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KAZALO - CONTENTS

NEUE REALITÄT – BASIS FÜR FRAGESTELLUNGEN EINER ANGEWANDTE WIRTSCHAFTSGEOGRAPHIE?

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Abstract
Neue Realität – Basis für Fragestellungen einer angewandte Wirtschaftsgeographie?
The Autor disscous the new perspectives in economic geography according to new social and economic situation in modern society. Among necessary and actual topics are poverty and social exlusion, social diferences, especially between rich and poor people and reach and poor regions. With the new approaches, the new instruments are needed, like new understanding of term space.

Key words
Angewandte Geographie, Raum, Cultural turn

Uredništvo je članek prejelo 7.10.2016

1. Einführung: Gesellschaftliche Veränderungen und neue Fragestellungen an die angewandte Wissenschaft

Diesjährige Tagung hat mit dem Thema „Neue Realität“ einen neuen Weg beschritten, ganz im Einklang mit den zahlreichen Bewegungen in der Geographie in vielen Ländern. Was bei uns in Deutschland schon Ende der 90-er Jahre des letzten Jahrhunderts mit der sozialtheoretischen Wende begann, ist gerade seit einigen Jahren unter Stichworten wie Neue Kulturgeographie oder auch Neuer Realität auf Tagungen und Workshops herausgestellt worden.

Dies entspricht durchaus auch den Bewegungen in der Gesellschaft bzw. im sozialen Raum, von naiven Protestveranstaltungen bis hin zur Suche nach einer "neuen" Demokratie. Häufig nicht durch rationale Informiertheit und dem Versuch nach Erklärungen gekennzeichnet als vielmehr durch Emotionen und Ängsten geprägt, werden Themen angesprochen, die in der Vergangenheit eher im Hintergrund blieben. Ermöglicht wurde dies neben neuen Lebens- und Arbeitsbildern vor allem durch die neuen Informationstechnologien. Brauchte man etwa noch vor Jahren erheblich Zeit und Kosten, um mehrere tausend Menschen zu einem Treffen einzuladen, so kann dies heute über die sozialen Medien in nur wenigen Stunden realisiert werden. Als Beleg sei nur die Dynamik der Internet-Nutzung in Deutschland herangezogen, von 22,9 Mio. im Jahre 2000 auf 76,8 Mio. 2014 (Abb. 1). Wie sehr diese Entwicklung die Gesellschaft erfasst hat, zeigt Abb. 2, wonach selbst bei den über 65-Jährigen noch es 65% sind, die das Internet regelmäßig benutzen. Damit verbunden sind neue Verhaltensmuster, neue Wertvorstellungen, auch in räumlicher Sicht, und damit neue Fragestellungen für die Geographie.

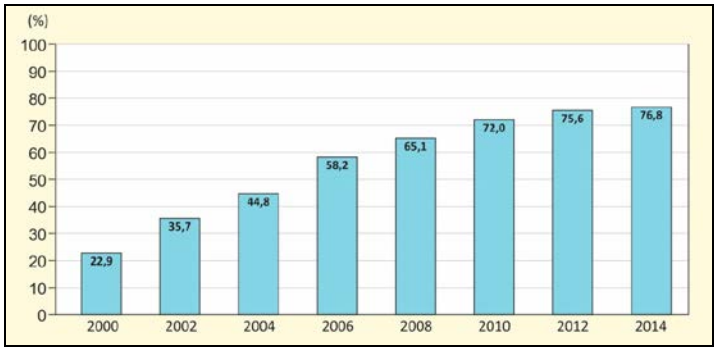

Abb. 1: Entwicklung der Internetnutzung in Deutschland.
Quelle: Eito.

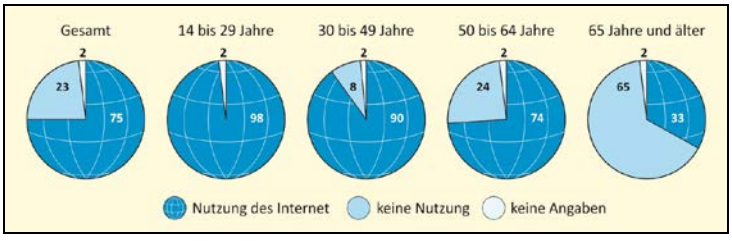

Abb. 2: Internetnutzung nach Alter in Deutschland.
Quelle: IDG Business Media GmbH, München.

2. Der definitorische Aspekt: Was ist unter Realität und Neuer Realität zu verstehen?

Bereits der Begriff der Realität zwingt uns zu der Erkenntnis, dass es sich hierbei um eine Interpretation unseres Gehirns handelt, also individuell gestaltet und auf Erfahrung aufgebaut ist. Realität ist folglich in erster Linie subjektiv, was man bei Techniken der Geographie, etwa der Beobachtung anhand unterschiedlicher Ergebnisse unter den Teilnehmern leicht zeigen kann. Der Begriff Neue Realität begegnet uns seit Jahren im Zusammenhang mit den neuen Informationstechniken. Viele Menschen vermuteten bei deren Entwicklung eine Art Parallelweit oder eine Virtual Reality, deren Zugang für manche erschwert erschien. Damit ergeben sich auch für die Geographie neue Herausforderungen. Sollte dies bei der Themenwahl des Konferenz angedacht gewesen sein, so kann ich dazu leider keine fundierten und weiterführenden Beitrag leisten. Deshalb habe ich meine Suche nach Erkenntnissen um die Neue Realität ausgedehnt auf das inzwischen weite Feld der Neuen (Human-) Geographie und ihren Raumkategorien.

3. Aktuelle Diskussion um Herausforderungen und Inhalte von Raumkategorien in der Geographie

Hilfreich war dabei eine kurzgefaßte Darstellung über Raumkonzepte im Geographie-Unterricht (Schneider 2002, 6), deren Aussagen insbesonders auf Weichhart (Weichart 2008) und Werlen (Werlen 2003) aufbauen bzw. als wesentliche Elemente einer kulturalistischen Wende das menschliche Handeln, die Transformation der Natur, die Ablehnung einer vermeintlichen objektiven Wissenschaft und die kritische Reflexion des Verhältnisses von Wissen und Macht zählen. Die Projektgruppe von Antje Schneider kommt zu der Empfehlung von vier Raumkategorien, wie sie in Abb. 3 auftreten. Während die Ersten beiden Raumsysteme den klassischen Vorstellungen von Raum entsprechen, dass dritte Bild dem Konzept der Wahrnehmungsgeographie entspricht, ist Neu im Sinne von bislang weniger analysiert der Raum als Konstruktion anzusehen, vielleicht eine Hilfe für empirische Arbeiten in unserem Forschungs-Sechseck.

Abb. 3: Raumkonzept.
Quelle: Schneider, A., Müller, S., Peterseim, C., Rulicke, B., Paul, T., Meerbach, K., Vogler, R., Nehrlich, T., Götz, C.: Raumkonzepte praktisch im Dialog, Dt. Gesellschaft für Geographie, 2002.

4. Konkrete Beispiele für Fragestellungen in thematischer und regionaler Sicht

Versucht man das Konstrukt "Neu" - abgesehen von dieser handlungstheoretischen Sicht auf Themen zu beziehen, die in der Geographie weniger studiert, jedoch von erheblicher gesellschaftlicher Relevanz sind, etwa das wachsende Auseinanderklaffen von Reichen und Armen bei und in Deutschland, so gäbe es durchaus Felder für entsprechende Analysen auch mit erheblichen regionalen Unterschieden.

Während Darstellungen zu Bevölkerungsveränderungen und zu sozioökonomischen Indikatoren in Deutschland regelmäßig vorliegen, gibt es etwa zum Thema Armut weit weniger Daten und Analysen. Dabei gelten trotz der guten Wirtschaftslage und überaus geringen Arbeitslosenzahlen viele Menschen, besonders Rentner und da wiederum Frauen, als arm. D.h., laut der Definition der EU zählen dazu Menschen, die über weniger als 60% des mittleren gesellschaftlichen Einkommens verfügen. Rechnerisch sind dies 12,5 Mio., davon rd. 3,4 Mio. Rentner. Und diese Zahl hat sich seit dem Jahr 2000 deutlich erhöht, von 12 auf rd. 16% (vgl. Abb. 4). Mecklenburg-Vorpommern, Sachsen-Anhalt, Sachsen und Bremen sind armutspolitisch die Problemregionen in Deutschland (vgl. Abb. 5). Besonders betroffen sind danach Erwerbslose und Alleinerziehende. Es wäre deshalb ein wichtiges Thema der Sozialgeographie, diese Gruppen in ihrem wirtschaftlichen und räumlichen Verhalten zu studieren, zumal sie standörtlich häufig konzentriert in Wohngebieten mit älterem Baubestand vorhanden sind. Wie meine lnternet-Recherche ergeben hat, hat es in den 90-er Jahren des letzten Jahrhunderts einen gewissen Boom an Publikationen dazu gegeben, in Verbindung mit dem 1. Armutsbericht der Bundesregierung, bezogen meist auf große Städte in NWR und Berlin (Klagge 2005). Vergleichbares kann man für andere Ende der Sozialsituation feststellen: Die oberen 10% der Vermögenden besitzen 52% des Vermögens. Bezogen auf die Einkommenssituation ergibt sich nicht nur ein regionales Spiegelbild zu Abb. 5, sondern weist grundsätzlich auf die erheblichen regionalen Unterschiede in Gestalt der Topverdiener 2008 (vgl. Abb. 6) oder gar der Einkommensmillionäre 2007 hin (Abb. 7). Was als Anreiz für Raumanalysen und Bestimmungsgrößen dienen könnte, reduziert den Forscherwillen schnell aufgrund der Schwierigkeiten bei empirischem Vorgehen. Die Internet-Recherche hat dazu ergeben, dass dieses bislang nicht allzu häufig behandelte Thema kleinräumlich am Beispiel etwa von Berlin im Rahmen eines studentischen Projektseminares diskutiert wurde (Burk-Matsunami 2005), umfassend für Deutschland anhand einer vergleichenden Darstellung von reichen und armen Regionen analysiert wurde (Eichhorn-Huter-Ergibt 2010). Während die erstgenannte Studie anhand von Indikatoren, etwa des “Luxus" versucht, das Phänomen zu erhellen, beschränken sich die drei Autoren der zweiten Untersuchung auf offizielle statistische Angaben. In beiden Fällen gelingt es jedoch nur teilweise, spezifische Raummuster des Verhaltens zu ermitteln. Die Quoten zur Armut in Deutschland im Vergleich zu Hartz IV und Arbeitslosigkeit

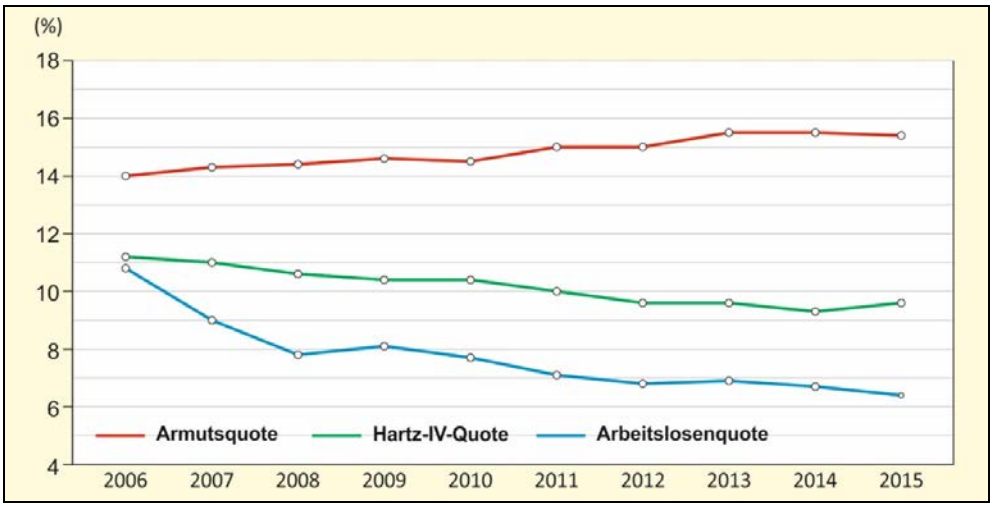

Abb. 4: Armut und Arbeitslosigkeit.
Quelle: Statistisches Bundesamt, Agentur für Arbeit.

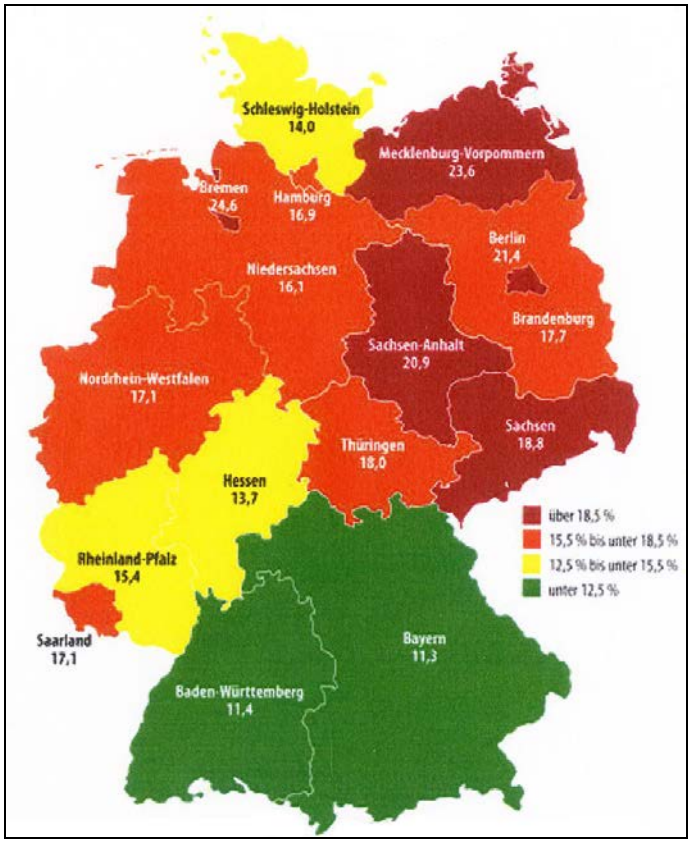

Abb. 5: So viele Deutsche sind von Armut betroffen (in Prozent für 2014).
Quelle: Bericht zur Armutsentwicklung in Deutschland des Paritätischen Gesamtverbands.

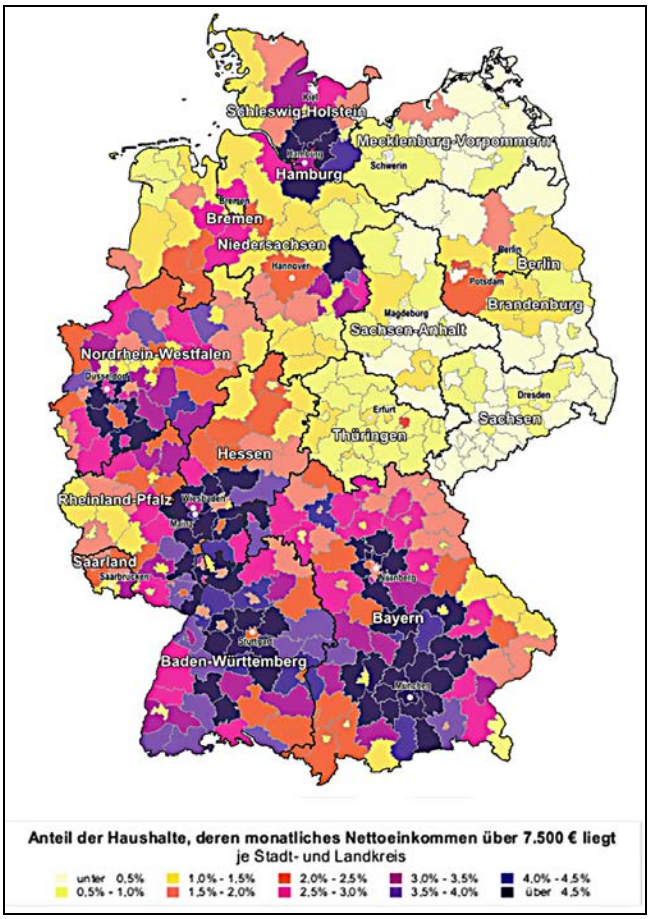

Abb. 6: Anteil der Topverdiener in Deutschland 2008.
Quelle: Gfk GeoMarketing.

5. Kurzes Fazit

Zum Schluss möchte ich noch einmal auf die Aspekte „Cultural Turn“ bzw. „Neue Kulturgeographie“ eingehen. Diese theoretisch-konzeptionelle Herangehensweise ist, mit Anregungen aus dem englisch-sprachigen Raum, seit Ende der 90-er Jahre des letzten Jahrhunderts in Deutschland in der Diskussion. Mit dem Deutschen Geographentag in Leipzig 2001 wurde sie breit thematisiert und findet alljährlich institutionalisiert bei umfangreichen Tagungen, in diesem Frühjahr etwa in Graz statt. Dabei liegt kein geschlossenes Bild vor, sondern es bestehen struktur- und handlungstheoretische sowie systemtheoretische Betrachtungsweisen, auch die Inhalte sind vielfältig, wenngleich als Grundlage wohl gilt, dass Wissen und Macht untrennbar miteinander verbunden sind. Um es etwas konkreter zu formulieren, soll auf einige Forschungsperspektiven des “Cultural Turn“ (nach Sahr 2001) zurückgegriffen werden (vgl. Abb. 8):

- Untersuchungen sozialer Beziehungen in kultureller Hinsicht (u.a. Identität und Lebensformen),

- Semiotische und sozialpolitische Interpretation kultureller Repräsentationen (u.a. Eliten und Massenkultur),
- Untersuchungen von Alltagspraktiken als kulturelle Ausdrucksform,
- Semiotische Gestaltung von Landschaften, Städten und Konsumwelten,
- Konstruktion von 2 imaginären Geographien, etwa als Produkt des Kolonialismus,
- Analyse des Zusammenhangs zwischen Kapitalismus, Spät-bzw. Postmoderne und Kultur.

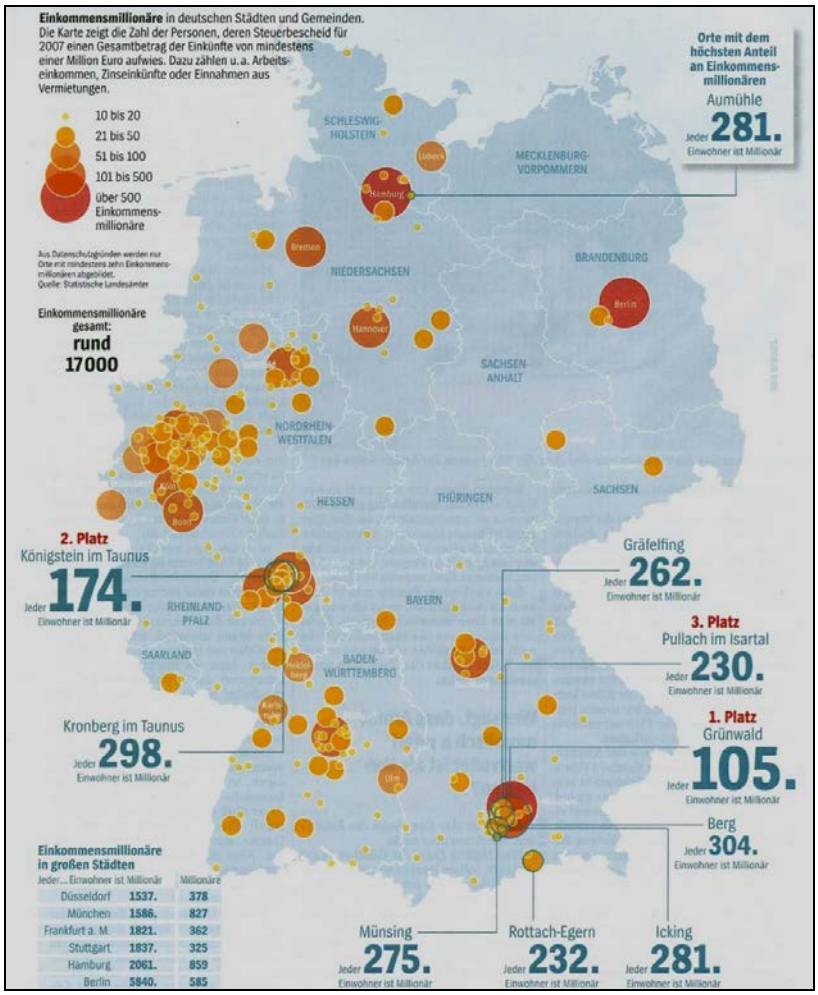

Abb. 7: Einkommensmillionäre in deutschen Städten und Gemeinden.

So anregend diese Themenwahl für weitere Untersuchungen erscheint, bei der Eingangs gestellten Frage nach der Bedeutung für eine angewandte Geographie muß festgestellt werden, dass sie angesichts häufiger Einbindung in Machtstrukturen grundsätzlich für die Neue Kulturgeographie problematisch erscheint, es sei denn in einer systemkritischen Position. Ich hoffe, diese Anregungen tragen dazu bei, die Diskussionen um neue Wege der Geographie im Forschungs-Sechseck zu forcieren.

- Untersuchung sozialer Beziehungen in kultureller Hinsicht. Im Mittelpunkt steht hierbei die Reflexion von Fragen der Identität, angefangen von nationaler Identität (z.B. postkolonialer Völker) über regionale Identität bis hin zur personalen Identität, zur Rolle des Körpers bei der Identitätszuschreibung (z.B. Funktion von Mode, ‚Gay World' etc.). Im Kontext des ‚Cultural Turn' werden vor allem die Pluralität und Hybridität von Lebensformen betont

- Semiotische und sozio-politische Interpretation kultureller Repräsentationen, u.a. Diskutiert wird in diesem Zusammenhang die Beziehung zwischen elitärer und Massenkultur, die soziale Differenzierung durch künstlerische Medien und das kulturelle Distinktionsverhalten in Konsumentenkulturen (im Sinne von Bourdieu 1982) etc.

- Eng damit verbunden ist die Untersuchung von Alltagspraktiken als kulturelle Ausdrucksformen. Diese Sicht entwickelte sich zunächst vor allem in der Kulturanthropologie/Ethnologie, zu einem Schlüsseltext wurde Clifford Geerz' "Dichte Beschreibung" (1987). Kultur als Sinnproduktion bzw. "Bedeutungsgewebe" kann durch eine interpretierende dichte Beschreibung erschlossen werden. Im Zentrum des Interesses steht dabei die Aufdeckung der verborgenen Muster der sozialen Alltagspraxis, ihrer Symbolordnungen und Logiken, aber auch ihrer subtilen Durchdringung durch Macht und Marktmechanismen (vgl. Reckwitz 2000)

- Untersuchungen der semioitischen Gestaltung von Landschaften, Städten und Konsumwelten u.a. Stadtlandschaft in multi-ethnischen Städten,

- Kritische Auseinandersetzung mit der Konstruktion von imaginären Geographien, z.B. als Produkt des Kolonialismus,

- Analyse des Zusammenhangs zwischen Kapitalismus, Spät- bzw. Postmoderne Kultur.

Abb. 8: Einige Forschungsperspektiven des „Cultural Turn“ (nach Sahr 2001).

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NEUE REALITÄT – BASIS FÜR FRAGESTELLUNGEN EINER ANGEWANDTE WIRTSCHAFTSGEOGRAPHIE?

Zusammenfassung

Der Begriff Neue Realität begegnet uns seit Jahren im Zusammenhang mit den neuen Informationstechniken. Viele Menschen vermuteten bei deren Entwicklung eine Art Parallelweit oder eine Virtual Reality, deren Zugang für manche erschwert erschien. Damit ergeben sich auch für die Geographie neue Herausforderungen. Als wesentliche Elemente einer kulturalistischen Wende das menschliche Handeln, zählen die Transformation der Natur, die Ablehnung einer vermeintlichen objektiven Wissenschaft und die kritische Reflexion des Verhältnisses von Wissen und Macht.

Die Projektgruppe von Antje Schneider kommt zu der Empfehlung von vier Raumkategorien, wie sie in Abb. 3 auftreten. Während die Ersten beiden Raumsysteme den klassischen Vorstellungen von Raum entsprechen, dass dritte Bild dem Konzept der Wahrnehmungsgeographie entspricht.

Während Darstellungen zu Bevölkerungsveränderungen und zu sozioökonomischen Indikatoren in Deutschland regelmäßig vorliegen, gibt es etwa zum Thema Armut weit weniger Daten und Analysen. Dabei gelten trotz der guten Wirtschaftslage und überaus geringen Arbeitslosenzahlen viele Menschen, besonders Rentner und da wiederum Frauen, als arm. D.h., laut der Definition der EU zählen dazu Menschen, die über weniger als 60% des mittleren gesellschaftlichen Einkommens verfügen. Rechnerisch sind dies 12,5 Mio., davon rd.3,4 Mio. Rentner. Und diese Zahl hat sich seit dem Jahr 2000 deutlich erhöht, von 12 auf rd. 16% (vgl. Abb. 4). Besonders betroffen sind danach Erwerbslose und Alleinerziehende. Es wäre deshalb ein wichtiges Thema der Sozialgeographie, diese Gruppen in ihrem wirtschaftlichen und räumlichen Verhalten zu studieren, zumal sie standörtlich häufig konzentriert in Wohngebieten mit älterem Baubestand vorhanden sind. Vergleichbares kann man für andere Ende der Sozialsituation feststellen: Die oberen 10 % der Vermögenden besitzen 52% des Vermögens. Bezogen auf die Einkommenssituation ergibt sich nicht nur ein regionales Spiegelbild zu Karte 1, sondern weist grundsätzlich auf die erheblichen regionalen Unterschiede in Gestalt der Topverdiener 2008 (vgl. Karte 2) oder gar der Einkommensmillionäre 2007 hin.

Es soll auf einige Forschungsperspektiven des “Cultural Turn“ zurückgegriffen werden:

- Untersuchungen sozialer Beziehungen in kultureller Hinsicht (u.a. Identität und Lebensformen),
- Semiotische und sozialpolitische Interpretation kultureller Repräsentationen (u.a. Eliten und Massenkultur),
- Untersuchungen von Alltagspraktiken als kulturelle Ausdrucksform,
- Semiotische Gestaltung von Landschaften, Städten und Konsumwelten,
- Konstruktion von 2 imaginären“ Geographien, etwa als Produkt des Kolonialismus,
- Analyse des Zusammenhangs zwischen Kapitalismus, Spät-bzw. Postmoderne und Kultur.

GENDER GAP IN SLOVAKIA: SELECTED PROBLEMS OF EDUCATION AND CAREER

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Abstract
Gender gap in Slovakia: selected problems of education and career
The article focuses on the gap between women education and their career. Women's education has significantly increased in a few last years, but their position on the labour market has been more difficult in comparison with men. The share of economical active women and also the share of working women with higher education have been growing till the present time. However, it is questionable how do women use their higher education in career or whether they can build even some career. We have used the data from Statistical Office of the Slovak Republic and some problems have been presented in the area of Slovakia on the level of regions (kraje).

Key words
Gender gap, education, career, Slovakia, leaky pipeline

Uredništvo je članek prejelo 17. 10. 2016

1. Introduction

Research in the area of gender gap in education and careers is important, because it calls for an attention to some phenomena which are typical in Slovakia and in other developed countries in the Middle and Western Europe and North America. No country can fully develop economically and socially if it fails to tap and fully utilize the talent of its citizens. The development and competitiveness of a village, state or nation depends on efficiently and effectively utilizing its resources. Human talent is a critical resource and women are half of that resource (Jackson at all 2009, 1). Today, women are also more likely than men to persist in college, obtain degrees, and enroll in graduate school (Bae at al. 2000, 7-8 in DiPrete, Buchnann 2006, 1). Many women feel that labour market is very demanding and often 'women un-friendly'; therefore their effort to get better education (and also better position on the labour market) is understandable. However, it is questionable if they have sufficient opportunities to use their education in the praxis. Women are in more difficult situation, because they have to divide their time between family and career. This problem was solved e.g. by Cukrowska-Rozewska and Lovasz (2006) and Valcour, Ladge (2008), where the authors were examining if or how many children in the family can be an obstacle in career and reason of gender gap. Not only children, but also care for older family members is usually duty of women. We can bear out this view with opinion of several authors (Schmid, Brandt, Haberkern 2012; Rodrigues et al 2012). Women are often less-favoured in the work; they are less interesting for employers than men. There arose also some differences among women. According to Waldfogel (1998), gap between women with children and those without children has been widening over the past few decades.

Slovakia has been confronted with several of these problems; many of them have amplified in nineties and after 2000. Gender gap has already existed in the socialist time, but social and economical changes after 1989 highlighted some more problems. The aim of this article is

- to point out to the fact that university-graduated women find an adequate job (to their education) more difficult despite of declared equality of opportunities,
- to focus to the inequality of remuneration in the selected sectors of NACE linked to the higher (university) education
- to present the selected problems in Slovakia on the level of regions (slov. kraje).

2. Data

We have analyzed data from the Statistical Office of Slovak Republic, using selected indicators from parts of database DATAcube:

- Demography and social statistic (Labour, Labour cost and School system and education)
- Multi-domain statistics (Science, technology and innovation).

We have observed some problems of gender gap in education and career in the period 2000-2015, but some data were not available and therefore we have used some indicators in the shorter period. Some problems have been observed also in space on the level of regions of Slovakia, always in the period 2010-2015.

3. Gender gap in education

In the last time, after 2000, more women than men have been studying at universities in Slovakia. After 1989, in the time of gradual transition from centrally planned economy to the market economy, labour market has developed also in Slovakia. Obligation to work has changed into a competition as the best use of education, knowledge and skills in the searching for an adequate and well appreciated job. The position of women on the labour market was and still is more difficult, because searching for a job is complicated by motherhood and their traditional position in the family and society. Competition on the labour market has been reflected in the higher interest of education. In 1991 only 178 708 men and 128 212 women reached university degree (it represented 5.82% of Slovak population and the share of women in this level of education was 41.77%). Till 2001 the share of university educated men and women increased: 228919 men and 194405 women earned university degree (7.87% of Slovak population; share of women 45.92%). Since 2001 many employers have increased education requirements. At the same time several universities have been formed and it reflected also in level of education of Slovak population. In 2011 349 150 men and even 398 818 women reached university degree (13.86% of Slovak population; share of women on this level of education was 53.32%), (Census 1991, 2001, 2011).

Fig. 1 shows the number of university students and university graduates in Slovakia in the period 2008-2015. It is clear that the share of women is higher in whole period and this fact holds to the students and also to the graduates. In the last time, we can observe a decrease of number of students and the graduates; however, this fact is not caused by lower interest in education but by changed demographic situation in Slovakia.

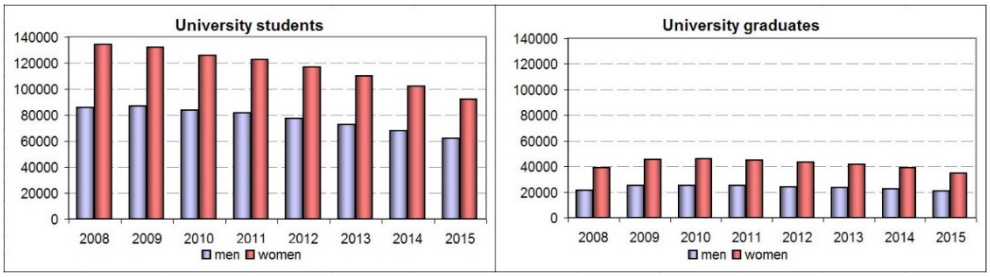

Fig. 1: Students and university graduates in Slovakia in the period 2008-2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

This higher share of women is notable in almost whole Slovakia in the period 2010-2015. We have used the same scale on every map in Fig. 2 and than we can compare the share of men and women in the frame of students and also in the frame of graduates. Only region Košice (KE) has recorded lower share of women in the period 2010-2015 (49.97%). There are Technical University (with faculties as Faculty of mining, Faculty of Metallurgy, Faculty of Mechanical Engineering, Faculty of Aeronautics, etc.) and Theological Faculty in Košice, with predominance of men. The highest share of women between the students and the graduates has been in region Prešov (PO). Average proportion of women-students in region Prešov was 70.23% in the observed period and 70.80% in 2015.

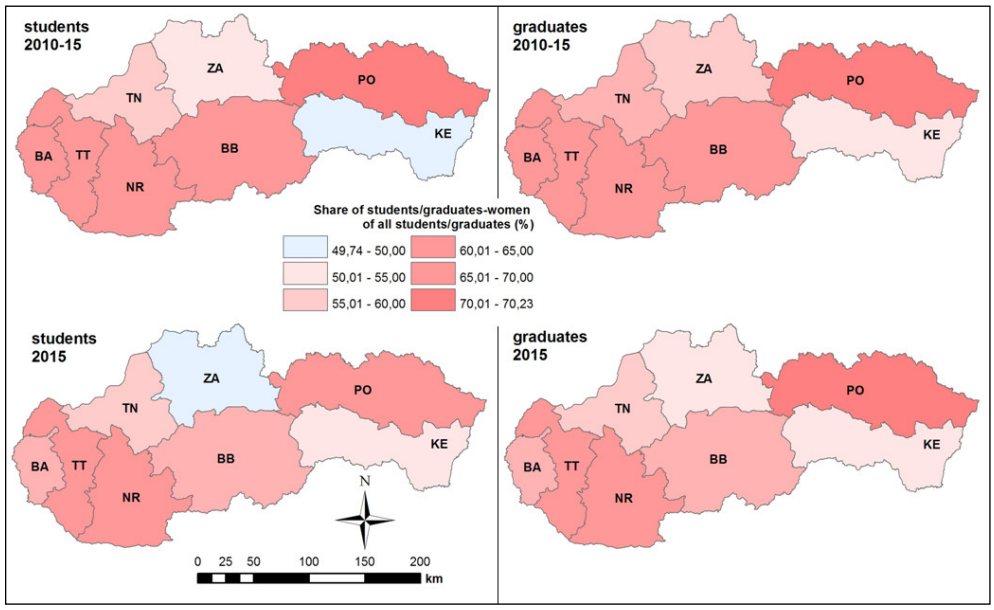

Fig. 2: The share of university students and the share of university graduates in the regions of Slovakia in the period 2010-2015 and in 2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

We can notice the similar share of women-graduates (average share 70.80% and share in 2015 74.34%). The high number of women among students and graduates in this region is due to existence University of Prešov with many faculties (Faculty of Humanities and Natural Sciences, Faculty of Education, Faculty of Health Care) which are more attractive for women. Region Presov belongs to the poorer regions of Slovakia and therefore it is understandable that women try to get higher education to succeed on the labour market. Several technological faculties are localized in the regions of Žilina (ZA) and Trenčín (TN) and therefore the predominance of women in these regions is not so strong. Regions as Bratislava (BA), Banská Bystrica (BB), Trnava (TT) a Nitra (NR) have got traditionally a broad offer of possibilities for studying for men and women.

The same indicator is expressed by other method (Fig. 3). We have used gender gap, which we can calculate as divide of difference of numbers of men and women and number of men:

$$GG = (W_m - W_f) / W_m$$

where GG is gender gap W_m is selected characteristic of men (number, average wage,..) and W_f is selected characteristic of women.

We have used the same scale again on each map in Fig. 3. The most expressive prevalence of women is evident among graduates in region Prešov (PO). Generally we can say that numbers of graduates-women have been higher in the whole observed period and in whole Slovakia. This fact submits an idea that women are more unremitting in acquiring education in comparison to men. Nowadays, demographic situation in Slovakia is changing and number of students is decreasing.

Many faculties reduce requirements for admission procedure and therefore it is easier to change the study.

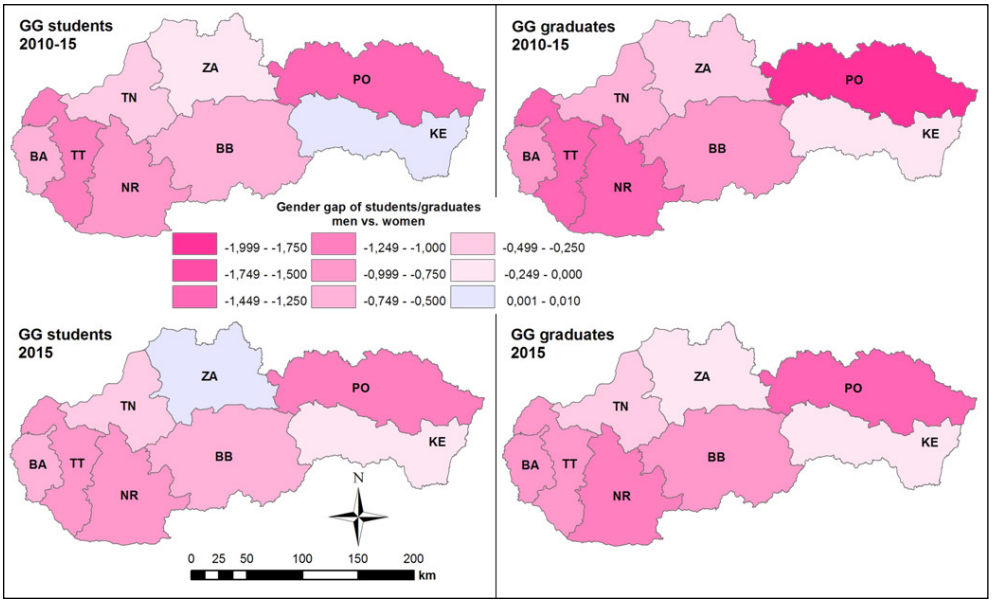

Fig. 3: Gender gap of university students and gender gap of university graduates in the regions of Slovakia in the period 2010-2015 and in 2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

Women's higher (university) education increased significantly in comparison to the past, because nowadays women have got better terms for studying in whole country. Despite of current decreased number of students, the share of women persists higher more than a half. Although we noticed disparities among regions of Slovakia, these differences are often caused by diverse offer of study fields at the universities.

4. Gender gap in economic activity

In the second part of this article we want to compare women's education and women's economic activity. The number of economically active population was increasing in the nineties, what was caused by population growth, population ageing (baby boomers form the seventies and eighties had moved to the productive age), but also by changed social situation in Slovakia. In comparison with socialist period, families have gradually become smaller with fewer children. Many couples often preferred only one or two children, perhaps even they based a family in the later age and this reflected into the higher share of economically active population.

In 1991 economically active population included 1 389 829 men and 1 228 106 women, what corresponded to 49.64% of whole population and women made up 46.91% of economically population. Till 2001 number of economically active persons increased: 1 428 518 men and 1 319 532 women accounted 51.08% of the population and share of women was 48.02% of all economically active people. Social and economic situation has improved after 2001, what reflected in the growing birth rate. Population depression of nineties caused that many kindergarten were closed in this

time and many retired women have solved their situation after 2001 in their families with small children like an au-pair. With growing competition on the labour market mainly older women increasingly difficult search a job and therefore stay at home like a housewife. We can see this fact in the numbers of economically active men and women in 2011: 1 422 590 men and 1 207 462 women, when women correspond to 45.91% of economically active population (Census 1991, 2001, 2011).

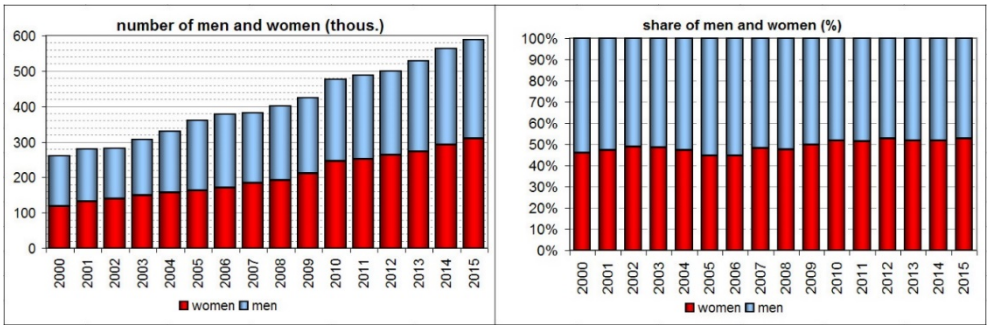

Fig. 4: Economically active men and women with the higher (university) education in Slovakia in 2000-2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

Fig. 4 zooms in more detailed view to economic activity of population with university education since 2000. It is positive that the share of higher educated people is growing. The share of women is growing gently since 2006 and we can observe the similar situation on figure 5, which shows working men and women with the university degree. The number and also the share of women are increasing similarly with figure 4 and it means that many women try to use their education in praxis.

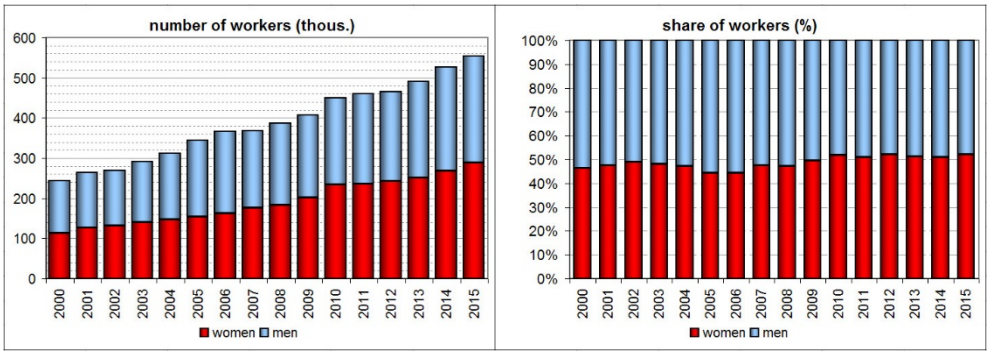

Fig. 5: Working men and women with higher (university) education in Slovakia in the period 2000-2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

However, we can see more expressive growth of number of economically active women with higher education in comparison to number of economically active women without university degree (figure 6). It is similar as the share of working women with and without university degree. The women's effort to be better and more desired on the labour market reflects exactly here. Number of economically active women with university education was 118.6 thousand (only 10.0% of economically active women)

in 2000 and 309.6 thousand (25.1%) in 2015. The share of working women with university degree didn't exceed 11.72% of all working women in 2000 (113 thousand), but in 2015, it took the value of 26.83% (288 thousand). The count of working women with university education more than doubled.

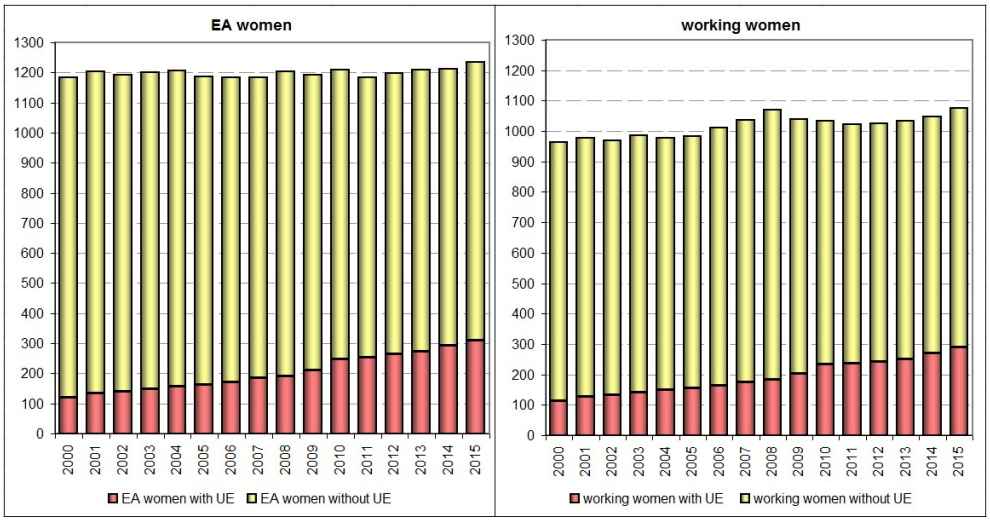

Fig. 6: The share of women with higher (university) education (UE) and without higher education among economically active and working women in Slovakia in 2000-2015 (thous.).
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

Fig. 6 shows some regional differences among regions in Slovakia in the period 2010-2015. In the observed period (2010-2015) the best situation for women was in region Banská Bystrica (BB). The share of women with university degree was higher than 20% among economically active population and also among all workers with higher education. Women have got the lowest representation in regions Bratislava (BA) and Trnava (TT). This fact is caused by concentration of head offices of many companies, where men dominate on the managements positions (Bratislava region) or by higher share of automotive industry in economy of region (Trnava).

The spatial structure of share of women with and without university degree is gently different. The highest share of economically active women and also working women with university degree is in Bratislava region (Fig. 8). It is understandable, because the region of capital city provides the highest amount of work possibilities linked to the higher education. If we compare average values of whole observed period to the values in 2015, we can say that in the last time women's effort to use their education in praxis became stronger. This situation is joined to the demanding labour market, but also to changed demographic situation in Slovakia and to changed scale of values. In the socialist time young couples got married quickly after obtaining their degree and soon began the family. The social security was higher, e.g. the flats were allocated to the young couples and everyone had the right to work. Changed economic and social situation in the transition time brought changed succession of life values. Young people after obtaining university degree look for some adequate job, than they try to buy some housing and to build their career. Family and children are coming later. Women study much more in comparison to the socialist time and therefore the share

of women with university degree has been growing in all regions of Slovakia in the last time.

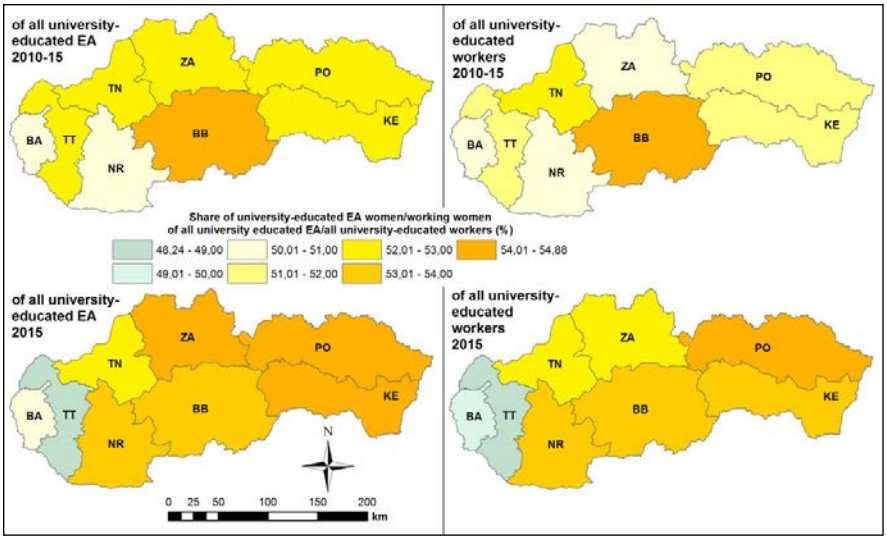

Fig. 7: The share of economically active (EA) women with university education of all economically active population with university education and the share of working women with university education of all workers with university education in the regions of Slovakia in the period 2010-2015 and in 2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

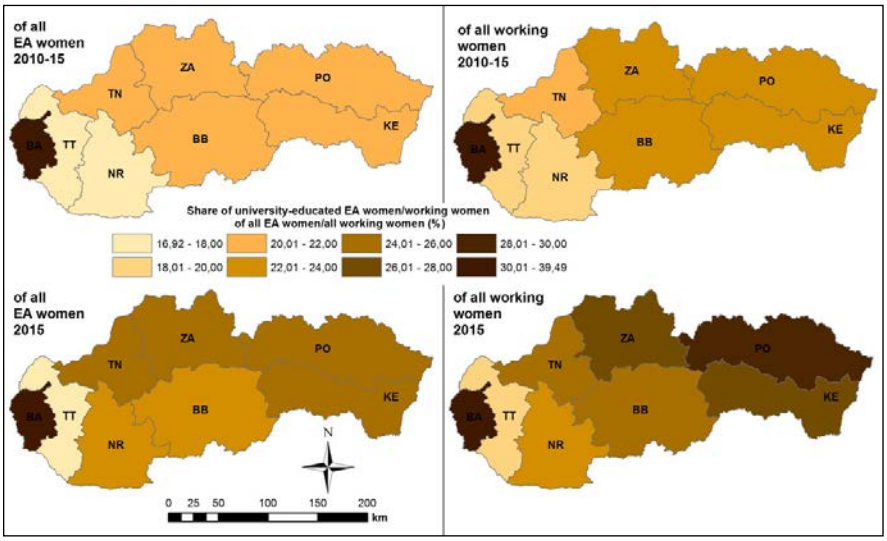

Fig. 8: The share of economically active women with university education of all economically active women and the share of working women with university education of all working women in the regions of Slovakia in the period 2010-2015 and in 2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

Many employers require higher education not only in Bratislava region, but in other parts of Slovakia, too. This showed in 2015, what we can see on Fig. 8. The share of working women with university degree of all working women was higher than 20% in almost whole area of Slovakia with exception of region Trnava (TT) – traditionally strong automotive region. The highest proportion of working women with higher education with the exception of the Bratislava region (BA) was in region Prešov (PO). This region is poorer a therefore education is some benefit in getting the job. Prešov and Košice (KE) are two regions in the east of Slovakia together with the region of Bratislava, where the share of university educated working women exceeded a quarter of all working women.

5. Gender gap in career

Although education and economic activity of women grew significantly, gender gap still persists. It showed, if we compared two selected sectors of NACE – Professional, scientific and technical activities and Education. The majority of occupations in these sectors demand generally a university degree. To the Professional, scientific and technical activities, we assign e.g. Legal and accounting activities, Activities of head offices; management consultancy activities, Architectural and engineering activities; technical testing and analysis; Scientific research and development and others. Sector Education includes Pre-primary education, Primary education, Secondary education, higher education, Other education and Educational support activities (Eurostat/RAMON).

It is clear that the number of employees in Education is incomparably higher than the number in the Professional, scientific and technical activities (Fig. 9). Different levels and kinds of schools are localized almost in each town and city and many villages in whole Slovakia, because it is necessary to educate the children and the youth in each region. However, this number has been decreasing since 2010. It is caused by changed demographic situation in Slovakia what mainly the schools in small villages have affected. The number of children has decreased; several schools have reduced the count of classes causing the firing of school workers. In extreme cases some schools were closed.

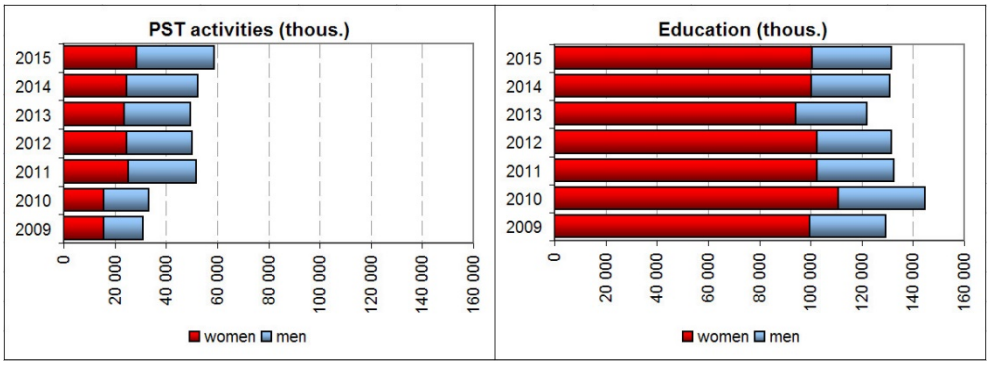

Fig. 9: Employees in the selected sectors NACE – Professional, scientific and technical activities (PST activities) and Education (thous.) in Slovakia in 2010-2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

Contrary situation is in the Professional, scientific and technical activities where the number of employees has been growing since 2009. It is related to the development of Science and research generally, to the localization of many head offices of foreign companies, etc. However, generally it is caused by development of automotive industry, which doesn't include only production, but also research and development.

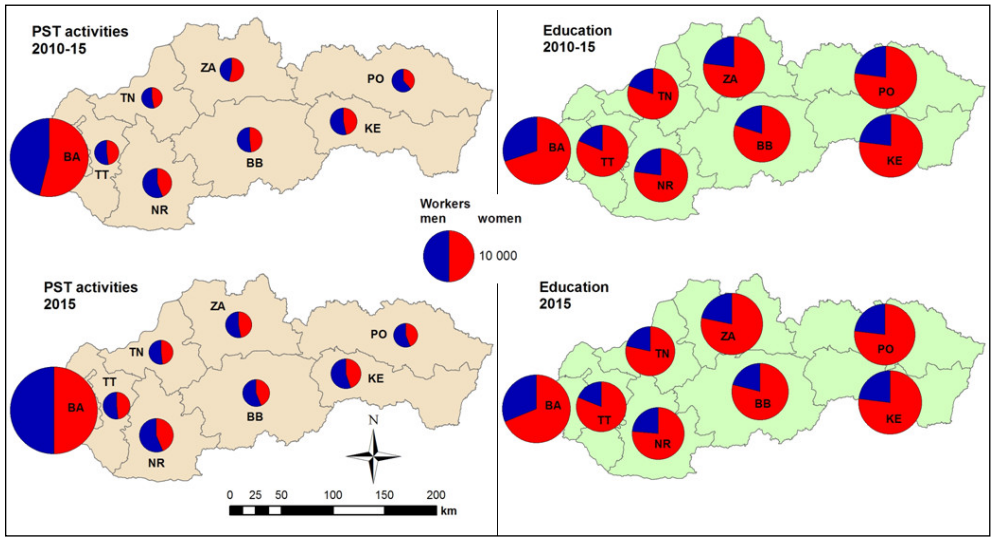

Fig. 10: The employees in the selected sectors of NACE – Professional, scientific and technical activities (PST activities) and Education – the share of men and women in the region of Slovakia in the period 2010-2015 and in 2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

The share of women in both sectors is very different. While in the case of Education women significantly predominate – they have made up more than three quarters of employees in the observed period (78.86%) – in the case of Professional, scientific and technical activities their share has been lower than one half of all employees (47.78%).

The differences have occurred also in the area of whole country (Fig. 10). The share of women in education employment in different regions of Slovakia is similar, more than 75%. Only Bratislava (BA) region is an exception, because there are many schools of higher level, where the share of men is higher (colleges, universities). The count of employees (men and women together) is also similar and comparable. Bratislava outnumbers slightly other regions thanks to mentioned higher concentration of many schools.

On the contrary, the Professional, scientific and technical activities have less homogeneous distribution in the area. Almost 60% of all employees of this sector work in Bratislava region, where the most of scientific institutes, legal offices, head offices and other institutions is concentrated. We can see the differences also in the share of men and women. Men have dominance in the most of Slovak regions in whole observed period; in case of Bratislava is the share of men and women more equal, perhaps even the share of women is higher. We can point out again that there are e.g. many institutes of humanities in Bratislava which are more accessible for women.

In other regions there are more technological institutes which are preferred by men. (E.g. Trnava (TT) – research of automotive industry, Research institutes of nuclear energy; Žilina (ZA) – institutes of University of Žilina – university with transport fields of study; Trenčín (TN) – electrical research institutes, engineering research institutes, Košice (KE) – metallurgical research institutes and others).

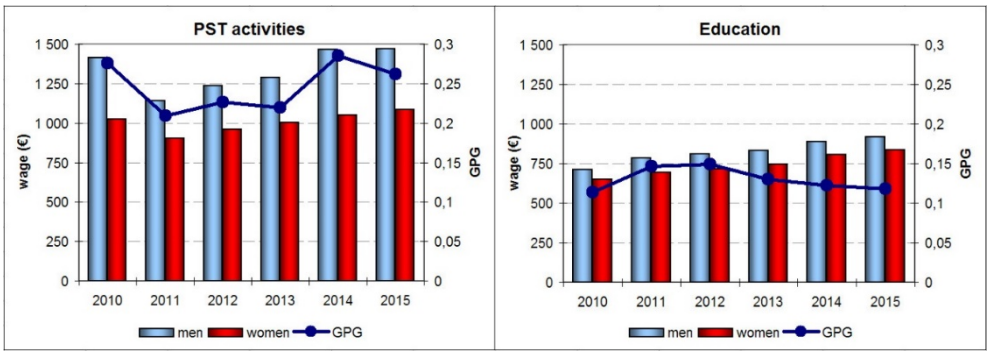

Fig. 11: The average nominal wages and gender pay gap (GPG) in the selected sectors of NACE –Professional, scientific and technical activities (PST activities) and Education in Slovakia in the period 2010-2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

However, it is more serious that women are worse appreciated in their work. Figure 11 shows the average nominal wages and gender pay gap in both of these sectors. The average nominal wage in the Professional, scientific and technical activities in 2010 was 1 230 €. Male average nominal wage had reached the value of 1 412 € and female average nominal wage only 1 023 € (DATAcube. 2016). The difference between male and female wages was 389 € and gender pay gap 0,275 (27.5%). Male average nominal wage increased till 2015 to the value 1 471 and female average nominal wage to 1 086 €. Difference cut back gently and gender pay gap took value 0.262 (26.2%). Average difference between male and female wages in the period 2010-2015 was 332 € and average gender pay gap 0,246 (24.0%). It means that women have been worse appreciated in work, because have had worse job positions in this sector, perhaps they have not so often taken a position in the management or head offices.

The situation in Education is more equal, but there is a problem that wages are too low. We have to say it is very sad that people in Slovakia caring for children and young people are paid so badly. The average nominal wage in Education in 2010 was 650 €, whereby men earned on the average 712 € and women only 631 € (DATAcube. 2016). The difference between male and female wages was 81 € and gender pay gap was 0.114 (11.4%). By 2015 male average nominal wage increased to the value of 920 € and female wage to the value of 811 €. The difference increased and took value 109 €, gender pay gap 0.118 (11.8%). Average difference in the period 2010-2015 was 107 € and average gender pay gap 0.130 (13.0%) These values are in comparison to the other sectors low, but it is bewildering that gender pay gap at all exists in sector with significant dominance of women.

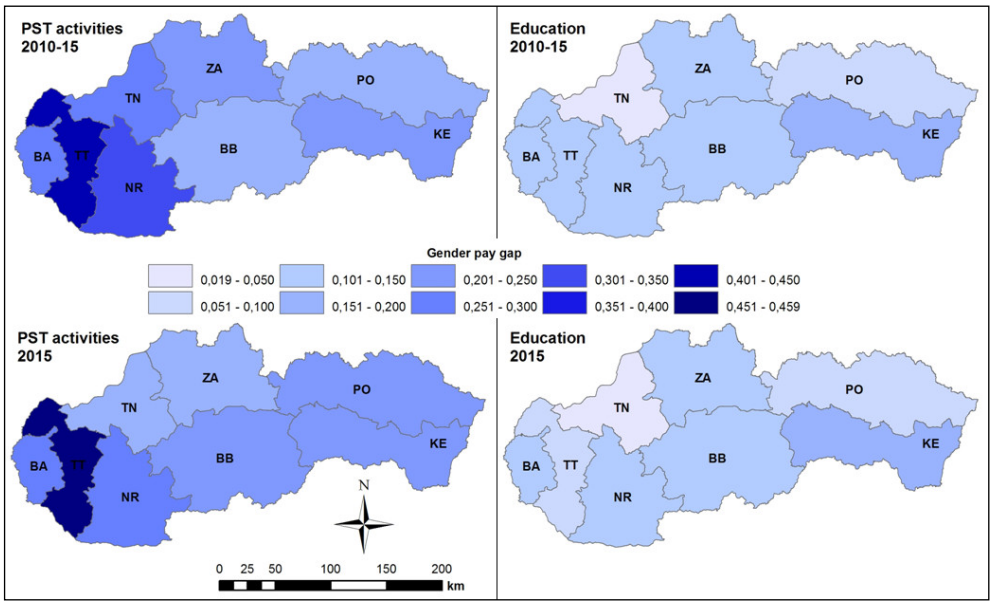

Fig. 12: Gender pay gap in the selected sectors of NACE – Professional, scientific and technical activities (PST activities) and Education in the regions of Slovakia in the period 2010-2015 and in 2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

Significant differences of gender pay gap are also among the regions of Slovakia. The highest gender pay gap in whole observed period has been noticed in region Trnava (TT) – more than 0.400 (40.0%) and in 2015 even 0.459 (45.9%). In the contrary, eastern part of Slovakia has had the lower values 0.152-0.238 (15.2-23.8%). In sector Education the differences are significantly lower. Generally, gender pay gap of all Slovak regions has been lower than 0.19 (19%), in region Trenčín (TN) even lower than 0.033 (3.3%). In this region women have been often on the high position in many schools and this fact has influenced positively the values of gender pay gap.

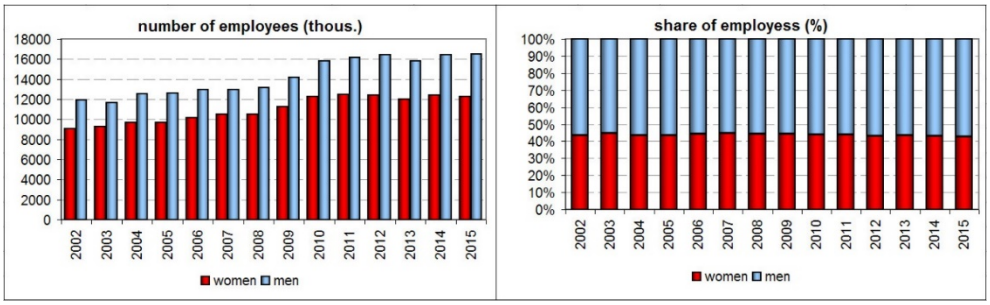

Fig. 13: The Employees in the Research and development in Slovakia in the period 2002-2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

At the end of our analysis, we want to try to find out the differences in the Research and development. We have used the data from database DATAcube. – Multi-domain

statistics (Science, technology and innovation), where employees of the Research and development are defined: "R&D personnel include persons employed directly in the field of research and development as well as persons providing direct services to research and development. Pedagogical staffs at universities and colleges who within the framework of their work to a certain extent participate in research and development are also included".

Unfortunately, the data of wages were not available; therefore we have focused on comparison of the count of male and female employees. The number of men exceeded the number of women (figure 13), whereby the share of women was moving at intervals 42.6-44.7%. However, we can see significant differences among regions of Slovakia: the smallest proportion of women has worked in region Trenčín (TN) – less than 26% (figure 14). The research in this region has been highly technical (electrotechnical, building, defence), in which women have participated less. The lower share of women is represented also in regions Trnava (TT) and Žilina (ZA), what are the regions with developed automotive industry. The most equal share of women was in region Bratislava (BA) – almost 46% and Nitra (NR) – more than 48.5%. There are many institutes of natural science research, medicines research and humanities in these regions which are more attractive for women and therefore they have got a higher proportion here.

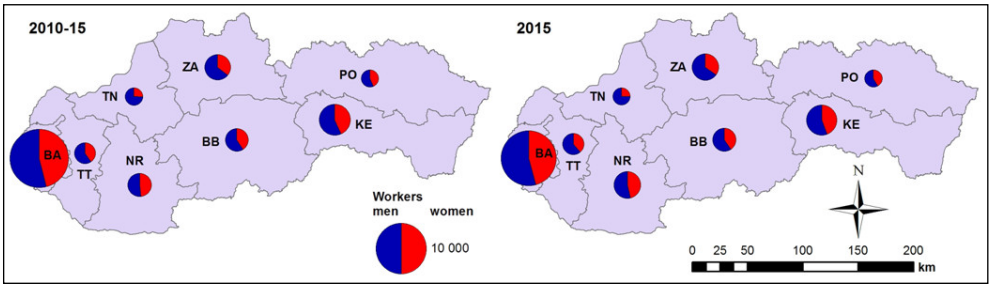

Fig. 14: The employees in the Research and development – the share of men and women in the region of Slovakia in the period 2010-2015 and in 2015.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

The economy structure has partly an influence on the inequality of representation of men and women in the Research and Development. Some fields are more attractive for women or women more exceed in them. Some fields are more male domain. Women are under-represented in science, technology, engineering and mathematics majors and careers in most industrialized countries around the world (Blickenstaff 2005, 369). However, gender gap often also depends on work position and occupation.

We compared positions of men and women by occupation in Research and development in the time period 2004-2014 a we found out that women more often work on the lower position than men – such as technicians and equivalent personnel or supporting staff (figure 15). In the period 2004-2014 almost 58% of researchers were men. Men exceeded the women also on the positions of technicians and equivalent personnel (52%). Women have had more a higher share only on the last position – supporting staff. Work position is all right if we take into account the relationship between education and occupation. However, the question is – why do so few women work in the Research and development on the researcher position? Why

do so often women work on the technical or supporting staff positions? It is in the conflict with the fact that women education has raised significantly till the present time.

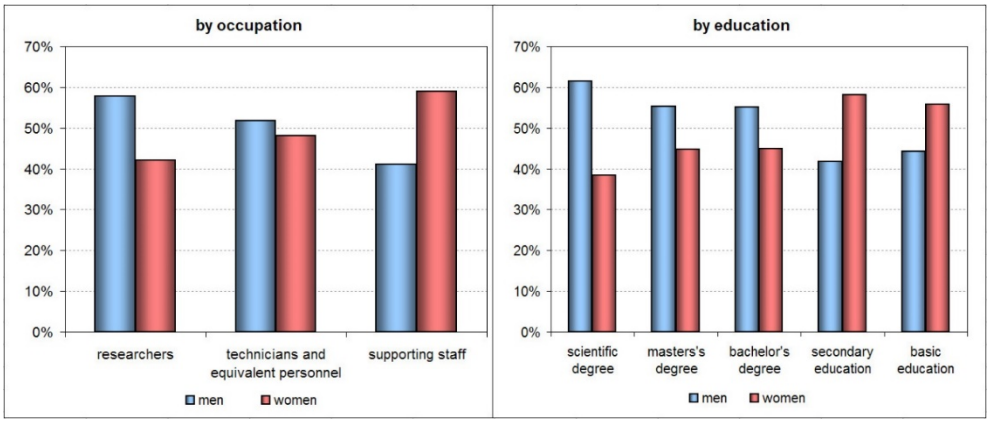

Fig. 15: The average share of male and female employees in the Research and development by occupation and education in Slovakia in 2004-2014.
Source: data from Statistical Office of the Slovak Republic, DATAcube., processed by authors.

6. Conclusion

Human capital theory argues that education is an investment decision (DiPrete, Buchnann 2006, 2). In Slovakia women's education has increased significantly in recent years, but women with a higher education (with Bachelor, Master or PhD. degree) haven't got the same amount of opportunities despite of declared equality to find the adequate and well appreciated job in comparison to men. Nowadays, women have achieved dominance in studying at universities and more women are acquiring university degree. Women awake the importance of education on the labour market and therefore they are often more persistent in the effort to accomplish a university education.

However, if we compare some selected sectors of economy linked to the higher education we can see the gap between education and occupation. Sector NACE – Education is highly feminized; more than 75% of all employees in all regions in Slovakia are women. Unfortunately this sector is deeply undervalued from wages point of view. Despite of dominance of women gender pay gap also exists here, it is not high (11.8% in 2015) but persists.

Other sector NACE – Professional, scientific and technical activities is characterized by gentle predominance of men (about 52%). Gender pay gap is much higher – 26.2% in 2015. This inequality in remuneration is caused mainly by fact that women occupy lower position with lower average wage and by fact that in some regions of Slovakia (Trnava, Trenčín) many occupations in this sector are of a technical nature what is the male domain.

Even greater disproportion in the share between male and female employees is in the Research and development. Only 42% of researchers in Slovakia are women, men dominate in this position. Women usually work as a technicians personnel or

supporting staff. This is an area where leaky pipeline effect applies. 'Leaky pipeline' – this term is used in world literature with gender issues and means that even though nowadays women have more opportunities to study than in the past, they still have little chance to use their higher education in the research and science. On the way up to higher positions and higher scientific degree the number of women is declining such as falling out of the leaky pipeline (Danielová, Lauko 2015). This dropping has two important reasons. First one is an objective reason – persisted gender stereotypes. The role of women is to care of the household, children, ill or elderly family members. Women often offer their career and support the career of their spouse and create a suitable background for them. According to Kirchmeyer (2006), the scientific life is very demanding on the time and it is very difficult for women with family and children and without support of their partners to advance on higher rank. Very successful women are often single, divorced, and childless or they have a spouse that largely takes care for family and household.

The second reason is more subjective. Academic career trajectories are never a one-person enterprise (Leemann, Dubach, Boes 2010, 3). Each researcher needs some mentors and gradual recognition and integration in scientific world to his success. Science, research and development were in the past the men's domain and men still dominate in the competitive structure of the academic field. Women are less likely able to count on an academically established person who provides support and promotes their careers (Zimmer et al 2007 in Leemann, Dubach, Boes 2010,7) and therefore it is more difficult for them to access in academic networks. Together with the first reason we have the answer why do women fall out from the 'Science pipeline' and why do they more often work on the lower work position.

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GENDER GAP IN SLOVAKIA: SELECTED PROBLEMS OF EDUCATION AND CAREER

Summary

Women's education has increased in last two decades, but we can still observe difficult situation of high-educated women (with Bachelor, Master or PhD. Degree) on the labour market.

Our research was based on the freely accessible data of Statistical Office of the Slovak Republic – database DATAcube. and Census 1991, 2001 and 2011. The aim of this article is to point out to the fact that university-graduated women are finding an adequate job (to their education) more difficult despite of declared equality of opportunities; to focus on the inequality of remuneration in the selected sectors of NACE linked to the higher (university) education and to present the selected problems in Slovakia on the level of regions (kraje). We present the selected problems on the level of whole Slovakia in the time period 2000-2015 (some data were not available and therefore we use some indicators in the shorter period), on the level of regions in the period 2010-2015.

Women make up the majority of university students and university graduates; the lower share of women was in 2010-2015 in regions Trenčín, Trnava, Košice where the universities and colleges with technical fields of study are localized. The highest proportion of women was in region Prešov. Generally women with university degree are trying to place better on the labour market. The higher education of women also reflects in their higher share among economically active and working population. The share of men and women is comparable nowadays.

However, other situation is in the selected sectors of NACE linked to the higher education. We focused on Professional, scientific and technical activities and Education. Sector Education is highly feminized in each region of Slovakia, the share of women is higher than three quarters but average wages are very low. Despite of these facts there is also gender pay gap (11.8% in 2015). Men dominate in the sector Professional, scientific and technical activities – with the number but also with their average wages. Gender pay gap is much higher here (26.2% in 2015). Strong dominance of men is in Research and Development. However women's education is increasing. It is very difficult to find position in the academic world because of persistent gender stereotypes and certain closeness this 'men's world'.

3D-CO_2-MODELLING FOR WASTE MANAGEMENT IN STYRIA/AUSTRIA

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Abstract
3D-CO_2-modelling for waste management in Styria/Austria
The paper in hand focuses on a calculation model which had been developed for calculating the CO_2 production of a garbage truck during a waste collection tour. The challenge is the integration of not only the distance and loading weight but also the different petrol consumption and therefore CO_2 production in regard to the topography of the whole collection tour. Additionally the increase of waste load at each stop during the whole collection tour has to be taken into account for the calculation.
The model has been developed on basis of Excel. In order to get the real data from the collection tours these had been accompanied. There not only the whole tour but also all waste bins and stops for loading the waste had been registered. Both GPS (Global Positioning System) and RFID (Radio-Frequency Identification) had been used. The huge amount of data had to be scrubbed. This process of amending or removing data in a database that is incorrect, incomplete, improperly formatted, or duplicated was an important step to have reliable data for further calculation processes.
The identification of the CO_2 production during a waste collection tour including the topography and continuous revenue load had not been done so far and allows the identification of tour segments with lower but mainly higher or very high ecological impact. However, this is the basis for further discussions about options for optimizing the actual tours and habits of waste collection. That approach is part of a more comprehensive investigation of waste collection tours with general focus on economic, ecologic and social potentials for optimization.

Key words
Waste management, CO_2 production of trucks, Styria, Austria

Uredništvo je članek prejelo 9. 10. 2016

1. Theoretical Background

Austria (around 84.00 km^2 and around 8.2 million inhabitants) has a tradition of controlled waste management spanning more than 30 years. It was the Austrian law for waste management of 2002 was an integral turning point for this transformation. Following the implementation of the law Austria´s waste management began to operate towards sustainability principles. It resulted in increasing collection, separation and recycling rates. Parallel to the positive economic development in Austria also waste quantities grew and the approach of waste reduction through waste avoidance became an essential part of waste management. For that purpose children in kindergarden and primary schools became familiar with the handling of different sorts of waste. With that knowledge children then educated their parents. More and more laws and guidelines passed a bill, and especially the so called "Landfill Ordinance" (Austrian Federal Government, Directive 164/1996 BGBl) of 1996 lead to a new way of thinking: the eradication of the majority of waste. According to the five steps of the recent EU waste hierarchy (European Commission, Directive 2008/98/EC) waste avoidance, re-use, recycling and preparation for recovery reduced the amount of Austria´s waste to around 3% (Federal Waste Management Plan 2010).

In Austria´s county Styria (around 16.400 km^2 and 1.2 mio. inhabitants) each inhabitant produces around 120 kg residual waste per year, in cities more, in the rural area less. The quota of waste separation is very high, nevertheless impurities are also very high. The reason can be seen not only in missing information and lack of behavior but also in ignorance. In the Styrian residual waste can also be found 51.300 t organic waste, 24.300 t synthetic material, 16.200 t paper, 6.700 t glass and 5.400 t metal. In sum an economic damage of 10 mio. Euro occurs (Land Steiermark website 2015). Together with inefficient collection systems the potential economic saving rates in Styria´s municipalities represent an important factor that should not be disregarded.

Austria´s recent Federal Waste Management Plan from the year 2010 includes beside

- an analysis of the actual situation of waste management and an estimation of the future development of waste streams,
- the regional distribution of waste disposal facilities and of significant facilities for the recovery of waste,
- an assessment of the need to decommission facilities,
- an assessment of the need for additional plant infrastructure for the purpose of establishing and maintaining a network of facilities to ensure waste disposal self-sufficient and to ensure the treatment of waste in one of the closest appropriate facilities,
- also includes existing waste collection systems and an assessment of the need for new collection systems (Federal Waste Management Plan 2010).

The research is legitimated via the requirements of the Federal Waste Management Plan 2010 and should be understood as a contribution to protection of climate and the sustainability of waste management in regard to it relevance for climate. Additionally the assessment of the traditional tours can be a basis for arguments within a decision making process in municipalities.

The main focus lies on the question which environmental impacts during a collection tour originate and which impacts do the long drive to single remote locations within the collection area cause. Out of that different fields of research can be deduced. Not

only economical but also ecological evaluations and frameworks should flow into the results. Therefore the following questions and statements are part of the project agenda (ADENSO 2014):

- How sustainable is the actual collection-logistic (Fig. 1)?
- How is it possible to increase the transparency of waste collection?
- What should a comprehensible and measureable service provision look like?
- Which basic criteria must a call for bids for waste collection have?
- Proposal for citizen targetted incentive schemes for residential waste prevention.
- Concept/test for technical tools, e.g. GPS and RFID.
- Dynamic tour guidance and renunciation from fix assignments.
- Requirements (ecology, logistics) on waste management companies and service
- providers.
- Preparation of a basic concept for objective benchmarking.
- The influence of infrastructure and topology will be assessed.

Fig. 1: An overfull waste bin, how it should not be!

2. Methods for fieldwork

The field work is methodologically extensive and entails accompanying residual waste collection trucks during the collection tour. This is the only possibility for gaining real drive collection data. Data is not limited to the length of route, but also entails measurement of time, topography, stops for loading waste containers, filling rates, and sometimes – if the municipality or waste management association is interested – the quality of the residual waste allocated by the households of the municipality (an indicator for the quality of waste separation).

Basically the methods of investigation are divided into a preparation phase and a field work phase. The preparation phase consists of statistical data collection about waste management such as waste containers, size of waste containers, economic data, fees and costs etc. As well as regional data on inhabitants, households, size of municipality etc. Differences arose from the type of vehicle and the layout of the payload. Even by only considering these circumstances, a range of challenges for the exact collection of the data occurred. Because of that, a public servant of the municipality was assigned to verify the accuracy of the data with the help of an analogue list of households that contained both the addresses and registered garbage bins. This task required an excellent knowledge of place by the responsible public servant. Moreover, the velocity at which the waste containers were loaded onto the truck had to be considered, especially if the containers had been picked up and emptied at a high rate in compact areas of settlement. Refuse collectors worked in a very experienced and uninterrupted manner in order to avoid obstructions of the traffic and to be able to fulfill their daily workload. Owing to the early morning hours and darkness as well as occasional bad weather conditions (rain or snow), the research team too had to cooperate efficiently and work with a high degree of concentration. The data (filling level and quality) were communicated via notes that were attached to the waste containers (Fig. 2). The notes were facing in the direction of the approaching collection vehicle. Problems were caused by different ways of attaching the notes, wind and if several waste containers were closely strung together.

Fig. 2: Investigation of the filling level of the container and the quality of waste by an employee of the Waste Management Association Weiz in May 2015.

3. Calculation of the Ecological Optimization potential

Ecological issues are an integral component of sustainable areal and tour optimization and were, thus, also incorporated into the study. Incurred CO_2-emissions usually play a crucial role in this matter. The examination at hand, therefore, specifically paid heed to this factor. The Fig. 3 shows the modified idea behind: the truck on the chart drives ups and downs but always has the same load and weight. A waste collection truck loads waste from stop to stop and therefore becomes heavier and heavier. The truck needs e.g. 3 minutes for that part of the tour which could be 900 meter. RFID measures that distance every second. That means in accordance to the driving speed for the whole three minutes 180 data about distance driven per second and difference in elevation are being generated.

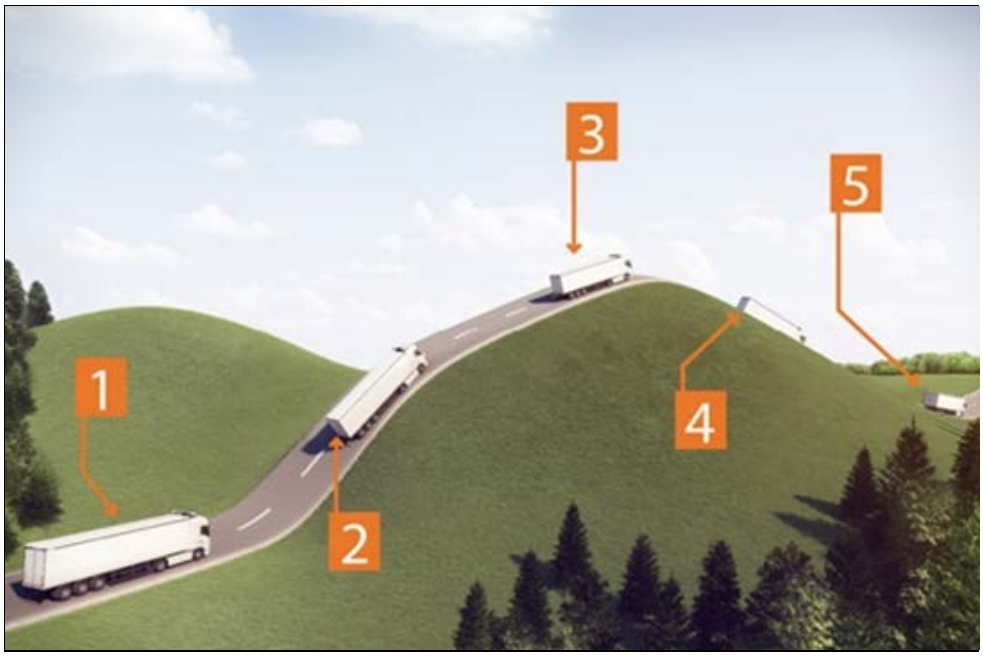

Fig. 3: A typical part of a waste collection tour with five stops for uploading waste bins.

The model developed for the study at hand was utilized for calculating the overall CO_2-emissions produced during the waste collection tours. For this purpose, the model made use of several parameters which included the length of the tour combined with the topography as well as the cumulative weight of the collected residual waste and the net weight of the waste collection truck.

In principal following two calculation approaches are possible:

1. from the start of the collection tour to the end of the tour and
2. from the end of the collection tour back to the start of the tour.

For the calculation introduced in the paper in hand the second way of calculation had been chosen because at the end of the tour the exact fuel consumption is known. This value can be used as a reliable parameter for the calculations. What has to be done

is to calculate the fuel consumption backwards to the start of the tour according to all known tour specifics such as:

- all the stops for loading waste,
- all the distances between those stops,
- the route of lines in sections (RFID measure per second, distances depending on the driving speed)
- the differences of elevation between the per second measurement points done with RFID.

The result of that kind of calculation is the proportional backward distribution of fuel consumption under the consideration of the tour specifics. Out of that e.g. fuel consumption factors for different inclinations in tour topography can be detected. The more tours are calculated the more precise that factor becomes. Of course this method of calculation always needs the same typ of waste collection truck. Finally it will be possible to simulate tours from the start to an end. It has to be underlined that this method of calculation and simulation mainly should be used for the direct comparison of a traditional tour with a proposed optimized waste collection tour. It is not the goal of the introduced approach and method to calculate the real fuel consumption and finally CO_2 production but to calculate on a as realistic as possible basis with the above mentioned tour specifics with focus on increasing load and topography of the tour in order to compare different waste collection tours!

For this calculation, established basic formulas were combined with applicable enhanced formulas, which resulted in the development of a complex calculation method. In combination with the known fuel consumption data of each residual waste collection tour, it was possible to calculate a target value. These calculations could then be extrapolated with the help of type-specific data on the standard consumption. The extrapolation simultaneously included the relevant parameters of the tours. Thereafter, the calculations and the results were compared with each other. The individual results were ultimately tested for plausibility and consolidated.

The objective of this process was to compare the optimized areal collections developed for the new municipality of Birkfeld with the current structures and processes from an ecological point of view. The results of the present study can be appropriated for quantifying and deducing the ecological benefit of future spatial optimizations from submitted proposals.

The data that were collected within the framework of this study allows conclusions on the residual waste collection tours. These collection tours can be depict as distance profiles. The data are detailed to such an extent that they record the gradient ratios per second (in this case, the varying velocity has to be considered). The length of the tour and the differences in altitude that were measured rendered it possible to calculate the gradient angle (uphill and downhill). At every stop, rises and slopes of the routes were identified, averaged and categorized relative to their inclination (Fig. 4). In parallel, the waste containers were added up per stop by way of filling degree and standardized weighting.

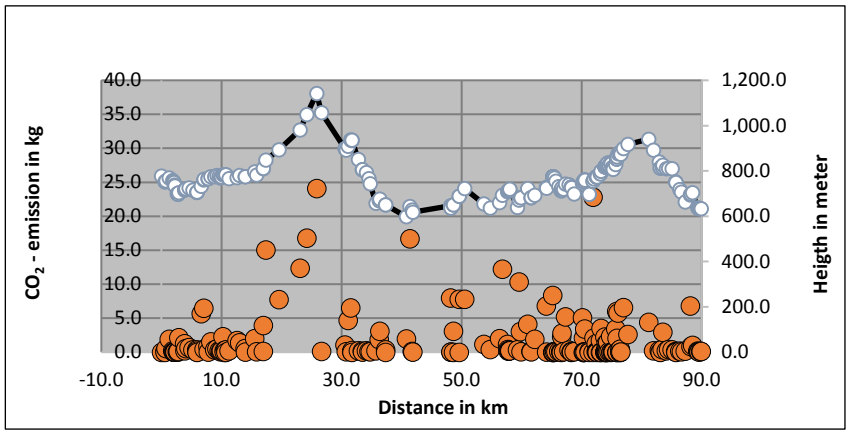

Fig. 4: The black line shows the topography of the collection tour. The white dots are the stops for loading waste containers. The red dots show the amount of the individual CO_2 production on the way to each household (residual waste container resp. stop).

4. Results

The final goal of the investigation is to define factors that determine the environmental impact of waste collection tours in catchment areas. These factors could help creating zones with above-average environmental impacts in order to generate a waste producer friendly mode of fees. According to the interpretation of the collected data, the municipality Birkfeld can be divided into three different waste collection catchment areas:

1. The local center of Birkfeld is a relative compact collection area with a high density of waste containers. The density of households is the highest in the whole area of investigation (143 households per km^2). The distance covered by the collection trucks is the shortest. The topography – calculated as the difference in altitude per household – is also the lowest. Therefore, the CO_2-emissions - presented in kg CO_2 per household – are relatively low at a rate of 0.38 and with around 27 % below the average of the whole new municipality (Fig. 5 and 6).

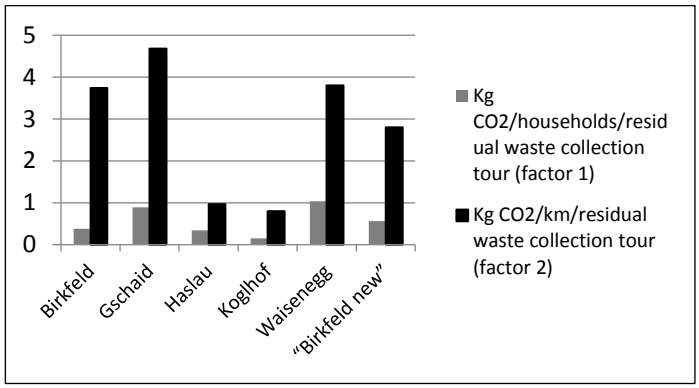

Fig. 5: Ecological factors according to geographical structures of collection areas.

2. In the local center of Birkfeld, 3.74 kg of CO_2 are produced per km in the course of the collection tour. This rate can be attributed to the enhanced stop-and-go traffic which, in turn, results from the large number of picked up containers. The rate is also influenced by the total of approx. 4,000 meters covered in altitude per collection tour, the structure of the tour, the preparation of the bins as well as the type of the collection truck (in this case only a single vehicle type is utilized).

3. The local centers of Gschaid and Waisenegg can be more or less summed up as a second group due to similarities in size, population density and topography. In detail, however, there are some differences connected to waste disposal. The values of kg CO_2 per household of the two local centers, namely 0.89 (Gschaid = 71% above the average) and 1.04 (Waisenegg = 100% above the average) are on top of the comparison, with Waisenegg ranking first. This can be explained by examining the baseline values for household density (Waisenegg 12.71 and Gschaid 19.67) and production of CO_2 as a function of route length (Gschaid : Waisenegg = 1 :1.6) and covered difference in altitude (Gschaid : Waisenegg = 1 : 1.44). The collection vehicles are of the same type. The values 4.68 (Gschaid) and 3.80 (Waisenegg) are associated with the factor 'CO_2 produced per kilometer of covered collection tour'. Consequentially, Gschaid is above the average at around 63% and Waisenegg at around 30%, which can be ascribed to the higher relief intensity along the collection route within the two local centers.

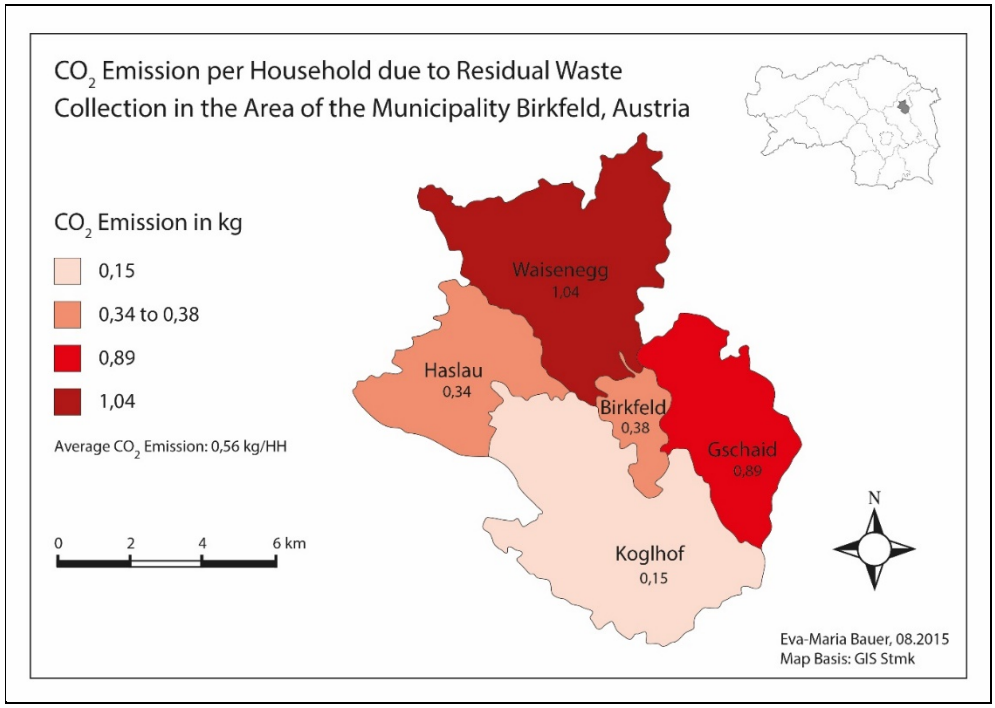

Fig. 6: The map shows Kg CO_2/households/residual waste collection tour (factor1) in the local centers of the new municipality of Birkfeld.

4. The waste collection systems of the local centers Haslau and Koglhof, on the other hand, function differently. The waste is managed by means of a concentrated collection of refuse bags at predefined collection spots and via partial delivery to the Haslau civic amenity site. Moreover, CO_2-saving pickup trucks are employed that – aside from topographical factors – consume less than half of the fuel compared to standard-type collection trucks.

As a result of the predefined collection spots, the distance covered along the residual waste collection tour is shorter than in local centers of similar size, for example Koglhof compared to Waisenegg (ca. 65 to ca. 90 km). Even if the topography is considered too, the respective values come off well compared to the other local centers and lie far below the average. The collection structures and processes of both local centers can be regarded almost ideal from an ecological point of view. In the case of a bonus-malus regulation, the local centers of Haslau and Koglhof would be attested ('rewarded') with a bonus. In the case of Koglhof, this bonus would be even more positive than in Haslau if factor 1 was considered (in Koglhof, more than 4 times as many waste bins or bags are collected). The same applies to factor 2 (Fig. 5) although in a weakened form.

The calculated factors are a clear expression of the differences between the local centers of a municipality with different geographic development. By calculating and then modelling the generated figures it is possible to do that on different areal scales: from the individual household up to all higher areal units such as unit residential areas, parts of municipalities, whole municipalities, districts (waste management associations), counties, etc. (even for whole Austria e.g.). Unified and therefore comparable figures are necessary to set benchmarks and for the comparison of the efficiency of waste collection (resp. waste management).

Tab. 1: Some recommendations to reduce CO_2 emissions.

Opportunities	Description	Considerations for implementation
Improved routing	Sub-optimal routing of waste bin collection generates unnecessary tonne-kms	Use more advanced logistics planning and vehicle routing tools Cost implications
Improve vehicle operation (eco-efficient driving)	The operation of a vehicle can be improved by driver training. Driver training can be supported by intelligent electronic systems that monitor driving behaviour and fuel-consumption.	Cost-benefit of different measures. Potential impact on service levels.
Make use of energy sources with a lower carbon intensity	Increase use of alternative fuels with lower carbon intensity (e.g. bio-fuel)	Sufficient cost advantage. Availability of technology and suitable equipment.

5. Conclusion

The research work focuses on potentials of the residual waste collection in rural areas with very different household densities and presents first results out of a very broad and intensive research work throughout the next years. Out of that result different efforts per household what means that those household which are in the very periphery have a higher economic effort than those in the center of the municipalities. In connection with the evaluated ecological load in form of CO_2 production of the waste collection truck during the collection tour it of course follows that the longer the

distance and the more topography the tour includes the higher the values are. On the basis of an own developed calculation model it is possible to show the economic and ecological costs not only per defined area but also per household. On that basis it is possible to create areal zones with understandable (waste producer friendly) fees. Additionally proposals for new residual waste collections tours had been made which increase the efficiency of waste collection in a both economic and ecological way.

The mode of investigation - from fieldwork to modelling - offers an ideal opportunity for a more sustainable waste collection management especially but not only in rural areas. The author therefore invites especially politicians but also public servants to think about existing structures and processes concerning waste collection under the aspect of changing developments in their divergent administrative units. The detailed knowledge about the operational systems of waste management is a crucial point and can be enhanced by proper basic research. The development shows an increasing interest coming from the municipalities because the can see the potentials of optimization. It would be fine if also waste management companies would follow that development.

Anyhow, this example of basic research work meets the requirements of a future optimized sustainable waste management (Stegmann 2009) and should be understood as a contribution to fighting against climate change even it is only a very small contribution. But it is not only this approach it is also the local positive influence on waste management when the populations becomes aware of questions around waste collection. The more often waste management affairs come to their mind the public awareness will be increased. The experiences show that people are interested in what is been done during the field work. That is the necessary basis in order to be successful in changing waste collection systems by optimizing them. It also needs the co-operation with the population at least in those parts of the catchment areas of waste collection which are identified as areas with high potential of optimization, so in very peripheral areas with ongoing depopulation processes. Without the willingness and co-operation of the population it will not be easy to realize proposal for optimization!

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3D-CO_2-MODELLING FOR WASTE MANAGEMENT IN STYRIA / AUSTRIA

Summary

Austria´s waste management began to operate towards sustainability principles. It resulted in increasing collection, separation and recycling rates. Parallel to the positive economic development in Austria also waste quantities grew and the approach of waste reduction through waste avoidance became an essential part of waste management.The main focus of the article lies on the question which environmental impacts during a collection tour originate and which impacts do the long drive to single remote locations within the collection area cause. The final goal of the investigation is to define factors that determine the environmental impact of waste collection tours in catchment areas. These factors could help creating zones with above-average environmental impacts in order to generate a waste producer friendly mode of fees. The research work focuses on potentials of the residual waste collection in rural areas with very different household densities and presents first results out of a very broad and intensive research work throughout the next years. Out of that result different efforts per household what means that those household which are in the very periphery have a higher economic effort than those in the center of the municipalities. In connection with the evaluated ecological load in form of CO2 production of the waste collection truck during the collection tour it of course follows that the longer the distance and the more topography the tour includes the higher the values are. On the basis of an own developed calculation model it is possible to show the economic and ecological costs not only per defined area but also per household. On that basis it is possible to create areal zones with understandable (waste producer friendly) fees. Additionally proposals for new residual waste collections tours had been made which increase the efficiency of waste collection in a both economic and ecological way.

INDUSTRIAL HERITAGE, CULTURAL RESOURCES OF CURRENT INDUSTRIES AND CREATIVE PIONEERS – UTILIZING INDUSTRIAL CULTURE IN CENTRAL EUROPE

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Abstract
Industrial heritage, cultural resources of current industries and creative pioneers – utilizing Industrial Culture in Central Europe
The paper deals with the framework conditions of Industrial Culture and the specific challenges in former industrialised towns outside agglomeration areas. To illustrate the use of Industrial Culture the paper gives a short Austrian example and finally discuss the main points about preservation and reactivation of industrial heritage.
Key words
Industrial heritage, industrial Culture, tourism, Austria

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1. Introduction

In the frame of major societal and economic changes, Europe's industrial societies have transformed over the last decades towards networked information societies that are increasingly based on knowledge-intensive services and creative industries. However, these developments are affecting territories in very different and uneven ways. Urban agglomerations are the major hubs in this development, being the preferred location of innovation and the knowledge economy, often merging manufacturing and design sectors. By contrast, small and medium-sized towns in rural environments often continue to have a small industrial base, but they do not succeed in attracting the knowledge economy in the same way as large cities.

At the same time, political attention to industrial production is increasing in the aftermath of the financial crisis. In a recent communication to the EU Parliament, the EU Commission "considers that a strong industrial base will be of key importance for Europe's economic recovery and competitiveness" (European Commission 2014). In a similar vein, national and regional governments set up strategies for reindustrialisation through the development of "Industry 4.0" or smart specialisation strategies, both aiming at a valorisation of industrial labour. Additionally we can also notice a new interest in former industrial sites and heritage through events and exhibition centres, connected to Cultural Capital of Europe or World Heritage titles (i.e. Ruhr 2012 or Völklinger Hütte). To understand these trends and their possible impact on regional development in peripheral old-industrialised areas in Central Europe, this article will refer to the term Industrial Culture, as a tool to unlock un-used potentials in such areas.

This article will discuss this situation by referring to the recently started InduCult2.0 Central Europe INTERREG project (2016-2019) focussing on Industrial Culture in small- and medium-sized towns. By drawing on the project aims, this article will focus on the framework conditions of Industrial Culture and the specific challenges in former industrialised towns outside agglomeration areas (section 2). To illustrate the use of Industrial Culture the paper will give a short Austrian example (section 3) and finally discuss the main points in a conclusion (final section).

2. Theoretical background

Industrial Culture is a term that has no coherent definition, especially when taking into account different national contexts. It is often narrowed down to physical remains of former industrial sites and their preservation or re-utilisation, often as sites for cultural events, education or other purposes. This understanding of Industrial Culture, as captured maybe best in the German expression 'Industriekultur', focuses mostly on the tangible remains of industry, i.e. buildings, infrastructures and landscapes (Pirke 2010). While this is indeed an important and the most wide-spread utilisation of the industrial past, previous research has highlighted already broader utilisations including also intangible aspects of the industrial past, focussing on skills, traditions and mind-sets (Harfst 2014, Harfst and Fischer 2015), thereby addressing more the Anglo-American understanding of 'Industrial Culture', as a whole 'milieu' of social and physical remains (Byrne 2002). The next sub-section will discuss why this topic has gained a more popular notion in the last decade, followed by the focus of the InduCult2.0 project in this context.

2.1. Industrial Culture in the frame of structural change

Industrial Culture in its broader sense has gained an unprecedented popularity in various sectors in the recent decades. Not only several world heritage titles addressing the industrial past (i.e. Völklinger Hütte, Ore mountains) and initiatives like the European Route for Industrial Heritage (EriH), but also spectacular events like Cultural Capital in the Ruhr 2012 celebrate a (past) time of intensive industrial mass production. All these features show a heightened interest in the industrial past and its remains, (ironically) after years of industrial decline in Europe and the Western countries in general, that stamped many of these places of structural change with a rustbelt image.

This is one aspect of industrial culture, focussing on the cultural and heritage value of the industrial past. Here this cultural heritage has been identified in numerous EU strategies as an important driver of change (European Parliament DG IP 2013), mainly in relation to the tourism sector, but also in the context of creating a joint European identity (Soyez 2015). Various scientific articles proof this relation, having re-enforced a trend by towns and cities to 'rediscover' their industrial heritage (i.e. Fleiss and Strelow 2008), despite the often subdued value of industrial heritage as a tourism product (Hospers 2002).

In addition to this sometimes rather backward looking, nostalgic perspective on industrial production, we find on the other hand initiatives strengthening industrial knowledge and production as a whole. As a reaction to the financial crisis since 2008, we find a heightened interest by policy makers towards a re-industrialisation of Europe - such as the EU's policies for the industrial sector, laid out in the Competitiveness Report 2013 (European Commission 2014). In connection to these aims the European Territorial Agenda 2020 demands a more focused approach towards place-based (territorial) potentials (EU Ministers of Spatial Planning and Territorial Development 2011). Here the second, knowledge-based aspect of Industrial Culture becomes important: the existing skills, traditions and knowledge of old-industrialised regions and its people. Once old-industrialised regions were drivers of change, being entrepreneurial and innovative by developing specific mind-sets and skills in their field of production (Sadler and Thompson 2001). These intangible remains of the industrial age form an important, but so far neglected resource in any re-industrialisation effort.

The main question in the context is now how to re-connect these skill and knowledge of traditional industry with the demands of a globalised market, build on creativity and innovation – in other words how to activate the specific milieu of old-industrialised region to face new challenges. In agglomeration areas these task is certainly easier to tackle, with (world-) market access, creative classes, higher education institutions and industrial-base all to a certain degree in place (Camagni 1991).

But for Europe's old-industrialised regions that are situated outside agglomeration areas this question is especially difficult to answer. These regions often still possess highly-competitive industrial units, albeit without the major employment effect for the region, they once had (Müller, Finka, and Lintz 2005; Koutsky, Slach and Boruta 2011). Nevertheless such places and industries face specific problems in the described market conditions – situated outside agglomeration areas means a stronger demand of local workforce and knowledge to remain competitive – a challenging task for regions with often high rates of outmigration, no higher education facilities and suffering from a bad image from the times of structural change (Wirth, Cernic-Mali, and Fischer 2012).

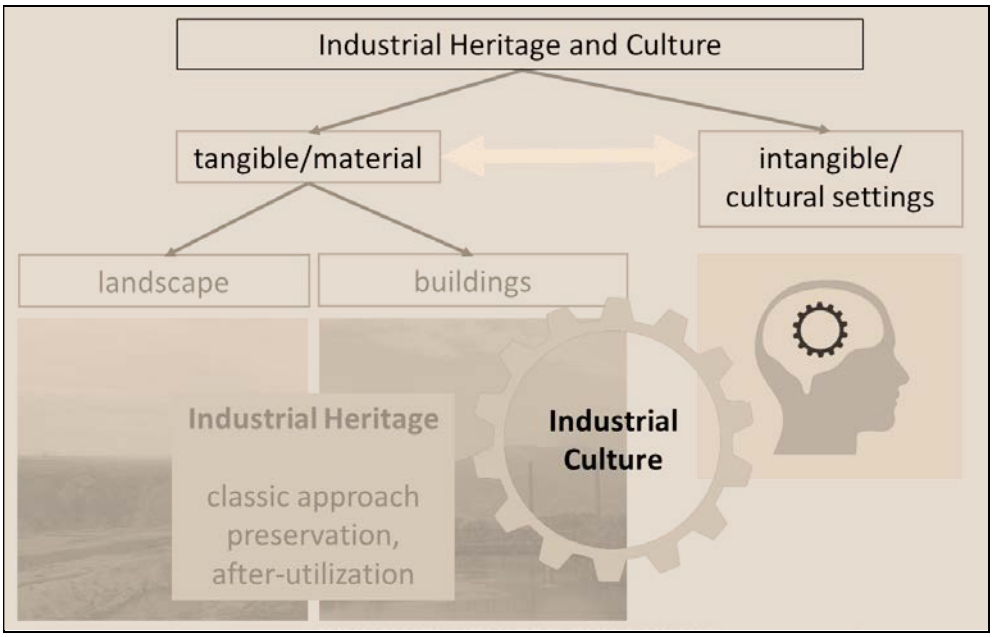

Fig: 1: Post-industrial resources.

2.2. The InduCult2.0 project

Within this context described above, the INTERREG project "InduCult2.0" brings together regions with a distinct industrial past and present, which are situated outside major agglomeration areas in Central Europe. In recent years, all of them have undergone deep transformation processes due to automation, adaptation to globalized production patterns and the opening of markets in the former state-led economies. The long economic predominance of industrial production has brought about a particular cultural setting in the project partners' territories. It is made up of certain skills, attitudes, traditions as well as tangible monuments and artefacts. However, these regions are usually considered culturally less active and they are not utilizing the existing industrial culture to their full development potential (Osebik und Pizzera 2012).

The concept of Industrial Culture, fundamental to the project, as outlined above, is thereby central. Industrial culture in the project's context is not understood as a synonym for industrial heritage. Only recently, a re-interpretation as Industrial Culture has been discussed, which goes beyond heritage issues by including contemporary or upcoming cultural and creative resources, addressing directly the future development opportunities of regions. Whilst some aspects of this conceptual framework of Industrial Culture are already applied in some places, there is no comprehensive outline available yet. In the academic field so far no coherent concept can be found. The aim of scientific workshops organised throughout the project term of 3 years is to elaborate a discussion on the state-of-the-art regarding the conceptualisation of Industrial Culture. Central questions in this context are:

- What different understandings of the concept of Industrial Culture do exist?
- What role does Industrial Culture play in the context of a post-industrial society and a knowledge-based economy?
- How is Industrial Culture linked to regional development and regional identity?

- How can Industrial Culture be used to increase the attractiveness of industrial labour and as a location factor for companies?

InduCult2.0, wants to revive the cultural spirit of long-standing industrial regions in Central Europe. Together with local stakeholders, partners rediscover and develop the positive elements of industrial communities. Specifically, project partners intend to:

- Promote and establish the idea of Industrial Culture in Central Europe;
- Strengthen the distinct culture of industrial regions and utilise it as location factor;
- Empower industrial regions by re-activating their pioneer spirit.

The scientific partners, the Department of Geography and Regional Science at the University of Graz, Austria, and the Leibniz Institute for Regional Geography in Leipzig, Germany, will support and reflect these activities and conduct an academic research along the project.

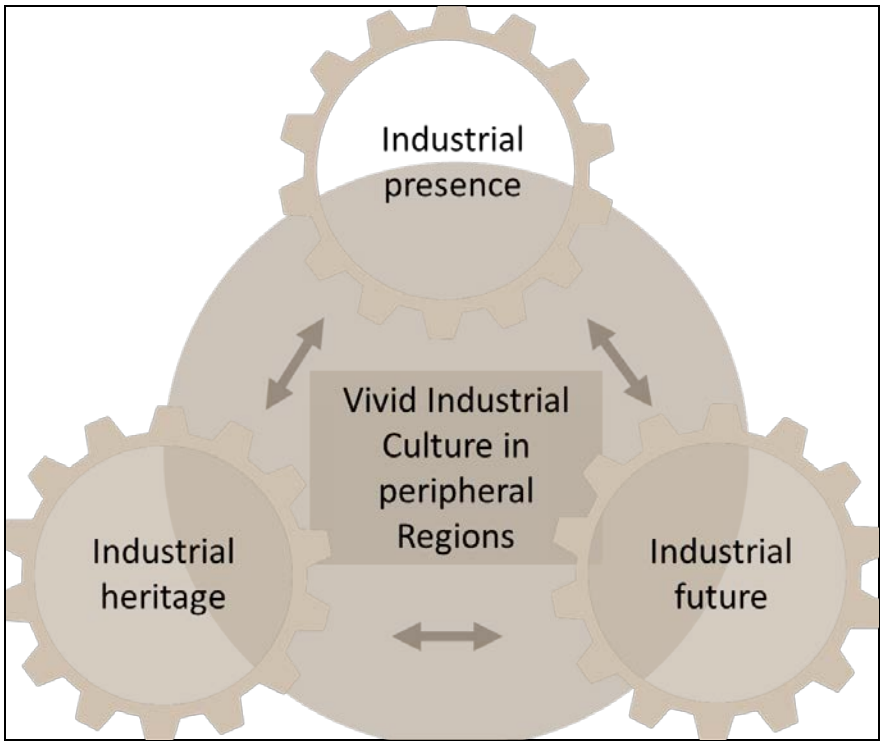

Fig. 2: InduCult2.0 – Central idea.

3. Case-study Steirische Eisenstrasse

In this section we will briefly give a practical example of what the new understanding of Industrial Culture could mean in practice. We will refer to a well-covered Austrian example, the Steirische Eisenstrasse (Zimmermann and Janschitz 2004, Fischer 2014). The region is a typical example of the above named case. It is peripheral in the Austrian context and a typical heavy industry region that has suffered extensive job losses in the last decades. Despite the restructuring, the region still has highly competitive, globalised companies in place, nevertheless the demographic

development of the region as a whole is marked by distinct outmigration and population loss, which also affects the existing industries (Wirth, Cernic-Mali, Fischer 2012).

The region has integrated its industrial heritage already for a long time in its development plans. Here, like in many other regions, various former industrial sites have been protected, preserved and partly converted into museums and other utilisations. In recent years regional actors have also embarked on tapping on the intangible resource of its industrial past, setting out to change the region's image, trying to stop the outmigration of the younger, skilled workforce or to attract new people, as visitors or creative people from the nearest metropolis Graz and other big cities in Austria (Harfst, Wirth 2014).

Amongst many initiatives, one of the landmark events in this regard is the 'Rostfest', an annually creative, urban arts festival in the mining town of Eisenerz (www.rostfest.at). On one weekend in summer the event attracts creative people from across Austria to the small town by offering concerts, performances, creative workshops and podium discussions on various topics, but also sport competitions. The festival aims to bring creative, pioneer spirit back to a formerly thriving mining settlement that has lost 30% of population over the last decade. In general the Rostfest plays with the former industrial heritage and puts these traditions into new contexts – incorporating inhabitants, as well as outsider in the spirit of a place set deep into industrial culture. Therefore, visitors are involved through interactions in the events that take place. According to the multi-temporal approach of the project, the past, presence, and future are integrated during the festival, aiming to foster the regions development.

Fig. 3: New images of the city during the "Rostfest".

The main principle in organisation is based on a sequence of five steps: impulse, collaborate, locate, perform and implement. First experimental impulses are planned and the actors are linked (collaborate). Next step is to locate those actions and give them a special space. It is mainly focused on abandoned buildings which are reintegrated in the "life" of the city. The events are then performed, giving those

vacant spaces a new image. One important instrument for new images are light installations, which show the "rusty" places in a new light. It is mainly locals who are addressed with these new images, giving them a chance to think of the future in a positive way. In the end sustainable results of those actions are implemented in the region and again used as a new impulse (Rostfest Dokumentation 2014).

4. Conclusion

This contribution has highlighted a new approach of utilising the remains of industrial production by focussing on the concept of Industrial Culture. In the light of recent demands trend in tourism and economic policies, especially old-industrial regions in the periphery, once again face new challenges, but also could make use of potential deeply embedded in their culture of place.

These specific settings, described here as Industrial Culture, have the potential to bring new impulses to regions, which are afflicted by a variety of negative social and economic trends. Valorising these potentials might not only attract more visitors to the places studying the remains of the by-gone age of industrial mass production, but also holds the potential to strengthen still existing industrial units, i.e. by securing future workforce, creating new regional networks and gaining access to creative impulses from outside the region. This can happen in various ways, as festivals (like the here described Rostfest), but also via employment initiatives, co-working spaces or other ideas, bringing together the past and present of industrial culture in order to jointly create a sustainable future in these regions. Therefore the concept of Industrial Culture holds the chance to transform old identities into new way of thinking forward in regions, where its inhabitants often have been marked painfully by the processes of structural change.

The InduCult2.0 is therefore an interesting experimental scheme to test the ideas behind Industrial Culture and to work out if and how new concepts can be jointly implemented by local and external actors.

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INDUSTRIAL HERITAGE, CULTURAL RESOURCES OF CURRENT INDUSTRIES AND CREATIVE PIONEERS – UTILIZING INDUSTRIAL CULTURE IN CENTRAL EUROPE

Summary

Industrial Culture is a term that has no coherent definition, especially when taking into account different national contexts. It is often narrowed down to physical remains of former industrial sites and their preservation or re-utilisation, often as sites for cultural events, education or other purposes. This understanding of Industrial Culture, as captured maybe best in the German expression 'Industriekultur', focuses mostly on the tangible remains of industry, i.e. buildings, infrastructures and landscapes. Beside the sometimes rather backward looking, nostalgic perspective on industrial production, we find on the other hand initiatives strengthening industrial knowledge and production as a whole. Once old-industrialised regions were drivers of change, being entrepreneurial and innovative by developing specific mind-sets and skills in their field of production. These intangible remains of the industrial age form an important resource in any re-industrialisation effort.

The main question in the context is now how to re-connect these skill and knowledge of traditional industry with the demands of a globalised market, build on creativity and innovation – in other words how to activate the specific milieu of old-industrialised region to face new challenges.

The INTERREG project "InduCult2.0" brings together regions with a distinct industrial past and present, which are situated outside major agglomeration areas in Central Europe. In recent years, all of them have undergone deep transformation processes due to automation, adaptation to globalized production patterns and the opening of markets in the former state-led economies. The long economic predominance of industrial production has brought about a particular cultural setting in the project partners' territories. It is made up of certain skills, attitudes, traditions as well as tangible monuments and artefacts. However, these regions are usually considered culturally less active and they are not utilizing the existing industrial culture to their full development potential. The last part of the paper portray the case study area Steirische Eisenstrasse.

INDUSTRIAL TOURISM AS A CHANCE FOR THE DIVERSIFICATION OF THE TOURISM OF THE PÉCS-MECSEK REGION

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Abstract

Industrial tourism as a chance for the diversification of the tourism of the Pécs-Mecsek region

The present article intends to reveal the industrial tourism potential of the Pécs-Mecsek region in Hungary where we believe there is an adequate potential of the present industrial heritage but only a limited or rather poor utilisation is realised in the research area in this respect. The possible utilisation of the industrial heritage would be useful since the area is facing a stagnating tourism industry and position losses in the latter period so the authors believe that the chance for the renewal of tourism product development could also be provided by the industrial heritage tourism in the analysed region.

Key words

Industrial heritage, Pécs-Mecsek, tourism diversification, thematic route, product innovation, culture, functional change

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1. Introduction

By today the tourism world market creates a coherent, interdependent system where the supply and demand side went through significant changes both in time and space taking into consideration quantitative and qualitative aspects alike. Newer and newer destinations are connected to international and domestic tourism and in this challenging competition only those areas and places of interest can survive which matches to the increasing quality expectations (Hall 2004, Meyer 2011, Michalkó 2010).

In the recent years, due to the changes of these tourism trends, an increasing number of travellers need different type of recreational and tourism services and it becomes a fact that considering their motivations, in the 21st century, more and more importance is laid on getting experiences, learning and sustainability for the tourists (Dávid, Kovács 2012; Michalkó 2012).

Taking into consideration the above mentioned, as a starting point, the topic of this research is provided by the recognition that cultural tourism is one of the most popular and most developing product of the tourism industry (Csapó, Matesz 2007; Csapó 2012) where industrial heritage and its tourism exploitation plays an important segment (Cameron 2000; Xie 2015).

This exploitation in tourism experiences several decade long history in Western Europe and North America with successful practice (Li, Soyez 2006; Schmidt 1988; Cole 2004), however, in Hungary, besides that fact the we believe that the country possesses adequate supply, both the research and practical exploitation of industrial heritage is a lagging and incomplete topic.

The Hungarian researchers of tourism-geography mainly dealt with the theoretical and practical approach of cultural tourism (Ásványi 2014; Jancsik 2014; Bujdosó et al. 2013; Csapó, Pirkhoffer 2009; Husz 2007; Rátz 2008; Berki, Gonda 2006). A comprehensive and thorough research on the tourism exploitation possibilities of the Hungarian industrial heritage was not yet achieved, since the professionals were dealing with this topic mainly elaborating the situation and possibilities in Northern Hungary (Nagy, Piskóti 2014) and not extensively to the complete country.

2. Theoretical background

Based on the above mentioned, industrial tourism, the utilization of the material and immaterial values of industrial heritage, constitute the foundation of a dynamically developing segment of cultural and heritage tourism (Cameron 2000, Xie 2015).

Before presenting how industrial heritage can diversificate the tourism of the Pécs-Mecsek region, it is inevitable to define the concept of industrial heritage. The Nyizsnij Tagil Charter[1] for Industrial Heritage (2003) can be regarded as the first document, specifically concentrating on the definition, legal protection, values, importance and interpretations of industrial heritage: 'Industrial heritage consists of the remains of industrial culture which are of historical, technological, social, architectural or scientific value. These remains consist of buildings and machinery, workshops, mills and factories, mines and sites for processing and refining, warehouses and stores,

[1] http://ticcih.org/about/charter

places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, religious worship or education.' (http://ticcih.org/about/charter/).

Furthermore Otgar et al. (2010) emphasis the role of those agricutural units which can also be visited by tourists. It is evident from the definitions that apart from the generally associated past tense, the present tense is also as important in investigating this theme-specific tourism product. Nevertheless, due to the nature of the heritage, the basis of the tourism attractions or destinations consist of artificial memorials, established not for tourism or recreational purposes. On the other hand, the preservation and transformation of the industrial heritage can appear between the framework of tourism by generating or increasing the number of tourists, visitors in the given tourism destination. The Nyizsnij Tagil Charter also defines industrial archaeology as 'an interdisciplinary method of studying all the evidence, material and immaterial, of documents, artefacts, stratigraphy and structures, human settlements and natural and urban landscapes, created for or by industrial processes. It makes use of those methods of investigation that are most suitable to increase understanding of the industrial past and present' (www.icomos.org/18thapril/2006/nizhny-tagil-charter-e.pdf). As a consequence, the industrial heritage is both part of cultural tourism and industrial arceology, as well (Németh 2005) (Fig. 1).

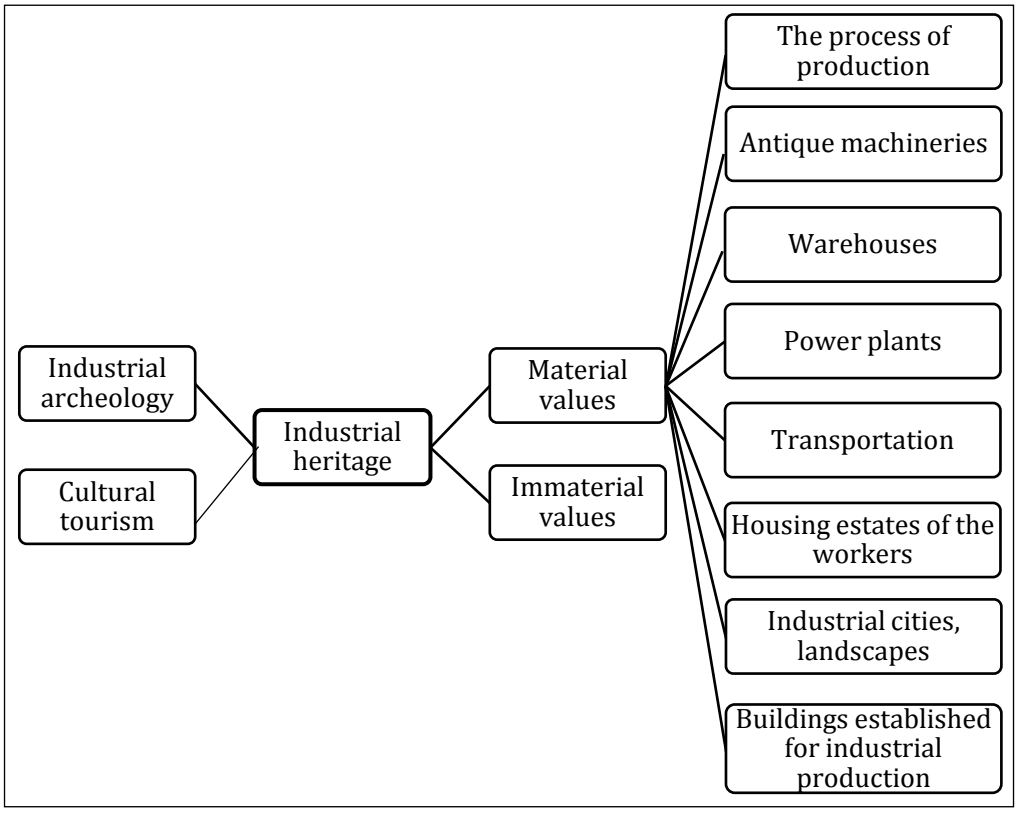

Fig. 1: The place and structure of industrial heritage.
Source: Pintér R. (2016) based on Németh (2005).

Naturally, the interdisciplinary nature must imply various scientific approaches – geography, history, archeology, architecture –, and complex research methods, but it is worth to highlight the development toolbar of tourism-geography, creating the connection between tourism and industrial heritage. As a consequence of dezindustrialization and the expansion of the tertiary sector, the abandoned and neglected, currently unutilized industrial inclusions, paralelly with the technological processes and products of the working units such as site manufactories, factories, breweries, can be promoted to tourism attractions, following new, creative and altarnative directions of postindustrial tourism (Martyin et al. 2013), which are the consequences of a multistage selection and
revitalization process (Fig. 2).

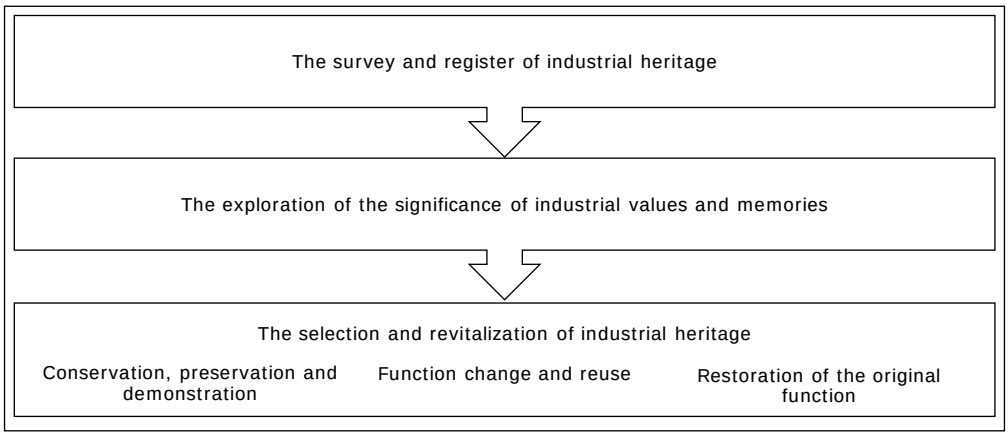

Fig. 2: The process of handling industrial heritage.
Source: Pintér R. (2016) based on Németh (2005).

The topic of this research is also explained by the existence of certain national – The Association for Industrial Archaeology[2], The Industrial Heritage Association of Ireland[3] – and international associations – The International Committee for the Conservation of the Industrial Heritage[4], European Route of Industrial Heritage[5] –, which were founded for the sake of preservation, demonstration, interpretation and sustenance of industrial heritage. Moreover, the UNESCO[6] raised the most outstanding attractions to world heritage rank in the interest of their universal maintenance and conservation. So these attractions are outstanding examples of a type of building, architectural or technological ensemble or landscape which illustrate significant stages in human history. Actually, on the World Heritage List of UNESCO, in the category of cultural heritage, 45 industrial based tourism attractons are included, which mean 4% of world heritage and 5,6% of cultural heritage. The increasing importance of industrial tourism is evident from the international trends, especially in countries with rich industrial past (USA, Japan, Great-Britain, Germany, the Czech Republic, Poland) (Chmielewska – Lamparska 2012; Sulimowska-Ociepka 2015; Staszewska – Żemła 2013). In Europe, by realizing the hidden tourism opportunities caused by the restructuring of the economy the leading regions are North-Western-England, the

[2] http://industrial-archaeology.org
[3] http://ihai.ie
[4] http://ticcih.org
[5] http://erih.net
[6] http://whc.unesco.org

'Black Country' region, the Ruhr area, the Saarland, the Upper-Silesian region and Moravia; where apart from the different located single attractions, tourism routes – Route der Industriekultur[7], Industrial Route of the Silesian Voivodeship[8] – also contribute to the regional settlement development (Chmielewska – Lamparska 2012). In addition to the several successful international initiations and projects, in Hungary the industrial heritage is rather associated with the words like underdeveloped area, utilization or rust than attractive tourism attraction (Csapó et al. 2016). Among other works, the Engineer Heritage Programme[9] was launched in 2009 with the aim of popularization of the technological museums and serve as an option within cultural tourism. Due to the project, visitor-friendly museum saloons were created and an irregular guidebook was published (Fekete – Kovács 2013), which especially emphasizes the technological museums. So these Hungarian tourism infrastructure elements and attractions mostly count on local and regional tourism reach, for example during excursions for school-classes. Nevertheless, as a consequence of a civil initiation, the Route of Iron Culture[10] was created, by connecting 12 Hungarian and 18 Slovakian settlements; however, without a proper personal and financial background, it was ceased to exist in 2015. All in all, the Hungarian industrial tourism can be noticeable in food industry – wine, beer, pálinka – (Martyin et al. 2013; Csapó – Wetzl 2015; Szabó 2012), and implies other unexploited opportunities.

The idea of developing industrial tourism in the Pécs-Mecsek region would greatly depend on the mining – black coal and uranium – traditions and heritage. Pécs would have not become outstanding industrial centre without black coal mining which was initiated at the end of the 18th century in the Eastern part of the city and specified the main direction of development from 1850s until the 1950s. Finally the last mine – the Carolina-pit – was closed in 2004. The uranium mining concentrated on the Western part of Mecsek, by resuscitating smaller mining villages like Cserkút, Bakonya, Kővágószőlős or Kővágótöttös until 1997 (Pirisi et al. 2009). As a result, Pécs and its surrounding area ensure a great basis for developing industrial tourism. Another direction of the industrial heritage in Pécs is provided by the former or still existing factories of the city, such as the Zsolnay Factory (porcelain and high-fire glazed porcelain) or the leather factory.

3. Data and methodological framework

The primary part of our applied researches was covered by the field trips around the investigated area, the field surveys, interviews, deep interviews and questionnaires. The field trips were carried out in 2015 and 2016. Through the research work we interviewed representatives of local, regional and national profit-, and non-profit orientated organizations, firms and tourism sector:

- Tourism Destination Managements: Irány Pécs!, Orfű TDM, Mecsek-Hegyhát TDM
- Non-profit orientated sector: The Route of Iron Culture, The Association of the History of Mining in Pécs
- Tourism sector: Zsolnay Cultural Quarter (Pécs)
- Stakeholders: Szalon Brewery of Pécs, Kapucinus Brewery of Magyarhertelend, Karl-Mikro Microbrewery of Mecseknádasd, Mill Musem of Orfű

Among the seconder methods, along with the classic desk research techniques and the elaboration of the domestic and international scientific literature, we carried out

[7] http://www.route-industriekultur.ruhr
[8] http://www.zabytkitechniki.pl
[9] http://www.muszakiorokseg.hu
[10] http://www.vaskultura.hu

statistical data analysis (relying on the database of the Hungarian Central Statistical Office) and GIS based spatial surveys as well.

4. Results

4.1. The declining tourism industry in Pécs

Pécs, as the main field of our investigations, have been suffering from significant tourism position losses since 2002 (Fig. 3). The city is the seat of Baranya county at the Southern part of the country, where cultural and heritage tourism – with UNESCO attraction – is the most decisive tourism product within tourism supply. That was one of the reasons why Pécs was the Cultural Capital of Europe in 2010. Although the tendency of low-altitude flying, covering the number of guests and guest nights had stopped for the year 2010, but after the series of cultural events, it has been declining and stagnating. By analysing the statistical data it turned out, that the tourism increase from 2009 to 2010 was much lower (16%), than the decrease from 2010 to 2011 (20%). It can testify the fact that the title of Cultural Capital of Europe was not as successful, as the leadership of the city would have believed. Moreover, there is a slight transformation around the structure of international tourists who visit the South Transdanubia tourism region with recreational purpose. Though still the Croatians, the Swiss, the Slovenians and the Dutch are the most decisive foreign tourists, but the ratio of the Germans have been decreasing for years, which have an effect on the decreasing tourism spending and average length of stay. These facts contribute to the tourism position loss at the list of the most visited cities in Hungary. Pécs is not able to step forward on the list, apart from the noted bath cities – Hévíz, Sárvár, Bük –, all of the regional centres precede Pécs.

That is the reason why our attention turned to Pécs and its surroundings, in order to renew its tourism supply and utilize the unexploited possibilities of industrial heritage which would make cultural and heritage tourism complete.

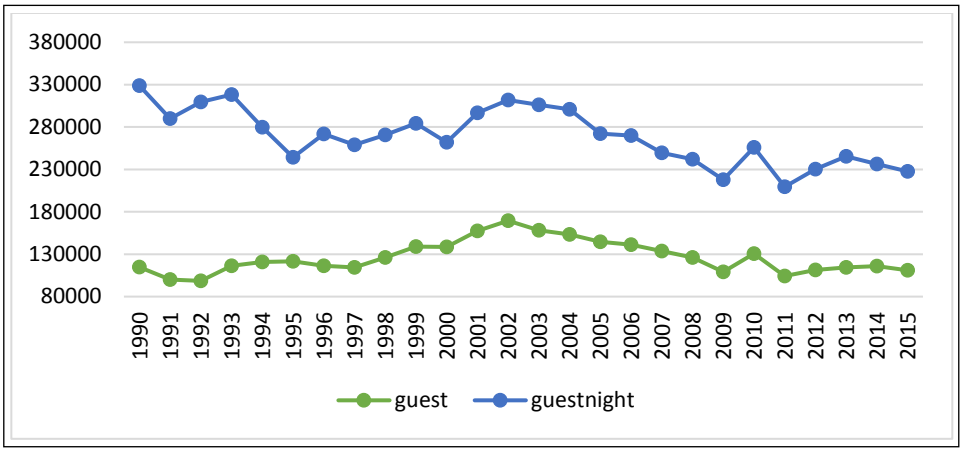

Fig. 3: The number of guests and guestnights in Pécs from 1990 to 2015.
Source: own edition, 2016.

4.2. The tourism attraction survey and analysis of the industrial heritage of the Pécs-Mecsek region

For the first step of our investigation, relying on both primary and secondary methods, we recorded and identified all the industrial remains in the territory of the delimited territory, covering the Mecsek and Tolna-Baranya Hills (Dövényi 2010). 123 sites and tourism attractions were surveyed (Tab. 1), however this considerable number is deceptive, as the list contains all of the monuments, plaques and memorial walls, connected to coal and uranium mining. The outstanding role of Pécs is obviously conspicuous in the investigated area, serving as a focal point of industrial tourism, as the majority of them can be found in Pécs (80%) (Fig. 4).

Tab 1: The spatial distribution of tourism attractions.

Name of the settlement	Number of tourism attractions
Pécs	96
Kővágószőlős	13
Kővágótöttös	4
Bakonya	3
Cserkút	2
Orfű	1
Óbánya	1
Pécsvárad	1
Mecseknádasd	1
Magyarhertelend	1

Source: own edition, 2016.

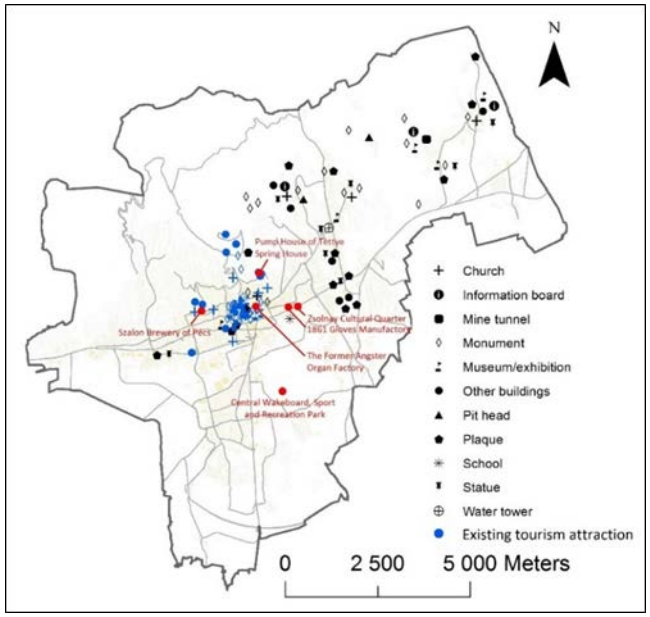

Fig. 4: The tourism attractions in Pécs.
Source: own edition, 2016.

The utilization and preservation of industrial heritage can happen with several methods, according to the former function, the ratio of the contaminated area, the future target audience, local political acts and tourism development strategies. From our primary research methods it turned out that apart from the two large categories (Urban – Vukoszávlyev 2014), a third one can be differentiated in the territory of Mecsek and Tolna-Baranya-Hills.

The first category ('re-use') can refer to those regenerated, former industrial territories and buildings which were given completely new tourism functions. It means the total loss of the original industrial or mining function and nature which sometimes serves as a temporary solution. These projects target a wider range of tourism segment and often serve the needs of the city dwellers. Due to the absence of the industrial atmosphere, the tourism attractions concentrate on the experience-based new tourism services. The former unloading territory of the power plant of Pécs was re-used within this mentality and became the home of the Central Wakeboard, Sport and Recreation Park with other recreation facilities, like outdoor sport fields, gyms, running track or playground for children. Tourists and city dwellers during using its space do not necessarily know that they spend their sparetime at a former brownfield. However, the most authentic way of presentation and interpretation is conservation or 'in situ' restoration (Urban – Vukoszávlyev 2014). Although the attractions can depend on a limited tourism flow, especially attracting heritage-, creative- and urban cultural tourists, such as fans of industry and technology; because it is the clear category of industrial or post-industrial tourism. Additional sub-groups can be differentiated on the basis of the importance of time. On the one hand, territories or buildings can exclusively be separated that demonstrate the former function as a site of post-industrial tourism. Due to the value and history of the heritage, they preserve the original industrial or mining nature. Mines, shafts, machines, furnishings and also spiritual heritage conservate the history of the industrial past as a tool, with the aim of sustenance, education or inheriting. The material and immaterial heritage of the mining activities of the Mecsek, the Central Mining Museum of Pécs, the remains of glassworks in Eastern-Mecsek – Óbánya – or the pump house of Tettye spring house in Pécs can be the best examples. On the other hand, apart from demonstrating the history of the past, industrial tourism highlights present tense, by visiting working manufactories, factories or breweries. In this case, the tourism attraction itself is the technological process how products are made or the product itself, especially at luxury products, like beer or chocolate. They can rely on tourism flow as single attractions, but have more opportunities along a common thematic route, under a common umbrella brand. In the delimited area, three breweries in Pécs and in its catchment area, the Mill Museum of Orfű and the Gloves Manufactory of Pécs have chances to be getting involved into industrial tourism.

The third category would refer to the intersection of the methods of conservation and re-use, because with sustainable long-term development projects, a still working industrial unit can be the home of new elements of tourism industry. At the rehabilitated, extended territory apart from the new suprastructure elements – accommodations, cafés – and the industrial milieu can serve a perfect basis for cultural and heritage tourism, as well. One of the trademarks of Pécs, the Zsolnay Cultural Quarter with the still working Zsolnay Manufactory was conserved side by side – by exhibitions, museums and by establishing a site manufactory – and re-used by establishing experience based elements – puppet theatre, planetarium, playgrounds, cafés, restaurants, education facilities for the university – for the local population and tourists.

The survey covered all the attractions and sites connected to industry or mining which was necessary to be performed by a process of an evaluation criteria. The method of selection was based on the evaluation of tourism attractions by their tourism reach (Aubert A. et al. 2010). In accordance with the classification, the sites were given attraction value points from 1-9 in order to ascertain their potential tourism reach (Fig. 5). In our opinion an attraction at least should reach the regional level, so value 4 was identified as a threshold above which tourism attractivity was considered. It can be well observed from the figure that the majority of the attractions are local ones and only 8% of them can be significantly taken into consideration. Moreover, most of the mining heritage are located at the Eastern edge of Pécs with poor accessibility and negative image, which has no integral connection with the city itself.

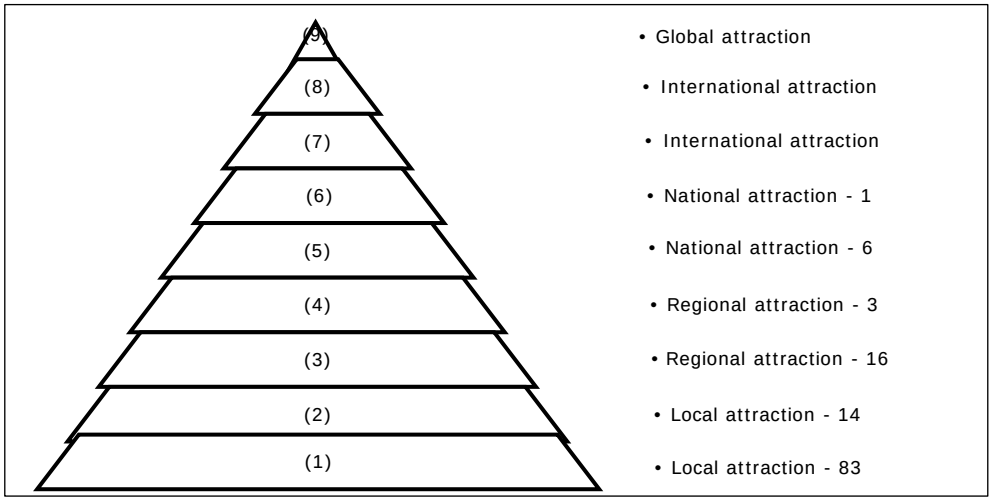

Fig. 5: The reach of the tourism attractions.
Source: Own edition, 2016 based on Aubert A. et. al 2010.

4.3 The analysis of the creation of a possible industrial heritage route in the Pécs-Mecsek region

Based on the above considerations we believe that thematic walks and routes would diversificate the tourism of Pécs. Based on the survey, localization and the selection of the attractions, three tourism walks would be stated, as a final, realizable result. Two of them (Fig. 6) would concentrate on the territory of Pécs – 'the Industrial Remains of Pécs', 'the Miners' Route of Pécs' – and the third one (Fig. 7) would connect the traditions of Western Mecsek, 'the Industrial Treasures of Western Mecsek.' Both tourism walks in Pécs would concentrate on the downtown area of the city and would be absolutely feasible on walk. 'The Industrial Remains of Pécs' can connect places from the Brewery of Pécs up to the Zsolnay Cultural Quarter, also including the Former Headquarter of the Danube Steamship Company, the former Angster Organ Factory, the Monument of Central Steam and Uranium Mining of Mecsek, the Church of Ágoston Square, the Gloves Manufactory and the Pump House of the Tettye Spring House. However, 'the Miners' Route of Pécs' would completely focus on the mining heritage, from the Western part of Pécs – statue of Ore Miner and Plaque of Uranium Mining, Uranium Minders' Square – through the main city centre – the Building of Mining district of Pécs, Central Mining Museum, Underground Mining Museum – till the Church of Ágoston Square. It can be well observed that within the delimited are, Pécs is the

richest in industrial heritage but the remains in the villages of the Western Mecsek should be also taken into consideration. 'The Industrial Treasures of the Western Mecsek' would connect the heritage of uranium mining in Cserkút, Bakonya, Kővágószőlős and Kővágótöttös and the working mill in Orfű and the brewery of Magyarhertelend. Naturally, the route should also connect the other tourism destinations and attractions of the villages, like the agro-rural tourism in Cserkút and the active tourism in Orfű in order to gain superposition.

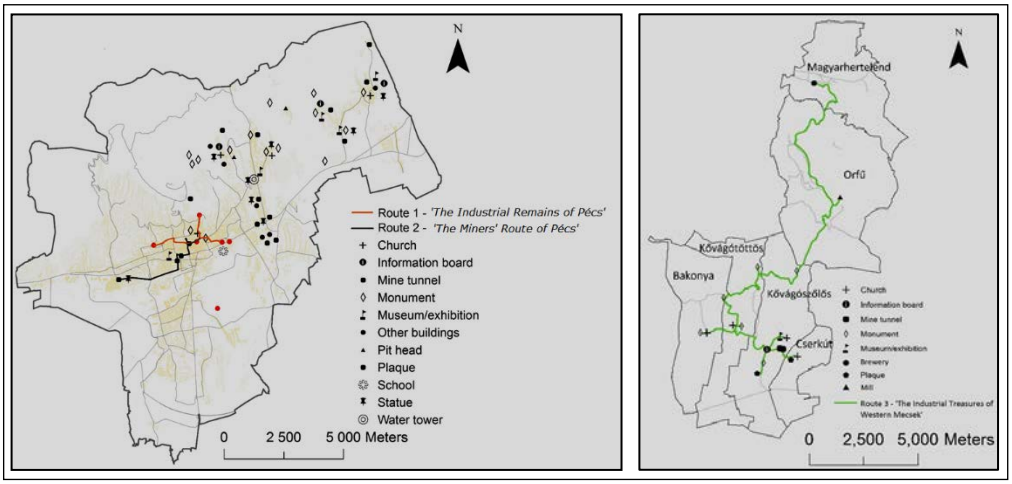

Fig. 6 (left) and 7: 'The Industrial Remains of Pécs', 'The Miners' Route of Pécs' and 'The Industrial Treasures of Western Mecsek.
Source: own edition, 2016.

We believe that these tourism walks and routes should be coordinated by a regional tourism organization, for example the Tourism Destination Management Organisation of Pécs, which know well the representatives of tourism services, provide a common marketing strategy, tourism guides and is able to ensure proper personal and financial background.

In accordance with the above mentioned aims, Pécs should utilize its mining heritage in the long run, by involving the isolated Eastern edges, like Vasas, Somogy or Pécsbánya. Apart from handling the material industrial heritage, a spectacular mining exhibition would diversificate the tourism, chime in with regeneration of brownfields for the benefit of tourism and recreation.Namely, the Underground Mining Museum of Pécs has been closed for a year due to an infection, which should be restored and modernized with exciting technical elements to be attractive for wider segments, as well.

5. Conclusion

During our researches we found out that as a former industrial region the industrial heritage of the Pécs-Mecsek region should be sustained for the newer generations and utilized by tourism. We underlined that the analysed existing potential can act as a supplementary tourism product for the tourism of Pécs and the Mecsek region where, together with the already functioning tourism products (cultural tourism, active tourism, gastronomy), industrial heritage could attract more tourists to the region.

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INDUSTRIAL TOURISM AS A CHANCE FOR THE DIVERSIFICATION OF THE TOURISM OF THE PÉCS-MECSEK REGION
Summary

Summing up, we think that the most important result of the research was that the development possibilities of the industrial heritage as tourism product was revealed with scientific approaches, due to which a so far undiscovered segment with adequate potential was surveyed, pointing to the chances of involvement in tourism and tourism development, taking also into consideration the local community, heritage protection, sustainable economic development and the principles of cultural variegation.

The further directions of the research would be making questionnaire surveys among the tourists of Pécs, questionnaire surveys among the citizens of Pécs and the Mecsek region where we could receive and analyse the opinion of the tourism demand and the local population. We would also intensify the tourism product development related to industrial heritage together with the local governments, stakeholders, local population and other actors for which the utilisation of (EU) financial sources and tenders would be inevitable.

Besides the upper mentioned reasons the reinforcing of the identity and image of the local population together with the chances of the function change at the settlements would strengthen important pillars of the EU's and Hungary's regional politics and regional development priorities.

THE GENERATION OF A SWIMMING POOL CADASTRE FOR GRAZ (1945 – 2015)

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Abstract
The generation of a swimming pool cadastre for Graz (1945 – 2015)
This paper deals with the generation of a swimming pool cadastre for Graz by means of multitemporal analyses of aerial photographs. Twelve temporal steps between 1944/45 and 2015 are analysed partly by digital image processing and visual mapping. The result shows an enormous increase of private swimming pool between the 1990 (600) and 2015 (5600). The distribution of swimming pools and their different types shows specific patterns, which can be geographically interpreted by social settlement structures.
Key words
Aerial photography, cadastre, social structure, Graz

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1. Introduction

The problematic of water shortages on the first day of spring as a result of the simultaneous filling of private swimming pools by the inhabitants has been stated in several newspapers and -groups in Austria (for example http://ooe.orf.at/news/stories/2770977/). To get an overview about the quantities of private swimming pools in the city of Graz this survey was conducted actual and historical aerial images. A swimming pool cadastre from 1944/45 to 2015 for Graz was created, to be able to approximately quantify the used water amount.

Especially in the dry touristic Mediterranean regions like Spain several studies to get hold of the water volume and thus evaporation of private swimming pools have been conducted (Hof , Schmitt 2011; Hof, Wolf 2014).

During their history swimming pools had a change in their meaning as social status. To have an own swimming pool on your terrace or in your garden was a symbol of prestige and an aspect to improve the quality of life (Niemitz 2004, Silberschneider 2015). Today swimming pools are not symbols and statuses for prestige any more but they still implement a certain lifestyle. It is not something that only wealthy people can afford but it has reached, thanks to the technical development and the new materials and shapes, also the population with limited financial income. This leads to the fact that nowadays many households own a private swimming pool in their gardens, backyards, patios and terraces (Silberschneider 2015). The main reasons for buying a swimming pools stated by the interviewed people by Silberschneider (2015) were: The dream of owning one as a kid, to avoid extra costs and time for going to a public swimming place (especially when having a family with kids) and the quietness and privacy you can enjoy while swimming in your pool. Today's lifestyle of stress and precipitance makes people search for calm areas which are often found in owning a private swimming pool where you can relax. However not only the need for tranquillity leads people to buy swimming pools but also the growing trend to stay fit and healthy and the development of new materials a new sort of leisure time arose. These are all reasons to denounce the swimming pool as a status symbol for society but to state swimming pools as an ordinary consumer good of the 21st century and part of our lifestyle (Silberschneider 2015).

2. Methodology

Data basis for this study were orthorectified images of Graz (see table 1) from 1944/45 to 2015. An important aspect and a problematic in this study was the time the images where shot. Some swimming pools are, due to the seasons in one year, temporal (Silberschneider 2015), and thus if the images were not taken at approximately the same time of the year the acquired data is not perfect for a time series analysis (Salentinig 2012). This can be seen in the results of this study as the images were not always taken on the same month (Tab. 1). Another aspect is, as a result of the tremendous improvement of remote sensing data, the changing spectral and spatial resolution (Salentinig 2012). Until 2004 the used images had a low spectral and spatial resolution and therefore where harder to interpret than the images taken in the 21st century.

Tab. 1: Data basis for the survey.

Year	Month	Scale/ spatial resolution	Source
1944/45	April	appr. 1m	Amt für Stadtvermessung
1953	September	1:14.000 – 1:23.000	Bundesamt für Eich- und Vermessungswesen
1956/59	April/ October	1:2.500	Amt für Stadtvermessung
1968	June/ October	1:11.000 – 1:18.000	Bundesamt für Eich- und Vermessungswesen
1975	May / June	1:23.000 - 1:31.000	Bundesamt für Eich- und Vermessungswesen
1984	October	1:27.000 - 1:34.000	Bundesamt für Eich- und Vermessungswesen
1990	October	1:27.000 – 1:35.000	Bundesamt für Eich- und Vermessungswesen
1997	April	Resolution: 100cm	Bundesamt für Eich- und Vermessungswesen
2004	September	Resolution: 50cm	Amt für Stadtvermessung
2007	September	Resolution: 50cm	Amt für Stadtvermessung
2011	June	Resolution: 50cm	Amt für Stadtvermessung
2015	April	Resolution: 50cm	Amt für Stadtvermessung

Due to the usage of heterogeneous data, from panchromatic orthorectified images to multispectral images taken with UltraCam, the mapping of the swimming pools was done visually. For the multispectral images that had an infrared channel water indices where calculated to better differentiate the swimming pools from trampolines which could have a similar form and were thus not easy to differentiate.

Owing to the big study area a systematic screening of the images was needed. The first image analysed was from 2011. Every district of the city of Graz was reviewed one by one by vertical strips which were overlapping with approximately 100 meters. After the mapping of the year 2011 the other years where mapped backwards until 1944. Every pool which was mapped in 2011 was selected and looked at in the other years. If there was no swimming pool before it was deleted from the list or if there was a change the change got mapped. After checking one pool a zoom out to a scale of 1:15.000 was conducted to make sure that no swimming pool could have been overlooked. For the year 2015, which got mapped after the year 2011, another systematic observation of the districts had to be carried out because new pools could have been built or set up.

Thanks to the manifold possibilities, by cause of the improving technologies concerning materials, many shapes and functions of private swimming pools can be found. There are two principal differentiations to be made: On the one hand there are above ground basins, which are set up and can be removed easily, and on the other hand there are inground swimming pools which are built into the floor and in consequence are constant (Silberschneider 2015). In this study the mapped swimming pools where differentiated on the basis of their shape and function as can be seen in Tab. 2 and Fig. 1. The numbers from Tab. 2 where added to the attribute table of the shapefile. Owing to the low spectral and spatial resolutions of the images taken in the 20th century a differentiation between the functions was not possible anymore and thus left out.

Tab. 2: Attributes given to the swimming pools.

Form		Function	
0	Pond	0	Pond
1	Round	1	Outdoor
2	Angled	2	Indoor
3	Hybrid	3	Not clear

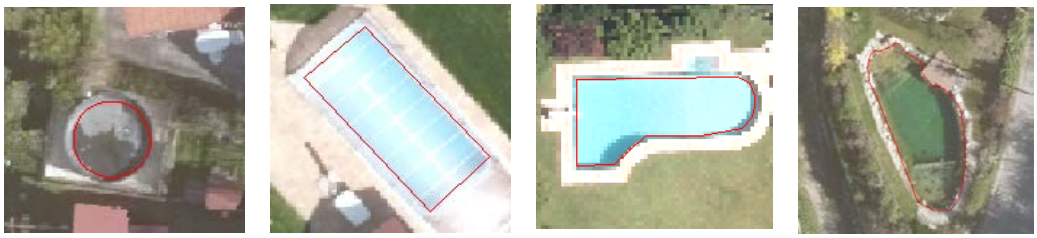


Fig. 1: Different shapes of swimming pools (round, angled, hybrid and pond).

The infrared wavelengths are absorbed by water features (Pope, Fry 1997) which makes them appear black in an infrared image. This characteristic was used with the multispectral images (2004, 2007, 2011 and 2015) to better detect if the pools are to be mapped as indoor or outdoor swimming pools. The right swimming pool in Fig. 2 is an indoor swimming pool and because of the coverage the infrared wavelengths cannot be absorbed. The swimming pool does not appear black and as a result is mapped as an outdoor swimming pool. Furthermore this characteristic was also used to better differentiate trampolines and round swimming pools.

Fig. 2: RGB image (left) with swimming pools and infrared image (right) where outdoor pools appear as black shapes due to absorption.

As stated before the images were not always taken in or approximately in the same month, which especially turned out to be a problem for the mapping of the year 2015. The image was taken in spring, which leads to the assumption that not all pools were already built or set up. This can be seen in Fig. 3. On some places where there was a swimming pool in 2011 but not in 2015 there is a certain structure which exactly fits

the shape of the swimming pool (Fig. 3). If this was the occasion the swimming pool was still mapped as one even though it was not to be seen, but a presumption can be made that the swimming pool was built up in the years between as the shape is clearly distinctive and that it will be built up in the future.

Fig. 3: Swimming pool in 2011 and structure of swimming pool in 2015.

These formulas were used to calculate the average water volumes for different shapes:

- Round pools: $V=\pi*r^2*h$; around 13m³ accords to 13.000 litres per swimming pool
- Angled pools: $V=l*w*h$; around 37m³ accords to 37.000 litres per angled swimming pool
- Hybrid pools (mainly oval pools): $V=l*b*h*0.89$ around 26m³ accords to 26.000 litres
- It was not possible to calculate an average water usage for ponds as their shapes and forms are too variable.

3. Results

The constant and rapid growth of the numbers of private swimming pools in the city of Graz can be seen in figure 4. There has been a tremendous increase especially from 1990 onwards. The slight stagnation between 2011 and 2015 could be a result due to the time the image was shot or there really is a cut down in the numbers. This could be verified by looking at the images the next years, as soon as they are available.

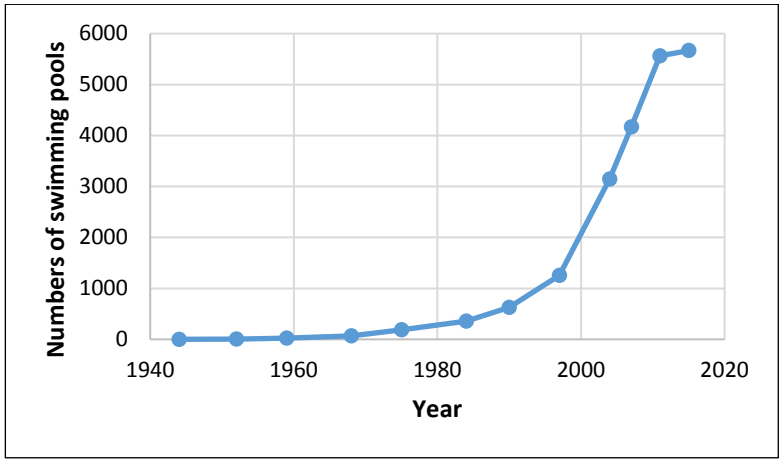


Fig. 4: Numbers of swimming pools in Graz from 1944 to 2015.

In Tab. 3 the total numbers of the swimming pools for all districts and years show that especially the outer districts of Graz have an enormous increase in numbers. The sealing and the building structures in the inner city districts are the reason for the low number of swimming pools as there are few possibilities for construction. This assumption can also be seen in Fig. 5.

Tab. 3: Numbers of private swimming pools seperated by districts and years.

	1945	1952	1959	1968	1975	1984	1990	1997	2004	2007	2011	2015
Andritz	0	0	2	4	21	43	74	167	347	484	695	745
Eggenberg	0	0	1	7	12	18	25	45	118	167	233	252
Geidorf	1	2	5	11	20	34	50	70	141	181	236	253
Gösting	0	0	1	2	2	17	30	64	146	183	262	262
Gries	0	0	1	1	1	4	9	19	61	83	115	110
Innere Stadt	0	0	0	0	0	0	0	0	2	3	4	4
Jakomini	0	0	0	3	3	8	13	19	64	94	146	142
Lend	0	0	0	1	2	2	6	14	3	47	72	70
Liebenau	0	0	1	2	5	12	45	78	249	334	502	492
Maria Trost	0	0	2	8	23	38	58	113	289	390	483	496
Puntigam	0	0	1	3	11	19	37	49	192	293	415	397
Ries	0	0	0	3	11	29	39	75	185	227	282	306
St. Leonhard	0	0	0	0	2	2	5	14	32	40	47	45
St. Peter	0	0	2	4	19	40	74	174	402	496	629	632
Strassgang	0	0	4	4	16	35	68	131	305	418	573	579
Waltendorf	0	1	2	12	25	38	61	148	362	436	502	512
Wetzelsdorf	0	0	0	2	11	18	34	75	218	290	368	370
Total	1	3	22	67	184	357	628	1255	3143	4166	5564	5667

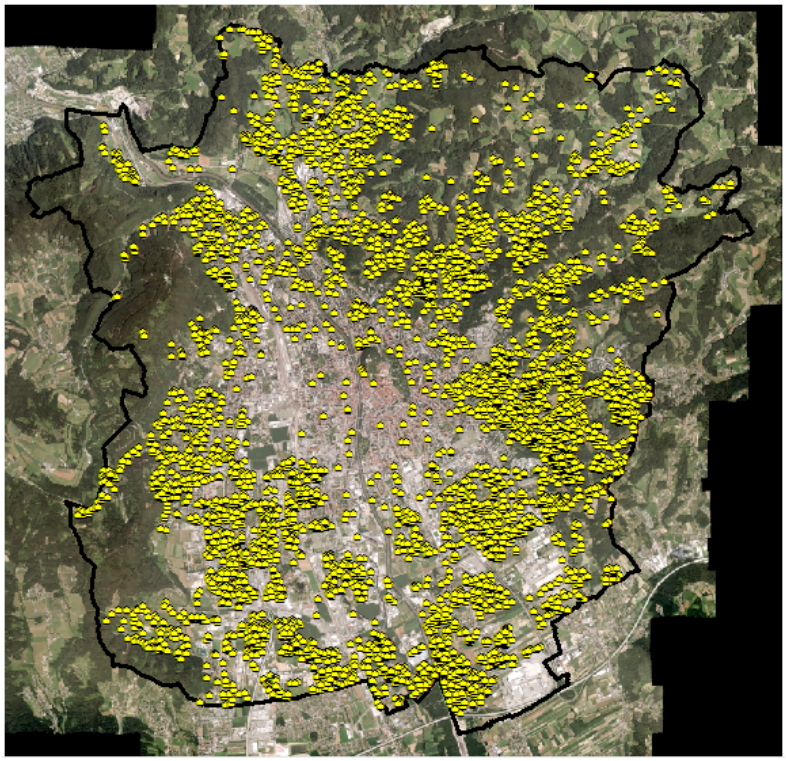


Fig. 5: Distribution of swimming pools in Graz.

To see if the closing of the public swimming place "Pammerbad" in 2004, in the district of St. Peter, had an influence on the increasing numbers in its surroundings some public swimming pools were mapped and then different radiuses over several years were calculated (see Tab. 4). The increasing numbers of the surroundings of the other public places and the Pammerbad were very similar which leads to the conclusion that the inhabitants did not purchase a private swimming pool because the public on in their surroundings closed.

Tab. 4: Number of pools from 1990 to 2011 in a certain distance to a public swimming pool.

Radius of 2 km

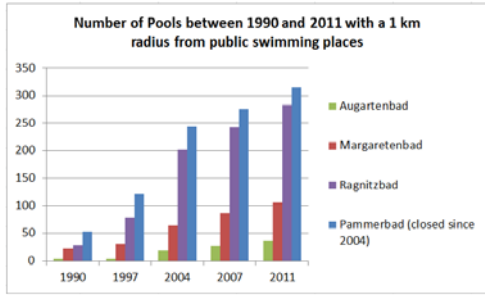
	Pammer-Bad *)	Margareten-Bad	Augarten-Bad	Ragnitz-Bad
1990	134	74	30	116
1997	317	128	48	285
2004	722	292	166	653
2007	877	378	245	778
2011	1035	464	350	911

Radius of 1 km

	Pammer-Bad *)	Margareten-Bad	Augarten-Bad	Ragnitz-Bad
1990	53	22	1	28
1997	122	31	3	79
2004	244	64	18	202
2007	276	86	27	242
2011	315	106	37	283

Radius of 500 m

	Pammer-Bad *)	Margareten-Bad	Augarten-Bad	Ragnitz-Bad
1990	12	1	0	7
1997	35	1	0	30
2004	67	5	2	62
2007	77	14	4	75
2011	89	19	5	81



Another aspect is that the distribution of different shapes of swimming pools is connected to a certain spatial distribution between the districts. As can be seen in Fig. 6 round swimming pools are mainly to be found in the southwestern districts of the city of Graz and angles pools mainly in the north-eastern districts. The different social and therefore building structures can be a reason for this spatial distribution. In the north-eastern parts of Graz the very rich population with big estates have their home. Angled pools are most of the time pools that are built into the ground and they are bigger than the round ones and thus more expensive. If considering that the wealthier population, with bigger parcels, lives in the north-eastern parts of Graz, this could be an explanation for the higher occurrence of angled swimming pools there. In the southwestern parts there are also mainly family houses with gardens to be found but the spatial distances between the houses and the parcels are much smaller than in the north-eastern part which could be an explanation for the existence of the bigger number smaller and cheaper swimming pools in these parts.

The approximate amount of water volume that is used the swimming pools of Graz is shown in Tab. 5. In Graz the amount of angled and round swimming pools in 2011 is about the same. The amount of water used by angled, even though there are as much

as round ones, is about 3 times bigger than by round ones. The approximate total water volume of all private swimming pools of Graz, ponds excluded, is about 139 Million Litres. The Federal Ministry of Agriculture, Forestry, Environment and Water Management states that owning a swimming pool increases the water consumption due to filling and refilling clearly. It can be said, that there is an increase of 40 litres per inhabitant per day (Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft, 2012).

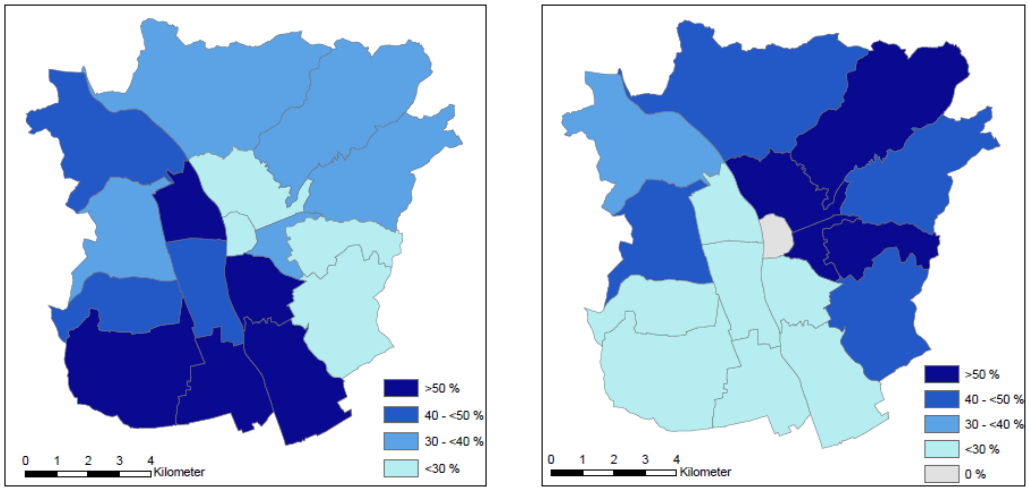


Fig. 6: Relative distribution of round (left) and angled (right) swimming pools seperated by district.

Tab. 5: Numbers of pools seperated by shape and their volumes.

	Pond	Round	Angled	Hybrid	Total
Andritz	38	248	277	132	695
Eggenberg	2	92	109	30	233
Geidorf	8	57	147	24	236
Gösting	6	121	84	51	262
Gries	4	57	31	23	115
Innere Stadt	0	1	0	3	4
Jakomini	4	74	40	28	146
Lend	2	43	15	12	72
Liebenau	12	262	117	111	502
Maria Trost	30	146	247	60	483
Puntigam	8	212	104	91	415
Ries	15	93	119	55	282
St. Leonhard	0	14	28	5	47
St. Peter	36	181	293	119	629
Strassgang	18	299	131	125	573
Waltendorf	26	108	297	71	502
Wetzelsdorf	16	157	108	87	368
Total	225	2165	2147	1027	5564
m^3		27206	78902	26324	139004
L		27206192	78902250	26324064	139004245

4. Conclusion

Private swimming pools have a high rate of water consumption which is the reason why the aspect of the numbers and their usage should be investigated to be able to create sustainable and healthy rules for the environment and their users. Further analysis can be made in regard to the sociogeographic distribution of private swimming pools, for the requirements if water supply and disposal and further investigations on the spatial and temporal distribution. Regarding the city of Graz it would be interesting to look at the development in the following years if the raise in numbers still continues or slowly starts to break down. Another interesting aspect would be to see if the results gained in this study correlate with the experiences of the water suppliers.

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THE GENERATION OF A SWIMMING POOL CADASTRE FOR GRAZ (1945 – 2015)

Summary

Private swimming pools have a high rate of water consumption which is the reason why the aspect of the numbers and their usage should be investigated to be able to create sustainable and healthy rules for the environment and their users. To get an overview about the quantities of private swimming pools in the city of Graz this survey was conducted actual and historical aerial images. A swimming pool cadastre from 1944/45 to 2015 for Graz was created, to be able to approximately quantify the used water amount.

Data basis for this study were orthorectified images of Graz from 1944/45 to 2015. Due to the usage of heterogeneous data, from panchromatic orthorectified images to multispectral images taken with UltraCam, the mapping of the swimming pools was done visually. The constant and rapid growth of the numbers of private swimming pools in the city of Graz can be seen. There has been a tremendous increase especially from 1990 onwards.

Another aspect is that the distribution of different shapes of swimming pools is connected to a certain spatial distribution between the districts. The different social and therefore building structures can be a reason for such spatial distribution. In the north-eastern parts of Graz the very rich population with big estates have their home. Angled pools are most of the time pools that are built into the ground and they are bigger than the round ones and thus more expensive. If considering that the wealthier population, with bigger parcels, lives in the north-eastern parts of Graz, this could be an explanation for the higher occurrence of angled swimming pools there. In the southwestern parts there are also mainly family houses with gardens to be found but the spatial distances between the houses and the parcels are much smaller than in the north-eastern part which could be an explanation for the existence of the bigger number smaller and cheaper swimming pools in these parts. Further analysis can be made in regard to the sociogeographic distribution of private swimming pools, for the requirements if water supply and disposal and further investigations on the spatial and temporal distribution. Regarding the city of Graz it would be interesting to look at the development in the following years if the raise in numbers still continues or slowly starts to break down. Another interesting aspect would be to see if the results gained in this study correlate with the experiences of the water suppliers.

EVALUATION OF THE PROJECT PILSEN – EUROPEAN CAPITAL OF CULTURE 2015

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Abstract
Evaluation of the project Pilsen – European capital of culture 2015
The paper deals with the evaluation of the project Pilsen – European Capital of Culture 2015. It is based on a few empiric research studies that were implemented after the project was finished. It presents the city of Pilsen and the project of the European Capital of Culture form its initiation to implementation. It deals with the benefits of the project from the point of view of attendance, investment, tourism, and impacts on the economic development. It also brings the evaluation of the project Pilsen - European Capital of Culture 2015 as seen by the city´s residents.

Key words
European Capital of Culture, Pilsen, evaluation research

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1. Introduction

Large cultural and artistic projects (megaprojects) and their significance for the development of cities and regions have been paid considerable attention over the last decade, both in theory and practice. (Campbell 2011). The evaluation of cultural projects has become the object of interest of many applied and academic research studies (Evans 2005). In the field of evaluation of the projects of European Capitals of Culture, at least as measured by the quotation response, the key role is played by the Palmer reports (Palmer 2004, Palmer 2007) which roughly summarize the findings of the host cities. Their weakness consists in the fact that they do not offer any framework procedure how to monitor and evaluate such large cultural projects in all their complexities. Even the European Commission, the initiator of the projects of European Capitals of Culture (ECOC), has not yet offered any elaborate methodology that would enable serious comparison of the results of the individual cities.

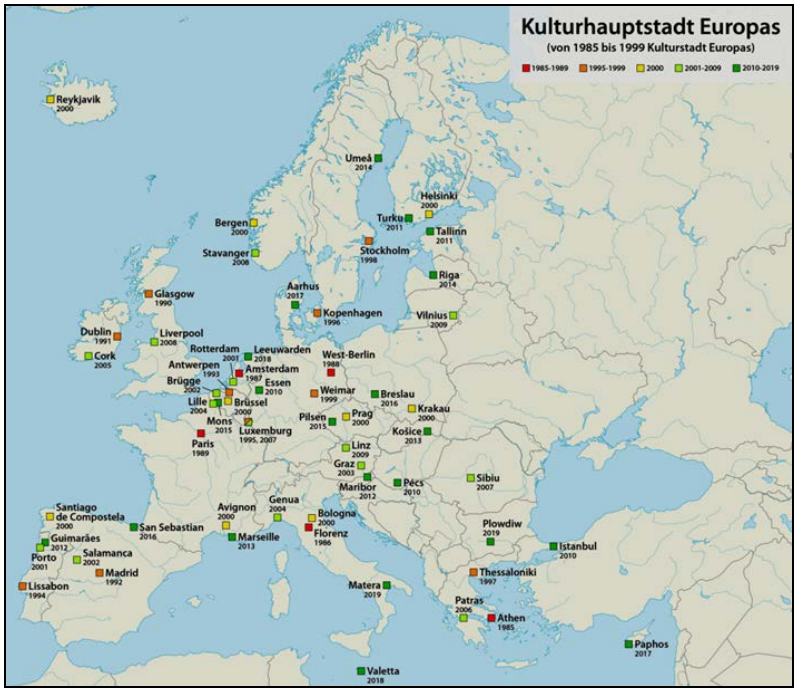

Fig. 1: A survey of European Capitals of Culture.
Source: Wikipedia (2016).

As stated, for example, by Kunzmann (2002), Lähdesmäki (2014) or Liu (2014) and confirmed by representatives of many cities contacted by us, monitoring and evaluation of large cultural projects represent a considerable problem as it is difficult to find suitable indicators of the rate of success on which all the parties involved would be able to agree. And what is more, representatives of the hosting cities often worry that evaluation studies and applied indicators show unsuccessfulness rather than positive effects, which leads to casting doubt on the effectiveness of such large and financially demanding investment projects (Impacts 2008). On the other hand, in reality we often see uncritical exaltation of economic benefits, not only of large

cultural and artistic projects, but of culture as such. Let us give a practical example from the Czech Republic when the cultural authorities uncritically welcomed the model offered by Ministry of Culture which enabled them to calculate economic benefits of cultural events as if they were the only indicators reasoning beneficial effects of cultural projects (Raabová 2010).

Evaluation studies on impacts of large cultural projects use attendance (primarily attendance in accommodation facilities), investment into cultural infrastructure or the number of newly created jobs as the most significant indicators of their economic benefit. Their authors are often criticised because they ignore the long-term and multiplication effects (Fox, Rampton 2015). The development of effective monitoring and evaluation systems and research methodologies for the determination of not only the economic impacts of large cultural projects can be seen as a big challenge, both for practice and also for practical and theoretical research. It is therefore surprising how, on the one hand, the projects of the European Capitals of Culture are emphasised because of their unquestionable economic benefit, while, on the other hand, any credible monitoring and evaluation systems which could verify the above hypothesis are missing (Ježek et al., 2015).

2. The aim and methodology

The aim of this paper is to analyse the benefits of the project Pilsen – European Capital of Culture 2015 and to try and compare some selected parameters of the project with other European cities. Our sources were partial analyses carried out for the purpose of the complex evaluation of this project for the needs of the city of Pilsen, Ministry of Culture of the Czech Republic and the European Commission (Bartoš 2016; Ježek et al. 2016a; Ježek et al. 2016b; Nosková 2016; Raabová 2016) served as our sources.

3. Presentation of the city of Pilsen: on the way from the industrial to post-industrial development

The city of Pilsen (approximately 175,000 inhabitants) is a regional city with a rich history, situated in West Bohemia, approximately 90 km west of Prague. It is the fourth largest city in the Czech Republic and lies on the confluence of four rivers. The first mentions of the city date back to the year 1295 when the city was founded by the Czech king Václav II (regular square ground plan). Since then the city has gradually developed and its importance has grown. In 19th century the city experienced a dynamic growth in connection with the development of mechanical engineering (Škoda Pilsen) and brewing industry (Pilsner Urquell brewery). At that time Pilsen became also a significant cultural centre and one of the centres of the Czech national revival (the development of dramatics and the like). During 20th century the industry became the most significant factor of the city development. This applies to the interwar, war (Škoda Pilsen belonged to the significant arms factories supplying the German army) and also post-war period when it became one of the most significant economic centres of the Czech Republic, just after Prague, Brno, and Ostrava. At the beginning of the 1990s there were far-reaching political and economic changes. Pilsen, thanks to its geographical location, became a gate to Western Europe. It experienced an influx of a great number of foreign investors. The modern development of the city is connected with industry, mainly with the traditional mechanical engineering and food industry (brewing industry). Over the last thirty years other fields have arrived as well, mainly electronics, electrical

engineering and optics. The competitive advantage of the city can be seen in the above mentioned geographical location but also in the cheap and qualified workforce and, last but not least, in the readiness of the city administration to provide investors with fully equipped business areas. The first industrial park in the Czech Republic was established in Pilsen (1995) and Pilsen was also one of the first cities which started using municipal marketing to support the communal economy.

4. From the initiative to the implementation of the project Pilsen – European Capital of Culture

At the beginning of the Pilsen 2015 initiative there was a discussion about how to increase the attractiveness of the city both for the local residents and visitors of the city as well as for investors. The participating parties agreed that this could only be achieved by increasing the investment into the field of culture, sport and the environment. What became the strategic goal of the development of the city of Pilsen was the shaping of the portfolio of what Pilsen could offer in order not to be perceived by the public only as a city of industry and beer (or recently ever more often as a city of sport, thanks to the European success of the local football club) but also as a European cultural centre with a positive image, well-known not only in the Czech Republic but also in Europe. In this connection the project Pilsen 2015 was understood to be a flag project.

The initiative to enter the European Capital of Culture competition came into being in the year 2003. It originated in the Department of Culture of the Municipal Authority of Pilsen which in that time cooperated on a partial project with the Austrian city Graz and in this connection the Austrian partner was seen as a model. In September 2007 the Municipal Council formally agreed on Pilsen participating in the competition. The organization of the entire project was entrusted to the Department of Coordination of European Projects. A team of workers emerged who were in charge of the entire event. An integrated plan of the development of the city was created consisting of two main documents under the names “Pilsen – European Capital of Culture 2015” and “Programme of the Development of Culture 2009 – 2019”. Both the documents formed a strategic framework for the implementation of the project of the European Capital of Culture. Not only the political and administrative management of the city but also the expert public (representatives of culture and art) and local residents were involved in the project. A significant role was played by the Centre of Community Planning West Bohemia which initiated the creativity of the local residents (especially the youth) to identify the problems of the city and the possibilities to solve them in a group game (“future city game”). By means of this participative method the participants of the game were invited to discover the problems of the city, namely economic, ecological but also social and cultural ones, and to suggest how to solve them. In October 2009 both the strategic documents were approved and the competition entry application was sent to the organizers. Out of three cities two were selected, Ostrava and Pilsen (Hradec Králové was the third applicant) and they qualified into the second round. Finally, on 8th September 2010, the selection committee chose Pilsen as the capital of European culture for the year 2015. In what aspect was Pilsen better than the competitor, Ostrava which was fancied by the media? The committee especially appreciated that Pilsen showed a professional attitude and achieved “an excellent balance between the cultural projects planned for the year 2015 and the regeneration of the city” (see the Final report of the selection committee). A significant role was also played by a strong political commitment from the mayor of

the city and the city management in general, the existing European contacts and relationships (according to some people this was the key factor of the success) and the openness of the overall project strategy.

5. Monitoring and evaluation system of the project Pilsen – European Capital of Culture

The drafting of the monitoring and evaluation systems was based on the findings of the foreign cities which had been participating in the project in the past. The so called Liverpool model (2008) is mostly considered to be the most elaborate study of the impacts of large cultural and artistic projects ECOC. The image of just a mechanical takeover of the Liverpool model was excluded from the very beginning. The reason was not only the dissimilarity of both the cities (Liverpool and Pilsen) but also the volume of funds that the city of Pilsen was prepared to invest into the implementation of the project and its evaluation, especially in the time of the global financial and economic crisis. Although systematic monitoring and evaluation of the ECOC project is a precondition for the hosting city to be granted the European subsidy (Melina Mercouri prize), it is also necessary to state (we have been dealing with this issue since the year 2012) that the monitoring and evaluation questions were only paid marginal attention in case of Pilsen. Some of the main reasons were multiple changes in the project management that influenced both the programme and its implementation but also the monitoring and evaluation of the project. The selection of the evaluators was decided on as late as in autumn 2014, only a few months before the entire project started. Therefore, the possibilities of comparing the results of the project with the situation two or three years before the project initiation, as recommended by many authors, were considerably limited (ECOTEC, 2009). Lack of time as well as lack of funds led to the fact that in the end not only one organization was chosen to be responsible for the complex evaluation of the project (University of West Bohemia) as had been originally planned, but the individual evaluation areas were entrusted to more organizations (calculations of the economic impacts, change of the cultural behaviour of the city residents, attitude of residents towards the project, attendance of the city, city image, response to the project in the media, satisfaction with the individual events, etc.) between which, because of the reasons related to time and other issues, the coordination of the research events did not work smoothly, and therefore some of them overlapped or they didn´t fit.

On the basis of the experience from abroad and the recommendations of the expert committee the following evaluation fields were finally selected in May 2015 (Ježek et al. 2015):

- Sustainability of cultural life in the city;
- Participation in cultural and artistic programmes;
- City identity and image;
- Project philosophy and management;
- European dimension;
- Economic impacts (growth of job opportunities, expenses of visitors, investment and the like).

6. Economic impacts of the project Pilsen – European Capital of Culture

The research methodology of the project Pilsen – European Capital of Culture 2015 is explained in detail in the paper of Nosková (2016). The implementation of the

project Pilsen – European Capital of Culture showed that culture does not only contribute to the development of creativity but it is also an important catalyst of the economic development. The overall attendance of the project Pilsen – European Capital of Culture was calculated at 1.23 million visitors (number of entries to the organized events). Out of this 60% were local residents, 20% inhabitants of the Pilsen region and 15% inhabitants of other regions of the Czech Republic. Approximately 5% visitors were tourist from abroad.

In connection with the project European Capital of Culture the visitors of the city spent a total of €20.9 million. According to our calculations the overall impact on the Czech economy (direct and indirect effects) accounted for €26.3 million. Out of this €12.7 million were impacts linked with foreign tourists. Thanks to the expenses of visitors of the ECOC programme approximately 388 new jobs were created in the whole Czech Republic (affecting both contractors and subcontractors).

According to our findings the investment expenditures of the project European Capital of Culture 2015 accounted for €50.9 million. The most significant investment transaction was the construction of the New Theatre whose cost finally climbed to €40.2 million. Other investment concerned the rebuilding of the former garage of the local transport company into a creative zone DEPO 2015 (www.depo2015.cz), Relax Centrum Štruncovy sady, Greenways and adjustments of the public open spaces. Apart from that the University of West Bohemia founded a new institution, Faculty of Art and Design. In connection with the investment construction 139 jobs were created.

7. Tourism

According to the data of the Czech Statistical Office the number of overnight stays in hotels and boarding houses grew, as opposed to a current year (2013), by 31.1% to 493,000 overnight stays in the year 2015. PPM factum company was commissioned to carry out the research of tourists and during the year (in four waves) a total of 2091 respondents were inquired (Bartoš 2016).

Most tourists visited Pilsen in the year 2015 for the first time (53%). More than one quarter of tourists visited the city more than once (26%). The largest share of new visitors arrived from Germany (69%), Slovakia and non-European countries (87%). Most often people came by car (61%) or by coach (31%). Coach as a means of transport was chosen predominantly by foreign tourists (mostly from Slovakia and Germany). Visitors moved about Pilsen using their own means of transport (64%) or on foot. The city transportation system (12%) and taxi service were used by only a small share of visitors.

Approximately one half of visitors spent in Pilsen only a few hours up to one day (51%). The other half spent in the city usually 2 – 3 days. Most often they stayed overnight in hotels and boarding houses (68%), the rest used the hospitality of their friends or relatives. Most visitors came to the city on their own (73%), mostly they came in smaller groups, with family, spouse, friends or acquaintances. The average daily spending on a visit to Pilsen was Czk 2107. Most money was spent on accommodation (Czk 1017) and shopping (Czk 561), a bit less was spent on meals (Czk 299) and entrance fees (Czk 230).

The most often quoted associations with the city of Pilsen (answers to the question "What comes to your mind if you hear the word Pilsen?" - multiple choice out of three possibilities) were as follows: five most quoted associations – beer and beer festival (66%), European Capital of Culture (11%), Škoda Plzeň (8%), architecture and sights (7%), and sport (6%). 63% visitors expressed their awareness of Pilsen being the European Capital of Culture. 45% respondents noticed a trailer related to Pilsen and/or ECOC before their journey. The Internet, outdoor advertising, radio, press and leaflets belonged to the most significant communication channels. Approximately 11% tourists stated that the main reason why they visited Pilsen was the visit of the European Capital of Culture. Other 32% visitors stated ECOC as one of other reasons why they visited the city.

Generally, the tourists expressed considerable satisfaction with the visit of the city. As the results of the questionnaire survey show, 50% visitors were very satisfied and 49% were rather satisfied. In all the attributes of the evaluation positive views prevailed. Visitors were most satisfied with accommodation services, cultural and leisure possibilities and, last but not least, with the level of catering. They were most dissatisfied with the city transportation system and the insufficient city cleanliness.

8. The programme of the project of the European Capital of Culture

Approximately 43 thousand visitors took part in the opening ceremony of the programme of the European Capital of Culture. The biggest attendance was recorded at the annually held Liberation Festival (219 thousand visitors), an event celebrating the liberation of the city by the US army in the year 1945. Big attendance was also recorded during the event called Giant Puppets in Pilsen – Skupa´s Pilsen Festival (73 thousand). Other significant events were as follows: Manége Cané Senárt (60 thousand), Lively Street Festival (47 thousand), Exhibitions: Jiří Trnka Studio and Trnka´s Garden 2 (44 thousand), The Light Festival (40 thousand), Fresh Festival Pilsen 2015 (33 thousand), The Historical Weekend or Pilsen´s Ghosts and Mummery (30 thousand) and Bavarian Days (25 thousand). Ten of the biggest cultural events were visited by nearly 541 thousand visitors, which amounted for 44% of the overall attendance of all 580 events organized under the heading of the European Capital of Culture.

The programme of ECOC was evaluated mostly positively both by the residents and visitors of the city. The selection of the key events was the subject of public discussions. Some events held annually were also included in the programme, such as The Liberation Festival. Another disputed issue was the event called The New Circus Season, i.e. a few performances of the world´s top level modern circus art which, however, has no tradition in Pilsen and therefore according to some experts it may be difficult for the city to make use of the gained contacts in the future.

9. Project Pilsen ECOC 2015 as seen by its residents

In this part the data are based on the results of our own questionnaire survey which was carried out at the turn of the years 2015 and 2016 (November 2015 up to February 2016) and it aimed at an overall evaluation of the project Pilsen – the European Capital of Culture 2015 by the residents of the city of Pilsen. In total, 1,000 respondents wee enquired. The method of quota selection was chosen.

Respondents were chosen according to age and gender so the individual groups of respondents reflected the demographic structure of Pilsen.

More than one half of the respondents (56%) stated that they were sufficiently informed about the project Pilsen ECOC 2015. The most used source of information (the respondents were able to state more answers) about the ECOC project was the Internet (54.9% respondents). More than one half of respondents stated they had participated in at least three events organized under the heading of the project Pilsen – ECOC 2015. Only 15% residents stated they had not visited any of the organized events. The survey showed that 4% residents were somehow involved in the preparations or implementation of the cultural programme of ECOC. Most often they participated as volunteers.

Approximately two thirds of the respondents stated that the ECOC project had been implemented successfully and had been well promoted. In their view the programme was varied enough end everybody was given a chance to choose whichever option he/she wanted. More than one half of the respondents expressed their hope that thanks to the gained experience and established contacts the city will be able to pick up the threads of the positive results even in the future. The most serious criticism concerned the funding of the project (high costs of the construction of the New Theatre and of some cultural events) and the balance of the programmes from the point of view of the representation of the local and foreign artists. Some respondents criticised the weak support of the local cultural scene.

The respondents see the biggest benefit of the project Pilsen ECOC in widening and improving the offerings of culture and art in the city (60.7%). The proof of that is not only the construction of the New Theatre but also a rich cultural programme throughout all the year. Further on more than a half of the respondents noticed the development of tourism (increase in the number of visitors and overnight stays), increase in the prestige of the city at home and abroad and, last but not least, increased public investment into the sphere of culture. The change of the city image, new opportunities for jobs and enterprising, increased feelings of togetherness with the city or increase in the quality of life in the city has been perceived by approximately one quarter or one third of the respondents.

10. Comparison of Pilsen with other European Capitals of Culture

As has already been stated in the introduction, the comparison of the ECOC projects is very difficult as there are no framework procedures for their evaluation. On the basis of publicly accessible information we can only compare the overall attendance, programme expenses and infrastructure expenses. But even here it is necessary to take all the compared information with a pinch of salt.

As far as the size of the cities which hosted the European Capital of Culture is concerned, they range from relatively small towns (Guimarães, Weimar and others) up to large metropolises (Copenhagen, Istanbul and others). The comparison of the individual European Capitals of Culture according to the population, implemented projects, reported attendance and expenses can be seen as an overview in Tab. 1. The expenses are stated for all the years of preparation and implementation of the programme (with the exception of the data for Luxembourg, Sibiu, Essen and Guimarães, where the space of time was not specified).

Tab. 1: Comparison of some selected parameters of the projects of the European Capitals of Culture.

	Population in thousands	Number of projects/ events	Overall attendance	Programme expenses (million €)	Infrastructure expenses (million €)
Luxembourg 1995	77	500	1,170,000	22	16
Copenhagen 1996	1,362	670	6,920,000	155	220
Thessalonica 1997	1,084	1,271	1,500,000	67	233
Stockholm 1998	113	1,218	N/A	55	N/A
Weimar 1999	62	N/A	7,000,000	46	411
Avignon 2000	86	200	1,500,000	21	8
Santiago de Compostela 2000	94	1,210	N/A	N/A	N/A
Reykjavik 2000	111	284	1,473,724	8	N/A
Brussels 2000	134	350	7,000,000	33	82
Bergen 2000	231	500	N/A	13	N/A
Bologna 2000	380	551	2,150,000	34	8
Helsinki 2000	555	503	5,400,000	33	N/A
Cracow 2000	738	121	N/A	N/A	N/A
Prague 2000	1,181	380	N/A	29	N/A
Porto 2001	258	350	1,246,545	59	169
Rotterdam 2001	595	524	2,250,000	34	N/A
Bruges 2002	117	165	1,600,000	27	69
Salamanca 2002	156	1,100	1,927,444	39	47
Graz 2003	226	108	2,755, 271	59	56
Lille 2004	180	N/A	N/A	74	70
Genova 2004	904	N/A	N/A	30	200
Sibiu 2007	185	867	N/A	17	137
Luxembourg 2007	480	584	3,327,678	57	N/A
Stavanger 2008	133	1,118	2,000,000	39	Negligible
Liverpool 2008	436	7,000	9,700,000	122	N/A
Linz 2009	190	200/7700	3,500,000	69	323
Vilnius 2009	550	100/1500	1,500, 000	20	44
Pécs 2010	160	650/4675	1,000,000	35	140
Essen/Ruhr 2010	2,000	5,500	3,400,000	81	N/A
Istanbul 2010	12,000	586	12,000,000	193	64
Turku 2011	177	8,000	2,000,000	56	N/A
Tallinn 2011	400	7,000	2,000,000	14	195
Guimaraes 2012	53	2,000	2,000,000	42	42
Maribor 2012	120	405/5264	3,100,000	28	Negligible
Kosice 2013	240	600/3000	N/A	23	78
Marseille 2013	850	950	11,000,000	99	665
Umea 2014	119	N/A	N/A	19	393
Riga 2014	700	488	1,600,000	27	N/A
Pilsen 2015	170	580	1,230,000	14	51

Sources: Ecotec, 2009; Fox and Rampton, 2015; Hudec et al., 2015; Impacts, 2008; Ježek et al., 2016a; Ježek et al., 2016b; McAtter et. al., 2013; McAtter et al., 2014; McCoshan et al., 2010; Palmer et al., 2004; Palmer et al., 2007; Rampton et al., 2011; Rampton et al., 2012.

According to the total sum of the applied funds the largest project was Istanbul (€193 million), Copenhagen (€155 million), and Liverpool (€122 million). On the contrary, the cities with the smallest budgets were Reykjavik (€8 million), Bergen (€13 million), and Tallinn (€14 million). As far as the infrastructure investments are concerned, in some cases we could not find their exact size or our only information stated that no larger investments had been implemented (Maribor, Stavanger). The biggest known infrastructure investments were implemented in Marseilles (€665 million), Weimar (€411 million), and Linz (€323 million), and, on the contrary, the least investment demanding projects were in Bologna and Avignon (both €8 million) or in Luxembourg (€16 million). The average overall expenses for the programme, calculated from accessible data (Tab. 1) amount for €49 million (middle value is €35 million). The average expenses for cultural infrastructure amount for €160 million (middle value is €82 million).

As is obvious from the table, it is not possible to find any unambiguous dependency between the size of the city and the extent of expenses (for project preparation or infrastructure). Projects with both a small budget (Reykjavik, Umea) and also with a large one (Guimarães, Weimar) can be found among the smaller cities, and therefore it is not possible to claim that the budget would grow in proportion to the size of the city. Even large cities could have small budgets, as can be proved by, for example, Riga or Genova (both cities with budget of up to €30 million).

The data concerning the infrastructure expenses are also very varied where very high amounts can be found in case of small cities (Weimar), as well as small amounts in case of large cities (Istanbul). We can therefore conclude that the size of any of these expenses is not related to the size of the city but rather to its ability to gain subsidies and the preparedness of the programme.

The number of programmes or events gives evidence of the size (extent) of the entire project but these data are not all that important as they are often just estimates and, apart from that, with some projects it is not obvious whether the numbers relate to events or projects.

Attracting visitors and economic benefits connected with them are often one of the main goals of the individual ECOC projects. Apart from the absolute numbers of visitors, which are mostly educated guesses, it is important to analyse also the changes in the number of visitors. For example, in Linz 2009 there was an increase in overnight stays by 10% in comparison with the preceding year, despite the ongoing economic crisis. At the same time, other Austrian cities reported a decrease in the number of overnight stays – Graz by 1.8% and Vienna by 4.6% (McCoshan et al. 2010). In Essen 2010 there was an increase in the number of visitors by 13.4%, and the total number of overnight stays jumped to 6.5 million, which generated an increase in revenues/sales by more than €90 million (Rampton et al. 2011). In Tallinn 2011 there was an increase of 22% in the number of overnight stays of tourists from abroad, which was much more than an increase of 8% in the rest of the country (Rampton et al. 2012). In Marseille 2013 the number of overnight stays increased by 9% (€5.7 million) (McAtter et al. 2014). A year-on-year increase by 21% was recorded even in Umea 2014 (Fox and Rampton, 2015). It is thus obvious that the ECOC brand helps its holders start up tourism, which can bring about very positive economic effects. By comparing the analysed parameters of the project Pilsen – European Capital of Culture 2015 with other European cities (see Tab. 1) we can state that it was a project comparable with other cities, such as Kosice, Vilnius,

Riga, Riga or Turku. From the point of view of the basic parameters the above project was rather one of the smaller projects the focus of which consisted mainly in the field of the programme offerings.

11. Conclusion

The results of the empiric research studies implemented in the year 2015 and at the beginning of the year 2016, i.e. immediately after the project Pilsen – European Capital of Culture 2015 was finished, show that the project brought about a number of positive changes, both in the field of attendance and in the field of investment and economic benefits. The basic parameters are comparable with other European cities, mainly with those from Central and Eastern Europe.

As the existing findings show, the key question remains how the city of Pilsen can make good use of all the above facts in the future. The expectations are high and it will be interesting to see what impact on the development of the city the project will have from the point of view of the medium-term and long-term perspective. If Pilsen can make use of the contacts made with the European cultural scene (the art of circus), if the awareness of the city and its image really increase, or whether the centre of creative enterprising DEPO 2015 can be given a good start etc. These are all challenges we want to focus on in our future research.

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EVALUATION OF THE PROJECT PILSEN – EUROPEAN CAPITAL OF CULTURE 2015

Summary

The article deals with the evaluation of the project Pilsen – European Capital of Culture 2015. In the introductory part the authors dealt with the existing experience in evaluating similar projects. They arrive at the conclusion that there is no generally accepted methodology how to monitor and evaluate the projects of the European Capitals of Culture. There are only general principles enabling varied approaches. The existing situation thus enables making only simple comparisons between the individual cities according to such criteria as the number of visitors, expenses concerning the programme and investment.

According to the authors of the paper the evaluation research was not paid sufficient attention because only a few months before the start of the programme it had been decided what external subject were supposed to evaluate the project. This means that the data collected in the year 2015 were difficult to compare with the data before the implementation of the project as such data are missing.

The implementation of the project Pilsen – European Capital of Culture showed that culture does not only contribute to the development of creativity but it is also an important catalyst of the economic development. The overall attendance of Pilsen – European Capital of Culture was calculated at 1.23 million visitors (number of entries to the organized events). Out of this 60% were local residents and 5% visitors were tourists from abroad. In connection with the project European Capital of Culture the visitors of the city spent a total of €20.9 million. According to our calculations the overall impact on the Czech economy (direct and indirect effects) accounted for €26.3 million. Thanks to the expenses of visitors of the ECOC programme approximately 388 new jobs were created in the whole Czech Republic (related to both contractors and subcontractors). According to our findings the investment expenditures of the project European Capital of Culture 2015 accounted for €50.9 million. According to the data of the Czech Statistical Office the number of overnight stays in hotels and boarding houses grew, as opposed to a current year (2013), by 31.1%, to 493,000 overnight stays in the year 2015. Most tourists visited Pilsen in the year 2015 for the first time (53%). Approximately one half of visitors spent in Pilsen only a few hours up to one day (51%). The other half most often spent there 2 – 3 days. The average daily spending on a visit to Pilsen was Czk 2107. Approximately 11% tourists stated that the main reason why they visited Pilsen was the visit of the European Capital of Culture. Other 32% visitors stated ECOC as one of other reasons why they visited the city. Overall the tourists expressed considerable satisfaction with the visit of the city.

Ten of the biggest cultural events were visited by nearly 541 thousand visitors, which amounted for 44% of the overall attendance of all 580 events organized under the heading of the European Capital of Culture. The programme of ECOC was evaluated mostly positively both by the residents and visitors of the city. The selection of the key events was the subject of public discussions.

According to the residents of the city of Pilsen the ECOC project was implemented successfully. In their view the programme was varied enough end everybody was given a chance to choose whichever option he/she wanted. More than a half of the respondents expressed their hope that thanks to the gained experience and

established contacts the city will be able to pick up the threads of the positive results even in the future. The most serious criticism concerned the funding of the project (high costs of the construction of the New Theatre and of some cultural events) and the balance of the programmes from the point of view of the representation of the local and foreign artists. Some respondents criticised the weak support of the local cultural scene. The respondents see the biggest benefit of the project in widening and improving the offerings of culture and art in the city.

AGROECOLOGY IN SLOVENIA

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Abstract
Agroecology in Slovenia
The article presents to agroecology (AE) as a sustainable approach in Slovenia. AE deals with contents as the ecology in agriculture, organic farming, sustainable agriculture, green agriculture, permaculture, ecoremediations, integrated farming and natural agriculture. According to the official definition the term AE means the use of traditional practices that are consistent with the characteristics of the local environment and do not limit only on food production, but also on food processing (recipes), products made from natural materials, especially wood, stone and construction as well as on ways of sustainable relationship to nature (water storage, attitude to water use, attitude to soil, shallow ploughing, attitudes toward animals, plants). We have discovered the concept of AE and its use in Slovenia. In Slovenia the term is limited to the understanding of the importance ecology in agriculture. The representatives of the Slovenian institutions of the Chamber of agriculture and forestry who have a similar project on the topic of AE, designed for agricultural consultants, having described different form of AE. In project Agroecology at the Faculty of Arts we develop educational moduls for teaching AE in practise.

Key words
Agroecology, agriculture, ecoremediation, organic farming, permaculture.

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1. Introduction

The term AE is thus very broad and it is understood as a responsible way of life according to the tradition of the local environment (Raman 2006; Dunphy, Spellman 2009). The approaches that are developed in Slovenia and in which we can find the content of AE, are limited to single segments of the term. Thus Organic Farming (OF) means farming according to EU guidelines, which takes into account the relationship to plants and animals, but they are not based on heritage or tradition and they do not direct natural resources in the direction of energy-saving use. OF knows irrigation and reclamation of land, ploughing, spray and protective agents. OF procedures are certified and as such generally applicable everywhere, regardless of location, tradition or the conditions of nature (Online source 2). Typical of biodynamic agriculture is to compliance with the rhythm of nature and to understand the cosmic forces and energies of the Earth, such as ethers. This is the highest level of responsible attitude to nature, but is not officially supported since it is not interesting for biodynamic agricultural markets because it does not use poisons (Online source 1; Piercea 1990). In Slovenia, permaculture is increasingly expanding and takes into account a comprehensive approach to nature, but it also has a hint of Asian elements, in particular, vertical gardening and various green systems, many of which are not suitable for Slovenian situations (green walls require a lot of water). We note that the concept of AE connects all the elements of responsible lifestyles, so we are introducing this concept as an integral for all the terms that have been used up until now in Slovenia.

2. Research work methodology

For understanding agroecology in Slovenia we analysed two projects:

2.1 The analyse of the project SAGITER
Project SAGITER-Agro-ecological knowledge and ingenuity of rural areas Data for the project SAGITER, which is the acronym for the project “Agro-ecological knowledge and ingenuity of rural areas”, we gathered from the website of the Chamber of agriculture and forestry of Slovenia (Online sources 1 and 2).

In the framework of the Leonardo da Vinci programme as a partner organization in a project with the title SAGITER the Slovenian representative is the Chamber of agriculture and forestry (KGZS). The project deals with the field of AE. This takes into account the legality of farming, according to traditional systems, adjusted to the specificities of their environment. Project SAGITER combines the ten partner institutions from seven European countries (Online source 2).

2.2 The analyse of the project “Teaching agro-ecology in the transitory period, its consequences for the agricultural knowledge Systems”
The Euro-EducATES project is an Erasmus+ project which takes place in the key action "cooperation and innovation for good practices" and in the field of "strategic partnerships for vocational education and training. Project will have five outputs: a first report makes an inventory and a comparative and critical study of the diversity of approaches of agroecology; a second report talks about innovations and changes induced by agroecology. It will be based on case studies; three educational tools (one based on written materials, one based on audiovisual techniques and one for E-learning developments).

2.3. Defining the direction of AE in Slovenia (based on the analysis of the situation)
Based on the review of diferent materials (books, articles, web pages, project materials) relating to agroecology was defined main- and subindicators that we take into account and we recognize the occurrence of AE in Slovenia (in practise, in research and in education) (Tab. 1).

Tab. 1: Main indicators and subindicators

Main Indicator	Subindicator
Social	Community
	Communication
	Education
	Transition / Transformation
	Tradition
	Political
	Social Justice (intergenerational thinking, worker rights, gender aspects, etc.)
	Values and Ethics
	Autonomy-food sovereignty
Environmental	Biodiversity
	Soil health
	Landscape (spatial dimension)
	Climate
	Climate Change
	Animal Health
	Plant Health
	Ecosystem Services (clean water, air, etc.)
	Ecoremediation
	Permaculture
Economic	Tourism
	Marketing
	Membership
	Green jobs
	E-marketing
	Autonomy (e.g.,) less inputs less costs, etc.)
Technical	Digital technology
	New tools

3. A broader understanding of the concept of agroecology in Slovenia

In the following part we present the results of the survey, which used the term AE in Slovenia. We have found that this concept can be found in education (the university degree of Faculty of agriculture and life sciences and the Faculty of ecology in Koper) and also in the field of agriculture (Chamber of agriculture and forestry of Slovenia). Although the term is not often used in recent years its use has strengthened. This can be seen by the inclusion of Slovenia in international projects with this content, which can be seen in the following part. In comparison with former republics of Yugoslavia, where the concept of AE is very often used, the term in Slovenia can be found only on some web pages (Online sources 2, 3, 4, 5).

The project connects ten partner institutions from seven European countries. Partners are three universities: University of Marburg in Germany, Cluj from Romania and the Hungarian University in the Gödölö; two Chamber of agriculture (KGZS) from Slovenia and VAL from Flanders and training centres from the Spanish province of Galicia and France: Geyzer, Fummeterre, and Nobody from the CFPPA SupAgro from Floraca, which is the lead partner. The project is carried out in the framework of the SAGITER Leonardo da Vinci, lifelong learning and aims to develop modules for the training of

AE in the area of agriculture. In the description of the project, it is stated that the purpose of the three-year project is to cooperate in a dynamic process of evaluation of the informal traditional knowledge, which have developed over time in the rural areas, and their conscience in parallel with an academic approach. This means that AE is understood with the transmission of traditional knowledge in the current practice, which is one of the directions of AE, which does not have a precise definition in Slovenia (for us this definition seems very suitable, since it is based on the capacity of the environment and is associated with the historical value of space, culture, habits and above all it is consistent with nature).

An indication that the purpose of the project is to participate in a dynamic process of evaluation of the informal traditional knowledge, which have developed over time in rural areas and their considerance in parallel with the academic approach with the effective use of natural resources and the creation of social cohesion in rural areas means that it comes to the implementation of the sustainable development or sustainable principles into practice, which is in the field of agriculture, a novelty in Slovenia, since up until now complex approaches have not appeared. Up to now, the emphasis was on the methods that work soothingly on the environment from intensive farming, but to connect all spheres of society, including tradition, is a novelty in the project SAGITER (Online sources 7, 8). In the presentation of the project it is also written that for this purpose, the partners will develop a method for training of mentors, engineers and technicians for a better recognition and integration of knowledge, which are formed by experience over time in rural areas.

The starting point of the project is to analyse the features of a traditional rural skills, options of its action and to prevent the loss of these skills. In centuries of farmer's coexistence with nature, farmers have accumulated knowledge and skills that they have been using for management. The skills and knowledge have been adjusted so that in the given conditions they are to produce as much as possible and take into account local characteristics of soil, climate, water, and coexistence with neighbours and nature. Over the centuries people have learned to observe nature and to adapt to it so that with her help they got a sufficient amount of high-quality food, feed and other products. Intensive farming pushed this knowledge to the periphery. Instead of sustainable farming profit prevailed in many parts. Nevertheless, throughout the world, there are knowledge and traditional farming approaches that give farming the characteristic of sustainable farming. This used to be a necessity, if farmers wanted to survive. Moreover, just by collecting and presenting these skills in some places, especially in South America, they enabled local communities to have once again begun to farm according to traditional systems, adapted to the specificities of their environment. The knowledge and proper valuation of traditional knowledge does not only allow their sterile maintenance, but also allows the inclusion of agro-ecological knowledge in the everyday life of rural areas and ensures sustainable farming. In doing so, institutions have an important role since they are increasingly assuming the role of mediator of skills to compensate intermittent traditional ways.

The approach is called AE and in the management of the agricultural space introduces an old traditional knowledge, which have been previously evaluated and updated by experts and are recommended to use (Online source 10). High-quality performance provides a multidisciplinary approach, enriched with a variety of partner links, such as agricultural advisors, teachers, mentors and researchers in the fields of agronomy, education, economics, anthropology and the environment.

At national level the uniform and final common definition of AE does not exist yet. Most of descriptions of AE recognized at national level are based on the environmental aspects of sustainability and underlines its importance. Hereafter report summarized some key international and national definitions, adapted to national agriculture situation.

AE is a term that can be used in several ways, as a science, as a movement and as a practice in the field of agriculture in the world. AE treats agriculture in an interdisciplinary way. Agriculture is considered as part of the ecology, therefore, AE is focused on OF principles (Online source 3).

AE in advance does not exclude any approach. It is a set of different skills, adapted for use in local environments for the most sustainable oriented farming. Approaches do not exclude a sustainable-oriented innovation or the transfer of knowledge from another environment where it appeared useful. The holders and users of this knowledge are mainly small farmers who have less and less space in the "farming for profit".

In some places in Europe, particularly in France, they have been collecting local knowledge and trying to transmit it to the young generations with the help of schools, for a long time. We are fortunate that many skills are still maintained and in some cases they still apply. AE approaches can help to evaluate this knowledge and maintain it.

AE is not associated with a particular method of production, whether it be organic, conventional, intensive or extensive. In addition, it does not define any way of management, such as the use of natural enemies instead of insecticides, or polyculture instead of a monoculture. Additionally, agroecologists do not unanimously oppose technology or inputs in agriculture, but want to assess how, when and if the technology can be used in conjunction with the natural, social and human resources. AE proposes a context or "site-specific" method of studying in agroecosystems studies and, as such, recognizes that there is no universal formula or recipe for success and the greatest prosperity of the agricultural ecosystem. Instead, agro-ecologists may study questions related to the four system properties of agroecosystems: productivity, stability, sustainability and justice. Unlike disciplines dealing only with one of certain properties, agroecologists see all four properties, which are connected to each other. Agroecologists study these four properties through an interdisciplinary approach. Using natural science agro-ecologist tries to understand the items in the ecosystems such as soil properties and plant, and that by using the methods of the social sciences they understand the effects of farming in rural areas, economic constraints to developing new methods or cultural factors determining farming practices.

The approach of Eugen Odum (1983) is based on the assumptions that natural systems with their stability and immunity are the best model for imitation. Usually the ecosystems of AE are not actively involved in social sciences, but this school is based primarily on the belief that the intensive agriculture is unappropriated.

The second approach involves the traditional agricultural production. This approach is also not actively involved in the social sciences of the AE analysis, however, it does use the social understanding of the processes by which an intensive agriculture became unsustainable. The third approach focuses on the multifunctionality of

landscapes, instead of focusing exclusively on the promotion of agriculture. Agriculture and nutrition counts as an institutional complex that relates and connects with other social institutions.

In accordance with the above definitions report summarizes them into a common working definition adapted to the national agriculture situation: AE means the use of sustainable practices based on traditional and local farmer‘s knowledge, consistent with the characteristics of the local environment and conservation of the biodiversity and cultural landscape. The management systems focuses on the whole food system, including environmental, economic, social and etnical dimension and the support of small scale farmers. AE is considered being a part of the ecology and developed ecological structure that doesn‘t need external inputs and allows the interactions among species for the system to work.

4. Agroecology in Slovenia

The Slovenian Ministry of agriculture, forestry and food carried out the common agricultural policy in the field of market orders and rural development arising from European rules, strategic and implementation documents on agriculture and the implementation of a policy of direct payments within the first pillar of the common agricultural policy and policy management of agricultural markets. Within the limits of the powers of the Ministry helps to shape the market-price and protective policies for agricultural, forest and food products (Online source 4).

Slovenia has, due to specific structural factors such as the diverse terrain, altitude and associated climatic conditions and soil type, handicapped accessibility, unfavourable age structure of the population on farms, lack of professional skills of farm holders, lack of technical assistance and information to farmers and consumers, lower profits and lack of financial stimulus (subsidies)-only ecological, supplementary farms dominate due the low farming income, abandonment of agriculture land and natural forest re-growth where the number of farms is dropping constantly difficult conditions for the development of agriculture. At the same time, Slovenia has a varied natural endowment, with different types of landscapes and lush landscaping specifications, with a large proportion of the mountain uplands of farms and other areas of less-favoured agricultural activity represent good opportunities for further and accelerated the development of naturally more friendly forms of farming. Such practices contribute significantly to the provision of public goods, the preservation of the cultural landscape, conservation or improvement of agricultural biodiversity, the protection of drinking water resources and protection of the whole environment (Online source 5).

Due the above specific conditions are the main challenges of Slovene agriculture: increase the level of agriculture productivity and help young farmers to get started, creating new jobs and fostering local development in rural areas, reduce the land abandonment and to improve the polluted ecosystems, support market organisation and short food supply chains, new ways of collaborations among small scale farmers, providing new working places for young people, increase of knowledge and innovations transfer.

During the period of Slovenia entering into the EU, Slovenia began to encourage conversion to sustainable forms of farming, for which there were EU and national financial incentives, which helped farms to replace the lost income due to the

transition. Slovenia promotes the introduction of agricultural practices, which in the long term contribute to the preservation and protection of the environment, sustainable management of non-renewable natural resources, soil fertility, preserving biodiversity and traditional rural cultural landscapes, protection of drinking water resources, adaptation to climate change and at the same time ensuring the production of high-quality and safe food (Online source 6).

Slovenia is in accordance with the objectives of the EU common agricultural policy, the national legislation and the national strategic documents supported financially and as a form of environmentally friendly agricultural practices encourages in particular, integrated production and OF. All forms of sustainable farming represent the long-term strategic course of agriculture, understood as interdependent and balanced development in the economic, social and environmental aspect, that are also emphasized in the key strategic documents and legislation of Slovenian agriculture. The national agricultural policy emphasises issues such as the: (de)population of the countryside, preservation of cultural landscapes, ecological acceptability of human activities, ecological and social factors in addition to market-oriented ones.

In this chapter we presented some other sustainable approaches, which are based on more traditional forms of farming as they are also understood in AE and take into account the circulation of substances on the farm, the crop rotation without the use of mineral fertilizers and pesticides. They are derived from the knowledge of the nature of the crops and animals. Approaches such as biodynamic farming, permaculture and ecoremediation in agriculture represent a new alternative forms of farming which have gained a big support among the general public and local farmers. Since the late 1990s, several non-profit and non-governmental Biodynamics and OF Associations of food producers and interested public were established (Demeter Certification) – Organic farming (OF) movement. However, at the national level they have not yet received financial incentives and are not legally defined as this applies to the already well-established OF. In particular, permaculture and biodynamic farming are increasingly expanding among Slovenian organic farms. Previous research indicates that farmers have a lack of knowledge about these approaches and want to learn about permaculture and other sustainable principles and their application in practice. Farmers miss more useful knowledge in the field of sustainable farming by educational institutions and associations.

4.1 Integrated production

Integrated production is one of the forms of nature-friendly way of production with the use of natural resources and mechanisms that reduce the negative environmental impacts of farming on the environment and human health, which produces high-quality and healthy food. The scheme of integrated production of the field crops, fruits, grapes and vegetables is being carried out in Slovenia and is considered to be the most widespread surveillance scheme. Harvesting technology, procedures, controls and method of labelling are written in the rules on integrated production and the technological instructions for integrated production, which is issued annually by the Ministry of agriculture, forestry and food. The ministry annually appoints control and certification organizations, which provide a continuous control of the production, and issue certificates in accordance with the regulations. Control over the operation of organisations for the control and certification is carried out by the Inspectorate of the Republic of Slovenia for the agriculture, forestry and food.

By the year 2015, integrated production is no longer a part of the Rural development programme 2014-2020. Farmers who have been or are still involved in integrated production can transit to organic production. Integrated farm must make the transition to organic processing through the conversion period that lasts at least two years, but for permanent crops it lasts at least three years before the beginning of the marketing of organic produce. In doing so, to the farm is entitled to partly cover the costs of support for controls of organic production and processing of agricultural products or food.

The certificate and the official designation of the organic, issued by an authorised control organisation offers consumers an assurance on a specific mode of production of organic crops and food under Regulations on organic production and processing of agricultural products or foodstuffs (Official Journal of the Republic of Slovenia, no. 31/01.).

4.2 Organic farming

At the national level OF was recognised as an opportunity to Slovenian farmers and consumers for providing safe and quality food. The trend has been directed by the national policies regarding farming conditions and the EU's environmental goals. OF represents a form and method of farming that is gaining increasing importance in the Slovenian agricultural area, however, its origins date back to the early 90's. Due to the nature-friendly technological processes it enables the sustainable management of cultural landscapes and natural resources and at the same time promotes the principles of animal welfare or adaptation of breeding to a certain animal species and breeds. In OF, integrated crop production and animal husbandry are complementary, and thus they trace the natural methods and circulation of materials in nature (Online source 8).

OF at the same time ensures the production of high-quality and safe food, rich in nutritional value and with a high content of vitamins, minerals and antioxidants. Whereas the use of soluble mineral fertilisers can be chemically synthesized, plant protection products (pesticides), genetically modified organisms and products derived from such organisms, as well as a variety of growth regulators with this method of farming are prohibited, therefore there is virtually no expected residues of these substances in crops or foods and consequently in the consumer (Online source 9).

In the system of OF there is also a continuous and transparent control over the production and processing of these products or of foods from field to fork and thus guaranteed greater security for those consumers who opt for such products or food. Agricultural produce or foods can be labelled as organic if they receive a certificate. In 1998, there were only 41 growers or agricultural holdings involved in the control. In 2014, 3049 farms had already successfully completed a conversion period and acquired the certificate.

Up until now, the entrance of organic farms into the control system and the increase of organic surfaces constitute a continuous growth which is also expected in the future. However, there is still an urgent need for large quantities of crops and organized appearance on the market, with the raising of awareness of consumers and producers. The current production is dominated by grassland or livestock production, consumer demand is the largest for fresh vegetables and fruits, as well as by non-meat processed, this is a grain and dairy products.

Since 2001, OF is regulated with the rules for organic production and processing, which is coordinated with the European regulation on OF mode. With the passage of more agro-environmental programmes such as Slovenian agri-environmental program- SKOP, 2001-2003 and Rural development programme 2004-2006 organic farmers were eligible for direct payments for the enforcement of the measures of this programme. Financial incentives are designed primarily to reduce the intensity of the action and the use of naturally more friendly technological processes, preservation of the population, the sustainable use of natural resources and the production of safe and quality food, preservation of natural resources, biodiversity and traditional cultural landscapes, as well as measures in the area of special environmental constraints that apply to protected areas. This program became part of the Rural development programme of the Republic of Slovenia when the state entered the EU (RDP 2004-2006, RDP 2007-2013, RDP 2014-2020) (Online source 10).

In 2005, the Government of the Republic of Slovenia on the basis of a European action plan for organic food and agriculture adopted its own national action plan of the development of organic agriculture in Slovenia until 2015. The document supports all 21 acts of the European action plan and provides the analysis, identify the needs, objectives, and measures to promote the long-term development of an accelerated organic agriculture in Slovenia. The main aims of the plan were: the inclusion of the action plan into nation RDP 2007-2013, increase the share of organic farms to 15% by 2015, increase the share of utilised agricultural area in organic farming to 20% and 10% of Slovenian origin of organic food of the total quantities marketed food, triple the number of ecological tourist farms, etc. Many of these ambitious goals were not realised due the several reasons such as: not organized marketing chain for OF products, some organic products are still sold as conventional (especially milk and meat), advisory system is not well implemented into the practice for supporting conversion and for knowledge transfer and weak collaboration among organic farmers (the voice is not heard in the policy) (Online source 5).

OF will continue to be encouraged in the context of new perspectives 2014-2020, which, in accordance with the aims of the EU defines measures for rural development programmes and for the first time establishes a completely self-contained measure for OF which aims to promote agricultural holdings for the voluntary guidelines or implementing of OF. The payments cover commitments that are beyond the mandatory standards of the NS, the minimum requirements for the use of fertilisers and phytopharmaceutical products and other relevant mandatory requirements set out in national law (Online source 6).

In the context of the RDP 2014-2020 a holistic approach is set for OF through the merging of payments linked to the surface, or animals, and grant support for the implementation of investment and other activities, such as integration in short supply chain, the logistics platform and promotions. More focus will also be on activities like the transfer of knowledge and innovation, since OF produces many of eco-innovation and the transfer of them into practice wants to be promoted.

4.3 Rural development programme (RDP)

RDP is a joint programming document of Slovenia and the European Commission and is the basis for the disbursement of funds from the European agricultural fund for rural development. The authority responsible for the preparation of RDP and for monitoring, control and evaluation is the Ministry of agriculture, forestry and food.

During the programming period 2014-2020 the basis for receiving funding is the RDP RS 2014-2020, which was approved by the EC in early 2015. The priorities that Slovenia identified on the basis of an analysis of the features and status of agriculture, agro-food sectors and forestry and its integration of these economic sectors in the rural areas and the whole space are: the acceleration of the processes of structural adjustment in the agricultural sector, more effective marketing organization of agriculture, strengthen the agri-food chain, to improve the visibility and quality of locally sourced products, the preservation of natural resources and response to climate change, sustainable exploitation of forests and increase the added value of the wood. A part of the program are as well green jobs and the harmonious development of rural areas. The transfer of knowledge and innovation, care for the environment and climate change are horizontal aims that are pursued by all the priority areas of action. In the framework the programme will carry out 14 actions that are also divided on sub-measures.

In March 2016 European Commission approved the first changes to the RDP 2014-2020 mostly in the agri-environment-climate payments scheme, OF and animal welfare that will benefit to Slovenian agriculture (Online source 18).

4.4 Sustainable – green agriculture

The new reform for the period from 2014-2020, is responding to the environmental, economic and territorial challenges with greater emphasis on sustainable development, the strengthening of the competitiveness of agriculture and rural development. The essential new feature is the Green component which devotes 30% of direct payments to agricultural practices, which are beneficial for the climate and the environment within which the measures will be implemented: diversification of crops, maintenance of permanent grassland and areas of ecological significance. Specific support will be passed on to young farmers who will start with agricultural activity for the first time. The support is intended to facilitate the start-up activities and the structural adjustment of their holdings. With this a generational rejuvenation in the agricultural sector will also be stimulated. A new element is the scheme for small farmers means a simplification of the procedures for entry into the scheme. Better targeting of direct payments is also reflected in the new terms and conditions for receiving direct payments to so-called active farmer, the minimum size of the agricultural holding.

Because Slovenia also follows the policies of the European aims the Government of the Republic of Slovenia in 2014 adopted a strategy for the implementation of resolutions on the strategic development of the Slovenian agriculture and agro-food sectors by 2020. The resolution defines the vision and goals of the development of agriculture in Slovenia in the next medium-term by 2020, and represents a response to the challenges facing agriculture in the 21st century. At the forefront of the resolutions is the pursuance of the multifunctional role of agriculture and agricultural development through the goals of sustainable development. This is based on the account of the economic, environmental and social role of agriculture. The objectives are defined through the presentation of the situation in agriculture, the global and the European framework and development advantages and options. Agriculture is understood in its broad sense, together with the associated economic sectors and their impact on the environment, space and rural resources. Strategic goals and programs will be realized in the context of strategy with the help of the various measures under the Rural development programme 2014-2020, of the regulation on

direct payments in agriculture, market price measures, national sectoral strategies or plans.

4.5 Permacultural farming

Permaculture is an approach to achieve sustainability and the whole world knows it. It is the answer to the findings of scientists, that there can be no unlimited use of natural resources and that we're getting close to the limits of growth. Despite some doubts about the unsustainable use of raw materials on our planet, as well as the exploitation of people make is certain that in the future we will have to work and live differently, as we have been until now. Therefore, with an imitation of nature (ecoremediation) and smart planning, we are already decreasing the costs of erosion, flooding, the disappearance of rare plant and animal species. However, there are still insufficient number of these kinds of approaches in education and because experiential learning is a necessity, in this paper we present methods of permaculture arrangements on school gardens. International Centre for ecoremediation is a professional institution that deals with these approaches on learning polygon for self-supply and permaculture in the Poljčane municipality.

Sustainable, permanent societies may be based only on what it can maintain and be restored on its own. Our current unbalanced policy, unsustainable use of the Earth and the lack of caring for people and the environment are already causing the need to change. The change must lead us back to the balanced society. The people who live according to the principles of permaculture, by observing the natural cycles have developed strategies which allow them to create their own system of sustainable life (Bell 2010). All it takes is the awareness that we cannot exploit nature endlessly and that we need to adapt to the natural rhythm (season, available resources, and the idea that we can do it). Permacultural systems are sustainable, give profitable crops, require minimum effort for maximum result, they are ethical and caring for the Earth and people and generate surpluses, which we share with others. This part of Permaculture and the real results that are already visible on the Learning Centre for self-sufficiency in Dole, are the starting point of realising that even educational institutions can be directed to the use of permaculture in school gardens. We always need practical experience before going into something new. Therefore, in this paper, we have gathered ways of organizing garden with the use of permaculture. These methods are simple, and convince us that in the nature the matter and energy circulate, and that the easiest thing to take into account is the nature's own guidelines. By creating our own permaculture gardens we can develop creativity, connect health, movement and food production and make a special contact with the soil, plants and animals, thus creating added value. The world's biggest problem nowadays is the lack of fertile soil.

In recent years, several initiatives have arisen to connect to the network of ecovillages in Slovenia. Members seek to maximise the self-sufficiency with food, sustainable housing, connection with nature, caring for healthy development of humans and a solid social ties within the community, which is based on the development of the basic principles of permaculture. This represents the starting point of the ecological planning and engineering, which develops a sustainable human settlements and self-sufficient and self-endurable agricultural modular systems that are modelled on the examples of natural ecosystems. This is an integration of traditional knowledge and modern innovative approaches in the field of agriculture, building and environmental planning. This means a coexistence of human and nature, where there is an intertwining of ecology, landscape, sustainable agriculture, architecture and

agroforesting. Within existing initiatives already comes to the first organized direct exchanges of organic crops – the so-called partnership farming.

In the new programming period from 2015 to 2020, with the introduction of agro-environmental and agri-climate payments promotes a high agricultural practices, which represent higher requirements than normal agricultural practices. The support is primarily intended for the management of agricultural land, which contribute to the conservation of biodiversity and the landscape, the protection of water resources and by adapting farming contributes to mitigating and adapting to climate change. In the context of the measure it supports and promotes methods successfully used primarily in permacultural farming, for example. the application of coverage, coverage of the soil with a groomed fallow ground, leaving unmown bands on meadows, etc.

4.6 Biodynamic farming

At the beginning biodynamic farming was strongly influenced by the situation in agriculture after the first world war. In time of war, industrial production was highlighted and food production has been neglected. Therefore, agricultural land after the first world war were in a very poor condition. The second cause was Justus von Liebig's theory about feeding plants with mineral fertilizers, which has led to a rapid degeneration of plants, decline in the quality of the crop and depletion of soil. The German farmers and powerful land owners were aware of and because of that they called Rd. Steiner in to help them. He taught eight lectures on the agricultural course in 1924 in Koberwitz and with this he moved the principles of biodynamic farming, which was the first organic farming as an alternative to chemical agriculture.

"Biodynamic farming ranks among ecological ways, but its standards are more stringent. It's a self-sustaining process of food production, which is based on the completion of a circle within the farm, includes mandatory animal husbandry, use their manure in the form of compost, and local production and distribution systems using domestic breeds and varieties, which should contribute to the preservation of the environment, biodiversity, and improving the lives of farmers." The essence of biodynamics is that it is based on self-sufficiency and achieving of natural balance by strengthening and reactivation of the living forces of cosmic energies that needs to be relinked with the Earth, that Maria Thun has shown in her seed sowing calendar that was a recapped after Rudolf Steiner.

Organic farmers who are eager to obtain the right to use the trademarks of Demeter must be in an organic control for at least two years. Products with this brand has been around since 1928, controlled by the International Association of Demeter International, which manages and awards quality certification Demeter.

In Slovenia, the administrator for the brand Demeter is the Institute Demeter, who leads all activities in order to obtain the rights to use it. Each biodynamic farmer must be a member of the institute and attend at least five annual meetings organized by it and further education in collaboration with the Faculty of agriculture in Maribor. He must also be a member of one of the local society Ajda that offer basic knowledge of biodynamics. For biodynamic farming is a subject to all statutory provisions that also apply to organic farming, taking into account the Demeter's international guideline.

4.7 Ecoremediation in agriculture

Agro-environmental programs of the common agricultural policy are increasingly supporting the sustainable approaches for the reduction of the negative impacts of

agricultural activities. Ecoremediation (hereinafter referred to as ERM) in Europe is increasingly being recognized as a sustainable approach to environmental protection and possible addition to the measures of the environmental program in agriculture. The Slovenian environmental programme largely stresses the preservation of specific values of Slovenian rural areas, such as the traditional forms of farming, conservation of cultural heritage and the typical Slovene landscapes and conserving the diversity of animal and plant species. Thanks to the friendly nature of traditional farming practices in Slovenia in the past, the agricultural space preserved many biotopes of animal and plant species and the variety of finely structured cultural landscape).

The design and implementation of environmental programmes is based on the principles of sustainability, in a cost-effective way and policies of environmental protection and aim to achieve the objectives, such as improving the standard of living in rural areas, the conservation of the population on farms in an environmentally friendly way, the protection of the traditional rural landscape, preservation of soil fertility with environmentally friendly production and processing, environmental protection, improving the quality of drinking water sources and the preservation of biodiversity. For an efficient and effective realization of those objectives a complement of the measures ecoremediations should be introduced as an innovative approach to protect and restoration of degraded environments. They are a natural systems and processes whose primary purpose is the sustainable management, which enables integrated territorial development in a given area and contributes to the harmony of human and nature and mitigates natural disasters.

Ecoremediations are an innovative, environmentally and health friendly technology, which includes the collection, containment, cleaning and reusing water. In so doing, ecoremediations take advantage of and promote the self-cleaning ability of natural ecosystems, and complements wit constructed wetlands, vegetational belts and other sustainable methods that imitate nature and processes in natural ecosystems. These are the reasons why ecoremediations are extremely useful in agricultural areas, because they are using the appropriate methods of reducing or even prevent the runoff of nutrients and protective agents in the waters and groundwater, but also provides water for watering.

The possibilities of using ERM to reduce the negative influence in agriculture and as an alternative to complement measures of agro-environmental programmes are:

- The reduction of contamination of groundwater with nitrates, phosphates and pesticides, and organic matter and ammonia compounds from livestock farms and in areas with agricultural and horticultural production;
- The reduction of air pollution;
- Reduce the effects of wind erosion and mudslides;
- Reducing the accumulation of pesticides in the soil;
- Reduction of salinated soils;
- The increase of landscape diversity and biodiversity;
- Holding water and enriching the groundwater;
- Act as a supplement to the existing system for the prevention of pollution;
- To prevents drying out, etc.

With the ERM we can successfully complete the measures of agricultural environmental programme and with that we can improve ecosystem services the agricultural landscape on a sustainable and long lasting way, we can contribute to increased and better products and its protection and at the same time, we guarantee

the protection of the surrounding ecosystems from the negative impacts of agriculture.

ERM are fully in line with the latest programming documents and strategies such as the water act, the law on nature protection, the law on the environment and also with the EU water framework directive (WFD), which was adopted at the end of 2000 and is included in the Slovene legislation.

5. Research work on the field of Agroecology

We present key research institutions at the national level (agricultural faculty, private and public institutions and societies), which operate in the various fields related to OF and other sustainable forms of farming (permaculture, biodynamics). Research results also include areas such as biodiversity, renewable energy, environmental protection, rural development, and content related to the area of agroecology in the broadest sense. Research work is linked with basic EU and national strategic documents and legislation, aiming at ensuring food security and sustainable food production. The research activity in agriculture is carried out and financially supported within the Measures of Rural Development Programme 2014-2020.

5.1 Faculty of Agriculture and Life Sciences, University of Maribor

Faculty of Agriculture and Life Sciences (FKBV), University of Maribor, independently and in collaboration with scientific groups and other institutions is engaged in the development, applied and fundamental researches as research projects for direct users. Research activity is carried out through the research groups and a number of independent research projects (international, fundamental, applied, targeted research and other research projects for direct users). The researchers published the results of research in top international scientific journals, on scientific congresses and symposia at the global and European level, as well as at home. In recent years, this is a very mutually strengthened international cooperation FKBV with a number of eminent global and European institutions. The faculty is involved in many research projects in the field of organic farming.

On the website of the faculty, we came across the fact that at the Department of Agricultural Economics and rural development, which was formally established in 2003, also works in the area of research for rural development, agriculture, AE space. Research was carried out under the methodological premises such as: statistical methods in the environment and biological, that are organized in three different sessions/Labs (agricultural economics, agricultural policy, marketing of the agricultural and rural development and management and information systems in the agricultural sector). Members of the Department are active as leaders of national and international research projects and their research results are published in a high-profile scientific journals with impact factor, spatial analysis and socioeconomic analysis.

5.2 The Agricultural Institute of Slovenia

The Agricultural Institute of Slovenia is the leading research institute in the field of agriculture in Slovenia. It comprehensively deals with the issues of modern agriculture and is expanding its activities into the fields of environmental protection and ecology. It employs 176 workers, of which 85 are researchers. It is a public research institute that performs fundamental, applied and development research and specialist tasks and agriculture, publishes the results of scientific research work as well as professional

and supervisory work, performs tasks based on authorization and accreditations and checks the quality of agricultural products and products used, and agriculture. The Institute also engages in the training of producers, education of young persons and consultation for various users and agriculture. The Institute performs its activity within the nine departments and an independent Service for Official Certification of Seed and Plant Propagation Material. The majority of research and professional work is done at the laboratories and in the experimental fields and plantations.

Research work at the Agricultural Institute of Slovenia is linked to the broader areas of agriculture, ecology and protection of the environment and follows the needs of providing food security and sustainable food production in Slovenia, which is reflected in the protection of the environment, preservation of soil fertility, biodiversity and traditional rural agricultural landscape. Research work is based on the Resolution on the strategic development of the Slovenian agriculture and agri-food sectors by 2020 –Zagotovimo.si food for tomorrow, and in the European framework programme for research and the innovation of 2014-2020-"Horizon 2020". The research work is carried out in the framework of the programming of the groups Agrobiodiversity, sustainable agriculture, the competitiveness of the agri-food and Infrastructure programs.

The scope of the research program Agrobiodiversity includes agricultural plants and animals and their wild relatives and the species which are connected with them in any relation. The researches focus on the genetic structure of populations, provide insight and understanding of the ecological and evolutionary processes and contribute to the theoretical and practical starting points for the development of effective and environmentally friendly methods to control the economically important pest and quicker adaptation to climate change. Development of the methods and tools for the purpose of breeding agricultural plants, study the genome, biology of plants and pathogens and physiological research.

The research work of the program Sustainable agriculture refers to the quantitative and qualitative aspects of food production (livestock farming, beekeeping, fruits, berries, viticulture and winemaking), and environmental issues (in the direction of improved production technologies for plant protection, the rational use of energy, water and soil protection and preventing of greenhouse gas emissions) (Online source 11).

5.3 Biotechnical Faculty (BF), University of Ljubljana

The research work of BF includes areas of science in agronomy, biology, genetics, biotechnology, forestry, landscape architecture, wood science and technology, microbiology, natural heritage protection, zootechnics and agro-food sectors and is organized into 22 different programs and 47 research groups. Pedagogic work is successfully linked and supplemented by basic and applied research work.

On the website we came across with the fact that different departments of the Faculty in recent years have carried out a variety of research programmes, in particular in the field of agriculture, ecology, environmental protection and rural development. In 2015, the Department of Agronomy carried out some research programs that are substantively related to AE: agroecosystems, crops-genetics and modern technology, animal health, the environment and food safety. As an educational institution, the faculty will be presented in the chapter Research/Pedagogy (Online source 12).

5.4 Institute for Sustainable Development (ISD)
ISD is a private non-profit institute founded in 1995. Its broader objective is the implementation of the principles of sustainable development in the praxis as well as their integration into national and EU strategic development programmes. ISD is an active member of EEB – European Environmental Bureau and IFOAM – International Federation of Organic Agriculture Movements and IFOAM EU Regional Group. ISD's specific objectives are: Implementation of sustainable development in agriculture and rural development; Protection of nature in agriculture and by the help of agriculture and Enhancement of living connections between urban – rural – nature.

Topics of work are:
- OF – conversion, technologies, system approach; support of marketing initiatives,
- Implementation of sustainable development principles in policy and practice,
- Protection of environment and biodiversity, sustainable management of natural resources in agriculture,
- Agricultural and rural development policy,
- Millennium Development Goals and OF,
- Impact of our lifestyle (focus: food, fodder, fuel) on Developing Countries,
- Innovative projects of sustainable rural development,
- Holistic approach to nutrition and quality of food,
- Sustainable production and consumption / lifestyle,
- Eco-tourism / agro-eco-tourism,
- Enhancing the role of the non-governmental organisations in the development of strategic programmes at different levels (national, EU, international) and their implementation.

Methods of work: research and development; providing advisory and expertise (especially in OF); informing, awareness raising, training, education, publication; organisation of conferences, seminars, workshops and other public events; networking and lobbying; focused work with target groups (farmers, rural population, experts, children) (Online source 13).

5.5 Chamber of Agriculture and Forestry of Slovenia (CAFS)
Chamber of Agriculture and Forestry of Slovenia is the umbrella interest organization of natural and legal persons in the Republic of Slovenia engaged in agriculture, forestry and fishery. Its central task is to protect and represent their interests, to consult them and accelerate economical and environment friendly activities.

Preferential tasks are: Acceleration of development and improvement of economic conditions; Assurance of specialist services operation; Co-formation of legislation; Improvement of social conditions in life; Keeping settlement of Slovenian rural areas; Promotion of Slovenian agriculture at home and abroad. Specialised services of the chamber are: agricultural advisory service, selection and monitoring production in stockbreeding, forestry advisory service, centres for fruit-growing and nursery.

The Chamber works on 3 levels: Chamber's Headquarters in Ljubljana, 13 district subsidiaries established throughout Slovenia; 59 local units operating on a local level. The Chamber is also involved in various projects and research, which are substantially related to the field of OF and sustainable development. The content of the international research project SAGITER, content-specific refers to the field of AE and we have explained in more detail in the chapter on Definitions of AE (Onine source 14).

5.6 International centre for ecoremediation, Faculty of Arts, University of Maribor
The International centre operates within the Faculty of Arts at the University of Maribor, in the context of development, international and national research projects in the field of sustainable development, self-sufficiency, ecoremediations, AE, natural resources, monitoring of soil properties and the properties of the water.

A broad preventive work of the centre: prevention of pollution of the environment by educating, raising awareness and information, protection and development of the protected areas with ecoremediation (sustainable tourism, agriculture), the protection of the environment by ecoremediation, in particular in areas where it is not possible to use the classical technologies (compilation on rural sewage with a dispersed urban dwelling, protection of the coastal area, the protection of sources of drinking water, groundwater protection, protection of watersheds, mitigating climatic extremes of watercourses such as drought and floods), on the degraded areas to carrying out sustainable ways of rehabilitating (sustainable eco-remediation of landfills, dumps, sediments with heavy metals, municipal had and others).

Below we present a survey conducted by the Institute for the promotion of environmental protection, the results were used in the article Permaculture as a new opportunity for the younger generations and it was published in the International Journal of Infinity Press in England.

6. Education and agroecology

We present the key institutions of formal education (agricultural faculties and higher education levels of the biotechnical schools) in our country, carrying out the educational programme under which learners acquire knowledge and skills, especially in the field of agriculture, ecology, nature conservation, spatial planning and protection of the environment. A support for formal education are as well various training programs and education, carried out by the institutions and institutes in particular for beneficiaries of environmental measures and the interested public, both at the local, regional and national level.

6.1 Faculty of Agriculture and Life Sciences (FALS), University of Maribor
FALS is the second largest educational institution in the field of agriculture in the country. With its operation, it contributes to the development and strengthening of agriculture throughout Slovenia. In the last period, it has also crucially contributed to the preservation and further recovery of the whole agricultural sector in the northeast of Slovenia. The faculty plays an important role in the environment, in particular in terms of economic development. The mission of the Faculty is to search for technological and business-organizational solutions to achieve a significantly higher level of self-sufficiency of the Republic of Slovenia with food through innovative production, manufacturing and business processes.

The training is carried out at all stages of Bologna study programmes, which is continuously updated with the achievements of basic research conducted within the framework of scientific research work at the University. Modern studies of agriculture give an expert profile with the necessary general professional as well as completely specific skills. Graduates gain, in the context of education at various levels of study, a lot of basic and practical knowledge that is offered to them by top-trained professors.

Study programmes are carried out in the framework of the 14 different chairs. At the I. Bologna cycle, there is one university (agriculture) and six higher professional study programmes (livestock, organic agriculture, agronomy-ornamental plants, vegetables and other crops, biosisystemic engineering, viticulture, fruit growing and wine production and management in the agro-food sector and rural development), at the II. Bologna cycle there are three study programs (agriculture, agricultural economics and food safety in the food industry) and at the III. Bologna cycle, there are two study programmes (agriculture and agrarian economics). On the Faculty website, we identified that the contents of agro-ecology are a part of a study program which are AE and agro-ecosystem and AE and mineral nutrition of field and vegetable crops (Online source 15).

6.2 Faculty of mathematics, natural sciences and information technology, University of Primorska

In the context of the University of Primorska, they carried out a regular master's 2. Bologna cycle study programme (120 ECTS). After the completion of the study a graduate acquires a master's degree in nature conservation and environmental protection. The program will educate graduates with the essential knowledge and skills in the field of the protection of nature and the environment. The basis for this is the understanding of the role of organisms at different levels, understanding of the importance of ecosystem services and the identification of changes in nature. Study programme covers both terrestrial as well as protection of marine ecosystems, which gives students a chance to choose a desired areas of nature conservation.

The aims of the curriculum are: to familiarize the students with the importance of diversity at the area of breeds, ecosystem and genetic level; to acquaint students with the principles of the natural population; to educate students in the field of environmental engineering and environmental technologies to address a wide range of environmental issues; to enable students to study interactions of plant and animal species with the environment; to inform students with possibilities of prevention and mitigation of changes in natural systems (Online source 16).

6.3 Biotechnical Faculty (BF), University of Ljubljana

Biotechnical faculty, University of Ljubljana, is the largest institution of this kind in the country and includes university, higher education, professional and postgraduate education, scientific, professional and advisory work in the field of living nature (Department of biology and Microbiology Department) and the agriculture, forestry and fisheries (Department of forestry, Department of animal science, Department of Agronomy) and related production technologies (Department of food science and Technology Department, and the Department of biotechnology). Scientific research work involves basic scientific areas of agronomy, biology, genetics, biotechnology, forestry, landscape architecture, wood science and technology, microbiology, natural heritage protection, zootechnics and agri-food sectors and is organized into 22 different programs and 47 research groups.

On nine different departments at the faculty is study programmes at all levels (higher education, University, master's and doctoral program), with a variety of subjects, in which the students acquire the knowledge and competences, in particular in the field of organic agriculture, ecology and biodiversity, forestry and forest ecosystems are carried out. Between the programs we have not noticed a subject that would directly address the area of AE, but students become familiar with the basics at least partly in the context of other subjects such as the ecological base of environmental protection, agricultural botany, plant ecology, plant and animal ecosystem etc.

The aim of the courses is to educate and to raise professionals who understand the interdisciplinary nature of the profession, knowledge of the basic methods of science, technology, economics and social sciences and are able to use it in the management and implementation of sustainable development in agriculture, forestry, landscape, agri-food sectors and biotechnology. The course of the study, students acquire the knowledge and skills such as planning, organization, management and implementation of technological processes and support services (Online source 17).

6.4 International centre for Ecoremediation (ICE), Faculty of Arts, University of Maribor

ICE is developing new knowledge on the links between environment, economy and society, leads several projects, participates in educational programs of all levels and participates in the preparation of books, workbooks, manuals etc. The ITC also organizes and conducts professional development for teachers and workshops in the areas of soil, water and ecoremediations, self-sufficiency, permaculture and AE. The mission of the International Centre for ecoremediation at the Faculty of Arts is to develop knowledge for the coexistence of human with nature.

For the purpose of education ICE has produced a catalogue of educational programs in five different content sections: Programs for experiential teaching for teachers; programs for creative and innovative research for pupils and students, other useful skills for everyday life, visits to the learning polygons, tourist programs.

Every program is carried out in practice, at the starting point the work is experiential, participants learn how to plan, implement and evaluate the results of their work. With this they gain permanent skills that they can use in everyday life. Visits to the learning polygons are meant for pedagogical staff, learners, the heads of development agencies and various societies.

6.5 Higher education

In the field of higher education in the field of agriculture, students can choose from a wide range of biotechnical professional high schools such as Biotechnical centre Naklo, Technical School Centre Nova Gorica, Biotechnical education centre Nova Gorica, Biotechnical educational centre Ljubljana, educational centre Pyramid Maribor. After the completion of education candidates obtain professional qualifications and the title of engineer.

While studying they gain a wide variety of professional theoretical and practically useful knowledge in the field of agriculture, breeding organisms, nature conservation, and many other content that are needed for agriculture and rural areas to make progress in terms of sustainable development (Tal, Morag 2009).

6.6 Non-formal education and training

Some of the faculties and institutes conducted an informal professional training and education, in particular for the beneficiaries of the measures of agro-environmental programmes. Thus, Faculty of Agriculture and Life Sciences, University of Maribor, with the collaboration of the Institute for sustainable development carried out mandatory annual training for organic farmers, who entered in the measure of payments for OF from rural development of the Republic of Slovenia for the period 2014-2020 (measure EK). Every year, farmers must take at least a 6-hour mandatory training programme in relation to the organic content, which are a condition for obtaining payment for the measure.

Chamber of Agriculture for agriculture carried out verification procedures and certification for obtaining national professional qualifications, which is intended for adults who:

- do not have a public document of professional or technical education,
- who have the professional competences (knowledge, skills, experience),
- who want to advance in their career, without having to obtain a higher level of professional education,
- an individual acquires a national professional qualification,
- after parts of the educational programs for the purpose of obtaining professional education,
- after programs of vocational training and advanced training if these programs are provided,
- if they prove that they reached the standards of the expertise and skills adopted in accordance with this Act.

7. The importance of agro-ecological knowledge

In accordance with the present educational programmes and courses we consider that the knowledges of AE are not accessible to the general population of students, but only to those who are studying agriculture and to all those who choose elective subjects in the field of ecoremediation, protection of soil, sustainable water planning and sustainable development of protected areas, which shall be carried out through the Department of geography as a part of physical geography. Additional educational opportunities are through lifelong learning approach where very much is going on. In Slovenia, there are a variety of workshops, lectures and field views from the substantive areas of AE. Most of the training takes place in a private-individual level. This kind of education also links theory with practice. While the so-called academic education is more tied to the theoretical approach (Stutz, Warf 2005, Sage 2012).

Trends in organic agriculture in Slovenia are not positive, because of the subsidy, on which this approach is based on, are declining and therefore the number of organic farms is also decreasing. Classical-oriented farms in Slovenia still use phytopharmaceutical products and extensive use of nitrogen, which has a negative impact on underground water and soil. Therefore, agriculture in Slovenia is considered as the main culprit for the polluted soil and underground water. Selective subject AE at the University of Primorska exists seven years, but since the study programme has been formed it has not yet been selected, which can be an indicator of low interest in this content.

We conclude that official education in Slovenia with the current systems does not effect on the knowledge of AE and that this content should be more integrated into the educational process. This is already happening on the "unofficial" level, because many organized it for themselves and want to gain knowledge in the field of AE. Thankfully, schools are already informed and enable children additional field education in these areas. It is necessary to point out that this education also involves the generation elder than 65 who attends workshops and many are starting with the natural way of food production for the first time in their lives. Therefore, there is more knowledge in the society about the AE than the official systems are showing. Here it is necessary to stress the importance of the media, who are daily trying to enter these kind of content on the radio and TV programme, many number of magazines have issued in the field of production and processing of food. And another important fact,

Slovenians are a nation of gardeners and everyone wants to take a very good care of their land, so it is going to be a growth in AE.

8. Conclusion

Most of descriptions of AE are based on the environmental aspects of sustainability and underlines its importance. Although the content of AE is not yet implemented into the formal curricula, students and pupils are already learning about AE principles within informal educational programmes based on learning by doing methodes.

AE as a sustainable agriculture concept is not official applied in the stategic policy, but some sustainable principles linked with AE are already carried out especially at local and regional level, due the preserved traditional agricultural management and knowledge of small family farms. The scope of the legislation and regulations shows that the focus is on financing forms of sustainable production of OF, but that there are some other forms that are quite unknown, in particular, there is no substantive support for sustainable forms of farming. Therefore, we miss policies put forth by AE consisting of the transfer of traditional forms of farming in the practice of what is now understood as an alternative farming. In addition to OF today we have developed other forms such as permaculture and biodynamic farming which are stil not financially supported or implemented in the legislation and strategic documents.

Slovenia is in diversity a rich country and it has great potential for further development toward AE, but the cooperation of all stakeholders and innovative approaches are needed for developing unique Slovenian agriculture based on sustainable small size family farming model with adequate social standards.

At the national level the interest for AE knowledge and practice is recognised, but the administrative and financial limitations enables more effective progress toward AE, thus we present the only way of introducing skills from AE into society with the self-sufficient learning polygon Dole, that is based on permaculture and ecoremediations, biodynamics and meet the content of AE approach. Below, we present in brief the learning polygon Dole as an example of good practice.

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AGROECOLOGY IN SLOVENIA
Summary

Agroecology (AE) as a sustainable agriculture concept is not official applied in the stategic policy, but some sustainable principles linked with AE are already carried out especially at local and regional level, due the preserved traditional agricultural management and knowledge of small family farms. The scope of the legislation and regulations shows that the focus is on financing forms of sustainable production of OF, but that there are some other forms that are quite unknown, in particular, there is no substantive support for sustainable forms of farming. Therefore, we miss policies put forth by AE consisting of the transfer of traditional forms of farming in the practice of what is now understood as an alternative farming. In addition to OF today we have developed other forms such as permaculture and biodynamic farming which are stil not financially supported or implemented in the legislation and strategic documents. Slovenia is in diversity a rich country and it has great potential for further development toward AE, but the cooperation of all stakeholders and innovative approaches are needed for developing unique Slovenian agriculture based on sustainable small size family farming model with adequate social standards.

Slovenian innovative practices are introduced in the field of AE at the local and regional level. The AE is represented primarily as a practice and science aspects: educational (educational programs for all stakeholders based on AE principles), technical (new technology for efficient use of renewable resources, AE principles for food production and processing), economical (improving the economic standard of small-scale farmers, the setting up of new sales concepts), social (networking and integration of the various participants in the community, an increase in social activities in the community, promoting a healthy lifestyle), as well as political (regional administrative support). With selected examples we want to encourage small farmers in particular, and the various stakeholders of local communities to take advantage of the benefits of agro-ecological approaches that contribute effectively to the sustainable development of the local environment. The focus is on sustainable use and conservation of renewable and natural resources with low levels of external inputs, connecting local community for the purpose of increasing the social and economic benefits of individual and the community, adaptation to climate change and local natural conditions and environment, the reduction of pollution and environmental protection, nature conservation, promoting restoration of the soil and biodiversity in production systems. These measures strengthen the operation and integration in the community and increase the long-term benefits of the region, the establishment of a healthy lifestyle and the strengthening of responsibility at the individual level.

In accordance with the present educational programmes and courses we consider that the knowledges of AE are not accessible to the general population of students, but only to those who are studying agriculture and to all those who choose elective subjects in the field of ecoremediation, protection of soil, sustainable water planning and sustainable development of protected areas, which shall be carried out through the Department of geography as a part of physical geography. Additional educational opportunities are through lifelong learning approach where very much is going on. In Slovenia, there are a variety of workshops, lectures and field views from the substantive areas of AE. Most of the training takes place in a private-individual level. This kind of education also links theory with practice. While the so-called academic education is more tied to the theoretical approach.

Trends in organic agriculture in Slovenia are not positive, because of the subsidy, on which this approach is based on, are declining and therefore the number of organic farms is also decreasing. Classical-oriented farms in Slovenia still use phytopharmaceutical products and extensive use of nitrogen, which has a negative impact on underground water and soil. Therefore, agriculture in Slovenia is considered as the main culprit for the polluted soil and underground water.

SVETLOBNA ONESNAŽENOST NA OBMOČJU MARIBORA

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Izvleček

Svetlobna onesnaženost na območju Maribora

Svetlobna onesnaženost predstavlja novo obliko onesnaževanja okolja, ki je rezultat pretirane uporabe umetnih svetil ponoči. Svetlobno onesnaženje okolja je emisija svetlobe iz virov svetlobe, ki poveča naravno osvetljenost okolja in povzroča za človekov vid motečo osvetljenost in občutek bleščanja pri ljudeh, ogroža varnost v prometu zaradi bleščanja, ogroža naravno ravnotežje, moti profesionalno ali amatersko astronomsko opazovanje in po nepotrebnem porablja električno energijo. V članku so predstavljeni rezultati meritev svetlobnega onesnaženja s Sky Quality Metrom na območju mesta Maribor. Predstavljeni so tudi rezultati analiz rož svetlobnega onesnaženja in porabljenih sredstev za javno razsvetljavo na območju Mestne občine Maribor.

Ključne besede

svetlobna onesnaženost, Maribor, varstvo okolja

Abstract

Light pollution in Maribor

Light pollution represents a new form of environmental pollution which is the result of excessive use of artificial lighting at night. The light pollution is the emission of light from the light sources that increases the natural illumination of the environment. Light pollution causes to human vision distraction illumination and a feeling of glare, it threatens the safety in traffic due to the glare, endangers the natural balance, disrupts the professional or hobby an astronomical observation and unnecessarily consumes power. In article are presented results of measurements of the light pollution, with the Sky Quality Metres in the area of the city of Maribor. Presented are also the results of the analyses of the light pollution roses and resources consumed for public lighting in the area of the municipality of Maribor.

Key Words

Light pollution, Maribor, Environmental protection

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1. Uvod

Človek je od začetka uporabe ognja le tega uporabljal tudi za razsvetljevanje v nočnem času. V zgodovini se je tehnologija osvetljevanja spreminjala sprva zelo počasi. V obdobju med sumersko civilizacijo in začetkom 19. stoletja se je tehnologija nočnega razsvetljevanja ni bistveno spremenila. V prevladi so bile oljenke, ki so jih v 19. stoletju počasi začele zamenjevati najprej plinske svetilke, ob koncu 19. stoletja pa električne. Slednje so se v 20. stoletju pojavljale v različnih inačicah (Mizon 2012, 34-35). V zadnjem času visokotlačne natrijeve svetilke vse bolj nadomeščajo t.i. LED svetilke. Z napredkom tehnologije razsvetljevanja, s spreminjanjem bivalnih navad in s širjenjem mest se je – zlasti po 2. svetovni vojni – vse bolj širila tudi množičnost uporabe svetilk. Zlasti v mestih so na težave zaradi množične uporabe svetilk med prvimi začeli opozarjati ljubiteljski in profesionalni astronomi, kasneje ekologi, danes pa na negativne učinke množične uporabe svetilk v nočnem času na zdravje človeka opozarja tudi medicina. Izpostavljenost umetni svetlobi namreč prekine tvorbo hormona melatonina, zaradi česar so take osebe močneje izpostavljene nevarnostim različnih oblik raka (Falchi, Cinzano, Elvidge, Keith, Haim 2011; Pauley 2004). Pretirana uporaba svetilk v nočnem času predstavlja tudi pomemben vir potrošnje energije. V Sloveniji za javno razsvetljavo v povprečju porabimo 83 kWh tokovine na prebivalca na leto, kar je približno dvakrat več kot je poraba v Nemčiji ali na Nizozemskem (Svetlobno onesnaženje… 2010). Uredba o mejnih vrednostih svetlobnega onesnaževanja okolja zahteva, da se letna poraba električne energije za javno razsvetljavo na prebivalca občine zmanjša pod 44,5 kWh (Uredba… 2007). Seveda pa svetlobno onesnaževanje vpliva tudi na ekosisteme, predvsem na nočne živali (žuželke, netopirje itd.) (Bruce-White, Shardlow 2011; Huemer, Kühtreiber, Tarmann 2010).

Svetilke javne razsvetljave bi glede na ekološko ustreznost lahko delil v tri tipe: nezastrte, polzastrte in zastrte. Prva dva tipa svetilk sta ekološko neustrezna, saj svetlobo oddajata tik nad vodoravnico, kar je z vidika svetlobnega onesnaževanja najbolj problematično. Svetloba, ki potuje tik nad vodoravnico namreč potuje najdlje skozi troposfero in tako pušča največje prostorske učinke. Modeliranje le-tega je pokazalo, da svetloba, ki jo oddajajo svetila le 1° nad vodoravnico 5 km debel nižji sloj troposfere zapustijo na razdalji 165 km, celoten, okoli 10 km debel sloj troposfere pa na razdalji 263 km (Mikuž, Zwitter 2007). Večja mesta zaradi tega ne predstavljajo le lokalne ampak že regionalne vire svetlobnega onesnaževanja.

Z vidika svetlobnega onesnaževanja je pomemben tudi spekter sijalk v svetilkah. Po Rayleghevem zakonu je sipanje svetlobe v obratnem razmerju s četrto potenco valovne dolžine (Petkovšek, Hočevar 1995). Modra svetloba se zaradi tega v atmosferi siplje šestnajst krat intenzivneje kot rdeča svetloba. Sijalke, ki imajo višek sevanja v modrem delu spektra (npr. led sijalke) zato povzročajo večje prostorske učinke svetlobnega onesnaževanja kot tiste, ki imajo višek sevanja v oranžnem delu sevanja (npr. visokotlačne natrijeve sijalke). Z povečano uporabo LED sijalk lahko pričakujemo sicer manjšo porabo energije, zato pa večje prostorske učinke, ki bodo posledica intenzivnejšega sipanja. V splošnem bi se pri razmišljanju o nočni razsvetljavi morali vselej vprašati kaj, kdaj in s kakšno jakostjo osvetljevati.

Svetlobno onesnaženje bi lahko opredelili kot emisijo svetlobe iz virov svetlobe, ki poveča naravno osvetljenost okolja. Svetlobno onesnaževanje okolja povzroča za človekov vid motečo osvetljenost in občutek bleščanja pri ljudeh, ogroža varnost v prometu zaradi bleščanja, zaradi neposrednega in posrednega sevanja proti nebu

moti življenje ali selitev ptic, netopirjev, žuželk in drugih živali, ogroža naravno ravnotežje na varovanih območjih, moti profesionalno ali amatersko astronomsko opazovanje, ali s sevanjem proti nebu po nepotrebnem porablja električno energijo. Svetlobno onesnaženje se manifestira kot sij neba. Pri tem gre za razsvetljenost nočnega neba, ki nastane zaradi sipanja svetlobe na sestavinah atmosfere in jo povzročajo svetilke, če zaradi neustrezne konstrukcije ali napačne montaže oddajajo svetlobo nad vodoravnico (Uredba… 2007).

Slovenija sodi med države, ki so sorazmerno zgodaj sprejele pravno podlago, ki omejuje svetlobno onesnaževanje (Uredba o mejnih vrednostih svetlobnega onesnaževanja okolja 2007), vendar se stanje ne izboljšuje s pričakovano dinamiko, marsikje se je stopnja svetlobnega onesnaženja celo poslabšala.

2. Metodologija

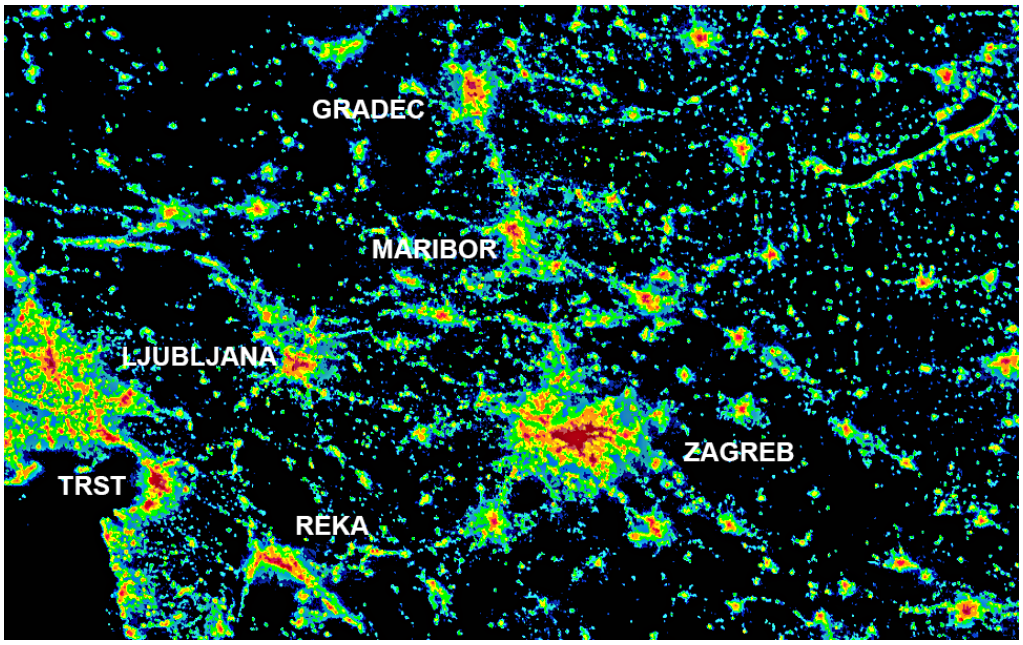
Merjenje sija neba smo opravljali na območju mesta Maribor in v njegovi bližnji okolici. Z meritvami smo želeli prikazati razlike v svetlobni onesnaženosti znotraj mesta in razlike med mestom in bližnjo okolico. Meritve sija neba smo opravljali z merilcem Sky Quality Meter (SQM) proizvajalca Unihedron, ki v svetu predstavlja standardiziran način merjenja sija neba za potrebe analize stopnje svetlobnega onesnaženja. Vrednosti meritev se izražajo v magnitudah na kvadratno ločno sekundo (mag^2/arc sec). Vrednost pomeni sij točke na nebu, ki je velika 1'' x 1'', v magnitudah. Za urbana, svetlobno močno onesnažena območja so značilne vrednosti reda velikosti med 16 in 18 mag^2/arc sec, medtem ko so za temnejše lokacije značilne vrednosti 22 mag^2/arc sec in več. Meritve opravljamo ob jasnem vremenu in brez Lune na nebu. naše meritve smo opravili v avgustu leta 2012. Osnovne meritve izvajamo v smeri zenita. Rezultate meritev na posameznih merilnih mestih smo nato vnesli v GIS aplikacijo in izdelali karto polja svetlobnega onesnaženja s pomočjo interpolacije. V našem primeru smo osnovne meritve dopolnili z meritvami v okolici mesta v osmih smereh neba in pod kotom 45° nad matematičnim obzorjem. Na ta način smo izdelali rože svetlobnega onesnaženja (polarne grafikone, ki kažejo sij neba iz posameznih smeri).

Razen meritev z SQM smo za določene lokacije v okolici mesta izdelali vsenebne (all-sky) posnetke, s čemer smo želeli prikazati razlike v siju neba v smeri mesta in na nasprotni strani. Vsako mesto v nočnem času oblikuje t.i. svetlobno kupolo, ki je intenzivnejša in višja v svetlobo bolj onesnaženih območjih. Pri izdelavi posnetkov smo zaradi primerljivosti povsod uporabljali iste nastavitve (ekspozicija 180 sekund pri ISO vrednosti 1600 in popolnoma odprti zaslonki).

Za območje Mestne občine Maribor smo analizirali tudi porabo proračunskih sredstev za javno razsvetljavo med leti 2006 in 2016.

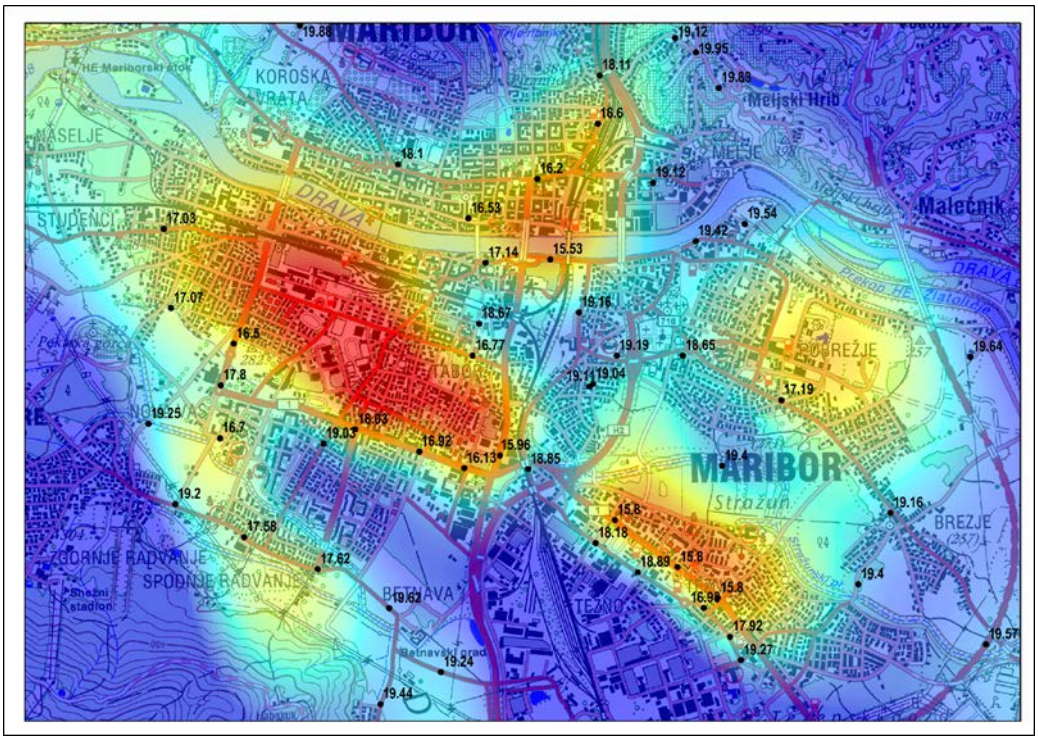
3. Svetlobna onesnaženost na območju Maribora

Maribor kot drugo največje slovensko mesto z 95 589 prebivalcev (Internet 2) sodi poleg Ljubljane med večje vire svetlobnega onesnaženja na območju Slovenije. Kot regionalni vir svetlobnega onesnaženja je vidno zapisan na nočnem satelitskem posnetku Slovenije in bližnje okolice (Slika 1). Zaradi še vedno prevladujoče neekološke razsvetljave, predvsem zaradi nezastrtih in polzastrtih svetilk ustvarja opazno svetlobno kupolo v tem delu Evrope.



Slika 1: Viri svetlobnega onesnaženja na nočnem satelitskem posnetku Slovenije in širše okolice leta 2016.
Vir: Internet 1.

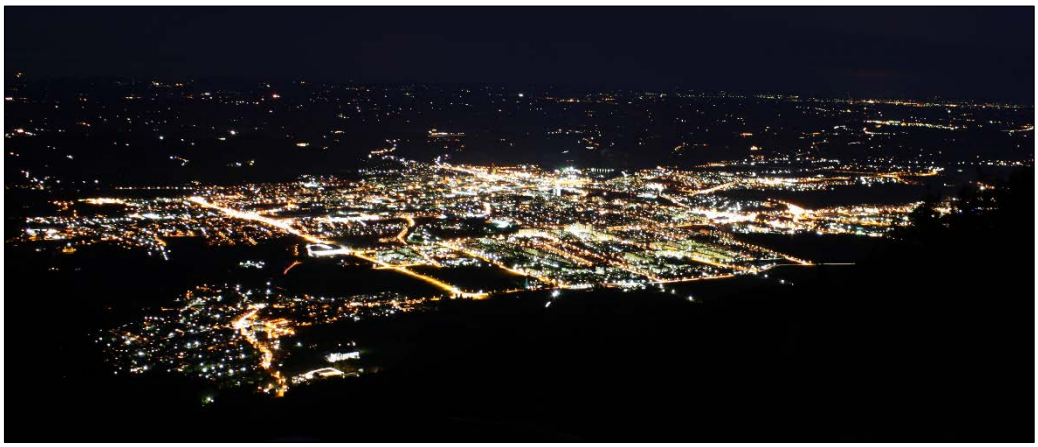
Meritve sija neba na območju Maribora smo izvajali avgusta 2012 in sicer na 48 merilnih mestih. Vrednosti meritev so se gibale med 15,53 mag2/arc sec (Pobreška cesta v bližini nakupovalnega središča Europark) in 20,07 mag^2/arc sec (Mariborske gorice med Meljskim hribom, Stolnim vrhom in Košaškim Dolom). Povprečna vrednost vseh meritev je znašala 17,96 mag^2/arc sec, kljub temu, da smo meritve izvajali tudi v zaledju mesta. Karta sija neba (Slika 2) kaže na določeno povezavo med intenzivnostjo sija neba in potekom glavnih mestnih vpadnic in cest. Najvišjo stopnjo svetlobe onesnaženosti beležimo na območju Tabora, Tezna (ob Ptujski cesti), Pobrežja (ob nakupovalnem središču Europark in ob Puhovi cesti ter v bližini nakupovalnega središča ob Ulici Veljka Vlahoviča), na območju mestnega središča med železniškim in Starim mostom ter v smeri Šentiljske ceste. Na omenjenih območjih je sij neba povsod pod 18 mag^2/arc sec (na karti so ta območja obarvana z rdečimi in oranžnimi odtenki). V težišču mesta na območju križišča železniških krakov proti Koroški, Ptuju in Šentilju, na območju Pobrežja med Hitro cesto in Nasipno ulico ter na območju med Cesto XIV. divizije in Stražunom (gre za območja s prevladujočo individualnimi stanovanjskimi hišami) je stanje nekoliko ugodnejše, saj je sij neba med 19 in 20 mag^2/arc sec, kljub temu da na tem območju še vedno prevladujejo nezastrte visokotlačne živosrebrne sijalke. Njihova svetloba ima modrikasto – zelen odtenek. Velik del energije oddajo v ultravijoličnem delu spektra, zaradi česar posebno privlačijo žuželke – bolj kot fluorescenčne in mnogo bolj kot natrijeve sijalke (Legiša 2010, 7). Z oddaljevanjem od središča mesta in z zmanjševanjem gostote cestnega omrežja se spreminja tudi svetlobna onesnaženost. Na robu Mariborskih goric ter v smeri Brezja, Miklavža in Peker ter na Vrbanskem platoju se vrednosti sija neba dvigajo nad 19 mag^2/arc sec (na karti so ta območja prikazana z modrimi odtenki).



Slika 2: Sij neba na območju Maribora (v mag^2/arc sec).
Vir: Lastne meritve.

Pogled na razsvetljen Maribor ponoči nam ponuja zanimive informacije. Vtis je, da med sijalkami še vedno prevladujejo polzastrte ali zastrte visokotlačne natrijeve sijalke, ki so s spektralnega vidika ugodnejše kot visokotlačne živosrebrne sijalke in LED sijalke, ki se pri nas v zadnjem času uporabljajo v vse večji meri. To nam dokazuje tudi Slika 3, na kateri je mogoče opaziti prevladujočo značilno oranžno barvo sijalk ob večjih cestah, medtem ko je na manjših ulicah pogosto mogoče zaznati zelenkasto-modrikast pridih, ki je značilen predvsem za visokotlačne živosrebrne sijalke.

Velika gostota svetilk v urbanih območjih zaradi sipanja svetlobe v atmosferi oblikuje nad mesti pojav svetlobnih kupol. Z meritvami v osmih smereh neba na izbranih točkah v okolici Maribora in z izdelavo vsenebnih posnetkov smo želeli obstoj svetlobne kupole potrditi in kvantitativno ovrednotiti. Rože svetlobnega onesnaženja, ki smo jih izdelali na osnovi meritev v osmih smereh neba kažejo na razlike v siju neba v smeri mesta in v nasprotni smeri (Slika 4, Preglednica 1). Rože svetlobnega onesnaženja izdelane za sedem lokacij v okolici kažejo na izrazito deformirane oblike in večje svetlobno onesnaženje, izmerjeno v smeri mesta.



Slika 3: Maribor ponoči z Mariborskega Pohorja.
Foto: Žiberna, 2012.

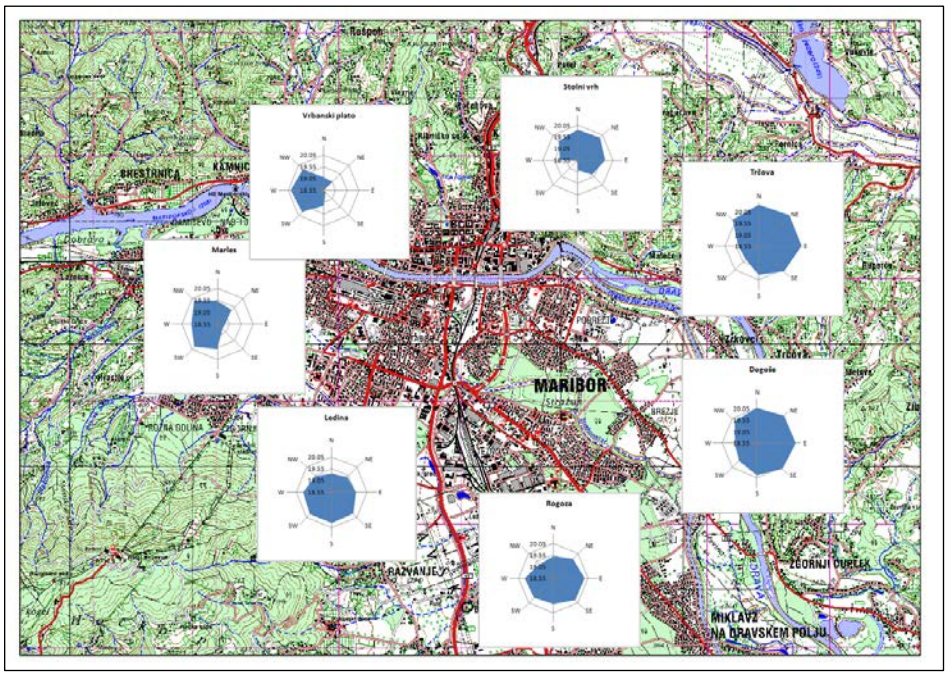
Preglednica 1: Sij neba v različnih smereh na izbranih lokacijah v okolici Maribora (v mag^2/arc sec).

Lokacija	Zenit	N	NE	E	SE	S	SW	W	NW
Stolni vrh	19.77	19.87	19.91	19.73	19.43	18.98	18.60	19.31	19.71
Trčova	20.44	20.36	20.46	20.44	20.13	19.83	19.37	19.45	20.17
Dogoše	20.20	20.07	20.21	20.22	20.11	19.94	19.64	19.50	19.90
Rogoza	19.92	19.49	19.74	19.90	19.90	19.68	19.74	19.78	19.39
Ledina	19.75	19.34	19.47	19.57	19.83	19.86	19.87	19.77	19.53
Marles	19.65	19.52	19.39	18.88	18.85	19.61	19.92	19.64	19.93
Vrbanski plato	18.93	19.10	19.03	18.55	18.65	19.21	19.86	19.95	19.81

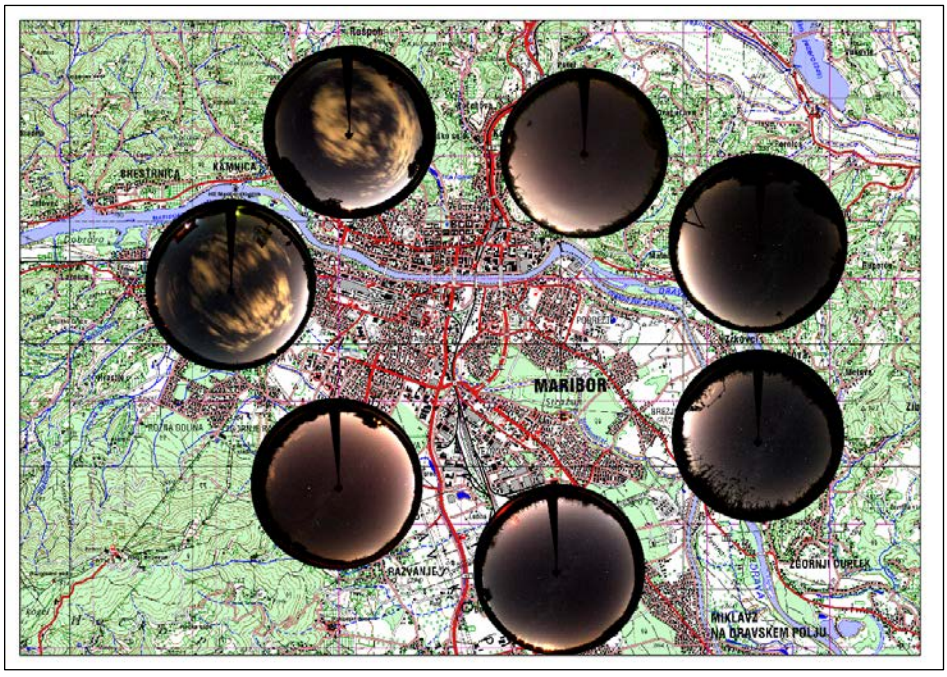
Vir: Lastne meritve, 2012.

Najvišjo vrednost (20,46 mag^2/arc sec, torej najtemnejše nebo) je mogoče zaznati na lokaciji Trčova v smeri proti severovzhodu, torej proti osrčju Slovenskih goric, kjer – razen Lenarta v Slovenskih goricah – ni večjih virov svetlobnega onesnaženja. Najnižje vrednosti (18,55 mag^2/arc sec, torej najsvetlejše nebo) smo izmerili na lokaciji Vrbanski plato v smeri proti vzhodu, torej proti središču mesta). Največje razlike v siju neba je bilo mogoče zaznati na lokaciji Stolni Vrh, kjer znaša razlika v siju neba proti mestu (18,60 mag^2/arc sec) in v nasprotni smeri (19,91 mag^2/arc sec) kar 1,30 mag^2/arc sec.

Prisotnost izrazite svetlobne kupole nad mestom dokazujejo tudi vsenebni posnetki, izdelani na istih sedmih lokacijah v okolici mesta (Slika 5). Obzorje je bistveno bolj svetlobno onesnaženo v smeri mesta, višina svetlobne kupole pa na večini lokacij presega kot 45° nad obzorjem. Zanimivo je, da se na lokaciji Rogoza pojavljajo opazne svetlobne kupole sosednjih naselij, predvsem svetlobna kupola Spodnjih Hoč, na lokaciji Dogoše pa svetlobna kupola Spodnjega in Zgornjega Dupleka. Še najtemnejši deli obzorja se pojavljajo na lokaciji Ledina v smeri proti jugozahodu (proti Pohorju) in na lokaciji Trčova v smeri proti severovzhodu (osrčju Slovenskih goric).

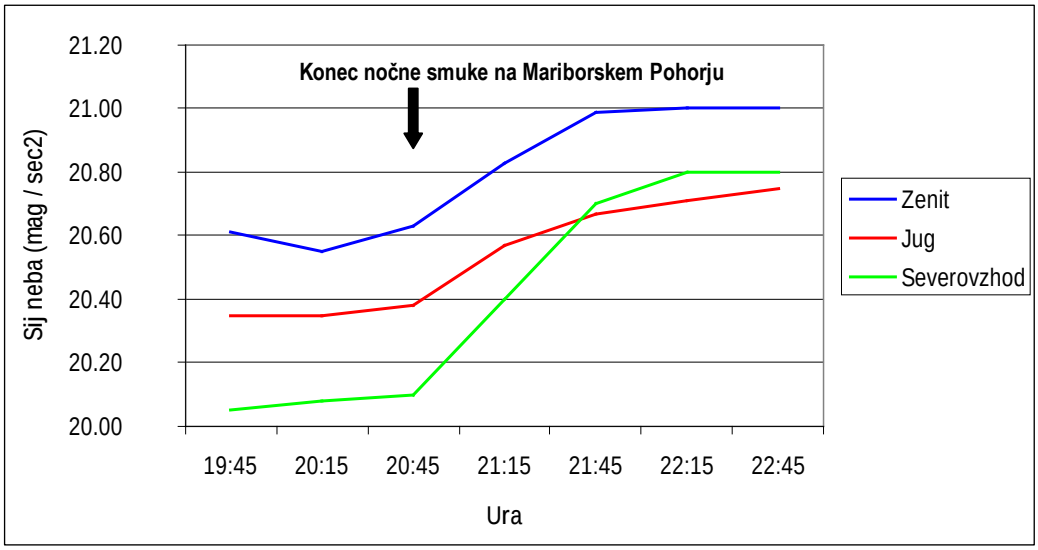


Slika 4: Rože svetlobnega onesnaženja na izbranih lokacijah v okolici Maribora.
Vir: Lastne meritve, 2012.



Slika 5: Vsenebni ponetki na izbranih lokacijah v okolici Maribora.
Vir: Lastni vsenebni posnetki, 2012.

V zimskem času se stopnja svetlobnega onesnaženja v okolici mesta poveča, čemur botruje nočna smuka na Mariborskem Pohorju, kadar je za to sploh dovolj snega. Čas, ko so pozimi smučišča osvetljena se zaradi finančnih težav upravljalca smučišč v zadnjih letih sicer zelo spreminja, načelno pa naprave v času nočne smuke obratujejo med 17. in 21. uro, ko luči ob smučiščih pričnо postopoma ugašati. Da bi prikazali vpliv nočne smuke na sij neba smo 5. februarja 2007 v Frajhajmu na Pohorju (nadmorska višina 1070 m), južno od počitniškega doma Zarja merili sij neba v zenit, proti severovzhodu (v smeri, v kateri se nahajajo smučišča na Mariborskem Pohorju) in proti jugu in to z intervalom 30 minut (Slika 6). Najmanj svetlobno onesnaženo nebo je bilo v zenitu, kjer so se v času obratovanja nočne smuke vrednosti sija neba gibale okoli 20,60 mag^2/arc sec in se po koncu nočne smuke dvignile na 21,0 mag^2/arc sec. Najbolj svetlobno onesnaženo nebo je bilo pričakovano v smeri smučišč, kjer so vrednosti sija neba v času obratovanja nočne smuke znašale dobrih 20,00 mag^2/arc sec in se po koncu nočne smuke dvignile na 20,80 mag^2/arc sec, torej skoraj za 1 mag^2/arc sec. Večje izboljšanje je preprečevala svetlobna kupola Maribora, ki je na tej lokaciji, kljub temu da se mesto ne vidi neposredno, dobro opazna. Izboljšanje stanja svetlobne onesnaženosti je vidno celo v južni smeri, kjer pa so bili tudi po koncu nočne smuke vidni vplivi svetlobnih kupol Slovenske Bistrice in Slovenskih Konjic, zato se vrednost sija neba ni dvignila nad 20,80 mag^2/arc sec. Vse meritve so bile opravljene ob jasnem vremenu. V primeru, ko se nad Mariborskim Pohorjem v času nočne smuke nahajajo srednji oblaki, je zaradi odboja umetne svetlobe stanje svetlobnega onesnaženja porazno. Omenimo naj, da se lokacija meritev že nahaja znotraj območja Natura 2000.

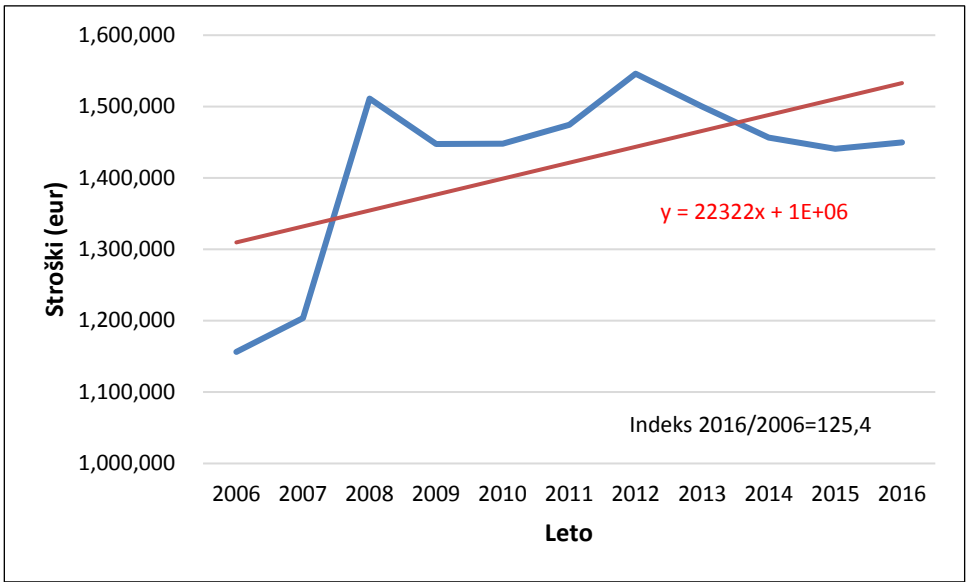


Slika 6: Sij neba v Frajhajmu na Pohorju 5.2.2007 med 19:45 in 22:45.
Vir: Lastne meritve, 2007.

Slika 7: Nočna smuka na Mariborskem Pohorju predstavlja dodaten vir svetlobnega onesnaževanja v okolici Maribora. Na skrajni desni strani posnetka so vidna osvetljena smučišča na Veliki Kopi na Pohorju.
Foto: Žiberna, 2013.

V prednovoletnem času se zaradi novoletne krasitve mesta poveča količina dekorativnih svetil, ki praviloma niso ekološke, t.j. oddajajo svetlobo nad vodoravnico. Še več: v času novoletne krasitve mesta že v začetku decembra prižgejo luči na južnem pobočju Piramide, ki nato v večernem in nočnem času svetijo vse do začetka januarja, torej okoli mesec dni.

Slika 8: Grič Piramida severno od mesta je v obdobju med začetkom decembra in začetkom januarja v nočnem času »okrašen« z množico neekoloških sijalk, ki sevajo svetlobo nad vodoravnico.
Foto: Žiberna, 2011.



Slika 9: Stroški za porabljeno energijo za javno razsvetljavo na območju Mestne občine Maribor v obdobju 2006-2016 (v evrih).
Vir: Zaključni računi Mestne občine Maribor (Internet 3).

Stroški porabljene energije za javno razsvetljavo v proračunu Mestne občine Maribor so od leta 2006 sicer nihali, po letu 2008 (začetek gospodarske krize) in 2012 (varčevalni ukrepi vlade in nemirne lokalno-politične razmere) sicer za krajši čas padli, v splošnem pa se ti višajo s trendom 22 322 eur na leto (Slika 9). Indeks porabljenih sredstev za plačilo energije za javno razsvetlja v obdobju 2006-2016 znaša 125,4 (Internet 3). Podatek je zanimiv, saj se niti število prebivalcev niti dolžina javnih cest v omenjenem obdobju na območju Mestne občine Maribor ni povečevala s tako dinamiko: število prebivalcev je v tem obdobju naraslo za 1,1 %, dolžina javnih cest pa stagnira (Internet 4).

4. Zaključek

Mesto Maribor sodi med večje vire svetlobnega onesnaženja na območju Slovenije. Znotraj mesta glavne vire svetlobnega onesnaženja predstavljajo nezastrte in polzastrte svetilke cestne razsvetljave, zato se svetlobno bolj onesnažena območja pojavljajo vzdolž večjih prometnic in na parkirišči v okolici nakupovalnih središč. Na območjih z individualno stanovanjsko gradnjo zlasti na Pobrežju, Teznu in delu Tabora je stopnja svetlobnega onesnaženja nekoliko nižja, kljub še vedno prisotni uporabi nezastrtih svetilk z visokotlačnimi živosrebrnimi sijalkami, ki imajo višek sevanja v modrem delu spektra. Mesto oblikuje izrazito svetlobno kupolo, ki ima regionalni značaj. V okolici mesta zimska nočna smuka na Mariborskem Pohorju predstavlja dodaten vir svetlobnega onesnaževanja. Kljub stagnaciji števila prebivalstva in dolžine javnih cest na območju Mestne občine Maribor se je višina porabljenih sredstev za plačilo energije za javno razsvetljavo v obdobju 2006-2016 povečala za 25 %. S postopno zamenjavo obstoječih pretežno visokotlačnih natrijevih sijalk z LED sijalkami lahko pričakujemo neugodne prostorske učinke svetlobnega onesnaženja, ki izhajajo iz intenzivnejšega sipanja modre svetlobe, ki jih oddajajo le-te.

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LIGHT POLLUTION IN MARIBOR
Summary

The city of Maribor is one of the major sources of light pollution on the territory of Slovenia. Within the city, the main sources of light pollution are non-ecological lamps, road lighting, so more polluted areas occur along the main roads and and parking lots around shopping centres. In areas with individual housing, in particular on the Pobrežju, Teznu and part of the Tabor, the level of light pollution is slightly lower, despite the still present use of non-ecological lamps. The city shall develop a distinctly light dome, which has a regional character. Winter skiing resorts on the Mariborsko Pohorje represents an additional source of light pollution. Despite the stagnation in the number of population and the length of public roads in the municipality of Maribor the amount of funds spent for payment of energy consumption for public lighting during the period 2006-2016 increased by 25 %. With the gradual replacement of the existing predominantly high pressure sodium lamps with LED lamps we can expect adverse spatial effects of light pollution, resulting in more scattering of the blue light emitted by these.

PRISPEVEK K POZNAVANJU SOCIALNE ZGRADBE MESTA NA PRIMERU NASELJA LENART V SLOVENSKIH GORICAH

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Izvleček

Prispevek k poznavanju socialne zgradbe mesta na primeru naselja Lenart v Slovenskih goricah

V članku je prikazan pristop k spoznavanju socialne zgradbe mesta na podlagi socialnih lastnosti uporabnikov posameznih dejavnosti v naselju Lenart. Socialna zgradba mesta se nanaša tudi na socialno diferenciranost posameznih dejavnosti, ki so namenjene zadovoljevanju potreb prebivalcev in obiskovalcev mesta. Teoretska podlaga besedila je spoznanje, da posamezniki podobnih socialnih lastnosti zadovoljujejo svoje potrebe na podobnih ali na istih krajih. V ta namen smo popisali kraje, kjer je mogoče zadovoljevati človekove potrebe in jim pripisali socialne vsebine. Izkazalo se je, da je socialna diferenciranost v Lenartu majhna. Večina krajev se razlikuje glede na starostno skupino uporabnikov.

Ključne besede

socialna geografija, urbana geografija, kraj, socialna skupina, Lenart

Abstract

Contribution to the perception of the social structure of a town in the case of the town Lenart v Slovenskih goricah

The social structure of a town illustrates the layout of elements and features with social content. It is usually presented with social indicators of the population of a said town; that is by age, ethical and religious affiliation, education, economic circumstances and similar social characteristics. Characteristics of such impressions means that they are made on the basics of statistical data and according to the domicile principle. However, the city is a dynamic formation; it cannot be explored just by taking into account the place of residence of the population. In social geography and urban sociology there is the realization, that members of the same or similar social characteristics are territorially and functionally interconnected. Functional interconnection means that they work and act (thus "operate") together, in a similar way, at the same locations and at the same time. The word "operate" refers to the satisfaction of the basic human needs, such as living, working, care and provisions, education, recreation and communication. Functional interconnection therefore relates to similar habits regarding supply of provisions at the same locations, going to the same or similar stores, similar recreation habits, and usage of same or similar recreational areas and so on. This creates emerging areas (in large cities) or individual objects (in small towns) which are frequented by people of specific social characteristics. This social sediment can be seen in the function, form, and position within the city, perhaps even in size. The paper shows the results of social structure of a small town based on the places, where specific social groups satisfy their needs.

Key words

Social geography, urban geogrphy, place, social group, Lenart

Uredništvo je članek prejelo 3. 11. 2016

1. Uvod

Socialna zgradba mesta ponazarja razmestitev elementov in lastnosti s socialno vsebino. Običajno jo prikazujemo s socialnimi kazalci prebivalcev nekega mesta, to je s starostjo, etično in versko pripadnostjo, izobrazbo, ekonomskim položajem in kar je še podobnih socialnih lastnosti. O tem obstaja v geografiji veliko študij, naj omenim samo prispevke Uroša Horvata in Dejana Rebernika (Horvat 2006, Rebernik 2000). Značilnost tovrstnih prikazov je, da so izdelani na podlagi statističnih podatkov in po domicilnem principu. Prikazujejo torej statično podobo – prostorski vzorec določene socialne lastnosti prebivalcev glede na njihov kraj bivanja. Takšen prikaz podaja vpogled v značilnosti razporeditve socialnih elementov na območju mesta, še posebej če si predstavljamo, da lahko skoraj vsak socialni pokazatelj prikažemo v prostorski razsežnosti. Vendar, mesto je dinamična tvorba, ni ga mogoče spoznavati zgolj upoštevaje kraj bivanja prebivalcev. V mestu se zadržuje veliko ljudi, ki živijo v bližnjih naseljih - ti so iz takšnega prikaza izvzeti. In morda še pomembneje: povezanost med socialnimi lastnostmi ljudi in krajem bivanja, je danes veliko manjša, kot je bila nekoč (Löw 2001, 253). Ta povezanost se je zrahljala zaradi vse večje socialne raznolikosti, individualizma, vse hitrejšega načina življenja, raznolikosti mesta. Socialno zgradbo mesta je mogoče spoznati še na drugi način. V socialni geografiji in prostorski sociologiji velja spoznanje, da se pripadniki istih in podobnih socialnih značilnosti teritorialno in funkcionalno povezujejo med seboj. Funkcionalno povezovati se, pomeni delovati skupaj, podobno, na istih krajih, ob istem času. Beseda »delovanje« se nanaša na zadovoljevanje osnovnih človekovih potreb, to so bivanje, delo, oskrba, izobraževanje, rekreacija in komunikacija. Funkcionalno povezovanje se torej nanaša na podobne oskrbovalne navade in na oskrbovanje na istih krajih, obiskovanje istih ali podobnih trgovin, podobne rekreacijske navade, uporabo istih ali podobnih rekreacijskih območij in tako dalje. Ni si težko predstavljati, da ob tem nastajajo območja (v velikih mestih) ali posamezni objekti (v majhnih mestih) v katerih delujejo ali jih obiskujejo prebivalci specifičnih socialnih lastnosti. Deloma je ta fenomen že bil obdelan in empirično podkrepljen na primeru Maribora (Drozg 2012). Iz tega izhaja še ena lastnost mest in našega bivalnega okolja, pravzaprav značilnost odnosa med človekom in okoljem. Sociologiji pravijo, da so fizične strukture, socialne strukture (Löw 2001). Seveda velja tudi obratno, socialne strukture so fizične strukture, kot lahko preberemo v študiji Human spatial behaviour (Jakle, Brunn, Roseman 1985, 11). V obeh primerih je rezultat enak – fizično okolje, v mestih bi lahko govorili o grajenih strukturah, ima socialna obeležja. Ta odnos je tudi v geografiji že nič koliko krat dokumentiran in potrjen, recimo v pojavu rezidualne segregacije, o kateri piše Rebernik (2002), pa tudi v odnosu med tipom stanovanjske hiše in življenjskim stilom lastnika (Drozg 2006), in ne nazadnje. To pomeni, da grajene strukture odražajo socialne lastnosti njihovih uporabnikov. Ta socialni sediment je lahko viden v funkciji, lahko v obliki, lahko v položaju znotraj mesta, lahko v velikosti. Pomembno je, da tak odnos obstaja, generira samega sebe, ob tem pa nastaja socialna zgradba mesta. Prepoznamo jo po specifičnih krajih, kjer določene socialne skupine zadovoljujejo svoje potrebe, povedano drugače, po fizični strukturi s specifično socialno vsebino. V nadaljevanju želimo pokazati socialno zgradbo majhnega mesta v Slovenskih goricah, in sicer iz vidika krajev, kjer posamezne socialne skupine zadovoljujejo svoje osnovne potrebe in iz vidika socialnih skupin, ki oblikujejo socialno zgradbo Lenarta.

2. Odnos med socialnim in fizičnim

Začenjamo s temo, ki je skoraj obče narave. Vzajemni odnos med človekom (duhovnim, socialnim) in okoljem (fizičnim, materialnim) je, tako izgleda, večna tema, ne le v znanosti, tudi v umetnosti. Čeprav nikoli ovržen, se vedno znova pojavlja kot raziskovalno vprašanje v sociologiji, etnologiji, antropologiji in tudi v geografiji. Velik del geografije izhaja (temelji) na odnosu med človekom in naravo ter na njuni medsebojni povezanosti, celo soodvisnosti. V določenem obdobju razvoja vede je bil označen kot (geografski) determinizem, vendar, kot navaja Viazzo, »ni nikoli izgubil veljave, ker bi ovrgli njegova načela, ampak empirično, ker so izpodbijali njegove primere«. (Viazzo 2014, 9). V geografiji današnjega časa se je poanta tega odnosa nekoliko »prestavila« iz naravnega proti fizičnemu (izgrajenem) okolju. Doreen Massey ponazarja ta premik ko pravi, da se prostor vzpostavlja, nastaja in se oblikuje skozi družbeno delovanje in socialne strukture. Pri tem je delovanje posameznika in skupnosti (socialne skupine) med seboj prepleteno in povezano do te mere, da je rezultat tega delovanja zelo podoben in komplementaren. (Massey po Glasze, Mattissek 2009, 41) Podobno razmišljajo tudi Jakle, Brunn in Roseman – ljudje specifičnih socialnih lastnosti dajejo določenemu kraju identiteto, hkrati pa ta kraj določa identiteto njih samih. (Jakle, Brunn, Roseman, 11) V sociologiji velja, da se socialne lastnosti posameznika, skupnosti in družbe odražajo v materialnem svetu (Steets 2015, 17-18). Pri tem je mogoče razlikovati tri pojmovanja: po prvem, materialne stvari odslikavajo socialne lastnosti posameznikov ali socialnih skupin, pa tudi socialne odnose v skupnosti oziroma v družbi. Obleka v številnih primerih izdaja socialni položaj človeka, stanovanjska hiša odraža socialne lastnosti stanovalcev, lokacija in opremljenost gostinskega lokala odraža socialne lastnosti obiskovalcev. Po drugem pojmovanju so vzrok tega, da določene materialne stvari pritegujejo ljudi s specifičnimi socialnimi lastnostmi, »signifikantni simboli« (značilne posebnosti), ki so del materialnih stvari (Steets 2015, 32). Določene lastnosti stvari (simboli) v določenih ljudeh vzbujajo podobna občutja in podobne reakcije, zaradi česar ti podobno delujejo v prostoru. Značilne posebnosti oziroma simboli, kakor jih imenuje utemeljitelj te teorije, George Herbert Mead, so lahko kakršnikoli - oblika, barva, položaj, velikost stvari. Socialna lastnost materialnih stvari torej ni del njih samih, ni vgrajena vanje, temveč je posledica dojemanja in ravnanja z njimi, je posledica človekovega odnosa do njih. Po tretjem pojmovanju so materialne stvari medij (sredstvo) v katerem se socialne lastnosti vsakič na novo vzpostavljajo, in sicer glede na zgodovinski (razvojni) kontekst ter z ozirom na socialne lastnosti uporabnika. Vsaka socialna skupina ima specifične predstave o fizičnem okolju, v katerem deluje, navaja Halbwachs (po Steets 2015, 27).

V vsakem od teh pojmovanj lahko prepoznamo veliko stičnih točk z obravnavano temo. Fizične strukture odražajo socialne lastnosti uporabnikov – rekreacijska območja najmlajših so prilagojena njihovim fizičnim in gibalnim zmogljivostim. Fizične strukture posedujejo signifikantne simbole, ki pritegujejo ljudi določenih socialnih lastnosti – ponudba blaga v trgovinah, tudi lokacija, so »značilne posebnosti«, ki pritegnejo določen del populacije. Trške hiše, nekdanja bivališča trgovcev in obrtnikov, so danes v socialnem smislu manj imenitni objekti in zato v socialnem smislu vrednoteni drugače, kot so bili nekoč.

3. Socialne skupine kot dejavnik socialne zgradbe mesta

Množica posameznikov – prebivalcev mesta je, po teoriji socialne geografije, povezana v številne neformalne skupnosti, ki jih imenujemo socialne skupine.

Socialne skupine vključujejo posameznike s podobnimi socialnimi lastnostmi in podobnim načinom delovanja v prostoru. Slednje pomeni, podoben način zadovoljevanja njihovih potreb, kar se nanaša na podoben kraj, podoben način in podoben čas delovanja v prostoru. Socialne skupine so zelo različne, definira jih starost, interes, materialni položaj in še druge socialne lastnosti (veroizpoved, nacionalnost, barva kože, spol) ter, kot rečeno, podoben način zadovoljevanja potreb. Pri tem je potrebno še upoštevati, da posameznik hkrati pripada različnim socialnim skupinam, odvisno od tega, katero lastnost ali dejavnost upoštevamo kot identifikacijski element. Tako je posameznik hkrati član socialne skupine stanovalcev v določeni soseski, član socialne skupine vrtičkarjev, člen socialne skupine obiskovalcev mestne knjižnice, član socialne skupine kupcev v določenem nakupovalnem središču in podobno. Vsakič ko zadovoljuje katero od potreb, deluje v prostoru kot član ene od socialnih skupin.

4. Kraji zadovoljevanja potreb – gradniki socialne zgradbe mesta

Pri spoznavanju socialne zgradbe mesta je primaren teritorialni vidik, torej deli mesta, kjer se zadržujejo ljudje podobnih socialnih lastnosti. Ta območja lahko imenujemo kraji zadovoljevanja potreb. Kraj, kakor ga razumemo v tem kontekstu, je prostor (območje), kjer deluje posebna socialna skupina in zadovoljuje svoje potrebe (Tuan 2001, 6). Seveda je tako pojmovan kraj teoretični (miselni) konstrukt, saj je v mestu nešteto krajev, ki se medsebojno prekrivajo in prepletajo, oblikujejo pa jih najrazličnejše socialne skupine. Vendar je kraj oznaka za območje, ki v določenem kontekstu pripada samo določeni socialni skupini. Kraj je socialni prostor določene socialne skupine, kjer ta deluje in zadovoljuje svoje potrebe. Zato je med pripadniki socialne skupine in krajem vzpostavljen še čustveni odnos, recimo v smislu navade, rutine, običaja, posamezniki ne zahajajo v katerokoli trgovino, temveč v tisto, ki so je navajeni, ki jim je blizu, zaradi pogoste uporabe imajo do te trgovine poseben odnos, kar je podlaga za opredelitev dela prostora kot kraj. Kraj je pomensko drugačen od pojma prostor - slednji je vrednostno nevtralen in obči pojem, nedefiniran, brez socialne vsebine, enak za vse ljudi. Kraj pa je del prostora, do katerega ima uporabnik osebni odnos, kraj je napolnjen s pomeni in človeško izkušnjo. Oznake za pojem kraj, kakršne zasledimo v literaturi, povsem odgovarjajo pomenu, kot ga uporabljamo pri spoznavanju socialne zgradbe mesta. »Kraj označujeta pomen in materialnost, oboje je rezultat človekovega delovanja« (Cresswell 2004, 30); kraj določajo položaj, lokalnost in vsebina (Agnew, po Cresswell 2004, 7), kraj ni nekaj danega samo po sebi, temveč je rezultat součinkovanja ljudi in dejavnosti (Allen 1999, 66), samo poznavanje krajev pomeni golo poznavanje položaja, potrebno je še poznavanje ljudi in njihove socialnih lastnosti, ki kraj oblikujejo.

5. Način spoznavanja socialne zgradbe mesta – metoda dela

Pri spoznavanju socialne zgradbe mesta oziroma socialne vsebine krajev sta ključni dve stvari: evidentirane krajev različnih dejavnosti, ki so namenjene zadovoljevanju potreb ter prepoznavanje socialnih skupin, ki na posameznih krajih delujejo. Kako poiskati presečno množico med enim in drugim? Kraje posameznih dejavnostih je mogoče popisati s kartiranjem. Vendar ni dovolj, da jih samo evidentiramo, v krajih je potrebno prepoznati še njihovo socialno vsebino in jih na ta način združiti v bolj pregledne skupine. Množico krajev je potrebno razdeliti v skupine, ki ustrezajo ali vsaj nakazujejo socialne lastnosti njihovih uporabnikov ali imajo same socialno vsebino. Primer: evidentiranje športnih igrišč ni dovolj, potrebno je še ugotoviti, katerim

socialnim skupinam je določeno športno igrišče namenjeno, kar imenujemo socialna vsebina kraja. Tako kot pri vsakem razvrščanju se dilema nanaša na število skupin – če jih je premalo, je prikaz lahko preveč generaliziran, če jih je preveč, je težava v natančnosti kriterijev in podvajanju. Socialne skupine, ki delujejo na posameznem kraju je mogoče ugotoviti na več načinov: eden izhaja iz vrste oziroma značaja kraja – na otroških igriščih se zadržuje socialna skupina predšolskih otrok, v osnovni šoli deluje socialna skupina otrok – učencev ter socialna skupina učiteljev/učiteljic. Drugi način je opazovanje. Z opazovanjem in razvrščanjem obiskovalcev določene trgovine je mogoče ugotoviti povprečno socialno sestavo kupcev. Tretji način je analiza statističnih podatkov; iz podatkov o izobrazbi zaposlenih v delovnih organizacijah je mogoče povzeti, ali večina zaposlenih pripada socialni skupini delavcev ali uslužbencev. Vsem krajem pa z nobeno od metod ni mogoče določiti socialne vsebine oziroma socialnih skupin, ki tam delujejo, običajno zato, ker ciljna skupina uporabnikov ni definirana. Na nekaterih krajih delujejo vse socialne skupine, ki v naselju živijo in delujejo. Prepoznavanje socialnih skupin, ki delujejo na posameznem kraju, je lahko težavno. Za določevanje socialnih vsebin krajev je potrebnih veliko podatkov, ki jih ni mogoče pridobiti drugače, kot z zamudnim terenskim delom. Del podatkov, ki so uporabljeni v prispevku, so zbrali študentje v okviru seminarja iz Urbane geografije v šolskem letu 2014-2015.

Razvrščanje na osnovi posrednih podatkov ima zagotovo svoje pomanjkljivosti, predvsem, ker so ugotovitve lahko premalo natančne in premalo selektivne, lahko pa so preveč subjektivne. Samo z opazovanjem je mogoče fizične strukture (kraje) razvrstiti v zelo splošne kategorije. Pogosto lahko opredelimo samo ciljno socialno skupino, prebivalce torej, ki jim je določena prostorska ureditev namenjena ali pa socialno skupino, ki najpogosteje deluje na določenem kraju. Vendar to ne pomeni, da je zaradi tovrstnih metodoloških omejitev poznavanje socialne zgradbe mesta napačno, kvečjemu je manj podrobno.

Še pojasnilo o smiselnosti spoznavanja socialne zgradbe mesta: poleg poznavanja razmestitve socialnih vsebin v mestu in s tem povezanih pojavov kot so segregacija in socialna diferenciacija, daje vpogled v socialno zgradbo mesta tudi spoznanja o kakovosti bivalnega okolja. Iz nabora krajev, ki so namenjeni posameznim dejavnostim in socialnim skupinam je mogoče oceniti, ali lahko vse socialne skupine zadovoljujejo svoje potrebe v domačem kraju. Nesorazmerje med kraji zadovoljevanja potreb in socialnimi skupinami pomeni, da je za nekatere socialne skupine premalo ali preslabo poskrbljeno oziroma, da je poskrbljeno samo za nekatere.

6. Kraji zadovoljevanja potreb in njihove socialne vsebine

Iz Preglednice 1 so razvidni kraji posameznih dejavnosti, ki smo jih evidentirali v Lenartu ter socialne skupine, ki na teh krajih delujejo in zadovoljujejo svoje potrebe.

6.1 Kraji bivanja

Kraji bivanja posedujejo več lastnosti, po katerih lahko sklepamo na socialne značilnosti tamkajšnjih stanovalcev. Običajno kraje bivanja ločimo glede na materialni položaj ter življenjski slog stanovalca, kar se kaže v velikosti objekta ter stavbnega zemljišča, obliki in s tem povezanem oblikovnem presežku, gradbenih materialih objekta, ureditvi okolice, ostale socialne lastnosti pa so v fizični podobi manj prepoznavne. V osnovi je potrebno razlikovati kraje bivanja v enostanovanjskih hišah in večstanovanjskih hišah, saj so kazalci za prepoznavanje socialnih vsebin različni.

Preglednica 1: Dejavnosti, kraji in ciljne/najpogostejše socialne skupine uporabnikov v Lenartu.

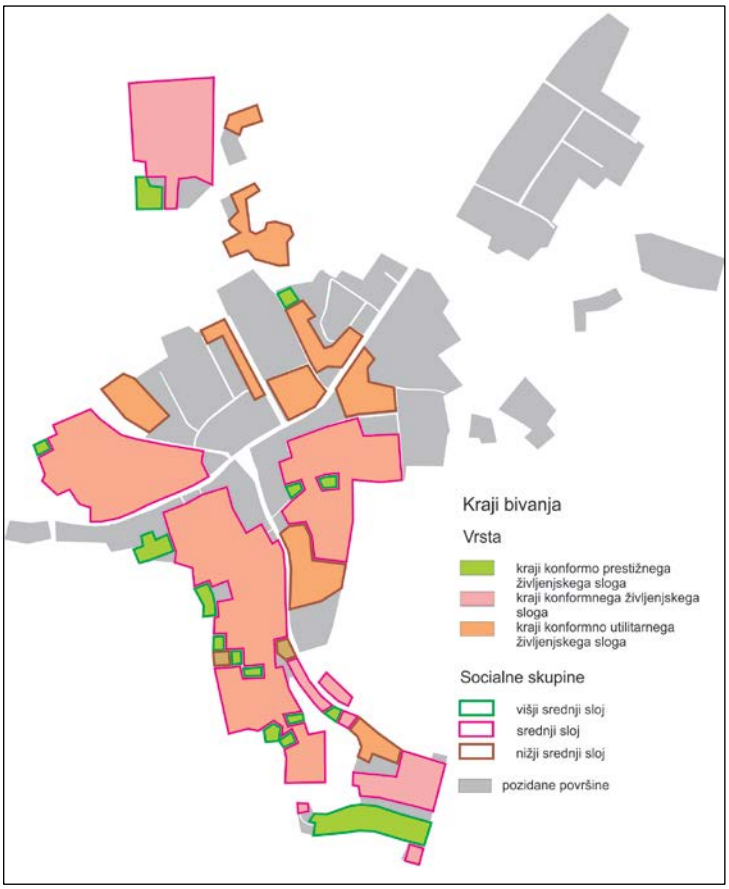
Dejavnost	Vrste / kraji dejavnosti	Ciljna / najpogostejša socialna skupina uporabnikov
Bivanje	Kraji konformo prestižnega življenjskega sloga Kraji konformnega življenjskega sloga Kraji konformno utilitarnega življenjskega sloga	Socialna skupina višjega srednjega sloja Socialna skupina srednjega sloja Socialna skupina nižjega srednjega sloja
Delo	Kraji proizvodnje Kraji storitev materialnega značaja Kraji storitev nematerialnega značaja	Socialna skupina poklicnih delavcev Socialna skupina administrativnih delavcev, trgovcev in uslužbencev Socialna skupina strokovnjakov
Oskrba	Kraji za dnevno oskrbo z živili Kraji s tehničnim blagom Kraji z blagom za osebne potrebe Kraji z izdelki za hišo in dom	Vse socialne skupine Socialna skupina manj zahtevnih kupcev Socialna skupina specializiranih kupcev (kmetovalci)
Izobraževanje	Kraji osnovnega izobraževanja Kraji dopolnilnega izobraževanja Kraji specializiranega izobraževanja	Socialna skupina šolarjev Socialna skupina odraslih Vse socialne skupine
Rekreacija	Otroška igrišča Športna igrišča Športna dvorana Vrtovi	Socialna skupina malčkov Socialna skupina šolarjev Socialna skupina rekreativcev, organiziranih mladostnikov in odraslih (člani športnih društev) Socialna skupina odraslih (najemniki vrtov)
Komunikacija	Mestni trgi Tržnica Društveni prostori Gostinski lokali Rekreacijska območja	Socialna skupina mladostnikov, Socialna skupina odraslih, Interesne socialne skupine Vse socialne skupine

V Lenartu največjo površino zavzemajo enostanovanjske hiše, poleg teh se pojavljajo še bloki in večstanovanjske trške hiše. V središču mesta so večstanovanjske trške hiše in bloki, na obrobju pa enodružinske hiše. Socialne vsebine večstanovanjskih objektov je težko oceniti. Glede na urejenost objekta in okolja, velikost stanovanj ter starost stanovanj sklepamo, da je to kraj bivanja ljudi, ki pripadajo nižjemu srednjemu sloju. K takšnemu sklepu navajajo tudi podatki o povprečni odmeri dohodnine, ki pa se žal nanašajo na večje območje. Če bi skušali oceniti življenjski stil prebivalcev večstanovanjskih objektov, bi bil najbližji utilitarni oziroma konformni življenjski slog. V najstarejših blokih in trških hišah je nadpovprečen delež starejših stanovalcev, saj so bili objekti zgrajeni za potrebe delavcev v javnih ustanovah. Med stanovalci v novejših blokih pa prevladujejo mlajše družine.

Socialne vsebine krajev enodružinskih hiš je lažje razvrstiti v ustrezne kategorije. Po podatkih o odmerjeni dohodnini, večina stanovalcev pripada srednjemu sloju prebivalcev, nekaj tudi višjemu srednjemu sloju. Po socialnih lastnostih stanovanjskih objektov pa gre večinoma za kraj bivanja socialnih skupin s konformnim življenjskim stilom. Nekaj krajev ima več lastnosti konformno prestižnega življenjskega sloga, zgolj utilitarnega življenjskega sloga pa na območju enostanovanjskih hiš nismo prepoznali. Natančnejši prikaz je razviden iz karte.

Ugotavljamo, da socialna diferenciranost krajev bivanja v Lenartu ni velika. Odstopanja od povprečja, to je konformnega življenjskega sloga, ne obsegajo posameznih ulic ali delov mesta, večjih območij, temveč le posamezne objekte. Bolj sklenjeno območje bivanja prebivalcev višjega socialnega sloja nastaja na južnem

robu naselja. Stanovanjski objekti, ki kažejo različne socialne vsebine se zelo prepletajo in tvorijo zelo droben prostorski vzorec. Ob nujni generalizaciji so nastala večja sklenjena območja istega tipa, sicer pa je socialna struktura zelo heterogena. Grafični prikaz zato ni povsem verodostojen.



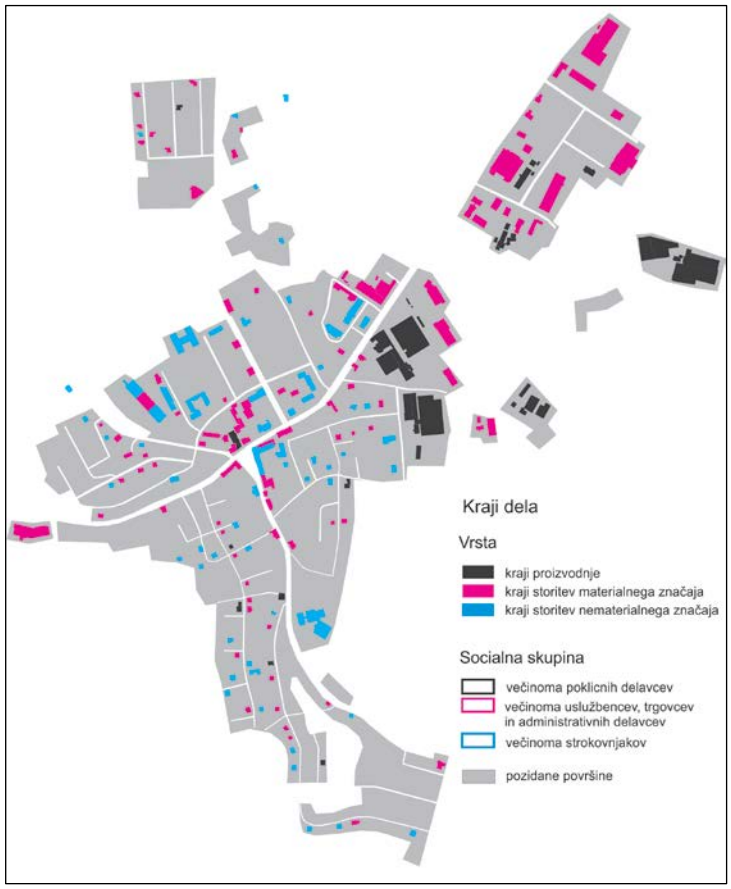
Slika 1: Kraji bivanja, vrste in socialne skupine.
Fig. 1: Places of living, types and social groups.
Vir: Lastno kartiranje, 2016.

6.2 Kraji dela

Ekonomska dejavnost v mestih je prav tako razlog socialne diferenciranosti. Že vrsta proizvodnje glede na najpogostejšo izobrazbo zaposlenih je eden od elementov socialne diferenciacije, enako tudi gospodarski subjekti glede na sektor gospodarstva. V Lenartu živi 3177 prebivalcev (SURS, 2015), od tega je 1406 aktivnih. Leta 2015 je 846 oseb (60,2% aktivnega prebivalstva) delalo v naselju Lenart, 460 ali 39,8% pa jih je odhajalo na delo v drugo občino, približno 1800 jih prihajalo na delo od drugod (več kot polovica iz okoliških občin). Lenart je torej v zaposlitveno središče za prebivalce iz okoliškega podeželja.

Kraje dela smo razdelili na tri večje skupine. Kraji proizvodnje, to so industrijski obrati, ki jih uvrščamo v sekundarni sektor gospodarstva. Teh je v Lenartu kar nekaj:

največji zaposlovalci so podjetje Unior, Prevent, Klemetal in Saubermacher. Poleg tega je še nekaj manjših obrtno industrijskih delavnic. Ti kraji dela so locirani na severovzhodnem delu naselja, v industrijski coni. Večina zaposlenih ima osnovno (poklicno) in srednjo izobrazbo. Poleg tega smo opredelili kraje storitev materialnega značaja, kjer delujejo gospodarski subjekti, ki imajo opraviti z materialnimi produkti – trgovina, frizer, obrt, avtomehanik, gradbeništvo, vrtnarstvo, gostinstvo, nepremičnine, optik. Tretja skupina so kraji storitev nematerialnega značaja, to pa so dejavnosti iz področja uprave, zdravstva, šolstva, kulture, svetovanja, vse, pri čemer rezultat proizvodnega ali menjalnega procesa ni materialna dobrina. Kraji dela iz področja storitev so razpršeni po celotnem naselju, marsikje sta kraj dela in kraj bivanja ponovno združena pod isto streho. Več poslovnih subjektov, predvsem storitvenih dejavnosti nematerialnega značaja, je v širšem središču, zaradi česar je središče velik kraj dela.



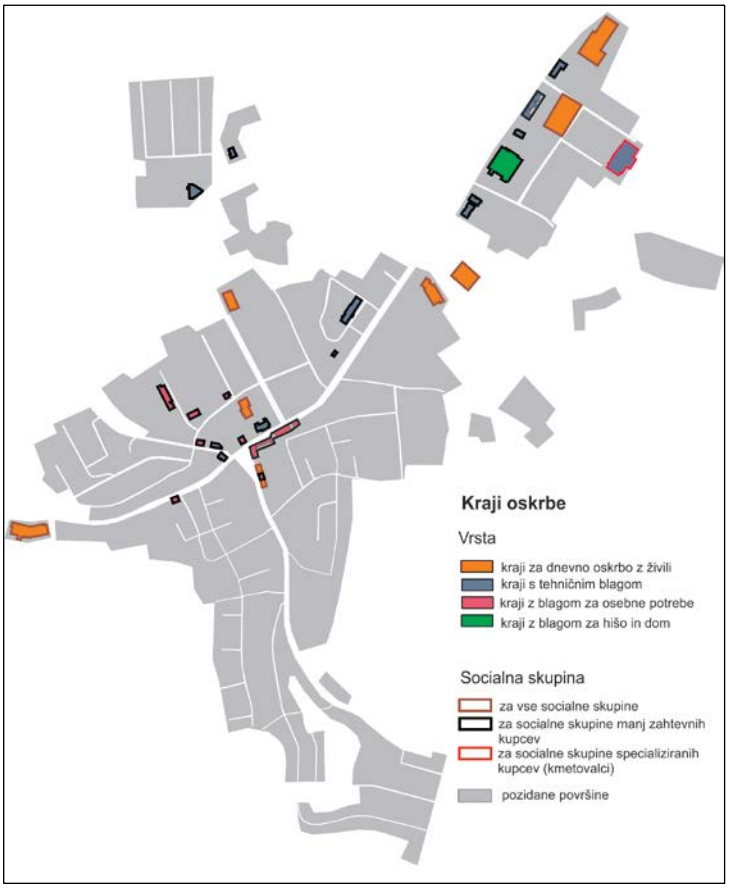
Slika 2: Kraji dela, vrste in socialne skupine.
Fig. 2: Places of work, types and social groups.
Vir: Lastno kartiranje, 2016.

Krajem dela lahko pripišemo več socialnih oznak. Upoštevaje spol zaposlenih lahko ugotovimo, da so v krajih proizvodnje zaposleni večinoma moški. V krajih storitvenih dejavnosti materialnega in nematerialnega značaj je razmerje med spoloma zaposlenih veliko bolj izenačeno, vendar zaradi težavnega pridobivanja podatkov,

tega ne moremo podkrepiti z numeričnimi vrednostmi. Relevantno je razlikovati tudi kraje dela glede na izobrazbo večine zaposlenih. Pri tem se izkaže, da imajo v večini proizvodnih dejavnosti zaposleni pretežno srednješolsko in poklicno izobrazbo, v storitvenih dejavnostih materialnega in nematerialnega značaja ima največ zaposlenih srednješolsko in visokošolsko izobrazbo. Natančnejši pregled še pokaže, da je krajev dela, kjer je večji delež zaposlenih z visokošolsko izobrazbo zelo malo (recimo zdravstveni dom, uprava). Ob tem je potrebno opozoriti, da je to bolj ocena, ki temelji na numeričnih podatkih zgolj tretjine gospodarskih družb oziroma pravnih oseb.

6.3 Kraji oskrbe

Oskrbovanje je tudi v Lenartu ena od najbolj zastopanih dejavnosti. Opazimo lahko, da je trgovin, ki ponujajo enake izdelke, z izjemo živil, zelo malo. To govori o dvojem: po eni strani je ponudba blaga majhna, po drugi strani je ponudba izdelkov prilagojena samo povprečnim kupcem. Kraji oskrbe so iz socialnega vidika zelo podobni, saj socialne diferenciranosti ni mogoče prepoznati. To se ujema z znanim spoznanjem, po katerem je ponudba blaga povezana z velikostjo mesta; večje ko je mesto, večja je socialna heterogenost prebivalcev, raznovrstnejša je ponudba blaga.



Slika 3: Kraji oskrbe, vrste in socialne skupine.
Fig. 3: Places of supply, types and social groups.
Vir: Lastno kartiranje, 2016.

Krajev oskrbe je v Lenartu več: eden obsega središče naselja, kjer je več manjših trgovin, ki so ostala od prvotnega oskrbnega središča. Drugi kraj oskrbe obsega novo središče naselja, kjer je nekoč dominirala veleblagovnica, danes pa je njena dejavnost precej okrnjena. Tretji kraj oskrbe je trgovsko središče ob severovzhodni vpadnici v mesto, četrti kraj oskrbe pa je ob jugozahodni vpadnici. Vsi kraji oskrbe so morfološko in fiziognomsko prepoznavni, trgovine so v današnjem komercializiranem in v potrošništvo naravnanem svetu identitetni element mestne zgradbe. Zanimivo pa je, da je v mestnem središču 18 trgovin od 54, kolikor smo jih našteli v celem mestu. Kraj oskrbe se iz središča mesta prestavlja na obrobje. Če ob tem upoštevamo še strukturo trgovin v mestnem središču in v trgovskih središčih je očitno, da je v trgovskih središčih prav toliko trgovin za dnevno oskrbo kot v mestnem središču, vendar so trgovine z živili v trgovskih središčih večje, z več izbire. Slednje govori o socialni diferenciranosti, saj so določene socialne skupine prikrajšane ali vsaj omejene pri dnevni oskrbi. V stanovanjskih območjih ni niti trgovin za dnevno oskrbo, recimo pekarn ali prodajaln z živili.

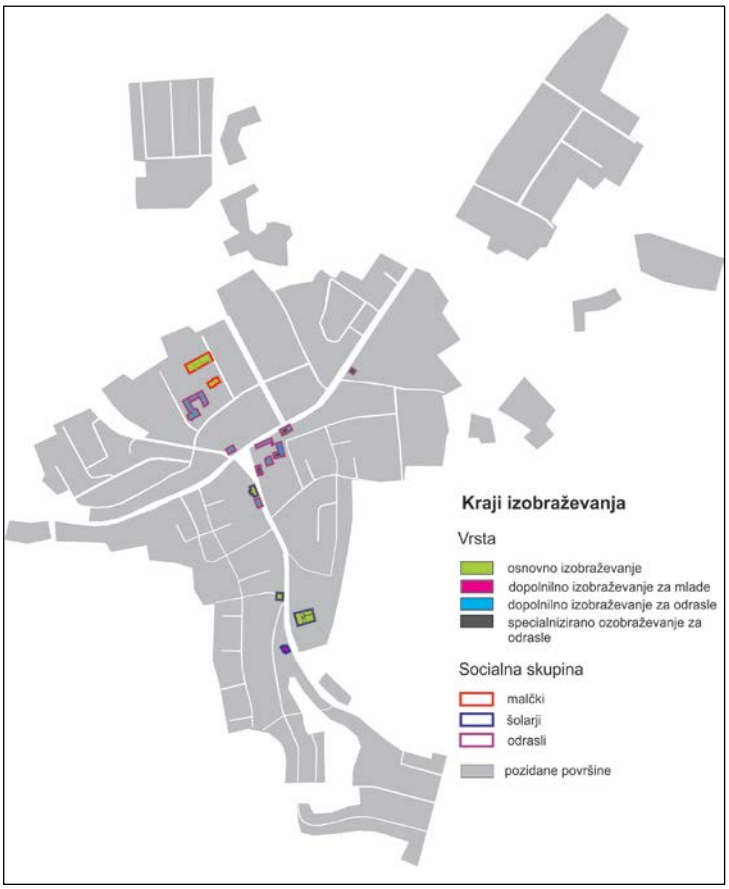
Struktura trgovin v mestu kaže, da lahko kupci v Lenartu zadovoljujejo dnevne ter del srednjeročnih potreb – obutev, oblačila, živila, specializiranih trgovin pa je zelo malo. V trgovskih središčih, kjer je trgovin največ, večina trgovin pripada trgovskim verigam, redke pa so trgovine neodvisnih trgovcev, kar tudi pojasnjuje standardiziranost ponudbe blaga.

6.4 Kraji izobraževanja

V Lenartu je poleg osnovnega izobraževanja še nekaj institucij za izobraževanje drugih socialnih skupin. Med institucijami obveznega izobraževanja sta dve osnovni šoli, med institucijami prostovoljnega izobraževanja pa dom kulture, dve avto šoli, šola za tuje jezike, konservatorij za glasbo in balet, posebna šola, knjižnica in izobraževalni center. Nekaj je še neinstucionalnega izobraževanja, recimo razstavišče, galerija, knjižnica, knjigarna (s papirnico) in spominska hiša. Kraji izobraževanja so, razen osnovne šole, v središču mesta, večina ostalih pa v širšem središču. Očitno je izobraževanje dejavnost, v kateri se odraža ekonomska in duhovna moč majhnega mesta.

Kraji izobraževanja niso veliki, obsegajo posamezne objekte, v katerih pa so nastanjene še druge družbene dejavnosti. Samo osnovna šola in kulturni dom sta v fiziognomskem in morfološkem smislu prepoznavna kot simbolno pomembna objekta. Vse ostale institucije v podobi kraja niso opazne.

Glede socialnih skupin, katerim so namenjene posamezne vrste izobraževanja lahko ugotovimo, da se razlikujejo kvečjemu glede na starost, nikakor pa ne glede na spol, izobrazbo in materialni položaj. Institucije dopolnilnega izobraževanja, so namenjene predvsem mlajši (šoloobvezni) populaciji in populaciji srednjih let, za starejše člane skupnosti pa posebnih vrst izobraževanja ni. Kot lahko razberemo iz sicer nepopolnih podatkov o socialnih lastnostih uporabnikov, so obiskovalci institucij prostovoljnega izobraževanja večinoma dijaki in mladinci, starostnikov ali tistih v zrelih letih je med uporabniki krajev izobraževanja veliko manj. Izjema je knjižnica, kjer poteka več programov prostovoljnega izobraževanja v obliki predavanj in tečajev. Diferenciranost vrst izobraževanja glede na socialne lastnosti je zelo majhna in se nanaša zgolj na starost, ne pa tudi na interesna področja. Podobno lahko ugotovimo o krajih izobraževanja: v socialnem smislu izstopata osnovni šoli kot socialni prostor otrok, ostali kraji izobraževanja pa so v socialnem pogledu manj diferencirani, saj so namenjeni vsem starostnim skupinam uporabnikov.



Slika 4: Kraji izobraževanja, vrste in socialne skupine.
Fig. 4: Places of education, types and social groups.
Vir: Lastno kartiranje, 2016.

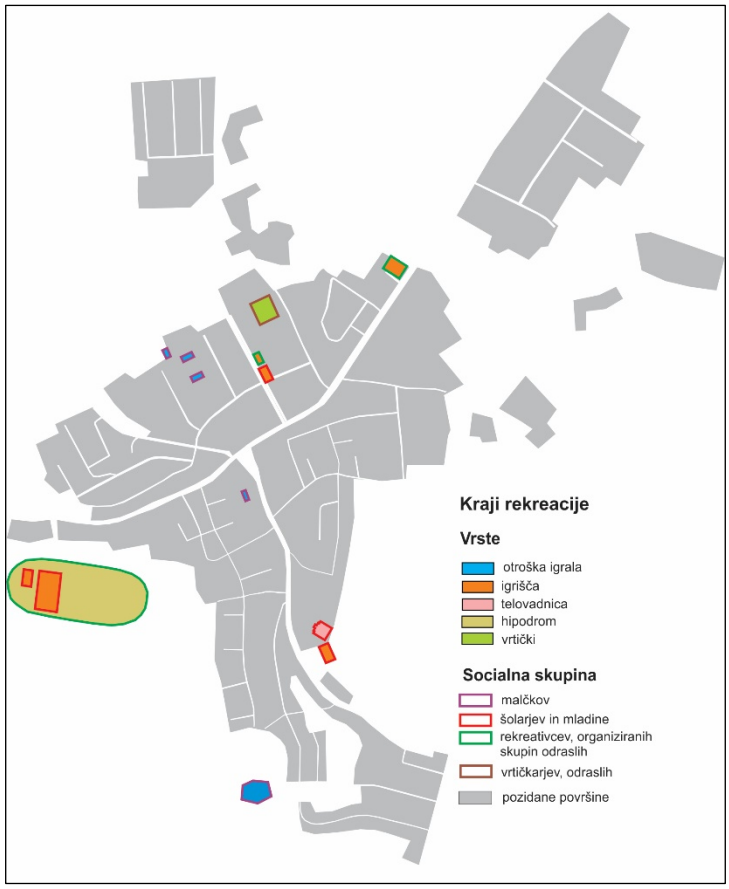
6.5 Kraji rekreacije

V Lenartu se je mogoče rekreirati na šestih mestih. Kraji rekreacije so ob osnovni šoli, ob hipodromu, v novi blokovni soseski, v parku ob robu novega središča naselja, na teniških igriščih ob severovzhodni vpadnici v mesto ter v tako imenovanem Račjem gaju na južnem robu mesta. Razen hipodroma, ob katerem je še nogometno igrišče, so ostali kraji majhni in točkovno razporejeni po naselju. Hipodrom je lociran na robu naselja, prav tako teniška igrišča, ostali kraji rekreacije pa so znotraj naselja, tako rekoč del funkcionalnih zemljišč bližnjih objektov – osnovne šole in stanovanjskih blokov. Dostopnost do krajev rekreacije zato ni za vse prebivalce ustrezna, predvsem stanovanjska območja na vzhodnem in jugovzhodnem delu naselja so zunaj radija 500 m dostopnosti.

Nabor rekreacijskih možnosti obsega igrišče z igrali za najmlajše, igrišča za igre z žogo (nogometno in košarkarsko igrišče, odbojka na mivki, tenis), balinišče, hipodrom ter telovadnico, ki je del osnovne šole. Poleg tega je urejeno še območje za ljubiteljsko vrtnarjenje, parkovna površina in sprehajalna pot do jezera Radehova. Večina krajev

omogoča zgolj rekreacijo na prostem, torej v topli polovici leta. Samo športna dvorana, ki je sicer del osnovne šole, omogoča rekreacijo tudi pozimi.

Kraji rekreacije so namenjeni predvsem mlajši populaciji predšolskih in šolo obveznih otrok. Za odraslo mladino, odrasle srednjih let in starejše, je nabor krajev rekreacije veliko skromnejši. Delo na vrtu je za mnoge oblika aktivnejšega preživljanja prostega časa, če sodimo po številu gospodarskih vrtov ob enodružinskih stanovanjskih hišah. Sprehajalnih poti in manjših parkovnih ureditev, ki so namenjene predvsem starejšim in družinam z majhnimi otroki, takšnih krajev v Lenartu močno primanjkuje, urejena je samo ena sprehajalna pot. Socialna diferenciranost krajev rekreacije ni velika. Kraji se razlikujejo predvsem glede na starostne kategorije uporabnikov. Najmanj možnosti za rekreacijo je za odrasle in starejše prebivalce naselja.

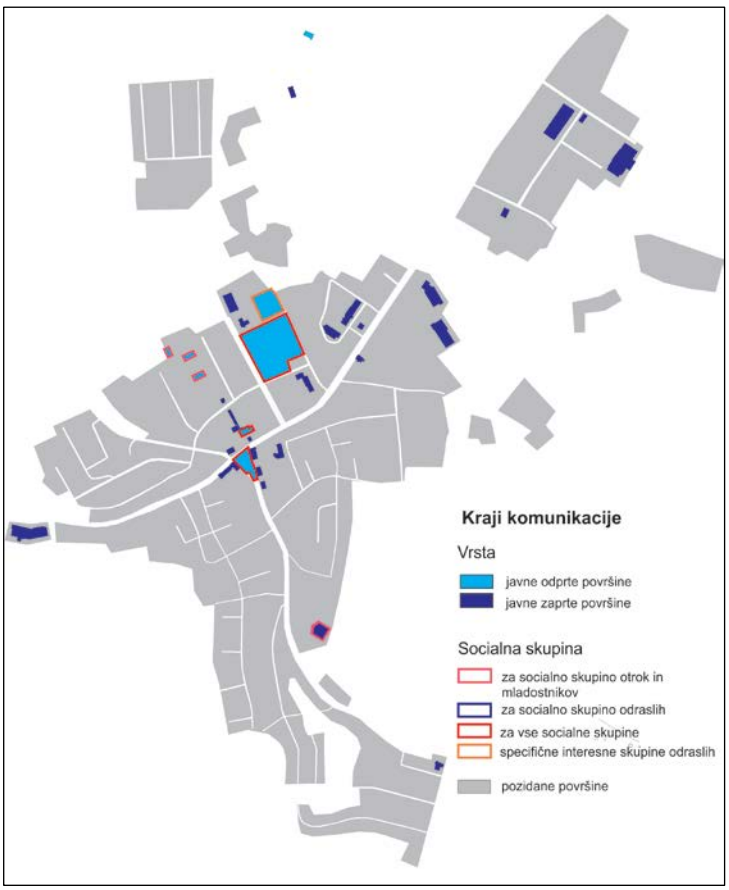


Slika 5: Kraji rekreacije, vrste in socialne skupine.
Fig. 5: Places of recreation, types and social groups.
Vir: Lastno kartiranje, 2016.

6.6 Kraji komunikacije in socialnih stikov

Socialnost mesta se odraža tudi v krajih, kjer prihaja do komunikacije in socialnih stikov med ljudmi. Razlikovati je mogoče med javnimi odprtimi in javnimi zaprtimi kraji. Javni odprti kraji so trgi in druge javne odprte površine, rekreacijska območja,

park - območja, ki so dostopna vsem in kjer je socialna funkcija med najpomembnejšimi. Teh je v Lenartu kar nekaj; park, otroška igrišča, osrednji trg, tržnica. Še več je javnih zaprtih krajev, med katere uvrščamo gostinske lokale, kulturni dom, kraje dopolnilnega in specializiranega izobraževanja ter prostore raznih društev.



Slika 6: Kraji komunikacije, vrste in socialne skupine.
Fig. 6: Places of communication, types and social groups.
Vir: Lastno kartiranje, 2016.

Kraji socialnih stikov so na prvi pogled razpršeni po celotnem naselju. Vendar ni povsem tako: največ javnih zaprtih krajev je v središču mesta, kjer ima sedež večina društev, na osrednjem trgu je tudi kulturni dom. V središču mesta je presenetljivo malo gostinskih lokalov, bolj številčni so v krajih oskrbe - nakupovalnih središčih, kjer se zadržuje večje število ljudi. V stanovanjskih delih naselja krajev komunikacije tako rekoč ni; v bližini blokovnih stanovanjskih sosesk je nekaj gostinskih lokalov, vendar so ti v funkcionalnem smislu del središča, ne pa stanovanjskih območij. Največ javnih odrtih krajev pa je na robu mesta, kjer je več rekreacijskih površin. V mestnem središču sta samo osrednji trg in tržnica. Na osrednjem trgu se odvijajo prireditve ob praznikih, proslave, zborovanja. Ta trg je edini prostor, namenjen javnim manifestacijam. Iz strukturne analize je razvidno, da je med kraji socialnih stikov

največ gostinskih lokalov, ne restavracij, temveč bifejev. Na drugem mestu so prostori društvenih dejavnosti, sledijo jim prostori rekreacije.

Če poskušamo posameznemu kraju socialnih stikov pripisati socialno skupino, ki se tam najpogosteje zadržuje, se izkaže, da socialna diferenciranost krajev ni izrazita. Tudi v tem primeru je starost tisti socialni element, ki najbolj vzpostavlja diferenciranost socialnega prostora. Rekreacijska območja so namenjena mlajšim in odraslim prebivalcem mesta; društvene prostore običajno uporabljajo odrasli in starejši, v gostinskih lokalih so najštevilčnejši gostje mlajši in odrasli. Diferenciranosti krajev socialnih stikov glede na materialni položaj obiskovalcev ni bilo mogoče prepoznati.

7. Zaključna spoznanja

Spoznavanje socialne zgradbe mesta na podlagi krajev zadovoljevanja človekovih potreb ima več omejitev. Prva in najpomembnejša je, da so socialne lastnosti nekaterih fizičnih struktur težko (ali slabo) prepoznavne. Naslednja pa, da je opredeljevanje socialnih skupin, ki na določenem kraju zadovoljujejo svoje potrebe, pogosto precej neselektivno. Vendar, tega ni mogoče spregledati, obe pomanjkljivosti sta povezani s kakovostjo vhodnih podatkov, ne pa z vsebino samo oziroma s temeljnima paradigmama takega pristopa.

Ponuja se še eno spoznanje: opredeljeni kraji se nanašajo samo na določeno dejavnost in samo na določeno (eno ali več) socialno skupino. Za vsako dejavnost je potrebno opredeliti drugačne socialne lastnosti in drugačne socialne skupine, kar pomeni, da ne obstaja ena socialna zgradba mesta, temveč več. Zato krajev posameznih dejavnosti ni mogoče primerjati med seboj, saj so opredeljeni z različnimi socialnimi lastnostmi in ker jih ustvarjajo različne socialne skupine. Krajev dela v socialnem pogledu tako ni mogoče primerjati s kraji oskrbe, saj so kazalci s katerimi so opredeljeni, različni.

Spoznanja, ki se nanašajo na socialno zgradbo Lenarta pa so:

- Vsem krajem v Lenartu, kjer prebivalci zadovoljujejo svoje potrebe, ni mogoče pripisati socialnih vsebin, ki bi se nanašale na specifično socialno skupino uporabnikov, temveč je dejavnost v kraju toliko splošna, da jo uporablja več socialnih skupin.
- Nabor krajev, kjer je mogoče zadovoljevati osnovne potrebe v Lenartu ni velik. Posamezna dejavnost je zastopana večinoma le na enem kraju, kjer pa je mogoče zadovoljiti zgolj osnovne potrebe in za socialne skupine, ki jih povezujejo zelo splošne lastnosti. To pomeni, da je socialna diferenciranost krajev majhna.
- Najpogostejši socialni element diferenciacije krajev je starost. Veliko krajev se razlikuje glede na starostno skupino uporabnikov, kar je, tako izgleda, ključni dejavnik socialno prostorske diferenciranosti v malih mestih. Največ krajev zadovoljevanja potreb je namenjenih mladini in populaciji srednjih let. Starejši so v tem pogledu precej zapostavljeni.
- Posamezniki in socialne skupine s specifičnimi interesi, svojih potreb v Lenartu ne morejo zadovoljiti. Zadovoljijo jih lahko le v drugem mestu. Iz tega bi lahko povzeli, da manj ko so dejavnosti specializirane (in namenjene zgolj najširši skupini uporabnikov), manjša je socialno prostorska diferenciranost, manjše je mesto oziroma urbanost. To zagotovo govori o kakovosti bivalnega okolja in urbanosti naselja.

- Socialno prostorska diferenciacija naselja ni izrazita, saj posamezniki ali posamezne socialne skupine nimajo možnosti izbire dobrin in aktivnosti, kar je pogoj, da se socialno prostorske diferenciacija vzpostavi.

Za konec še vtis: nekatere sheme in spoznanja, ki se zdijo na nivoju teorije povsem sprejemljive in logične, se, ko jih skušamo instrumentarizirati in prenesti na nivo konkretnega, izkažejo za veliko manj prepričljive, skoraj trivialne in nedokazljive. Kot da so nastale na podlagi poglabljanja v teorijo, ki je ni spremljalo preverjanje na empiričnem delu. Delovanje socialnih skupin v mestu zagotovo povzroča socialno diferenciranost, vendar so za natančno predstavo o tem potrebni številni, zelo podrobni podatki. Ne glede na to: uporabljen pristop k spoznavanju socialne zgradbe mesta se je izkazal kot ustrezen, zato lahko zapišemo: socialna zgradba mesta je preplet krajev, ki jih označujejo socialne lastnosti uporabnikov.

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CONTRIBUTION TO THE PERCEPTION OF THE SOCIAL STRUCTURE OF A TOWN IN THE CASE OF THE TOWN LENART V SLOVENSKIH GORICAH

Summary

The social structure of a town illustrates the layout of elements and features with social content. It is usually presented with social indicators of the population of a said town; that is by age, ethical and religious affiliation, education, economic circumstances and similar social characteristics. Characteristics of such impressions means that they are made on the basics of statistical data and according to the domicile principle. They show a static image – a spatial pattern of a certain social characteristics of the population, regardless of their place of residence. However, the city is a dynamic formation; it cannot be explored just by taking into account the place of residence of the population. Furthermore, the connection between the social characteristics of people and their place of residence is today much smaller than it once was (Löw 2001, 253). In social geography and urban sociology there is the realization, that members of the same or similar social characteristics are territorially and functionally interconnected. Functional interconnection means that they work and act (thus "operate") together, in a similar way, at the same locations and at the same time. The word "operate" refers to the satisfaction of the basic human needs, such as living, working, care and provisions, education, recreation and communication. Functional interconnection therefore relates to similar habits regarding supply of provisions at the same locations, going to the same or similar stores, similar recreation habits, and usage of same or similar recreational areas and so on. This creates emerging areas (in large cities) or individual objects (in small towns) which are frequented by people of specific social characteristics. This creates another feature of cities and the living environment: sociologists say that physical structures are social structures. It of course goes vice versa, too. Social structures are physical structures, as we can read in the studies of Doreen Massey. The result is similar in both cases – a physical environment (in towns we could speak about built structure) has social marks. This means that built structures reflect social characteristics of their users. This social sediment can be seen in the function, form, and position within the city, perhaps even in size. It is, however, important that such a relationship exists and generates itself, while at the same time allowing the social composition of the city. One can recognize it on the basis of a physical structure with a specific social contents.

Relationship between social and physical: the mutual relationship between man (spiritual, social) and the environment (physical, material) is an eternal topic, not only in science but also in arts. Although never proven wrong, the question repeatedly appears as a research question in sociology, ethnology, anthropology and also geography. A large part of geography is based on the relationship between the man and nature, and on their interconnection. In a certain period of development it was characterized as (geographic) determinism; but as stated by Viazzo, it "never lost force because of invalidating its principles, but empirically speaking, because they challenged its cases". (Viazzo 2014, 9). The geography of our time sees this relationship slightly shifted from the natural toward the physical (built) environment. Doreen Massey illustrates this shift by saying that the space is created, developed and formed through social acting and social structure. Acting of individuals and the community is thus interrelated, and linked to such extent that it results in a very similar and complementary appearance. (Massey after Glasze, Mattissek 2009, 41).

Social groups as a factor in the social structure of the city: a multitude of individuals, residents of the city, are in theory of social geography linked to a number of informal

communities that are called social groups. Social groups include individuals with similar social characteristics and a similar modus operandi in a certain area/space. The latter means that the group fulfils their needs in a similar way, which includes the location, a similar way and time of performing activities. Social groups differ; they are defined by age, interest, material status and other social characteristics (religious affiliation, nationality, skin colour, gender) and a similar was of meeting needs. An individual can at the same time belong to different social groups, depending on which characteristics or activity is considered as the element of identification. The individual is thus seen as a member of the social group of residents in a particular neighbourhood, member of the social group of gardeners, member of the social group of library goers, member of the social group of buyers in a certain shopping centre and the like. Each time a need is met, the person acts in the area as a member of one of the social groups.

Places for fulfilling the needs – elements of the social composition of the city: when learning about the social structure of the city, the territorial aspect is seen as the primary aspect; that is parts of the city, occupied by people of similar social characteristics. Such areas can be called places of fulfilling the needs. A place, as understood in this context, is a space (area), occupied by a special social group that fulfils its needs in it (Tuan 2001, 6). Such place can also be understood as a mental construct, because there are countless places in the city, which overlap and intertwine, and which are formed by different social groups. However, such place is also an area that in a certain context belongs to a certain social group. Such place is a social space of a certain social group, where the latter operates and fulfils its needs. An emotional relationship is therefore formed between the members of the social group and the place, for example in the sense of habits, routines and customs; the individuals don't go to any store but to the one they are used to, the one that is closed to their heart. Visiting it often, they develop a special relationship toward this store which is the foundation for defining a certain area as a place. Such place is semantically different from the concept of space; the latter is value-neutral and a universal conception, undefined, without social content, the same for all people. Place, on the other hand, is part of the space to which the user has a personal relationship; a place that is filled with the meanings and a human experience.

Ways to learn the social structure of the city – methods of work: when learning about the social structure of the city or the social contents of places, two things become crucial: recording places of different activities, meant for fulfilling the needs, and recognizing social groups that operate in certain places. Places of activities can be mapped. However, it is not enough to just record them; one needs to recognize their social contents and herewith connect them into more transparent groups. A plurality of places must be divided into groups that match or at least indicate social characteristics of their users, or have a social content. An example: recording sports fields by itself does not suffice; one needs to establish which social groups the sports field is intended for; that is called the social contents of place. As with each classification, the dilemma here refers to the number of groups – if too few, the problem is generalization; if too many, the problem is in accuracy criteria and duplication. Social groups operating in a certain place can be determined in several ways: one resulting from the type and the nature of place – children playgrounds where the social group of preschool children hangs out; in elementary school there is the social group of children – pupils, and the social group of teachers. Another method includes observation. Through observation and classification of visitors of certain shops, the average social composition of customers can be established. The third

method is analysis of statistical data; data on education of employees in organisations can tell if the majority of the employees belongs to the social group of workers or employees. However, no method can determine the social contents or social groups in all places, usually because the target group of users is not defined. We might find places with all social groups that live and operate in the area. Identifying social groups that operate in a certain place can be difficult.

Places of fulfilling the needs and their social contents: the table below shows places of individual activities that were recorded in Lenart, as well as social groups that operate and fulfil the needs in these places.

Tab.1: Activities, places and target/the most common social groups of users in Lenart.

Activity	Types/ places of activity	Target / the most common social group of users
Living	Places of prestigious lifestyle Places of conformist and utilitarian lifestyle	Social group of higher middle class Social group of middle class Social group of lower middle class
Work	Places of production Places of services of material characteristics Places of services of non-material characteristics	Social group of skilled workers Social group of administrative employees, sales people and other clerks Social group of professionals and experts
Supply	Places for daily supply of provisions Places for supply with technical goods Places with goods for personal needs Places for products for house and home	All social groups Social group of less demanding customers Social group of specialized customers (farmers)
Education	Places of elementary education Places of supplementary education Places of specialized education	Social group of pupils Social group of adults All social groups
Recreation	Children playgrounds Sports fields Sports hall Gardens	Social group of preschool children Social group of school children Social group of recreational athletes, organised youth and adults (members of sports clubs) Social group of adults (garden proprietors)
Communication	City squares Market Communal areas Pubs and catering establishments Recreational areas	Social group of youth, Social group of adults, Special interest social groups, All social groups.

Conclusion: getting to know the social structure of the city based on places where people fulfil their needs has several limitations. The first and the most important is that the social characteristics of physical structure are hardly (or badly) identifiable. Next, the definition of social groups that fulfil their needs at a certain place can be quite unselective. However, this cannot be overlooked; both deficiencies are connected to the quality of the input data and not to contents as such, or to the fundamental paradigms of such approach.

Defined places relate to a specific activity and only to a certain (one or several) social group. For each activity, it is necessary to define different social characteristics and different social groups. This means that there is not one social structure of the city, but several. Places of particular activity can therefore not be compared with each

other, as they are defined by different social characteristics and created by different social groups. Places of work can in the social sense not be compared to places of supply, because the indicators, that define them, are different.

Lessons to be learnt, related to the social structure of Lenart:

- One cannot attribute social contents, related to a specific social group of users to all places in Lenart, where residents fulfil their needs. Instead, the activities in the area are so general that they are used by several social groups.
- The selection of places where one can fulfil the basic needs in Lenart is not large. Individual activity is mostly only represented in one place, where one can satisfy the basic needs; and for social groups that are connected by general characteristics. This means that the social differentiation of places is small.
- The most common social element of differentiation of places is age. The size of places differs regarding the age group of their users, which is the key factor of the social and spatial differentiation in small towns. The majority of places where one can fulfil the needs are intended for youth and middle-aged population. The elderly are quite neglected in this respect.
- Individuals and social groups with specific interests cannot fulfil their needs in Lenart, but they have to go to another city. This lets us conclude that the less the activities are specialized (and intended for the widest possible group of users), the smaller is the social and spatial differentiation, the smaller the city and its urbanity.
- Social and spatial differentiation of a place/village is not large, because the individuals or individual social groups don't have possibilities of selecting goods and activities, which is the prerequisite for setting up social and spatial differentiation.

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1. Sestavine članka

Članki morajo imeti naslednje sestavine:
- glavni naslov članka,
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- avtorjev poštni naslov (na primer: Oddelek za geografijo Filozofska fakulteta Univerza v Mariboru, Koroška 160, SI – 2000 Maribor, Slovenija),
- avtorjev elektronski naslov,
- izvleček (skupaj s presledki do 800 znakov),
- ključne besede (do 8 besed),
- abstract (angleški prevod naslova članka in slovenskega izvlečka),
- keywords (angleški prevod ključnih besed),
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Avtorji naj pri citiranju med besedilom navedejo priimek avtorja in letnico, več citatov ločijo s podpičjem in razvrstijo po letnicah, navedbo strani pa od priimka avtorja in letnice ločijo z vejico, na primer: (Drozg 1995, 33) ali (Belec in Kert 1973, 45; Bračič 1975, 15 in 16).

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Vse preglednice v članku so oštevilčene in imajo svoje naslove. Med številko in naslovom je dvopičje. Naslov konča pika. Primer:

Preglednica 1: Število prebivalcev Ljubljane po posameznih popisih.

Vse slike (fotografije, zemljevidi, grafi in podobno) v članku so oštevilčene enotno in imajo svoje naslove. Med številko in naslovom je dvopičje. Naslov konča pika. Primer:

Slika 1: Rast števila prebivalcev Ljubljane po posameznih popisih.

Slika 2: Izsek topografske karte v merilu 1 : 25.000, list Kranj.

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Avtorji naj prispevke pošiljajo na naslov urednika:

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