ASPECTS OF QUALITY OF LIFE IN URBAN AREAS OF THE EUROPEAN UNION

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ABSTRACT
It is considered that in urban areas, the sources of pollution are also given by the activities carried out by people. Controlling these activities can lead to reduced environmental impact. Human activities produce changes on environmental factors. These changes are both quantitative and qualitative. Given that resources are limited, the way they are allocated influences the development of urban areas. The quality of life in urban areas is influenced by different factors. Also, given the importance of comfort, the article presents an analysis of the size of the living space and the type of housing. Human communities are affected by air pollution. The urban population is more exposed to pollution than the rural one. At the same time, the article highlights the importance of the recycling of municipal waste, as well as the secondary treatment of waste water. The protection of the environment can be achieved through the application of technologies that ensure a sustainable development of urban areas.

KEYWORDS: *European Union, housing, municipal waste, pollution, urban environment, wastewater*

1. INTRODUCTION

Urban regeneration and development implies the interconnection of the environmental, social, economic and cultural dimensions of urban space. Aspects of urban renewal must take into account an integrated and sustainable approach to these dimensions (European Union, 2019).
In the urban environment, the neighborhood links are maintained with the help of green spaces, these being considered meeting places of the people that allow social cohesion. Thus, the existence of air pollution factors in urban areas can have negative effects (Elmqvist et al., 2015).
In recent years, the quality of urban life has been influenced by an increase in human concentration in urban areas. The challenges are even higher as the urban population is forced to use a small number of resources and services (Psatha et al., 2015).
Since health is a notion that refers to both physical and spiritual and social well-being, the outcome of home improvement is based on the cause-and-effect principle (Feng et al., 2018). Increasing lifespan and maintaining health can be achieved by ensuring decent living conditions. Deficiencies in the state of housing decreases the quality of living conditions. Environmental degradation in urban areas may be due to aspects related to living spaces (Bran et al., 2018b).
In addition to the satisfaction of housing status, air pollution negatively affects the quality of life of people in urban areas (Rădulescu, et al., 2018 a, b). Thus, life expectancy is influenced by the presence in the air of small particles of suspended matter. Exposure to these particles affects the state of comfort and health of the inhabitants of urban areas.
It is considered that, in the urban environment, pollution can be primary, secondary or natural. Combustion of fossil fuels contributes to primary pollution, and chemical reactions in the atmosphere

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lead to secondary pollution. Worldwide, poor air quality leads to serious health problems (Charlesworth & Booth, 2019).
Respecting the weight of the maximum concentrations of atmospheric pollutants, by applying measures to maintain air quality, can lead to a decrease in the spread of air pollutants.
The water deficit has increased in recent times. Thus, wastewater can be subjected to treatments and purges that will lead to the possibility of re-use in industrial processes. In the European Union, the total installed treatment capacity is estimated to be around 780 million EL (equivalent per capita). Of the total wastewater load of the European Union, approximately 42% is generated by 580 large cities of the European Union. This requires that further treatment needs arise in the future (Jianu, et al., 2019). Also, secondary treatment is carried out only at 88.7% of the wastewater in the European Union. It has been found that efforts to reduce the discharge of untreated wastewater have led to an improvement in the biological life of the rivers, increasing the number of fish species (European Commission, 2017).
Aspects related to ensuring access to decent housing and environmental protection can be ensured through access to basic services, such as: waste collection and treatment, sewerage systems, adequate housing (Burlacu et al., 2018).
The quality of life has increased in cities and communities in these areas. A contribution to this growth has also been the process of sustainable waste management. Urban waste comes either from the population or from economic agents or from road areas.
Local services are responsible for activities such as sewage treatment and collection and disposal of household waste. These can be considered as risk factors for the health of the inhabitants. Incorrect waste management can lead to the emission of pollutants into the environment.
The quality of life in urban areas depends on several opportunities that are offered to the inhabitants. Thus, compared to the rural areas, in the urban areas there are more possibilities to participate in educational and cultural programs, but also more offers on the labor market. But, in urban areas, environmental challenges can arise. Sustainable urban mobility can be achieved by increasing accessibility and urban planning.
Activities in urban areas need to be controlled so that environmental factors do not turn into pollution sources. It is hoped that the quantitative and qualitative changes due to human activities will have the least impact on the environment.

2. QUALITY OF LIFE INDICATORS

It can be appreciated that for the inhabitants of urban areas, urban development lays the foundation for a higher quality of life. The opinion of the inhabitants is that the living space largely influences the quality of life (Włodarczyk, 2015).
The quality of life in urban areas is influenced by the living conditions in the living space. Thus, the information regarding the average surface of the living space and the type of housing can lead to some conclusions regarding the living conditions. The information found on the EUROSTAT website is updated, but in most cases, the data are at the level of 2011. Also, some countries did not send information regarding the type of housing, respectively the surface of the living spaces. The situation for 2011 is shown in the Table 1.
From the table, it can be observed that the average area of living accommodation is the highest for: Greece (49.6 m²/person), Sweden (44.15 m²/person), Portugal (41.81 m²/person). The lowest values are recorded in the following countries: Bulgaria (21 m²/person), Slovakia (21.1 m²/person), Czechia (23.4 m²/person). Also, the proportion of households living in houses is high in: Italy (96.4%), Ireland (87.3%), Slovenia (61.6%), Denmark (58.7%). At the same time, the proportion of households living in apartments is the highest in the following countries: Latvia (74.1%), Estonia (68%), Lithuania (59.5%), Poland (55.9%), Czechia (53.3%), Germany (53%).

Table 1. The average surface of the living space and the type of housing, 2017

Countries	Average area of living accommodation (m^2/person)	Proportion of households living in houses (%)	Proportion of households living in apartments (%)
Austria	-	-	-
Belgium	-	-	-
Bulgaria	21.00	46.0	45.6
Croatia	-	-	-
Cyprus	-	-	-
Czechia	23.40	44.1	53.3
Denmark	-	58.7	37.7
Estonia	30.50	29.8	68.0
Finland	39.00	-	-
France	37.00	56.9	42.2
Germany	-	47.0	53.0
Greece	49.60	51.1	48.4
Hungary	-	-	-
Ireland	-	87.3	10.8
Italy	-	96.4	-
Latvia	26.70	25.9	74.1
Lithuania	-	-	59.5
Luxembourg	-	-	-
Malta	-	-	-
Netherlands	-	-	-
Poland	25.60	43.8	55.9
Portugal	41.81	55.8	43.5
Romania	-	58.3	40.7
Slovakia	21.10	50.3	49.5
Slovenia	27.40	61.6	35.8
Spain	37.37	-	-
Sweden	44.15	-	-
United Kingdom	-	-	-

Source: processing according to data published by Eurostat, 2019

According to the data available on the EUROSTAT website, the Table 2 shows the evolution of the population share connected to a secondary wastewater treatment system, for the period 2000-2017 (%).

Interest in additional wastewater treatment has led some countries to implement secondary wastewater treatment systems. Thus, compared to 2000, in 2017, the share of the population connected to a secondary wastewater treatment system has increased significantly in the following countries: Slovenia (+55.1%), Hungary (+49.4%), Belgium (+41.86%), Croatia (+32.7%), Ireland (+32.15%). In 2017, the highest values were registered in: Austria (99.75%), Netherlands (99.5%), Luxembourg (97%), Germany (95.974%), Sweden (95%), Latvia (94.95%), Greece (93.4%), Denmark (91.8%). At the same time, the lowest values were registered in the following countries: Malta (14.86%), Croatia (36.9%), Romania (46.5%).

Table 2. The average number of usual weekly hours of work in main job, 2009-2018 (hours)

Countries	2000	2005	2010	2015	2017
Austria	77 (2001)	91.8 (2006)	93.9	95 (2014)	99.75 (2016)
Belgium	41.1	54.4	75	80.46	82.96
Bulgaria	36.1	38.3	45.1	60.7	63.19
Croatia	4.2	8.6	36.9 (2011)	36.9	36.9
Cyprus	14.3	29.8	-	-	-
Czechia	-	72.8	76.9	80.7	82.3
Denmark	87.1	-	88	90.8	91.8
Estonia	69	78	83.3	87.61	87.87
Finland	80	-	83	-	-
France	77.3 (2001)	-	77.7	80	80
Germany	92.6 (2001)	97.3	95.6	95.766	95.974 (2016)
Greece	-	-	87.4	93.4	93.4 (2016)
Hungary	29.8	41.7	69.5	76.47	79.2
Ireland	29 (2001)	-	63 (2011)	60.56	61.15
Italy	-	54.2	-	59.6	-
Latvia	-	65.1	60.3	90.29	94.95
Lithuania	-	-	-	72.282	73.78
Luxembourg	-	-	91.3	96.6	97
Malta	13.8	13.2	6.6	0	14.86
Netherlands	98.1	99	99.3	99.43	99.5
Poland	50.2	58.1	64.5	72.6	73.5
Portugal	-	42.6	-	-	84.64
Romania	-	16.9	22.7	39.7	46.5
Slovakia	-	-	-	-	65
Slovenia	12.3	32.1	51.6	57.4	67.4
Spain	80	88 (2006)	93	-	-
Sweden	94	94	94	95	95
United Kingdom	91	99	99.5	-	-

Source: processing according to data published by Eurostat, 2019

Another important indicator for the quality of life in urban areas is the rate of recycling of municipal waste. Thus, the Table 3 presents the evolution of the weights of the recycling rate of municipal waste from the total waste generated in urban areas (%).

From the data presented in Table 3, significant increases are also observed for the following countries: Slovenia (+51.8%), Lithuania (+48.1%), Italy (+33.5%), Hungary (+33.4%), Czechia (+33.2%), United Kingdom (+33.7%), Poland (+31.7%). Also, in the following countries the share of the municipal waste recycling rate of the total waste generated in urban areas decreased: Austria (-5.7%), Malta (-3.7%). In 2017, more than half of the municipal waste generated was recycled in: Germany (67.6%), Slovenia (57.8%), Austria (57.7%), Netherlands (54.2%), Belgium (53.7%). The lowest values were registered in the following countries: Malta (6.4%), Romania (13.9%), Cyprus (16.1%), Greece (18.9%).

Table 3. The evolution of the weights of the recycling rate of municipal waste from the total waste generated in urban areas (%)

Countries	2000	2005	2010	2015	2017
European Union	25.1	31.7	38.3	44.7	46.4
Austria	63.4	58.3	59.4	56.9	57.7
Belgium	48.4	53.8	55.1	53.5	53.7
Bulgaria	15.5	18.3	24.5	29.4	34.6
Croatia	-	-	4	18	23.6
Cyprus	3	3.7	10.7	17.9	16.1
Czechia	0.9	6.2	15.8	29.7	34.1
Denmark	37.1	41	-	46.3	46.3
Estonia	2.4	22.5	18.2	28.3	28.4
Finland	33.6	33.6	32.8	40.6	40.5
France	24.5	29	36	40.8	42.9
Germany	52.5	60.9	62.5	66.7	67.6
Greece	8.8	11.8	17.1	15.8	18.9
Hungary	1.6	9.6	19.6	32.2	35
Ireland	11.9	31.1	35.7	-	-
Italy	14.2	18.5	31	44.3	47.7
Latvia	0	3.8	9.4	28.7	23.3
Lithuania	0	1.9	4.9	33.1	48.1
Luxembourg	36.1	43.5	46.5	47.4	48.3
Malta	10.1	8.7	5.2	6.7	6.4
Netherlands	44.1	46.7	49.2	51.8	54.2
Poland	2.1	5.6	16.3	32.5	33.8
Portugal	10.5	15.2	18.7	29.8	28.4
Romania	0	1.8	12.8	13.2	13.9
Slovakia	5.1	2	9.1	14.9	29.8
Slovenia	6	18.6	22.4	54.1	57.8
Spain	18.4	31.4	29.2	30	33.5
Sweden	38.3	44.8	48.1	48	46.8
United Kingdom	11.1	26.7	40.2	43.3	43.8

Source: processing according to data published by Eurostat, 2019

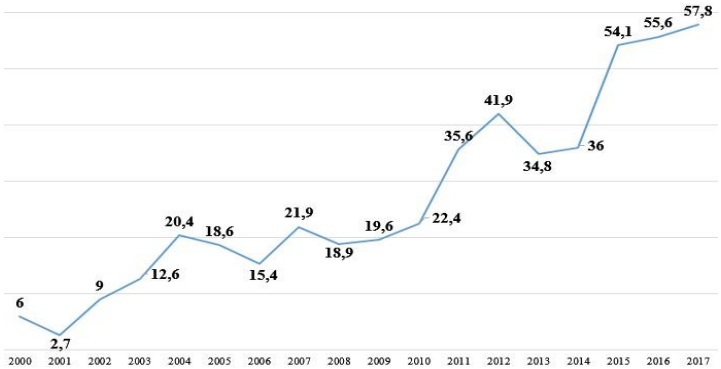

Figure 1. The evolution of the weights of the recycling rate of municipal waste, Slovenia, 2000-2017 (%)

Source: processing according to data published by Eurostat, 2019

In 2017, compared to 2000, the largest increases are registered for Slovenia. The Figure 1 shows the evolution of this indicator in Slovenia.

It is noted that, for the whole period analyzed (2000-2017), the trend is increasing. For Slovenia, this indicator increased from 6% in 2000 to 57.8% in 2017.

Air pollution in the urban environment raises challenges regarding air quality management. A proactive approach can lead to the identification of solutions to reduce carbon emissions (Charlesworth & Booth, 2019).

Exposure to air pollution due to suspended powders is another important indicator for the quality of life in urban areas. The following table presents, for the period 2013-2017, the evolution of the values of the exposure to air pollution due to the powders in suspension less than 2.5 μm, respectively less than 10 μm (μg/m3).

Table 4. The evolution of the values of the exposure to air pollution due to the powders in suspension less than 2.5 μm, respectively less than 10 μm (μg/m3)

Countries	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
	Particulates < 2.5 μm					Particulates < 10 μm				
European Union	15.7	15.2	14.6	13.8	14.1	24.1	22.5	22.7	21.2	21.6
Austria	17.1	14.5	14.4	13.1	13.8	24.4	21.3	20.8	18.4	19.2
Belgium	17	14.4	13.5	13.3	12.9	25	22.4	21.4	20.9	20.4
Bulgaria	26.3	26.1	25	20.2	23.8	43.7	41.2	36.2	37.9	37.3
Croatia	21.9	20	20.8	20.6	19	34	29.7	33.1	34.7	35.1
Cyprus	17	17.2	17.3	14.6	14.7	37.4	32.4	35.2	27.3	29.2
Czechia	20.1	19	17.4	18.1	18.4	27.6	27.7	24.3	22.6	23.9
Denmark	10.3	12.4	11.3	10	9.2	-	18.7	18.3	15.1	15.5
Estonia	8.1	8.6	6.7	5.4	5.3	13.8	15.3	13	12.1	10.5
Finland	6.7	8.4	6	5.7	4.9	11.4	13.7	11.3	12.2	10
France	15.8	12.6	13.5	12.7	12	23.2	18.2	20.5	19.2	19.1
Germany	14.6	15.1	13.3	12.8	12.7	20.3	20.2	18.9	17.7	17.5
Greece	10	-	16.4	14.7	-	34.4	25.8	26.5	29	-
Hungary	17.3	20.2	-	-	20.9	27.3	28.2	26.9	25.3	26.5
Ireland	10.5	8.6	7.9	8.5	7.7	15	14.3	13.2	12.5	11.5
Italy	20.1	17.5	21.6	19.3	19.4	30.2	26.8	30.5	27.6	29.2
Latvia	16.8	18.3	15.9	15.4	13.6	21.4	23.7	19.9	19	17.2
Lithuania	-	-	-	-	-	23.9	23.4	21.7	24.1	22.8
Luxembourg	16.3	11.4	11.7	13.4	11.2	20.8	20.7	21.4	20.5	20.3
Malta	-	-	-	-	-	-	-	-	-	-
Netherlands	14	13.9	12.7	11.2	11.3	21.2	21.2	19.7	19	19.2
Poland	25.4	26	23.8	23	23.8	33.8	35.1	33.1	31.2	32.2
Portugal	8.9	10	10.3	10.1	12	22.4	19.3	19.9	18	18.3
Romania	15.5	13.9	17.1	17.2	20.4	28.1	24.9	27.7	23.4	26.6
Slovakia	-	18	19	14.7	17.5	-	24.5	23.9	20.7	24.2
Slovenia	20.1	17.5	21.6	21.6	19.7	24.9	22.5	27.7	25.6	24.8
Spain	10.7	11.3	13	11.3	12.1	19.9	21	23.4	20.7	21.9
Sweden	5.3	7.2	5.8	5.6	5.4	14.9	14.3	13	12.3	11.8
United Kingdom	12.7	12.6	9.9	10.1	10	17.9	17.7	16.4	17.4	15.6

Source: processing according to data published by Eurostat, 2019

It is noted that, compared to 2013, in 2017, the values of exposure to air pollution due to powders of less than 2.5 μm have decreased in most countries, but more strongly in the following countries: Luxembourg (-5.1 μg/m3), Belgium (-4.1 μg/m3), France (-3.8 μg/m3). It is also noted that in some countries the exposure to air pollution due to powders of less than 2.5 μm has increased in the following countries: Romania (+4.9 μg/m3), Hungary (+3.6 μg/m3), Portugal (+ 3.1 μg/m3), Spain

(+1.4 µg/m3), Sweden (+0.1 µg/m3). In 2017, the highest values were registered in: Bulgaria (23.8 µg/m3), Poland (23.8 µg/m3), Hungary (20.9 µg/m3), Romania (20.4 µg/m3). At the same time, the lowest values were registered in the following countries: Finland (4.9 µg/m3), Estonia (5.3 µg/m3), Sweden (5.4 µg/m3), Ireland (7.7 µg/m3), Denmark (9, 2 µg/m3), United Kingdom (10.0 µg/m3).
Regarding the exposure to air pollution due to powders of less than 10 µm, in 2017, compared to 2013, there were decreases in values in most countries. The most significant decreases are observed in: Cyprus (-8.2 µg/m3), Bulgaria (-6.4 µg/m3), Austria (-5.2 µg/m3). At the same time, there was an increase in air pollution exposure due to powders of less than 10 µm in the following countries: Spain (+2.0 µg/m3), Croatia (+1.1 µg/m3). In 2017, the highest values were registered in: Bulgaria (37.3 µg/m3), Croatia (35.1 µg/m3), Poland (32.2 µg/m3), Cyprus (29.2 µg/m3), Italy (29, 2 µg/m3). At the same time, the lowest values were registered in the following countries: Finland (10.0 µg/m3), Estonia (10.5 µg/m3), Ireland (11.5 µg/m3), Sweden (11.8 µg/m3).
At the European level, the following figure shows the evolution of exposure to air pollution due to powders in suspension of less than 2.5 µm and less than 10 µm.

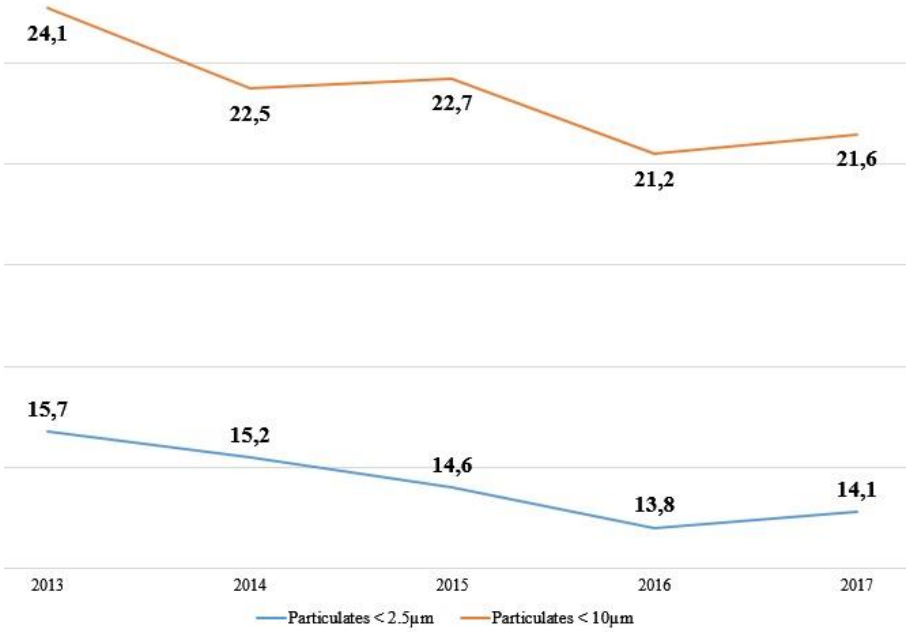

Figure 2. The evolution of exposure to air pollution due to powders in suspension of less than 2.5 µm and less than 10 µm, European Union, 2013-2017 (µg/m3)
Source: processing according to data published by Eurostat, 2019

It is observed that, for the period 2013-2017, the evolution of the parameters the exposure to air pollution due to the powders in suspension smaller than 2.5 µm, respectively smaller than 10 µm, was decreasing. Thus, in 2017, compared to 2013, the exposure to air pollution due to powders in suspension of less than 2.5 µm decreased by 1.6 µg/m3. Also, in 2017, compared to 2013, the exposure to air pollution due to powders in suspension less than 10 µm decreased by 2.5 µg/m3.

3. CONCLUSIONS

Cooperation through participation in European partnerships contributes to the promotion of best practices, as well as to economic growth and quality of life (European Union, 2019).
From the analyzes, it is found that the values are almost double in the countries where the average area of living accommodation is the highest compared to the countries with the average area of living accommodation the lowest. Also, the proportion of households living in houses is high in many of the member countries of the European Union. In terms of additional wastewater treatment, the

population connected to a secondary wastewater treatment system has grown significantly over the last 20 years. The interest for a less polluting urban environment is also observed by increasing the recycling rate of municipal waste. The quality of life in urban areas has also increased on the basis of decreased exposure to air pollution due to suspended powders.

Sustainable economic and social development of cities can only be achieved by increasing the quality of life. Improving the air quality, the quality of the drinking water, as well as the modernization of wastewater treatment, are priorities that local communities must take on.

Water quality is affected by the existence of some compounds. Different human processes, but also some natural ones, lead to water pollution. Promoting environmental standards may be a measure to improve the correct management of water quality (Charlesworth & Booth, 2019).

Changes in the environment can lead to changes in preferences regarding living conditions. Improvement of living conditions will be influenced by demographic changes, people's habits, climate change, but also future urban developments (Feng et al., 2018).

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