some of them change in the course of time, e.g. population, or can be changed, like the size of green areas in town center or its revitalization. So local authorities can draw conclusions and take appropriate measures to enhance the quality of public space in the town center.

The model of assessment of the quality of public space presented in this paper was tested on a group of chosen medium-sized towns of the Łódź region. The results of ratings obtained using particular methods and the whole model turned out to be convergent with subjective impressions of users and professionals visiting the

centers of towns, which confirms that the model has succeeded in quantification of the quality factors and yielded objective results reflecting subjective impressions concerning the quality of public space in town centers.

REFERENCES

CARMONA, M., SIEH, L. (2004), *Measuring Quality in planning. Managing the performance process,* London and New York: Spon Press.

CEGŁOWSKA, A., MATYKOWSKI, R. (2010), *Przestrzenie publiczne i ich znaczenie w dużym mieście: przypadek Poznania*, [in:] Studia miejskie *Funkcje miast jako czynnik kształtowania przestrzeni miejskiej*, 2/2010, Opole, pp. 219–230.

ČERNE, A., KUŠAR, S. (2010), *The System of Indicators for Regional Development, Structure and Potentials,* Geograff 6, Ljubljana.

CHĄDZYŃSKA, M. (2012), *Przestrzeń publiczna małego miasta jako integralny element struktury systemu miejskiego*, [in:] HEFFNER, K., MARSZAŁ, T. *Przestrzeń publiczna małych miast*, Studia KPZK PAN Tom CXLIV, Warszawa, pp. 67–80.

CHMIELEWSKI, J. M. (2001), *Teoria urbanistyki w projektowaniu i planowaniu miast, Oficyna Wydawnicza Politechniki Warszawskiej*, Warszawa.

CHMIELEWSKI, J. M. (2005), *Przestrzeń publiczna w teorii urbanistyki*, [in:] GZELL, S. (ed.), *Przestrzeń publiczna jako element krystalizacji zespołów urbanistycznych*, Urbanistyka, Międzyuczelniane Zeszyty Naukowe Rok X, pp. 5–10.

CROWE, T. D. (2000), *Crime Prevention Through Environmental Design: Applications of Architectural Design and Space Management Concepts*, National Crime Prevention Institute (University of Louisville).

DZIUBIŃSKI, D. (2014), *Spójność układu przestrzeni publicznych Wrocławia*, [in:] CIOK, S., JANC, K. (eds.), *Współczesne wyzwania polityki regionalnej i gospodarki przestrzennej,* T. 2, Wrocław, pp. 121–134.

GACHOWSKI, M. (2004), *Kwestia celowości istnienia centrum miasta w warunkach transformacji społeczno-urbanistycznej,* [in:] SŁODCZYK, J. (ed.), *Przemiany struktury przestrzennej miast w sferze funkcjonalnej i społecznej*, Uniwersytet Opolski, Opole pp. 87–94.

GRUSZECKA, K., GZELL, S., REMBARZ, G. (2009), *Osiedle: reurbanizacja*, [in:] „Urbanista", nr 10(181), Warszawa.

HOŁUB, A. (2002), *Współczesna przestrzeń publiczna. Terapia patologii czy rozwój nowych terenów – poszuiwanie przesłanek projektowych,* [in:] KOCHANOWAKI, M. (ed.), *Przestrzeń publiczna miasta postindustrialnego*, Wydawnictwo Politechniki Gdańskiej, Gdańsk, pp. 9–26.

JACOBS, J. (1961), *The Death and Life of Great American Cities.*

JUCHNOWICZ, S. (1965), *Metoda wyznaczania zasięgu obszaru centrów miejskich. Niektóre problemy ich struktury funkcjonalno-przestrzennej*, Warszawa.

JUCHNOWICZ, S. (1971), *Śródmieścia miast polskich. Studia nad ukształtowaniem i rozwojem centrów*, Opole.

KOCHANOWSKA, D. (2002), *Śródmiejskie przestrzenie publiczne – współczesne przekształcenia*, [in:] KOCHANOWAKI, M. (ed.), *Przestrzeń publiczna miasta postindustrialnego*, Wydawnictwo Politechniki Gdańskiej, Gdańsk, pp. 27–59.

KOZŁOWSKI, S., WOJNAROWSKA, A. (2011), *Rewitalizacja zdegradowanych obszarów miejskich. Zagadnienia teoretyczne;* Łódź, pp. 1–160.

LORENS, P. (2007), *Tematyzacja przestrzeni publicznej jako wyraz dywersyfikacji struktury urbanistycznej miasta doby globalizacji,* [in:] MADUROWICZ, M. (ed.), *Percepcja współczesnej przestrzeni miejskiej*, Warszawa, pp. 83–92.

LYNCH, K. (1960), *The Image of the City*, MIT Press.

MIERZEJEWSKA, L. (2011), *Przestrzeń publiczna strefy podmiejskiej (na przykładzie Poznania),* [in:] WDOWICKA, M., MIERZEJEWSKA, L. (eds.), *Problemy rozwoju lokalnego i regionalnego na początku XXI wieku*, Biuletyn Instytutu Geografii Społeczno-Ekonomicznej i Gospodarki Przestrzennej Uniwersytetu im. A. Mickiewicza w Poznaniu, Seria: Rozwój Regionalny i Polityka Regionalna nr 15, Poznań, pp. 85–97.

NATLAND, J. (2007), *Urban by Design: An Evaluation of Public Spaces in Downtown New Westminster*, Simon Fraser University

NOWAKOWSKI, M. (1982), *Kształtowanie centrum miasta w świetle teorii i praktyki*, Kraków.

PARYSEK, J., GUARINO, E., MIERZEJEWSKA, L. (1995), *Wybrane problemy teoretyczno-metodologiczne delimitacji centrum miasta,* [in:] KACZMAREK, J. (ed.), *Centra i peryferie dużych miast, transformacja i przyszłość. Pojęcia i metody badawcze,* VIII Konwersatorium Wiedzy o Mieście, Łódź.

PIOTROWSKA, E. (2010), *Nowa jakość miasta w przestrzeniach publicznych,* [in:] SŁODCZYK, J. (ed.), *Funkcje miast jako czynnik kształtowania przestrzeni miejskiej*, Studia miejskie 2/2010, Opole, pp. 219–230.

REGULSKI, J. (1980), *Rozwój miast w Polsce*, Państwowe Wydawnictwa Ekonomiczne, Warszawa.

STERNBERG, E. (2000), An integrative theory of urban design, Journal of the American Planning Association, Vol. 66, Issue 3.

SZEWCZYK, P. (2009), *Rozwinięcia przestrzeni publicznej w głąb obiektów architektury – nowe miejsca na styku budynku i miasta,* rozprawa doktorska, promotor dr. hab. inż. arch. L. Nyka, Politechnika Gdańska, Gdańsk.

WALLIS, A. (1977), *Miasto i przestrzeń*, PWN, Warszawa.

WALLIS, A. (1979), *Informacja i gwar – o miejskim centrum*, PIW, Warszawa

WEJCHERT, K. (1984), *Elementy kompozycji urbanistycznej*, Arkady,Warszawa

WHYTE, W. H. (1988), *City*: *Rediscovering the Center*

WOJNAROWSKA, A. (2015), *Przestrzeń publiczna Uniejowa*, Biuletyn Uniejowski 4/2015, pp. 25–44.

ZEREN GÜLERSOY, N., ÖZSOY, A., TEZER, A., GENLI YIGITER, R., GÜNAY, Z. (2009), *Strategic quality planning in urban environment*, Istanbul Technical University Faculty of Architecture, Istanbul, Turkey, Vol. 6, No. 1, 109-125 2009-1

ZUZIAK, Z. (2008), *O tożsamości urbanistyki*, Wydawnictwo Politechniki Krakowskiej, Kraków.

CABE (Commission for Architecture and the Built Environment), (2004), The value of public space, London.

European Council of Spatial Planners, (2005), *Guide to Sustainable Development at the Local Level: 'Try It this Way'.*

Karta Przestrzeni Publicznej, 2009.

London Borough of Redbridge Planning Service, (2004), *Urban Design Framework Supplementary Planning Guidance.*

SES Stadterneurerungsgesellschaft Stralsund, (2003), *10 Jahre Stadterneuerung Hansestadt Stralsund. Leben, Wohnen, Arbeiten in der Altstadt,* Stralsund.

Studium uwarunkowań i kierunków zagospodarowania przestrzennego Wrocławia, (2010).

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

https://doi.org/10.1515/esrp-2016-0006

REVIEW ARTICLES

Paul STOUTEN*

URBAN DESIGN AND THE CHANGING CONTEXT OF URBAN REGENERATION IN THE NETHERLANDS

Abstract. Urban design schemes accompanied by avant-garde design of space have been an outcome of economic growth of cities and countries in many periods of time. At the beginning of the 21st century, Nieuw Crooswijk in Rotterdam was the largest area involved in nationally launched policies. Many times the conflicts surrounding the plan were in the news, particularly concerning the aim to attract higher incomes. Gentrification, with displacement of present and original residents forms a central issue and the discussions in Nieuw Crooswijk fit within the more general urban landscape and language of urban regeneration in Europe.
Key words: urban design, collaborative planning, urban regeneration and gentrification.

"How can you live your life in a cosy neighbourhood and then be forced to move out? The aim is to give the neighbourhood a new image by getting higher educated people to the neighbourhood and disperse less affluent people all over municipalities in the suburbs". "Despite an increasing sense of insecurity the social cohesion stays high"

IKON TV Ned.1: 02-08-2005

1. INTRODUCTION

Urban regeneration is and was one of the major challenges for societies across Europe and the world. In this century, the Dutch housing stock turned out to be in good condition and, compared to other European countries, of the highest quality (Ministry of the Interior and Kingdom relations, 2014). There were hardly any poor

* Paul STOUTEN, Delft University of Technology, Faculty of Architecture and the Built Environment, Department of Urbanism, Julianalaan 134, PO Box 5043, 2600 GA Delft, the Netherlands, e-mail: p.l.m.stouten@tudelft.nl

houses left due to large efforts since the 1970s to renew complete areas of housing to fit current requirements (Liagre Böhl, 2012). Only small concentrations of property owned by private landlords revealed deficits. Whereas in the mid 1980s' the share of poor housing was about 20% of the Dutch housing stock, this was in 2012 only 1% (Lupi, 2013).

But still there were many problems to solve, which led to the government selecting and defining so-called priority areas in 2003, later renamed as 'empowerment areas'. The main focus in the governmental problem definition was not so much on physical problems within the urban fabric but more on unemployment, social safety, education, multi-cultural and minority ethnic neighborhoods, crime rates etc. Paradoxically, the government then attempted to solve these social and economic problems through extensive spatial and physical interventions. The government had the intention to break through the one-sided housing supply: they argued that there was too much social housing in these areas. Following these policies, local authorities often chose demolition and new built housing accompanied by gentrification. Rotterdam with its existing (social) urban renewal neighbourhoods as assigned in the 1970s, got a high share in planning these market oriented strategies including building for higher income groups.

As in other European countries (Gospodini, 2002; Punter, 2010) urban design appeared to be an important instrument in the economic development of cities in the Netherlands, within the context of a new competitive global and regional environment; for metropolitan cities, larger cities and smaller cities, as well as cities in the core and cities in the periphery of Europe. Urban regeneration aims for the creation of lasting spatial solutions that connect design issues to their social, economic and political contexts. Due to the financial crisis of 2007–2009, conditions for modernization of urbanized areas have changed. What is the impact of changing policies and the crisis on the delivery of urban design qualities and planning strategies?

Design-led urban regeneration combined with a strong (public-) private partnership was recognized as an important mechanism in the urban regeneration of Nieuw Crooswijk in Rotterdam (Fig. 1). The restructuring project in Nieuw Crooswijk was launched in 2003 under the umbrella of a new form of relationship between urban design and development planning. The project with its conflicts about the final destination was regularly in the news, on the television and in newspapers. This approach marked a fundamental break with the former more social, tenant driven strategies. However, due to the resistance of the existing residents and the financial crisis in 2007 the flagship character of this project has had to be reeled back in somewhat smaller proportions. The experience of urban design driven by gentrification and its ongoing transformation into a significant issue of contemporary urbanism, is present in the urban regeneration process of this case. The primary topic in this paper is urban design as public policy and as

an indication of why processes may or may not be successful. These questions concern the relationship between design and urban planning, and its processes and organization.

2. URBAN REGENERATION AND URBAN DESIGN

Generally speaking, the task of urban planning and design, including urban regeneration, is to integrate a variety of interests into proposals for design and process. Urban regeneration, in general, can be considered as developing a vision and approach in a complex urban context that includes a variety of spatial scales, sectors, actors and disciplines. Urban regeneration needs to respond to new conditions and aims to modify the urban fabric in order to suit new conditions, social requirements and demands (Stouten, 2010). According to Heeling, Meyer and Westrik (2009, p. 2) urban design is a "plea to concentrate the urban form not on the architecture of buildings as such, but on the issues that concern the urban tissue: the subdivision, the arrangement of buildings on the lots, the building density, the crossing between the public and private domain". They add that in the long term, social developments are uncertain and unknown. The UK government's definition of urban design adopts Punter (2010, p. 1), and is more focused on the agenda of the last decade: "urban design is the art of making places for people. It includes the way places work and matters such as community safety, as well as how they look. It concerns the connections between people and places, movement and urban form, nature and the built fabric, and the processes for ensuring successful villages, towns and cities".

Research into urban regeneration is too often based on one of two approaches. The first is concerned with urban form, the design of housing and the urban fabric. The second deals more with questions concerning the planning of environmental processes, participation, and social and economic issues. The aim of this paper is to combine these two approaches and to show a broader view of the impetus for urban regeneration and renewal, within an understanding of changing context and policies.

3. CHANGING CONTEXT

Between 1975 and 1993, urban renewal, embedded in the world of the Dutch welfare state, had a major impact on urban planning in the Netherlands. Essentially, social housing, schools and healthcare were dependent for their production, distribution and management, on the intervention of the state. The changing

context since the mid 1990s with privatization and market-based strategies as main driving forces, means that an age when the social sector seems the solution and the private sector the problem belongs to the past. The net result is, according to Merrifield (2014), that collective consumption items, as defined by Castells (1972), have changed into those of individualized consumption, framed by the debt economy. All those major items of collective consumption, as mentioned by Castells in the 1970s, are in the current situation items of household debt such as housing, health and education (Merrifield, 2014). Many Dutch local governments have run into serious debt since 2007, mainly caused by financial deficits on land development. Policies are no longer driven by control of completion (the legal need to deliver a certain amount of development), but are based on guideline figures for housing and building production, resulting in increased uncertainties and an unstable foundation for spatial planning policies. Showing the way to Dutch policies in the future, the Dutch Scientific Council for Government Policy introduced the principle of development planning in 1998 (Scientific Council for Government Policy, 1998). According to Hobma and Jong (2015) the principle of development planning is gaining popularity, aiming to establish a link between spatial planning (predominantly the domain of government) and spatial investments (predominantly the domain of private parties). Within the current context of urban design and planning, the local government has, as agent, to work in a more corporate and collaborative way that enables and incorporates design quality and place making dimensions.

In this respect it should be emphasized that the Netherlands today has still the highest proportion of social housing in the EU, about 31% of the total housing stock, and for the large Dutch cities this proportion can be, as it was in 2014, as high as 47%. However, in the last decade, the housing market in most of the Dutch cities has showed severe problems e.g. a decrease of prices in the owner occupied sector, many houses for sale, hardly any access to the housing market for first time buyers and tenants, and hardly any moves from the rental towards the owner-occupied sector.

4. URBAN RENEWAL AND URBAN REGENERATION

In the 1990s in the Netherlands, urban renewal became more or less part of a more comprehensive form of urban regeneration of a city or region. Urban renewal was more area based while urban regeneration referred to interventions city wide or even region wide. Since then, years of experience with urban renewal processes have taught us that what matters is not just physical decay but also a complex of social and economic issues. Roberts and Sykes (2000, p. 17) define the essential

features of urban regeneration as: "comprehensive and integrated vision and action aimed at the resolution of urban problems and seeking to bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subjected to change". Urban regeneration has to be characterized as a process with design based on a strategic vision, partnership(s), and sustainability. And in many approaches to urban regeneration, the improvement of quality of life including livability has become an important issue.

In more recent years there has been a strong governmental call for initiatives and investments from the private sector that are expected to complement or replace the public investments. But these expectations seem too optimistic concerning the recovery from the crisis. Currently in the Netherlands, despite economic growth being predicted at 2,25% for 2015, the production of buildings is still 20% below that in the period before the crisis and similarly 30% below for building materials. Besides, local Dutch governments lost 2,9 billion euros on land development between 2009–2011 (including 1,8 billion on public private partnership projects), and the national average vacancy of office buildings was 16% and shops 8% in 2013 (Council for the Environment and Infrastructure; 2014). As Stiglitz (2012) argues that markets are supposed to be stable, but the global financial crisis showed that they could be very unstable, with devastating consequences. Topics like sustainable development have to be explicitly planned and will not be solved by market forces alone (Korczak, 2007).

In 2003 the Minister of Housing, Regional Development and the Environment launched the Actieprogramma Herstructurering (Action Program of Restructuring) including instruments for the improvement of 56 priority areas. According to this approach, a start was made in Rotterdam in five areas with a large-scale and long-term physical approach to battle complex quality of life problems. The government and real estate developers hailed Nieuw Crooswijk as a 'shining example' for this new design-led approach. Once again the areas in question had for years been included in lists prepared as part of earlier urban renewal policies. Although in the programs attached to these policies modernization or transformation was mentioned, the approach in 2003 was mainly aimed at demolition followed by new housing, mainly in the owner-occupied sector (Fig. 2).

Since 2007 the central government has renamed 40, out of the former 56, assigned 'priority areas' and they are currently defined as empowerment areas (krachtwijken). These areas are defined by a high representation of residents with hardly any access to the labour and housing market, including problems of quality of life and deprivation. Rotterdam is again 'champion' on this list including seven areas from the national list of forty. In total, 38% of the Rotterdam population lives in an area that is assigned as an empowerment area.

The market oriented policies of the late 20th and early 21st century caused changes in the housing stock and divisions of housing tenures. In the period

1995–2012, the share of owner-occupied housing in the housing stock of Rotterdam increased by 13%, from 21% to 34%. This occurred mainly at the cost of the share of social housing. This declined from 57% to 47%, while the private rental sector decreased from 22% to 19%. The crisis of 2007 had very serious consequences for the completion of new build housing. Completion declined in Rotterdam and the region as well by about 40%; in Rotterdam in the period 2005–2008 the average completion was 2.850 per year and in the period 2009–2013 only 1.770 per year, mirroring the national picture. This situation makes urban planning and urban regeneration, whether it is defined as development planning or collaborative planning, quite uncertain (Fig. 3).

5. URBAN DESIGN AND PRODUCTION OF SPACE

The execution of urban renewal programs in the period 1975–1993 was based – and that was crucial – on the production of spatially and temporally defined entities. Those entities were called 'communities' and the manner of production of spatial-temporality itself became a vital component within the social process (see also Harvey, 1996). The idea in advance was to solve urban problems by an area based community approach, mainly founded on the spatial way in which urban renewal areas were each searching for a more inward-looking strategy. The spatial and social frontiers of areas were seen as equal parts in attacking the problem and in the execution of programs. The organization of those, then well-founded 'communities', had an incentive to define themselves against and through exclusion of others (for example social groups or population categories) (Stouten, 2010). In the beginning especially starters on the housing market and immigrants were excluded; they had no access to social housing. On the other hand, because of this approach, displacement of original residents from their neighborhood was avoided and a large proportion had been able to improve their housing conditions. Besides, in general urban regeneration caused and will cause population growth in cities and an increase of young families in cities (ABF research, 2014).

After a couple of years, during the urban renewal process, neighborhoods seemed less homogenous than desired by the original residents. Neighborhoods seemed to be persistently heterogeneous with different groups living next to each other, meaning that claims on using public space were not without tensions but polarization and duality is inadequate to describe the situation. Neighborhoods that were part of urban renewal policies offer also low-income groups a large number of positive elements. Due to urban renewal a large share of the housing stock is of good quality with a reasonable price and quality ratio. There is a diverse supply of shops, specific facilities and shops for ethnic groups. Informal scenes offer all kind of services.

Later, with urban regeneration seen in the light of restructuring and urban renaissance, urban design was recognized as an important mechanism in the re-imaging and place marketing of cities. Thereby, as argued by Punter (2010) explaining the urban renaissance in UK, enhancing competitiveness between cities. In Rotterdam one can see the same kind of changes in the city center, with its large scale interventions including high rise buildings, as an introduction of the new age of planning. It was the introduction of a period with agendas of driving urban economic competiveness between cities (inter) nationally, tackling the mismatch between commuting and the current population by building housing for higher income households, and speeding up infrastructure. Recently the new central station, including a new node of many sorts of public transport was completed as part of a national program of key projects to regenerate areas around the stations of six cities. But, in Rotterdam, some of the former urban renewal areas were also planned to be part of restructuring strategies combined with gentrification. Iconic architectural projects were completed and show the bias towards 'designing' the city center of Rotterdam. On the other hand there had been criticism on these forms of city branding, and urban design as an agent of gentrification. Although quality of life, livability, and design quality are not the main drivers of economic competitiveness, they are an increasingly important part of economic decision-making in neighborhood renewal (Punter, 2010, p. 29 and Council for the Environment and Infrastructure, 2014, p. 68).

6. GENTRIFICATION

In most of the Dutch cities (like in the UK, Tallon, 2010, p. 205) national and local policies have encouraged the repopulation of the city center, exemplified by urban renaissance, brownfield development and mixed-use development. There is a wide range of strategies from restructuring and privatization by demolition of the social housing stock, to upgrading and modernization measures. Neil Smith (2002) argued that the process of gentrification, which in early stages emerged as an incidental and attractive anomaly on the housing market of some true metropolitan cities, is since mid 1990s much more generalized as an urban strategy and its incidence is global. Jones and Evans (2009) define gentrification as 'the process by which buildings or residential areas are improved over time, which leads to increasing house prices and an influx of wealthier residents who force out the poorer population'. Gentrification means displacement and is quite different from residentialization processes that occur by building luxury housing e.g. on former brownfields near city centers. Though gentrification is basically driven

by the private sector, urban regeneration and renewal processes are very dependent on national and local government policies.

However, the tension within policies on community renewal between the idea of bottom-up community-led empowerment and the ideas of centrally driven priorities remains. Concerning gentrification and urban renewal in individual neighbourhoods, this tension is in most cases a relatively limited process from a temporal as well as spatial perspective. To understand these perspectives, more insight in to the development and changing context of more inward looking approaches to urban renewal and more outward looking approaches to urban regeneration is needed. That will be analyzed in the case of the plans in Nieuw Crooswijk.

7. NIEUW CROOSWIJK

Nieuw Crooswijk was one of the 'empowerment areas' (and former selected 'priority areas') that were in 2003 as part of the national action program of restructuring. Housing associations aimed to demolish more than 10% of the total social housing stock in favour of owner-occupied housing in these neighbourhoods (Volkskrant, 11–02–2008). In Nieuw Crooswijk, the demolition of 85% of the dwellings was planned based on a so-called cooperative urban regeneration. The design and planning process started by bringing agents together that had interests in financial investments and land, along with the relevant authorities.

7.1. Urban fabric and social fabric

The neighborhood Nieuw Crooswijk was built between 1913 and 1930 and about 50% was completed in the social sector. Most of the housing has access via porticos and has up to 5 storeys. The urban renewal in Nieuw Crooswijk, as a neighbourhood of the wider urban renewal area Crooswijk, took place between 1978 and 1993 following the 'building for the neighbourhood' strategy and was, for example on the national TV station in 1982 (Stouten, 1982). In this period urban renewal meant mainly modernization of old housing owned by the housing association. As part of the strategy the municipality forced private landlords to sell their property to the local government because, by lack of maintenance, these houses were often in a very poor condition. In the flourishing period of urban renewal about 80% of the social housing in the area was modernized (including 15% that was new build) and buildings serving as shops and businesses. Nevertheless, after 25 years, in 2002 – 25% of the modernized housing revealed deficits and needed serious maintenance. The improvement of housing conditions was focused on social renewal as

well as technical renewal within an area based and inward looking process. After modernization of the housing, the number of households declined and a decrease in nuclear families occurred.

Before the new master plan was launched, in 2004 – 40% of the households were dependent on social benefits and half of the population belonged to a minority ethnic group. There were no extraordinary figures of mobility of persons and households in terms of influx to or exodus from the neighbourhood. The social fabric in 2013 reveals a changed neighbourhood, but also a general picture of this sort of area: many young people, a majority of single households (56%), one-parent families (10%) and nuclear families (11%). Most households are native (52%), compared to the Rotterdam total (55%), although significant majorities of Turkish and Moroccan (16%), Surinam and Antilles (10%) and a lot of other different ethnic groups, makes the heterogeneity even larger. The so-called productive age bracket of 20–65 years is well represented with 73%, which is 10% higher then the city total.

The income structure is very much related to the social fabric as many young singles are starting their career in the labour market. In 2012 the average income of households living in the neighbourhood was 16% lower than in Rotterdam, and the average of Rotterdam is 12% lower than the national average. In 2012, 27% of the households of Nieuw Crooswijk lived on or below the poverty line. That is much higher when compared to Rotterdam (17%) and the Netherlands (9%). The unemployment rate in 2012 was 23%, compared to Rotterdam (15%) and the Netherlands (9%).

An important quality of the urban fabric is the green; a couple of wide avenues with trees, the river and green along two cemeteries. The neighbourhood is just a few meters away from a city park and a few minutes away from the ring road and (inter) national highway and well connected with the city center by public transport or bicycle.

7.2. Land use plan 2005

As said before, Nieuw Crooswijk was launched as a flagship project following the design-led strategy as part of development planning. The preparation started in 2000 with the private partnership OCNC as client: two private developers and one housing association. The agencies of this partnership had signed an agreement with the local government about financial, organizational and procedural matters. The housing association owned approximately 95% of the housing stock and the municipality owned the public space. The local government was forced to take care of quick procedures and debates in the city council (Fig. 4).

From the beginning, the private partners and local government did not take the participation of residents very seriously. The time schedule and financial scheme was, according to the private developers, in combination with the planned stages of design, demolition and completion of new housing, very tight. This situation was a source for

strong conflicts with groups of residents, which were on the local and national news. In 2005, according to the land use plan, 1800 of the 2100 should be tear down and 10% of the total neighbourhood population of 5.000 residents had already moved out because the situation in their living environment was very poor and threatening. The social landlord anticipated demolition by doing hardly any maintenance and leaving houses vacant when residents moved, attracting for example burglaries and drugs. This strategy was initiated particularly in the areas indicated in the first phase of the plan and the building blocks that were to be demolished. This bad practice fuelled the resistance of residents in other parts of the neighbourhood. Besides, according to Postumus, Kleinhans and Bolt (2012) there were negative effects caused by so-called 'waterbed effects'. This meant that residents in other neighbourhoods, although not directly affected by the master plan, developed negative evaluations of changes in their own living environment, mainly due to the influx of relocated households that had to move due to urgent matters such as demolition.

The aims of the private partnership organization and the local government prioritized the attraction of higher and middle-income groups, advertising the position of the neighbourhood near the highway, city center, city park and river, as icons for luxury housing developments. This mostly outward looking approach raised sharp conflicts with the resident organization of mainly tenants and a small group of owner-occupiers that were threatened by demolition of their property as well. The land use plan (master plan) according to the design of West 8 meant a fundamental change of the social and urban fabric. The design proposed three 'classical' avenues to create direct connections e.g. with the city center and city park, the replacement of former building lines, changing of subdivisions, creation of new public spaces, mixed use, spacious inner courts, more parking facilities mainly completed within the building blocks, variety of facades, (higher) building blocks up to 9 storeys and two tower blocks up to 18 storeys (Private Partnership Nieuw Crooswijk, 2005). The sustainable agenda in this plan included the enlargement of (rain) water storage, separation of sewage, flexibility of floor plans and use of ground floors of buildings (housing and or businesses up to a floor height of 3,5 m). According to the plan, the division of housing tenure should fundamentally change with the completion of 34% social housing compared to the 95% of the original situation. This fuelled the resident's fear of displacement, including a group of owner-occupiers, who feared displacement because according to the master plan, the building lines of their blocs would change and lead to a completely new subdivision.

7.3. New plan stops demolition

According to the master plan, as legalized by the city council in 2005, demolition of 750 dwellings started in 2006, although up until 2013 only 278 new houses were completed on the vacant land. As part of current plans, this vacant land will get a temporary use. This stagnation was caused by the conflicts between

the present residents and the private developers and reinforced by the crisis in the capital and housing market. Tenants that were threatened by the demolition of their homes went to court, which resulted in the verdict that the municipality had to reconsider the land use plan. This situation led to extra costs of 1,6 million per year (AD 20–07–2006) above an investment of more than 450 million as estimated in 2004 for the total plan (Cüsters, 2004). In addition there would be a loss of approximately 27 million euro on investments in modernized and new build dwellings completed about twenty years ago that would have to be demolished too. Finally, due to the crisis and the lawsuit, in 2013 the municipality and the private developers launched an alternative plan to stop the vast demolition of the neighbourhood (Fig. 5). The plan was more tailor-made and introduced more intensive procedures to match the regeneration with the demands of the (future) residents; only when the buildings had serious foundation problems would demolition be chosen.

The residents' response to this change of plans were – politically and literally – two-sided: disappointment by residents of the new build housing, mostly owner-occupiers, because their dreams as promised by the private developers would vanish and on the other hand happiness of the original tenants because they could stay in their homes. Tailor-made, building block by building block with participation of the residents, mainly meant modernization and in the case of poor foundations, after demolition, new build housing. Looking at the demolition and the division by tenure, the new situation was that in total about 1000 houses fewer than before would be demolished and the share of social housing would decline from 95% to 68%, instead of to 34%. In total, due to the delays, the completion of the regeneration will take ten years more than was planned in 2006.

8. CONCLUSION

In the Netherlands, as in other Western European countries, a period characterized by urban growth and large strategic projects has ended and the elaboration of new forms of strategic plans is needed. However the design-led urban regeneration and development planning had very serious consequences for neighbourhoods such as Nieuw Crooswijk and failed. To begin with, the collaboration with involved agencies was limited to the private developers and the housing association, with the local government in a back seat position. In fact the private legal agreements had a large impact on public justice. The original strategy was to upgrade the neighbourhood by building new housing for more affluent residents. But the process of completion destroyed the urban and social fabric, including where constructive and improving communities existed and where the situation called for encouragement rather than

destruction (see also Jacobs, 1961, p. 270). The solution to these problems lies not in dispersal and displacement but working with the existing social and built capital, working to increase safety, education and investments in refurbishment of public space and modernization of building stock. Local government mostly activates self-organization and if that is the case there are unequal positions of the participants, particularly among residents with quite different positions e.g. an owner-occupier in comparison to a tenant of social housing, or a private landlord.

Nieuw Crooswijk was launched as a new strategy for design-led urban regeneration and the private legal procedures directed the public legal master plan procedures. The design-financial format and planning appeared too tight for participation of residents. Despite the motto of collaborative planning, residents were excluded from the design process. and that fuelled the lawsuits initiated by the resident organizations. Reinforced by the credit crunch and the crisis in the housing market, and the verdicts in court, the plan changed fundamentally. The situation led to a strong divergence of problem definitions between the private developers together with the municipality, and the resident groups. The main aim should be to use urban design as an instrument to integrate interventions in the urban fabric without exclusion; to combine an inward looking, area based approach with outward looking strategies and see them as complementary. Besides, the design should avoid great differences between social housing and owner-occupied housing that is manifest in differences in architectonic qualities and image within a very short distance from each other. As proven by this case, at the end it is still the government who has to control the planning strategy with a more equal and institutionalized position of residential groups during the planning process. Flexible forms in terms of the urban fabric and floor plans are important to meet eventual new demands and requirements.

REFERENCES

ABF research (2014), Bevolkingsgroei in steden (Population Growth in Cities), Delft.

AD (newspaper) 20–07–2006, Onverwachte dreun voor sloopplan Crooswijk (Unexpected blow for the demolition plan of Crooswijk), Algemeen Dagblad, Rotterdam.

CASTELLS, M. (1972), La question urbaine, Paris: Maspero.

COUNCIL FOR THE ENVIRONMENT AND INFRASTRUCTURE; advisory board for the government and parliament (Raad voor de leefomgeving en infrastructuur) (2014), De Toekomst van de Stad (The Future of the City). Den Haag.

CUSTERS, J. (2004), KEI-salon Nieuw Crooswijk, Rotterdam: KEI kenniscentrum stedelijke vernieuwing.

GOSPODINI, A. (2002), European Cities in Competition and the New 'Uses' of Urban Design, Journal of Urban Design, Vol. 7, No. 1, pp. 59–73.

HARVEY, D. (1996), Cities of urbanization? City 1/2,3 pp. 8–61.

HEELING, J., MEYER, H. and WESTRIK, J. (2009), Het ontwerp van de stadsplattegrond (Design of the Urban Fabric), Nijmegen: SUN.

HOBMA, F. and JONG, P. (2015), Planning and Development Law in the Netherlands, Den Haag: Instituut voor Bouwrecht.

IKON TV (2005) Wijken voor de Rijken (Retreat for the rich), Ned. 1.

JACOBS, J. (1961) The Death and Life of Great American Cities, New York: Vintage Books.

JONES, P. and EVANS, J. (2009), Urban Regeneration in the UK, Los Angeles, London, New Delhi, Washington DC: Sage.

KORCZAK, D. (2007), Nachhaltigkeitsmanagement – indikatorengestützte Steuerung zu mehr Lebensqualität (Sustainability management – pinched indicator control towards higher quality of life standards), [in:] SINNING, H. (ed.) Stadmanagement: Strategien zur Modernisierung der Stadt(-Region), Dortmund: Rohn.

LIAGRE BOHL, H. de (2012), Stadsvernieuwing in de steigers: Stadsvernieuwing in Nederland 1970–1990 (Urban renewal in the Scaffolding: Urban Renewal in the Netherlands 1970–1990), Amsterdam: Bert Bakker.

LUPI, T. (2013), De Kwaliteit van de Nederlandse Woningvoorraad: feiten, cijfers en trends (The Quality of the Dutch Housing Stock: facts, figures and trends), Tijdschrift voor de Volkshuisvesting, nr. 6, pp. 10–12.

MERRIFIELD, A. (2014), The New Urban Question, London: PlutoPress.

MINISTRY OF THE INTERIOR AND KINGDOM RELATIONS (Ministerie van Binnenlandse Zaken en Koninkrijkrelaties) (2014), Staat van de Woningmarkt 2014 (The situation on the housing market), Den Haag.

MINISTERY FOR HOUSING, REGIONAL DEVELOPMENT AND THE ENVIRONMENT, Action Program of Restructuring (Ministerie Volkshuisvesting, Ruimtelijke Ordening en Milieu) (2003), Actieprogramma Herstructurering (Action Program of Restructuring), Den Haag.

POSTUMUS, H., KLEINHANS, R. and BOLT, G. (2012), Bijwerkingen van herstructureringsoperaties (Side effects of restructuring operations), Delft: Eburon.

PRIVATE PARTNERSHIP NIEUW CROOSWIJK (OCNC; Ontwikkelingscombinatie Nieuw Crooswijk) (2005), Masterplan Nieuw Crooswijk (Urban plan, decree of the city council), Rotterdam.

PUNTER, J. (2010), Urban Design and the British Urban Renaissance, London and New York: Routledge.

ROBERTS, P. (2000), The Evolution, Definition and Purpose of Urban Regeneration, [in:] ROBERTS, P. and SYKES, H. (eds.), Urban Regeneration: A handbook, London, Thousand Oaks and New Delhi: Sage Publications, pp. 9–37.

SMITH, N. (2002), New Globalism, New Urbanism: Gentrification as Global Urban Strategy, Antipode, 34, pp. 427–450.

STIGLITZ, J. (2012), The Price of Inequality, London: Penguin Books.

STOUTEN, P. (1982) *Betaalbaarheid en Haalbaarheid* (Home Dear Home), 16 mm film, 35 min. Hilversum: IKON Televisie and Rotterdam: INW.

STOUTEN, P. (2010), Changing Contexts in Urban Regeneration: 30 Years of modernisation in Rotterdam, Rotterdam: Techne Press.

TALLON, A. (2010), Urban Regeneration in the UK, London and New York: Routledge.

VOLKSKRANT (newspaper) (2008), Afbraakbeleid prachtwijken (Condemned policy for prize neighbourhoods), Volkskrant, 11–02–2008.

SCIENTIFIC COUNCIL FOR GOVERNMENT POLICY (Wetenschappelijke Raad voor Regeringsbeleid) (1998), Ruimtelijke Ontwikkelingspolitiek (Spatial Development Policies), Den Haag: Sdu Uitgevers.

Fig. 1. Avant-garde design Nieuw Crooswijk (Rotterdam)
Source: own

Fig. 2. Demolition in Nieuw Crooswijk (2007)
Source: own

Fig. 3. Land about ten years waiting for re-development: Nieuw Crooswijk
Source: own

Fig. 4. Land use plan Nieuw Crooswijk (2005) as proposed by OCNC private partnership
Source: OCNC, Rotterdam

Fig. 5. Saved from demolition
Source: own

EUROPEAN SPATIAL RESEARCH AND POLICY

Volume 23 2016 Number 1

https://doi.org/10.1515/esrp-2016-0007

Ari HYNYNEN*

FUTURE IN WOOD?TIMBER CONSTRUCTION IN BOOSTING LOCAL DEVELOPMENT

Abstract: Large scale timber construction has been on the upswing for some time in many European countries. Besides the building cluster, also regions and cities have taken advantage of the ongoing timber boom in their economic and spatial development. In this article the focus is on the South Ostrobothnia region and the city of Seinäjoki in Western Finland, where the potential of the business is quite weakly exploited regardless of favourable preconditions. By studying the key actors of the innovation network we are able to better understand the premises of the local development platform that should aim at boosting timber construction.

Key words: urban development, regional development, timber construction, innovation network, development platform.

1. INTRODUCTION: TIMBER CONSTRUCTION IN TURNING POINT

One objective of the Finnish government's programme in 2011 was to promote large-scale timber constructions such as, for example, multi-storey apartment blocks. The government's resources in contributing to the success of one branch of industry are usually limited, but in this case the passing of favourable legislation and the launching of a dedicated development programme have been decisive.

Behind the programme there are global pressures to develop more advanced technologies and systems for timber construction. The advantages of more extensive use of wood in combating climate change seem undeniable. Due to the surge of the timber-based building industry in central Europe, Sweden and Norway, there are expectations for growing demand and business potential in Finland. Among other reasons for interest in wooden buildings is, for example, a steady increase in moisture problems often found in buildings made of concrete.

Now, in the autumn of 2015, the four year term of the Finnish government has expired, and the extent of the realisation of these objectives should be critically

* Ari HYNYNEN, Tampere University of Technology, School of Architecture, Seinäjoki Urban Laboratory, P.O.Box 600, FI-33101, Finland, e-mail: ari.hynynen@tut.fi

assessed. Regarding timber construction, the situation seems quite good. The aim was to increase the share of wooden multi-storey apartment blocks from one to 10% of the annual production of flats, and this objective is almost being met. However, despite the progress, the situation is still critical. There is a risk of increase in price of widely-used CLT (cross-laminated timber) -based modules due to lack of competition in the trade. This would be harmful, since an increase in the use of wood in the building industry can only come about if it is competitively priced. In this sense the development of timber construction, which started well, may have entered a decisive turning point.

The impacts of developments in wood construction are not limited to environmental assets or to business opportunities of timber producers and the building industry. The potential of timber construction could be conceived in broader terms, as value chains tend to be more geographically decentralised compared with other industrial building technologies. This aspect could have significance in regional and local strategies if taken seriously into consideration. Earlier, as all CLT-elements were imported from Austria, these issues were irrelevant, but now CLT-elements are also produced in Finland. In summary: the turning point that was mentioned above should not be considered insignificant when we are developing our cities and regions.

Raw material for timber construction is produced and processed all over Finland. The whole production chain of wood from forest to construction site could be easily handled by small and middle-sized firms. According to the studies of Finnish PTT-research centre[1], the growth of timber construction has positive impacts on the national economy (Esala *et al.,* 2012; cf. Petersen and Solberg, 2005). In addition, studies made in the Ruralia Institute of the University of Helsinki point out that there are positive impacts on the regional level as well (Männistö *et al.*, 2012).

It is fair to say that cities, municipalities and regions should now seize the current momentum. Of course there are other important local and regional actors, but the support of public bodies is vital, as there are rates of employment, tax revenues and the future prospects of small and middle-sized companies at stake. On the other hand, local and regional authorities have an access to effective means and instruments to promote this kind of development.

However, because of the complicated nature of local development, we need to have a closer look at the drivers and potentials of timber construction, as well as the central actor networks and possible development platforms. The findings and arguments in this article are based on the results of our research project "Puu-Hubi" (Wood-Hub) that was carried out in the South Ostrobothnia region in Western Finland between the years 2012–2015. The aim of the Puu-Hubi project was to identify the information needs of the firms in new timber construction technologies. Based on this information, the project team organised training for the firms

[1] http://ptt.fi/en

to provide competences to meet their needs. The project was a joint effort of Seinäjoki University of Applied Sciences and Tampere University of Technology, and it was funded by ESF (European Social Fund) -financing. (Hynynen *et al.*, 2015).

2. DRIVERS AND POTENTIALS

The ruling megatrend that contributes to an increased use of wood in building industry is obviously climate change. Large wooden buildings serve as a good long-term repository for carbon. The sustainability aspect gets even stronger if the design is based on the principles of a circular economy, as in the car industry. (cf. Petersen and Solberg, 2005).

The scientific community and governments all over the world are gradually reaching agreement on the reasons and impacts of climate change, albeit common policy formations will take a longer time. Some signs of progress are emerging here and there, like the ERA17-action plan (Energy-Smart Built Environment 2017) in Finland, which aims at substantial improvements in energy-efficiency of the built environment. In practice this means the implementation of related EU directives on a national level, as well as life cycle assessments of buildings. Arguably these kinds of policies will favour the use of wood-based materials in building.

In addition, there is also a programme for promoting bio-economy in Finland. According to the programme's website:

Bio-economy means an economy which utilises the biological natural resources and turns them into food, energy, and other products and services. It is characterized by the use of clean technologies which save the environment and by efficient recycling of materials. Bio-economy makes us less dependent on fossil fuels, prevents the impoverishment of ecosystems, promotes economic development and creates new jobs.[2]

It seems quite obvious that these kinds of prospects offer strong support for timber construction.

From the standpoint of local development, the positive impacts on regional economies seem especially interesting. As mentioned earlier, the Ruralia-institute of the University of Helsinki carried out a study in South Ostrobothnia where they applied their RegFin –model[3] for simulating the economic impacts of increasing timber construction. The results pointed out that one euro invested in timber construction pays another euro in the regional economy. In the analysis, the chosen target level for the growth of timber construction was 20% of the whole field of construction industry in the region. Consequently, the rate of employment would

[2] http://www.biotalous.fi

[3] http://www.helsinki.fi/ruralia/research/regfin.htm

climb 1%, which is equivalent to 550 work years. This positive impact would radiate towards other branches, like the lumber industry, woodworking industry and the real estate business. The analysis was based on the assumption that the chain of raw material is only partly self-sufficient regionally. If the whole chain were regional, the rate of employment would climb by as much as 1,5%, creating 1300 new jobs. (Männistö *et al.*, 2012.)

In addition to new construction, there is a growing business potential in the renovation of buildings. It has been estimated that the size of the renovation market in Finland falls somewhere between 30–50 billion euros. The annual revenue of the renovation business has already reached the level of new construction. In the near future, the emphasis of the construction industry will be on the renovation and infill of 1960s and 1970s suburbs built of concrete elements. For this purpose, the so called TES-system (timber-based element system) has been developed in international collaboration of research institutes since 2008. TES provides technology for repairing exterior wall elements by replacing the outer concrete panels with prefabricated wooden elements. This method allows continued residence during the repair work. The technology is ready to use, but before this new system is adopted, construction firms, municipal planning offices, and building inspection authorities need to become more familiar with it. (Soikkeli *et al.*, 2014; Heikkinen *et al.*, 2009).

Interesting possibilities are now within reach, as the new building act in Finland allows high apartment blocks up to eight stories to be made of wood. By using CLT-elements these could be easily erected. Actually, the first eight-storey buildings have already been built in Jyväskylä, Finland. Moreover, in Bergen, Norway, a 14-story wooden apartment block will be soon completed, and in Vienna, Austria, they have ambitious plans to build an 84 meter wooden high-rise (The Guardian 2015). It seems that timber buildings are also considered adequate for completely urban settings. The cities of Växjö and Skellefteå in Sweden are good examples of using novel timber architecture in public and private urban development.[4]

At the moment, there is not enough consumer demand for wooden flats in Finland, but the situation will probably change as environmental issues gain more urgency. There are also studies ongoing that will provide more information on building physics and other kinds of durability and reliability issues that might influence public confidence in timber construction.

It seems that, at least in principle, new timber construction technology could open tempting opportunities for the developers of cities and regions. On the other hand, timber-based building clusters also need supporting acts and interventions from the side of local municipalities and regional authorities in order to take advantage of the emerging market potential.

[4] e.g. http://www.nordicwoodencities.com/website4/1.0.4.0/3/1/index.php

3. INNOVATION ENVIRONMENT

In the South Ostrobothnia region the main issue is economic competitiveness. Municipalities and firms are already aware of the growing market potential of wooden buildings, but the ability to realise the business potential requires that building clusters have competencies that exploit new technology and markets. In practice, the firms should be able to complement their own internal resources and competences by obtaining complementary resources from external sources. In this sense the *innovation environment* of timber construction is the specific part of the operation environment that provides complementary competences and resources the firms need in their innovative endeavours. However, the innovation environment is not the same for all enterprises, since their needs are different. (Cooke, 2004; Kautonen, 2008) Yet, from the standpoints of local and regional development, the *regional innovation environment* could be considered a common innovation environment for some specific field of industry. Important elements of these environments include, among other things, education, research and development, technical infrastructure, management consultancy and financial support (Camagni, 1991; Virkkala, 2008.)

The term "regional" does not imply that all the resources and competencies will come from the local region. Local and global entities should form a fruitful collaboration to create new know-how. Local arenas are needed for close interaction, and global connections are needed for distant communication. No region is self-sufficient enough to be able to provide all the necessary competencies. In addition, the geographical scales of firms vary (Kolehmainen, 2004; Lechner and Dowling, 2003), as some companies, even in South Ostrobothnia, have established international trade relationships.

It is important to note that firms do not innovate alone. Innovations are developed in networks that consist of diverse actors which include clients, subcontractors, competitors, financiers, administrators, trade associations and research institutes. *Innovation network* refers to all those players that contribute to innovation processes (Cooke *et al.*, 2000; Lundvall, 2001; Virkkala, 2008). If the processes take place in the normal practices of firms, they are sometimes referred to as *open innovation*, as opposed to science-based processes. Some studies point out that innovations are mostly developed in production-based settings (Harmaakorpi *et al.*, 2011; Chesbrough, 2003a, 2003b).

Innovation networks consist of social relations. The qualities of those relations have an effect on the performance of the networks as facilitators of production and economy. Network relations can be divided between those with strong ties and those with weak ties. Usually the strong ties are based on trust between parties, common goals and easy communication due to common language and similar basic access to information. However, strong ties do not necessarily encourage

firms to combine different ways of thinking and acting that finally might result in innovations. Studies have pointed out that open innovation utilizes the weak ties of networks especially. Weak ties force firms to seek solutions from new kinds of reference groups, which might result in fruitful mixes of information and, perhaps, ultimately in innovations. (Burt, 1992; Granovetter, 1973.)

A good example of the utilisation of weak ties is the case of the construction company Lakea Oy, which could be considered the most innovative firm in the field in the South Ostrobothnian building industry. Lakea Oy has been developing building systems based on CLT-modules mentioned in the beginning of this article. There have not been ready-made concepts available, so Lakea Oy has sought co-operation with innovative architects and researchers outside the region. In other words, a relatively underdeveloped innovation network has forced the company acquire competences from elsewhere.

It is not possible to anticipate or control the processes that take place in innovation environments, but the innovation environment itself could be developed deliberatively (Sotarauta and Srinivas, 2006). For example, regional arenas for interaction and collaboration between different competences could be organised. These kinds of settings have been termed *development platforms* by some researchers (e.g. Harmaakorpi *et al.*, 2011). Competence-based platforms are able to combine diverse knowledge and create novel variations of competences, as experts from industry, universities and municipalities gather around some common theme or technology.

Development platforms are fundamentally future-oriented arrangements (Harmaakorpi *et al.*, 2011). Technological development by its own right is capable of creating new platforms, but usually they are based on the evolution of existing platforms. In South Ostrobothnia the development paths of timber construction can be easily traced back in the region's history. Traditional rustic houses, high-grade carpentry skills and a strong entrepreneurial culture are well-known characteristics of the region. Yet it requires a visionary mind-set to recognise the elements of evolving platforms that could merge existing potentials and global flows into a local success story. Also, innovation policies should be targeted to the specific features of regional innovation environments.

4. PRECONDITIONS FOR A BREAKTHROUGH

In our Puu-Hubi project the central network of regional players is easily distinguishable, although all the actors do not recognise their own role as an effective node in the innovation network. The key players are in most cases building cluster firms like wood producing enterprises, construction firms, property developers,

architecture offices and civil engineers. Some companies have acquired a lot of knowledge in new construction technologies such as wooden frame systems, fire safety or architectonic possibilities. The common feature of all innovative firms is their connectedness to supra-local value networks, whether it comes to information or business. Yet the market potential would allow much more significant economic performance in the region.

What kinds of supportive resources and competences could the region of South Ostrobothnia offer for the firms? The main goal of the Puu-Hubi project was to figure out the information needs of the firms in new timber construction technologies. Many different theme areas were named, and our task was to organise training for the firms to provide competences to meet their needs. The best experts in Finland were used, so it was anticipated that the feedback from the firms would be positive. Nevertheless, it is not realistic to expect that there will be immediate impacts on numbers of innovations or production volumes. Other resources beyond purely cognitive ones are needed as well. The firms should possess a so called *absorptive capacity* (Cohen and Levinthal, 1990; Zahra and George, 2002). In other words, they need capabilities to evaluate, adopt and apply new information. But even if the firms have these capabilities, the birth of an innovation is anything but a systematic process, and lucky coincidences will still be needed. As we know, innovations can't be pushed, but it is possible to fuel the flow of information in innovation environments.

Of course other organisations besides private firms need absorptive capacity as well. Cities and municipalities are well aware of the market potentials of new timber construction in Finland. At the same time they strive to develop attractive housing and business environments to entice a skilled workforce and promising firms to their area. They place significant resources into marketing efforts by launching trendy urban innovations. Yet it is unusual when these efforts are propelled by the possibilities that timber construction could offer. In Sweden the cities of Växjö and Skellefteå have gained worldwide publicity by creating innovative combinations of timber-based industry, academic research and urban development.

Actually, local governments would have several opportunities to promote timber construction, if they really wanted to. For example, in municipal land-use planning it is possible to regulate building materials, and building inspection authorities have a say in applying fire safety regulations. At least in Finland there are big differences among municipalities in how they apply regulations. In many cities land-use planning and business development offices have been linked together for more efficient urban development. This kind of model offers good chances for simultaneous promotion of the innovative building industry, urban development and energy-efficient economy, as administrational borderlines do not restrict absorptive capacity.

Sometimes we might hear city leaders saying that public authorities can't one-sidedly promote any one single building material, since that would favour certain firms while excluding others. It is fair to say that the increasing use of wood in the building industry will decrease the use of concrete to some degree. However, concrete is also still needed in wooden buildings, at least in foundations and basements. It is also debatable whether higher than 8-storey timber buildings are practical on the whole, but the coming years and ongoing building projects will provide valuable information on this issue.

We can also consider timber construction as one branch of the emerging bio-economy, which might lead, according to some scenarios, to more extensive structural changes of production and the overall economy. This would not be a new situation, as we have seen these kinds of changes before. Like always with structural changes, there are winners and losers, and this conclusion has usually been expressed in the statements of politicians as well as economists. Popular reasoning leans on the statistics describing ongoing economic globalisation. In timber construction it is as much a question of globalisation, as slowing down climate change requires international measures. According to the theories of ecological modernization, the most sinister scenarios of risk to societies do not have to be realised if the environmental risks can be turned into technological development and business opportunities (Spaargaren and Mol, 1992).

Also, the institutions of local government belong to the innovation network of timber construction. For example, the Finnish Forest Centre has been active in promoting timber construction in South Ostrobothnia. The Centre is a state-funded organisation that covers the whole country. It is tasked with promoting forestry and related livelihoods, advising landowners on how to care for and benefit from their forests and the ecosystems therein. But like the university units acting in the region, the Forest Centre is dependent on competitive project funding. Quite often the projects are financed from the EU structural funds that are regionally administered by the Regional Council of South Ostrobothnia and the Centre for Economic Development, Transport and the Environment. Consequently, these institutions are also important parts of the innovation environment in question.

As mentioned in the introduction of this article, the Puu-Hubi project was funded by ESF-financing. The rules of the applied ESF-programme allowed training only for enterprises, although it would have been reasonable to promote mingling of firms and municipal officers in common sessions and workshops. Of course local funders cannot be blamed for this, since they are not responsible for the rules. Some scholars point out that these kinds of institutional restrictions might lead to over-controlled and inflexible operation environments, which do not support creative knowledge-based economies. There should always be some space left for unplanned and unanticipated incidents and encounters (Kautonen, 2008).

In our subject region there have been many discussions on the possibilities of timber construction. The amount of information is no longer the decisive bottleneck in the breakthrough of the industry. Instead, s*trategic awareness* should be awakened somehow (Sotarauta *et al.*, 2007; Heifetz, 2003). University-led projects and workshops will not suffice as the only means, but real leadership is now needed. Somebody has to get down to the business with clearly defined goals and geared with abilities to lead networks. The first task is to create a storyline where diverse players are able to identify their roles and interests in a common endeavour. For example, firms and municipal development offices, as well as education and research institutes, should conceive their interdependence in an innovation network as a positive opportunity.

It is really a question about storytelling, where the narrative is able to clarify the information flow by selecting and connecting elements into one line that could direct concrete development actions. A good and useful story is based on past development, on a realistic understanding of the present situation and, finally, it should make visible future opportunities and risks (Sotarauta *et al.*, 2007; Simmons, 2001). The value of storytelling lies in the idea that the story is not one-sidedly received, but also participated in by the local and regional players by attaching subjective and meaningful elements to it.

5. FROM STORYTELLING TO CONCRETE ACTIONS

For being able to take advantage of timber construction in the development processes of regions and cities, the actions should be locally entrenched. Usually this takes place by setting up a new organisation or by integrating new actions into existing organisations. However, there is still a need for strategic awakening and storytelling in the South Ostrobothnia region before any meaningful concrete actions might occur.

The role of local government in promoting timber construction was highlighted earlier in this article. Based on the ideas above, the story (whoever tells it) should point out the added value and common goals of timber construction as well as the basic developmental objectives of the local government. Municipalities and cities have urban development projects in progress that could increase in value if they were built of wood. For example, in the city of Seinäjoki (the regional centre of the South Ostrobothnia region) they are preparing extensive plans for the railway station area which will constitute a new 20 hectare core for the central business district. The area is important not only for the city of Seinäjoki, but for the whole region, as it functions as a central transportation hub with travel and logistics centres.

In addition, the area is now one of the target areas in the European13[5] architectural competition, which will entail plenty of international publicity. The city of Seinäjoki has a unique occasion to create a new and innovative wooden city centre. Moreover, no extra resources would be needed compared with conventional construction systems. Thus far, however, this is only an option. The issue should be to mobilise strategic awareness, display visionary thinking and channel political will. At their best, the results could radiate through diverse branches and reinforce the region's standing as a specialist in emerging bio-economic development. In the national INKA (Innovative cities) -programme Seinäjoki is one of three responsible cities of bio-economy with its expertise in innovative food systems.

At the moment the University Consortium of Seinäjoki is preparing a new professorship with the University of Vaasa. The branch of science will be business of timber construction. If the consortium succeeds in funding the chair, the new specialist would have an interesting role in the innovation network. Will the new professor prove to be a decisive node in the network? Either way, the chair will provide permanence and continuity for the innovation environment, but its holder will also be an important storyteller. The new storyline should make visible the business potentials of timber construction in a very concrete manner. It should also increase the strategic awareness of the local government as a primary agent of public procurement.

6. CONCLUSIONS

Wooden multi-storey apartment buildings have been common in North America for a long time. Now, large-scale timber constructions are proliferating in Europe as well. The main drivers for this development include, for instance, favourable environmental impacts of wooden building materials as well as general moisture problems associated with concrete buildings. Growing demands for efficiency in the construction business have entailed unrealistic timetables that do not allow proper periods for draining concrete structures, whereas new timber construction technology is based on prefabricated dry elements and fast assembly on the construction site.

In addition, the timber-based building industry has potential to support regional economic development. This is true especially in countries like Finland, which have strong forest and wood industries, as well as long traditions in timber construction.

Based on these views, it would be assumable that there should be more development in the trade than there actually is. One explanation is the fierce competition

[5] http://www.europan-europe.eu/

in the construction business. Building firms do not easily change their familiar production platforms because of fear of economic risks. Also, producers of concrete materials are campaigning for their continued dominance. However, it is important to understand that the renewed interest in timber construction technology is only just getting started.

Our Puu-Hubi project highlighted interesting aspects of the roles of local and regional actors in the development of timber construction. In particular, cities and municipalities could promote win-win situations, as they are beneficiaries of regionally entrenched value chains of the wood building industry. They also have authority in writing and applying laws and codes that have impacts on building costs. Municipal and regional developers could support wood building in many ways by including it in their programmes as the Swedish cities mentioned earlier in this article have.

Also, other institutions, like universities, have chances to participate in the development of timber construction. At least academics in technical sciences consider it important to be involved in developing new technology. Quite interesting triple-helix combinations are now emerging in Finland, as some regional organisations and enterprises establish new professorships on timber construction with universities. For example, the city of Kouvola with Aalto University, as well as organisations and firms in South Ostrobothnia with the University of Vaasa, have ongoing recruiting processes. These kinds of processes indicate that regional potentials have been well-recognised. The arrangements can be seen as efforts to complement regional innovation networks by providing missing nodes and links.

At the moment, those involved in new timber construction technology are trying to probe its limits and possibilities: what kind and how big can wood buildings reasonably be? Another question is whether there will be enough consumer demand for wooden apartments. Moreover, will there be enough competition between the producers of wooden elements and modules for attaining competitive cost levels? And finally, some researchers and regional actors have recognised the regional potentials of timber construction, but will they be realised? It seems that there are more questions than answers but, as mentioned before, there is momentum, and it remains to be seen how well these hopeful expectations will bear fruit.

REFERENCES

BURT, R. S. (1992), Structural Holes. The Social Structure of Competition. Cambridge, Massachusetts, Harvard University Press.

CAMAGNI, R. (1991), Innovation Networks. Spatial Perspectives. London, Belhaven Press.

CHESBROUGH, H. W. (2003a), The Era of Open Innovation. MIT Sloan Management Review. 44:3, pp. 35–41.

CHESBROUGH, H. W. (2003b), Open Innovation: The New Imperative for Creating and Profiting from Technology. Boston, Harvard Business School Press.

COHEN, W. and LEVINTHAL, L. (1990), Absorptive Capacity: A New Perspective on Learning and Innovation. Administrative Science Quarterly 35, pp. 128–152.

COOKE, P. (2004), Introduction: Regional Innovation Systems – an Evolutionary Approach, [in:] COOKE, P., HEIDENREICH, M. and BRACZYK, H.-J. (eds.), Regional Innovation Systems, 2nd Edition. London, Routledge.

COOKE, P., BOEKHOLT, P. and TÖDTLING, F. (2000), The Governance of Innovation in Europe. Regional Perspectives on Global Competitiveness. Science, Technology and the International Political Economy. London, Pinter.

ESALA, L., HIETALA, J. and HUOVARI, J. (2012), Puurakentamisen yhteiskunnalliset vaikutukset (Economic Impacts of Wood Construction). PTT raportteja 239. Helsinki, Pellervon taloustutkimus PTT.

GRANOVETTER, M. S. (1973), The Strength of Weak Ties. American Journal of Sociology. Vol. 78:6, pp. 1360–1380.

HARMAAKORPI, V., TURA, T. and MELKAS, H. (2011), Regional Innovation Platforms, [in:] COOKE, P., ASHEIM, B., BOSCHMA, R., MARTIN, R., SCHWARTZ, D. and TÖDTLING, F. (eds.), Handbook of Regional Innovation and Growth. Cheltenham, UK, Edwar Elgar.

HEIFETZ, R. A. (2003), Leadership Without Easy Answers. 13th edition. Cambridge, MA, The Belknap Press of Harvard University Press.

HEIKKINEN, P., KAUFMANN, H., WINTER, S. and LARSEN, K. E., (eds.) (2009), TES Energy Facade – prefabricated timber based building system for improving the energy efficiency of the building envelope. Woodwisdom Net. [14.10.2015] http://www.tesenergyfacade.com/index.php?id=4_downloads

HYNYNEN, A., PANU, A-M. and TAANILA, T., (eds.) (2015), Puu-Hubi. Perinteestä uusiin innovaatioihin. Tampere University of Technology, School of Architecture / Seinäjoki Urban Laboratory.

KAUTONEN, M. (2008), Yksi alue, monta innovaatioympäristöä, [in:] TEOKSESSA SOTARAUTA, M. and MUSTIKKAMÄKI, N. (eds.), Innovaatioympäristön monet kasvot. Tampere University Press.

KOLEHMAINEN, J. (2004), Instituutioista yksilöihin: Paikallisen innovaatioympäristön kolme tasoa, [in:] TEOKSESSA SOTARAUTA, M. and KOSONEN, K-J. (eds.), Yksilö, kulttuuri, innovaatioympäristö. Avauksia aluekehityksen näkymättömään dynamiikkaan. Tampere University Press.

LECHNER, C. and DOWLING, M. (2003). Firm networks: external relationships as sources for the growth and competitiveness of entrepreneurial firms. Entrepreneurship and Regional Development 15, pp. 1–26.

LUNDVALL, B.-Å. (2001), Innovation Policy in the Globalizing Economy, [in:] ARCHIBUGI, D. and LUNDVALL, B.-Å. (eds.), The Globalizing Learning Economy. Oxford University Press, pp. 272–291.

MÄNNISTÖ, T., TÖRMÄ, H. and JYLHÄ, P. (2012), Metsän arvoketjujen aluetaloudelliset vaikutukset Etelä- ja Keski-Pohjanmaalla. Puurakentaminen ja yhdistetty lämmön ja sähkön tuotanto. Raportteja 94. Helsingin yliopisto, Ruralia –instituutti.

PETERSEN, A.K. and SOLBERG, B. (2005), Environmental and economic impacts of substitution between wood products and alternative materials: a review of micro-level analyses from Norway and Sweden. Forest Policy and Economics 7, pp. 249–259.

SIMMONS, A. (2001), The Story Factor: Inspiration, influence and persuasion through the art of storytelling. New York, Basic Books.

SOIKKELI, A., KOISO-KANTTILA, J. and SORRI, L. (2014), Korjaa ja korota. Kerrostalojen korjaamisen ja lisäkerrosten rakentamisen ratkaisuja. Julkaisu A 62. Oulun yliopisto, Arkkitehtuurin tiedekunta.

SOTARAUTA, M., KOSONEN, K-J. and VILJAMAA, K. (2007). Aluekehittäminen generatiivisena johtajuutena. 2000-luvun aluekehittäjän työnkuvaa ja kompetensseja etsimässä. Sente-julkaisuja 23/2007. Tampereen yliopisto, Alueellisen kehittämisen tutkimusyksikkö.

SOTARAUTA, M. and SRINIVAS, S. (2006), Co-evolutionary Policy Processes: Understanding Innovative Economies and Future Resilience. Futures 38/3, pp. 312–336.

SPAARGAREN, G. and MOL, A. P. J. (1992), Sociology, Environment and Modernity: Ecological Modernization as a Theory of Social Change. Society and Natural Resources 5, pp. 323–344.

The Guardian (2015), http://www.theguardian.com/cities/2015/mar/01/vienna-plans-worlds-tallest-wooden-skyscraper [18th Dec 2015].

VIRKKALA, S. (2008), Maaseutualueet ja pienet keskukset Innovaatioympäristöinä, [in:] TEOKSESSA SOTARAUTA, M. and MUSTIKKAMÄKI, N. (eds.), Innovaatioympäristön monet kasvot. Tampere University Press.

ZAHRA, A. Z. and GEORGE, G. (2002), Absorptive Capacity: A Review, Reconceptualization and Extension. Academy of Management Review 27/2, pp. 185–203.