

Study on the implementation of self-service systems for the delivery/clearance of postal items

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I. Introduction

The postal services sector is in a continuous transformation, adapting the processes of postal items processing, through modern means and technologies, to the new market requirements. Digitalisation and technological developments have influenced the postal items processing operations, in particular with regard to the delivery/collection of postal parcels.

Thus, in the field of postal services, in recent years we have seen at both European and national level that the letter traffic volumes have decreased throughout the world as a result of sectoral digitalization and the users' tendency to replace traditional communication means with those specific to electronic communication, on the one hand, and that parcels traffic flows have grown sustainably, this dynamic being created by the increasing postal flows generated by e-commerce, on the other hand.¹

Moreover, during 2020-2021 the Covid-19 pandemic generated the need the need to carry out an increased number of postal operations without physical contact, so that the large providers on the market have tested and implemented postal services with the possibility of automated processing, the so-called self-service systems, where delivery and collection are made through automatic systems of "parcel locker" or "PUDO" type.

Taking into account these developments, as well as the need to monitor the dynamics of self-service systems on the Romanian market, ANCOM initiated the present study to assess the stage of implementation and development of the infrastructure of parcel lockers and PUDO locations.

II. Methodology

Methodologically speaking, the carrying out of this study involved, among other, the following procedural steps:

- Establishing the research panel and questioning the providers;
- Collecting and centralizing the information;
- Data processing and analysis.

In order to carry out the study, the first 27 postal service providers, which processed together, during 2021, more than 95% of the parcel traffic in Romania (processing of domestic and cross-border parcels and small packages²) were selected. The research involved the transmission in electronic format of a questionnaire in order to obtain data on the degree of implementation of self-service systems for the delivery/collection of postal items.

Considering the above, for the national dimension of the study, in the research were involved only the postal service providers that processed postal items generated by electronic commerce and communicated to the Authority that they had provided self-service postal services through their own networks of parcel lockers and PUDO. The study concerned the data reported by the providers who communicated that they had used parcel lockers networks and PUDO locations for collection/delivery, respectively a number of 6 providers (2 providers only parcel lockers, 2 providers both parcel lockers and PUDO, respectively 2 providers only PUDO networks).

¹ https://www.ancom.ro/studii-de-piata_5507 - Study on the quality of parcel services and the impact of e-commerce on the postal services market;

² Even if they are characteristic only to the activity of the universal service provider, small packages are assimilable to postal parcels;

Thus, the research panel included the following providers:

Research panel	Parcel lockers	PUDO
C SOLUTION S.R.L.	✓	
CARGUS S.R.L.		✓
DELIVERY SOLUTIONS S.A.	✓	
DYNAMIC PARCEL DISTRIBUTION S.A.	✓	✓
FAN COURIER EXPRESS S.R.L.	✓	✓
PACKETA ROMANIA S.R.L.		✓

For the international dimension of the study, through the Secretariat of DG GROW (Directorate General for Internal Market, Industry, Entrepreneurship and SMEs) within the European Commission, in the first quarter of 2022, ANCOM submitted to the experts in the fellow regulatory authorities from the ERGP (European Regulators Group for Postal Services) Member States a questionnaire on the development of self-service postal services and parcel lockers and PUDO networks in the respective states.

For this study, ANCOM collected the Romanian and European data between March - September, the obtained data being centralised to the largest extent possible with similar data for previous years, to facilitate thus the analysis of the dynamics of the indicators subject to the questionnaire. The process of verification, processing and analysis of data also involved contacting the representatives of the interviewed providers and the regulators of the ERGP Member States, in order to clarify the reported information by direct communication with them. The centralization and verification of data ended between September - October.

In accordance with the rules set by the legislation regulating the postal field in Romania, the end points of the postal networks are called *access points* or *contact points*, these being defined³ by the provisions of art. 2, indents 5 and 6 of the Government Emergency Ordinance no. 13/2013 on postal services, with subsequent amendments and completions.

The technological progress and the implementation by several providers, in recent years, of a handful of innovative solutions for rendering more efficient the process of distribution by optimising the postal items clearance/delivery stages led to the development of parcel lockers and PUDO networks, the respective facilities becoming end points of the postal networks (access and/or contact points). In view of an accurate interpretation of this document, the parcel lockers and PUDOs may not be confused with the access points "street mailboxes" installed by the universal service provider in view of carrying out the operations of clearance of the postal items it processes within the scope of universal service.

Given that the process of monitoring and research of the services provided in a self-service regime is still at an early stage of development and taking into account that some of the respondents have communicated that they do not have specific, accurate data on the self-service networks and the traffic volumes processed through them, some of the values presented in this document must be interpreted with caution.

³ *access points* – physical installations, including mail boxes made available to the public by means of which the postal items can be introduced in the postal network; *contact points* – the set of physical installations by means of which the postal items can be delivered to the addressees;

Taking into account the above, in the specific sense of this research, the terms below have been defined as follows:

- self-service postal service: a postal service whose particularity is that the user can submit and pick up postal items in/from the postal network without any human interaction, through automated installations;
 - parcel locker: automated installation which allows the users to self pick up and send the postal items; these installations are assimilated to the automated systems provided at indent 3.9.1. – postal item clearance; 3.10.1. – postal item delivery; and 3.10.3. – Cash-on-delivery item delivery of the ANCOM President's Decision no. 313/2017 on the general authorisation regime for the provision of postal services, with the subsequent amendments and completions;
1. PUDO (Pick-Up/Drop-Off): location for pick-up/drop-off, usually materialised by the conclusion of a specific contract between the operator of the postal network and a store or a retail sale point; PUDO locations can be manned or automated (the latter are similar to parcel lockers); taking into account that these networks enter into a competitive relation with the parcel lockers networks, all the PUDO points reported by the respondents were included in this research, this fact not being such as to consistently influence the results of the research. Throughout this report, the PUDO does not include parcel lockers.

In view of the above, the research on the implementation of self-service postal services for the delivery/clearance of postal items was carried out, the results for the reference period 2020-2021 being detailed below.

III. Self-service postal services in Europe

The data obtained by ANCOM showed, among other, that sector digitalisation and development of electronic commerce reshaped the users' consumption behaviour, many courier providers adjusting to them by developing new working methods, among which most notable is the implementation of self-service solutions for the provision of specific postal services (e.g. standard, express, Cash-on-delivery, advice of delivery parcels etc.). Although, at the European Commission level and the level of the European regulators, there is a consistent concern for the collection of data, it must be mentioned that the surveyed authorities hold limited information as to the values of some indicators specific to this market segment. Nevertheless, the implementation of self-service postal solutions in Europe has reached the stage of expansion of parcel locker networks or PUDO points as points of clearance or submission of postal parcels.

III.1. Number of parcel lockers/PUDO

26 respondents answered the question concerning the number of parcel lockers.

Centralizing the data transmitted by the respondents from the European states as of October 2022, relevant for the end of 2021, most of the parcel lockers were found in Poland (18.4 thousand), Spain (17.3 thousand), Germany (8.5 thousand), Sweden⁴ (4.8 thousand), Romania (2.5 thousand), Italy⁵ (2.5 thousand), Denmark (1.5 thousand) and Lithuania (1.3 thousand), followed by Austria, Belgium, Bulgaria, the Czech Republic, Cyprus, Croatia, Estonia, Greece, Latvia, Malta, Moldova, Slovakia and the Netherlands with less than 1,000 parcel lockers installed on their territory. It should be noted that the responding authorities from France, Ireland and Norway⁶ have communicated that they do not have specific data on this indicator⁷.

The gathered information showed that the majority of the European national regulatory authorities do not hold specific data on the PUDO networks. More than that, these are in many cases considered parcel lockers.

III.2. Number of self-service postal service providers

As regards the number of postal providers that processed items through parcel lockers/PUDO networks in 2021, we must specify that 10 respondents said they did not hold precise data, although there are active providers on this market segment in their countries (Austria, Belgium, Cyprus, Croatia, France, Ireland, Italy, Norway, Spain, The Netherlands).

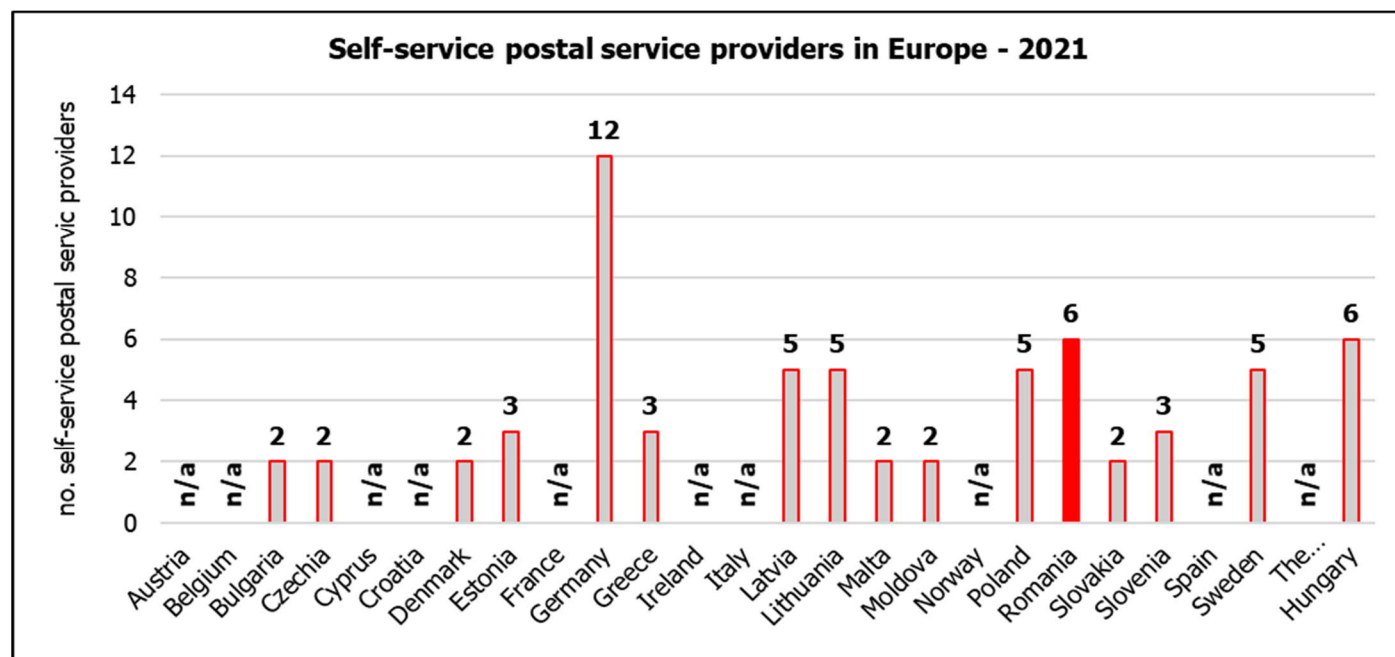
According to the collected data, Germany ranks first with 12 providers, followed by Romania with 6. We emphasize that the graph below that does not illustrate, as far as the European states are concerned, the providers that provide services exclusively through PUDO, except for Romania, which has 2 such providers.

⁴ Sweden: with data updated as of January 2022, it recorded the largest increase in the number of parcel lockers by 210%, from 1,544 parcel lockers in January 2021 to 4,779 parcel lockers in January 2022; the Swedish regulatory authority (PTS) has also published a map of that network, which is presented for information purposes in Annex No. 1;

⁵ Italy: The responding authority (AGCOM) carried out during 2021 a procedure to identify measures to incentivise the use of parcel lockers. It can be consulted at the following internet address (accessible only in Italian): [Misure per incentivare l'utilizzo degli armadietti automatici per la consegna e la raccolta dei pacchi](#), Annex A to Decision No 117/21/CONS);

⁶ Norway: The Responding Authority of Norway (NKOM) noted that no data on the number of parcel lockers are regularly collected, but universal service provider Norway Post had planned to install parcel lockers at 1,000 locations by the end of 2021;

⁷ Updates of the information are possible and are without prejudice to the relevance of the ERGP Report on core indicators for the monitoring of the European postal market;



III.3. Geographical distribution of self-service networks

Geographically speaking, even if most of the respondents do not hold specific data, the gathered answers show that in several European states the self-service solutions are implemented with priority, similarly as in Romania, in urban, densely populated areas, information thereon being offered by the authorities from Belgium, Denmark, Italy, Spain and Sweden.

We note the particular case of the regulatory authority from Spain (CNMC) which indicated that the Spanish universal service provider (Correos Group) plans to invest approximately 1 million euros to digitalise the postal infrastructure at national level, including to extend the networks of parcel lockers/PUDO in rural areas⁸.

III.4. Self-service traffic volume

In 2021, in Europe, as shown also in the ERGP Report on postal market core indicators⁹, a total postal traffic of approximately 49 billion items was processed, up by 0.9% from 2020 (Romania – approx. 595 million).

Of the total postal traffic processed, around 12 billion items were postal parcels, on the rise by more than 10% compared to the parcel traffic registered in the previous year (Romania – approx. 218 million parcels).

As for the volume of postal items processed through parcel lockers in 2021, the vast majority of respondents said they did not hold data, but in the states where this flow of items was monitored the

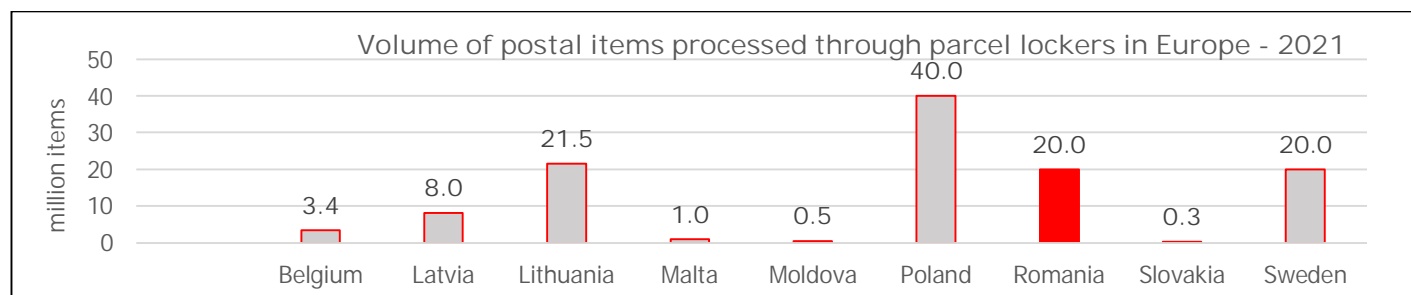
⁸ Spain: more details on the investments plan of Correos Group can be found at the following webpage (available only in Spanish) <https://www.elconfidencialdigital.com/articulo/dinero/correos-calcula-que-ingresara-1000-millones-euros-mas-oficinas-digitales-espana-vaciada/20220114142613333064.html>;

⁹ https://single-market-economy.ec.europa.eu/sectors/postal-services/european-regulators-group-postal-services_en: the report on European postal market core indicators;

registered values reached a maximum of approx. 40 million items in Poland, respectively a minimum of approx. 26 thousand items in Slovakia.

In Romania the total volume of the items processed through parcel lockers reached approx. 20 million¹⁰ during 2021.

Postal volume processed through parcel lockers: Europe – 2021

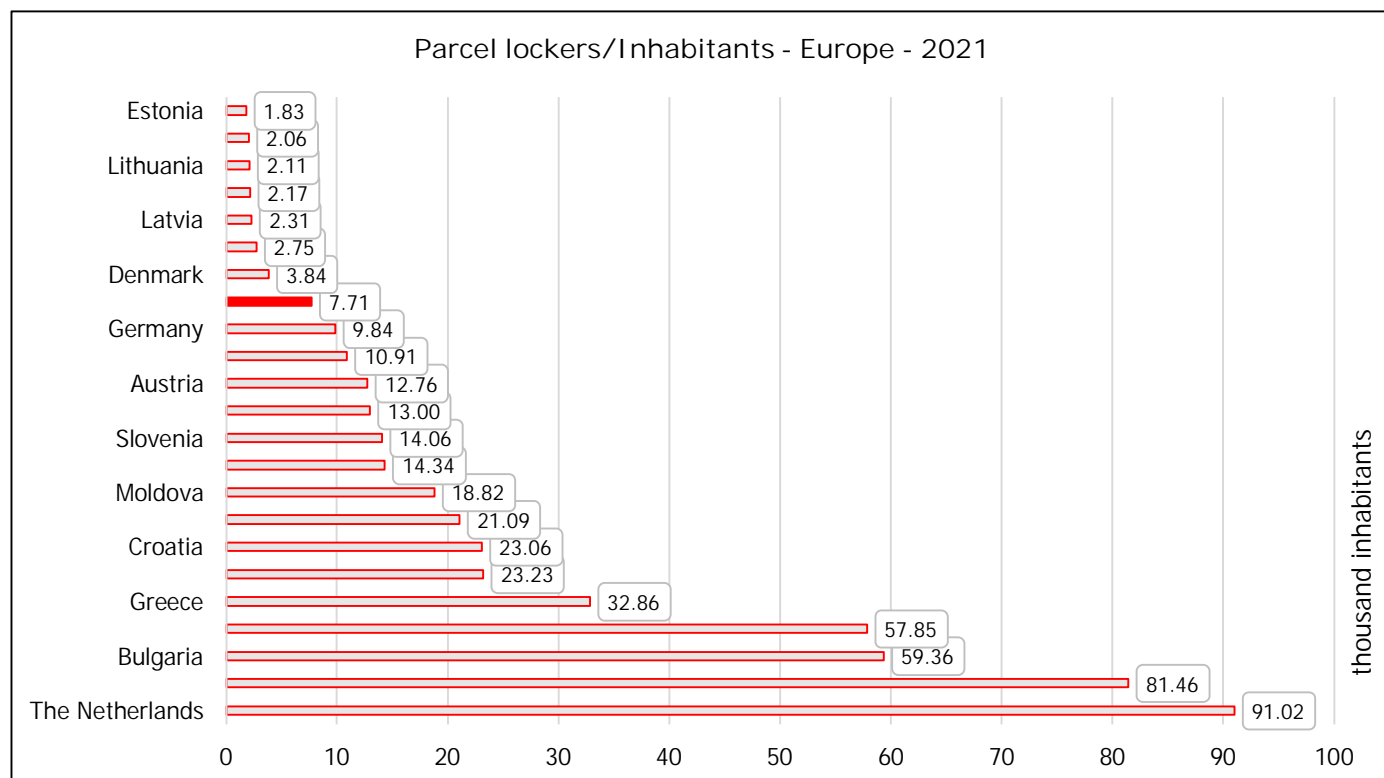


The gathered data reveal a more intense use of parcel lockers in Romania during 2021, compared to Poland (the European leader in the implementation and development of self-service systems): 40 million items processed through 18.4 thousand parcel lockers in Poland (2.2 thousand items/year/locker) versus 20 million items processed through 2.5 thousand parcel lockers in Romania (8.1 thousand items/year/locker).

III.5. Self-service network density

According to the data obtained by ANCOM¹¹, from density standpoint (number of parcel lockers per total number of inhabitants), the top three states in Europe are Estonia (1 parcel locker/1.8 thousand inhabitants), followed by Poland and Lithuania (both with 1 parcel locker/2.1 thousand inhabitants). On this point, Romania ranks eighth with 1 parcel locker/7.7 thousand inhabitants.

Self-service network density: Europe – 2021



¹⁰ According to the statistical data report: <https://statistica.ancom.ro/sscpds/public/alldocuments/report>

¹¹ Specific density data can be found in Annex no. 2;

IV. Self-service postal services in Romania

In the context of the Covid-19 pandemic, in Romania, the postal sector and in particular the segment of items generated by electronic commerce continued to register significant evolutions in 2021. The instauration of the state of emergency and of the quarantine made the consumers turn heavily to electronic commerce for the purchase of goods, which influences the starting of the implementation and development of self-service postal services.

Thus, from the data monitored by ANCOM it can be seen that the postal service providers in the research panel initiated and carry out significant investments in optimisation of the parcel lockers/PUDO infrastructures. Out of the investments for the development of parcel services in 2021, approx. 78 million Lei¹² were allocated for extending postal operation through the implementation and development of self-service systems.

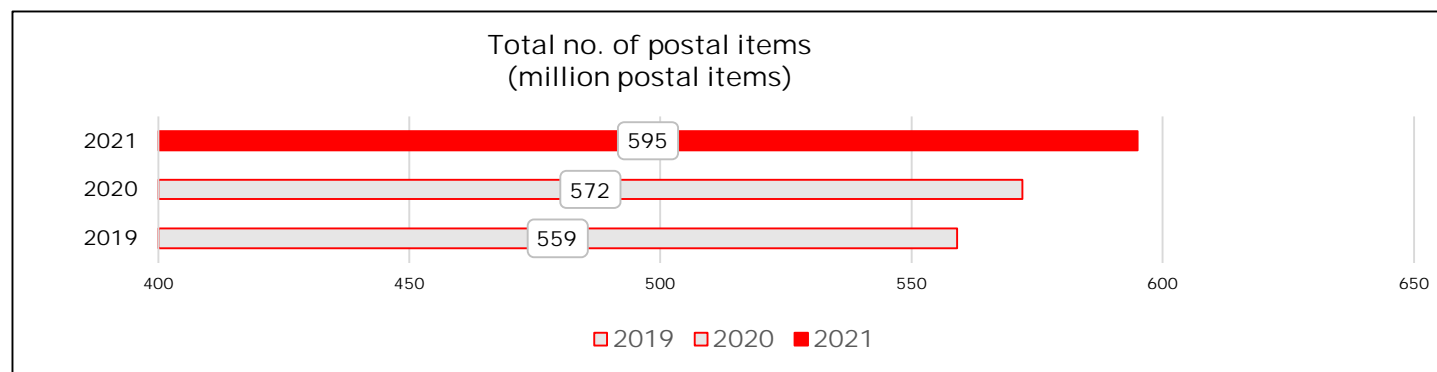
IV.1. Total postal traffic

During 2019-2021, the total traffic of postal items in Romania grew from about 559 million items in 2019 to 595 million items in 2021 (up by approx. 6%).

As well, the total traffic for certain categories of items (e.g. *parcels and small packages*) has grown significantly during this timeframe (+50%).

In view of this study, the Authority has used the most recent data on the evolution of the postal sector, including data that were generated by the annual statistical reportings incumbent on the postal service providers¹³.

Dynamics of total postal traffic: 2019-2021

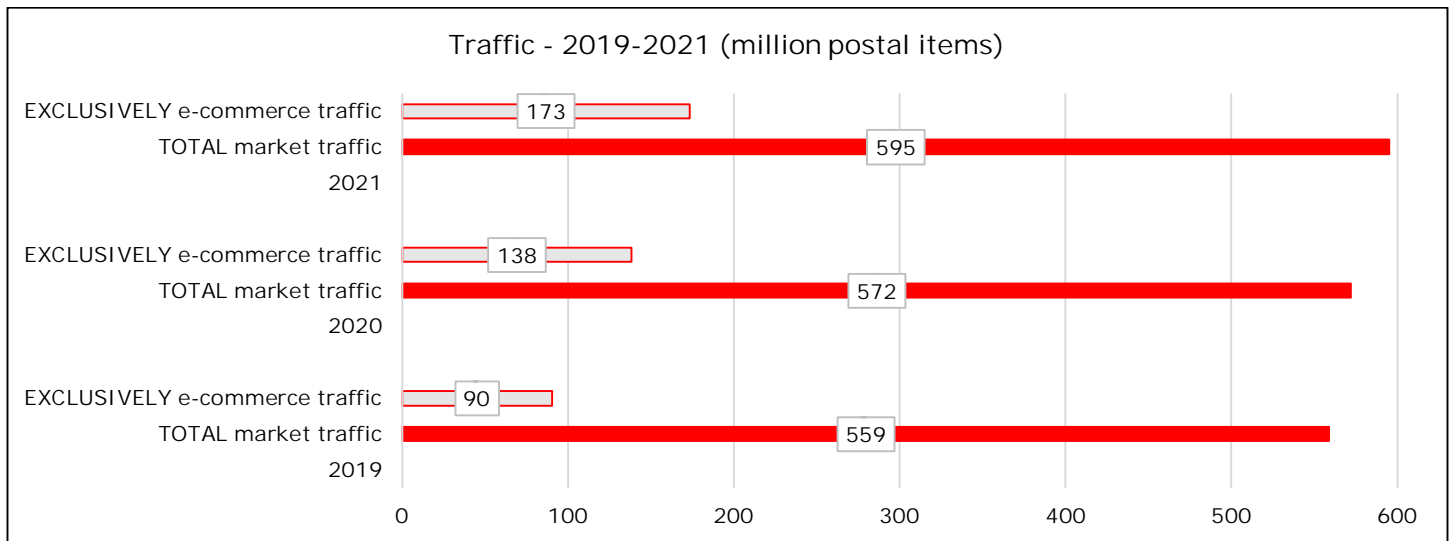


IV.2. Postal traffic generated by electronic commerce

The number of postal items generated by electronic commerce has reached 90 million items, holding a share of 16% within the total market traffic in 2019; has exceeded 138 million items, with a share above 24% within the total market traffic in 2020; and has exceeded 173 million items in 2021, holding about 29% share within the total traffic).

¹² https://www.ancom.ro/studii-de-piata_5507 - Study on the quality of parcel services and impact of electronic commerce on postal services;

¹³ <https://statistica.ancom.ro/sscpds/public/alldocuments/report> - Romanian postal service market in 2021;

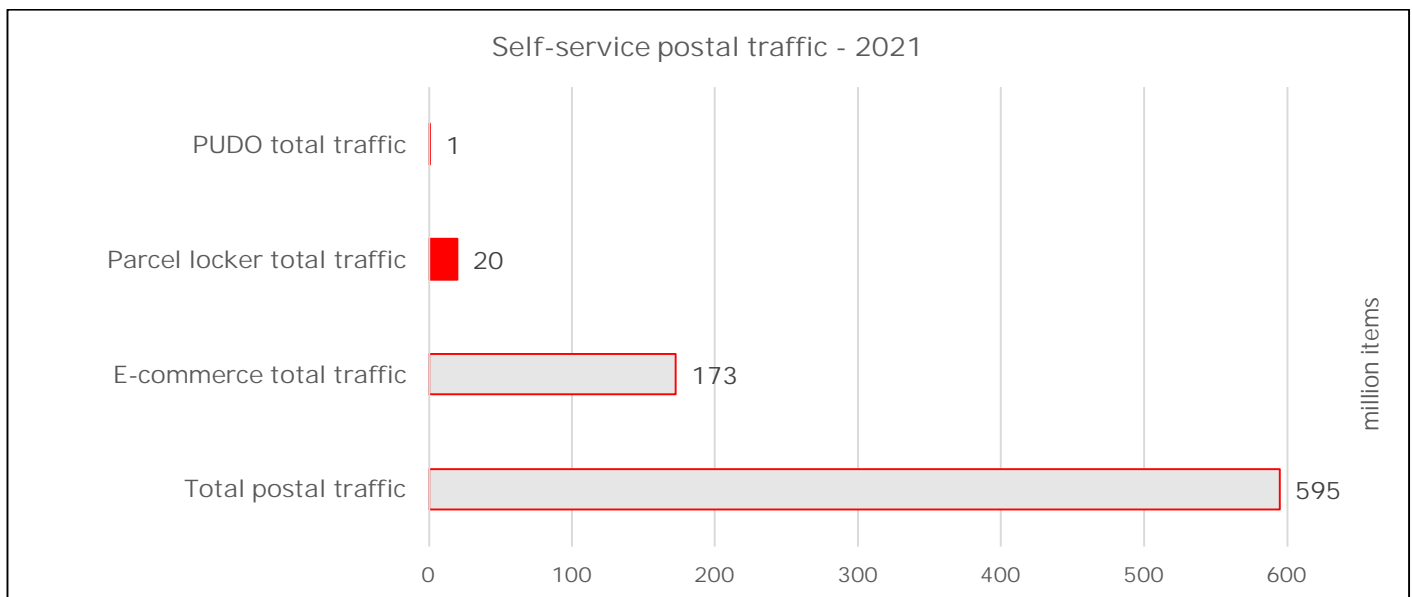


IV.3. Postal traffic: self-service services

During 2020, in Romania, within the total volume of more than 138 million postal items generated exclusively by electronic commerce, at least 5 million items (3.6%) were delivered/cleared to/from over 1,000 parcel locker/PUDO locations.

In 2021, within the total volume of more than 173 million postal items generated exclusively by electronic commerce, about 20 million items (more than 11%) were delivered/cleared through parcel lockers (approx. 2,500 locations), respectively over 1 million items (approx. 1%) were delivered/cleared through PUDO points (more than 2,400 locations).

Total parcel locker/PUDO traffic – 2021



¹⁴ * It is possible that some respondents did not include the items above 31.5 kg, but their volume should not affect significantly the presented values;

IV.3. Level of use of self-service postal services

For an overview of the share of self-service postal services within the postal service market, we calculated the parameter *Level of use of services* depending on the traffic corresponding to these services.

The *Level of use of services* (G_{US}) in relation to the processing of total traffic generated by electronic commerce on the postal service market was based on the following calculation algorithm:

$$G_{US(Self-service)} = \frac{Self-Service\ Traffic\ Volume}{E-commerce\ Total\ Traffic\ Volume} \times 100$$

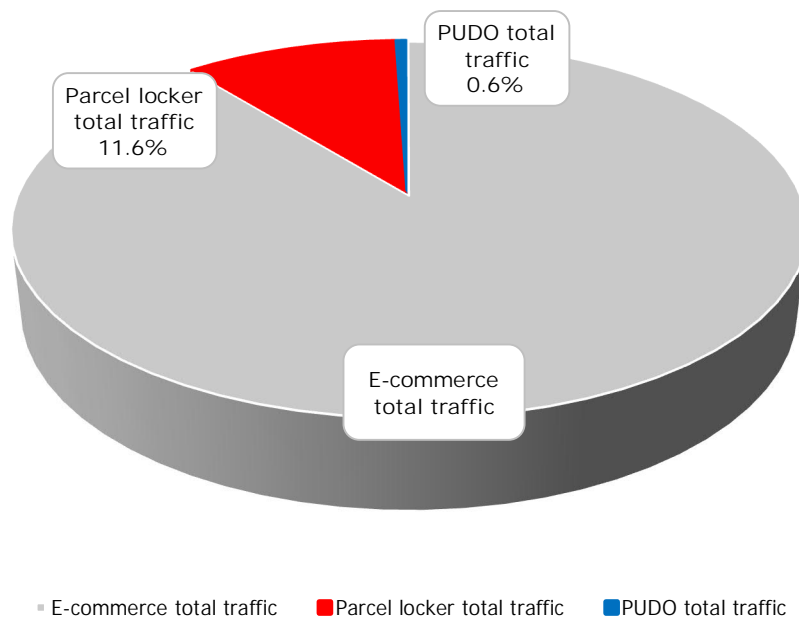
Thus, the level of use of self-service through parcel lockers within the total traffic generated by electronic commerce on the Romanian postal market registered a share of about 11.6% in 2021.

$$G_{US(Parcel\ lockers)} = \frac{20\ mn\ items\ through\ parcel\ lockers}{173\ mn\ E-comm\ items} \times 100 = 11.6\%$$

The level of use of self-service through PUDO points within the total traffic generated by electronic commerce on the Romanian postal market was about 0.6% in 2021.

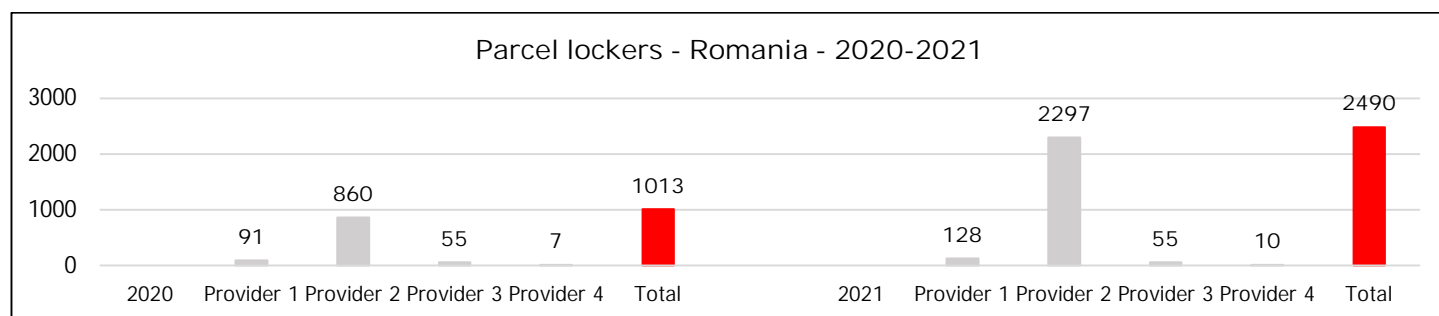
$$G_{US(PUDO)} = \frac{1\ mn\ items\ through\ PUDO}{173\ mn\ E-comm\ items} \times 100 = 0.6\%$$

Usage level of self-service postal services - 2021
(E-comm traffic)



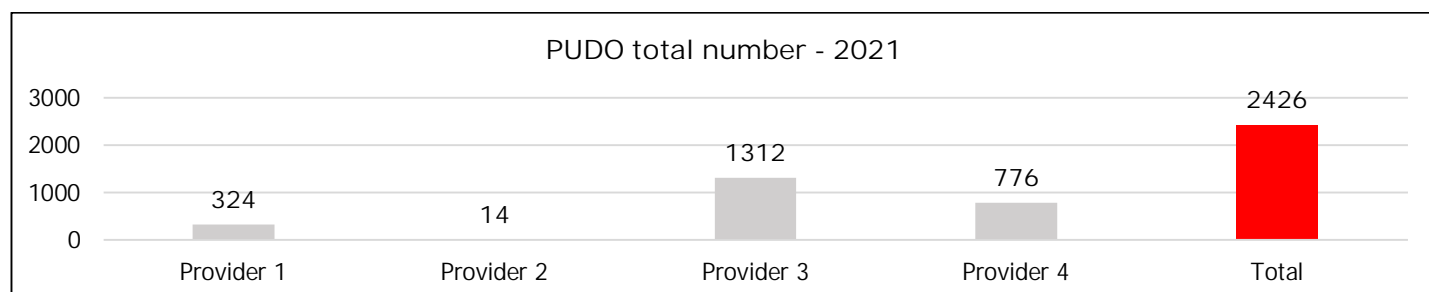
IV.4. Parcel lockers and PUDO locations in Romania

In 2020, according to the data reported on the number of parcel lockers employed, 4 of the surveyed providers said that they have used 7, 55, 91, respectively 860 units, resulting a total of 1,013 parcel lockers. In 2021, according to the data reported on the number of parcel lockers employed, 4 of the surveyed providers said that they have used 10, 55, 128, respectively 2,297 units, resulting a total of 2,490 of parcel lockers.



In 2021, according to the data reported on the number of PUDO used, 4 of the surveyed providers said that they have used a total of 2,426 locations.

PUDO - Romania – 2021



IV.5. Provision of postal services through parcel lockers and PUDO

The data made available to ANCOM revealed that in 2020 four of the surveyed providers have registered a total of approximately 5 million self-service deliveries/clearances (parcel lockers). In 2021, four providers that reported they hold parcel lockers have carried out a total of approx. 20 million self-service postal operations through these locations. We should mention that one provider carried more than 90% of its operations through parcel lockers.

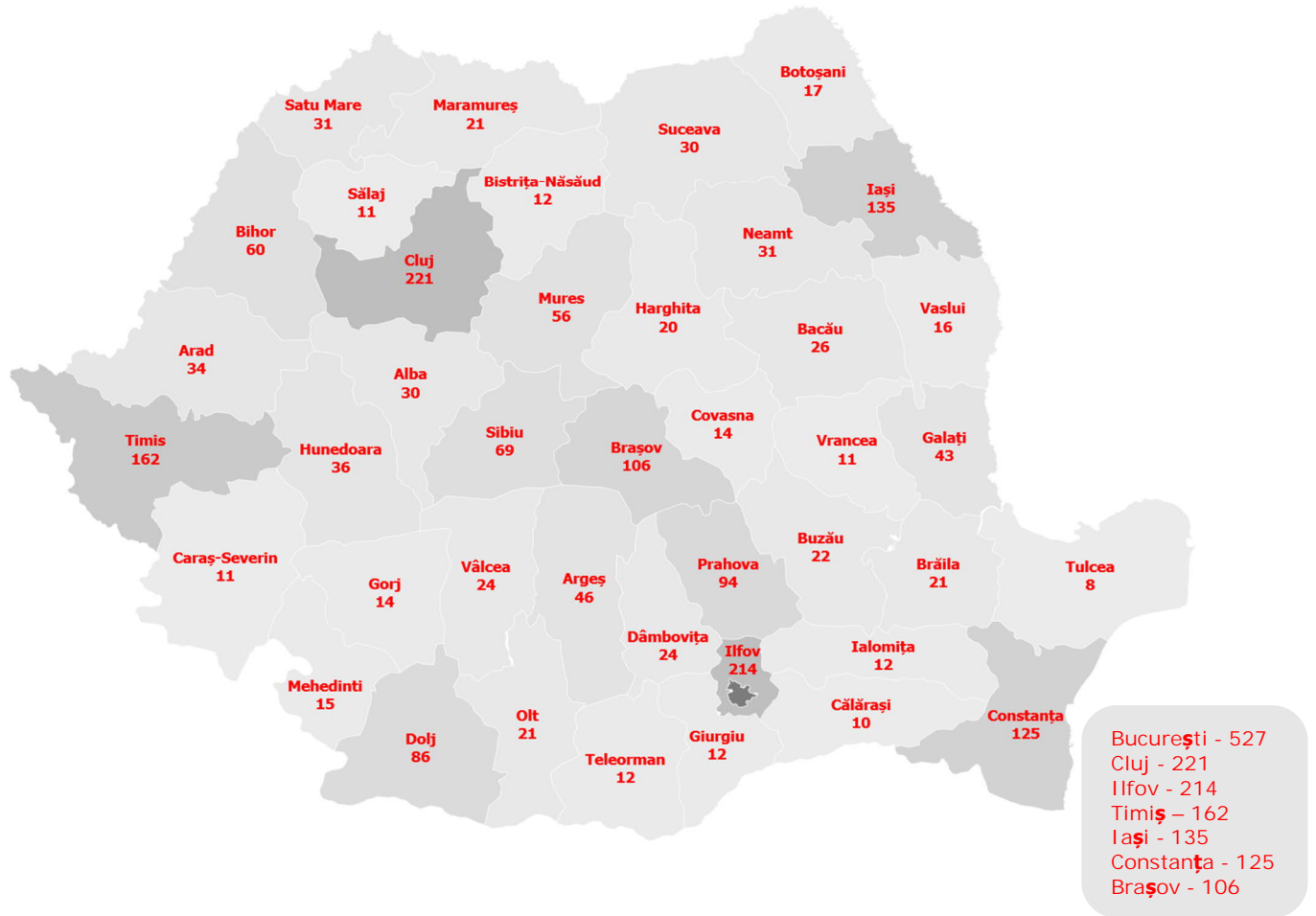
As regards the volume of postal items processed through PUDO locations, in 2021, four of the surveyed providers undertook a total of about 1 million postal operations.

IV.6. Parcel lockers and PUDO locations at county level

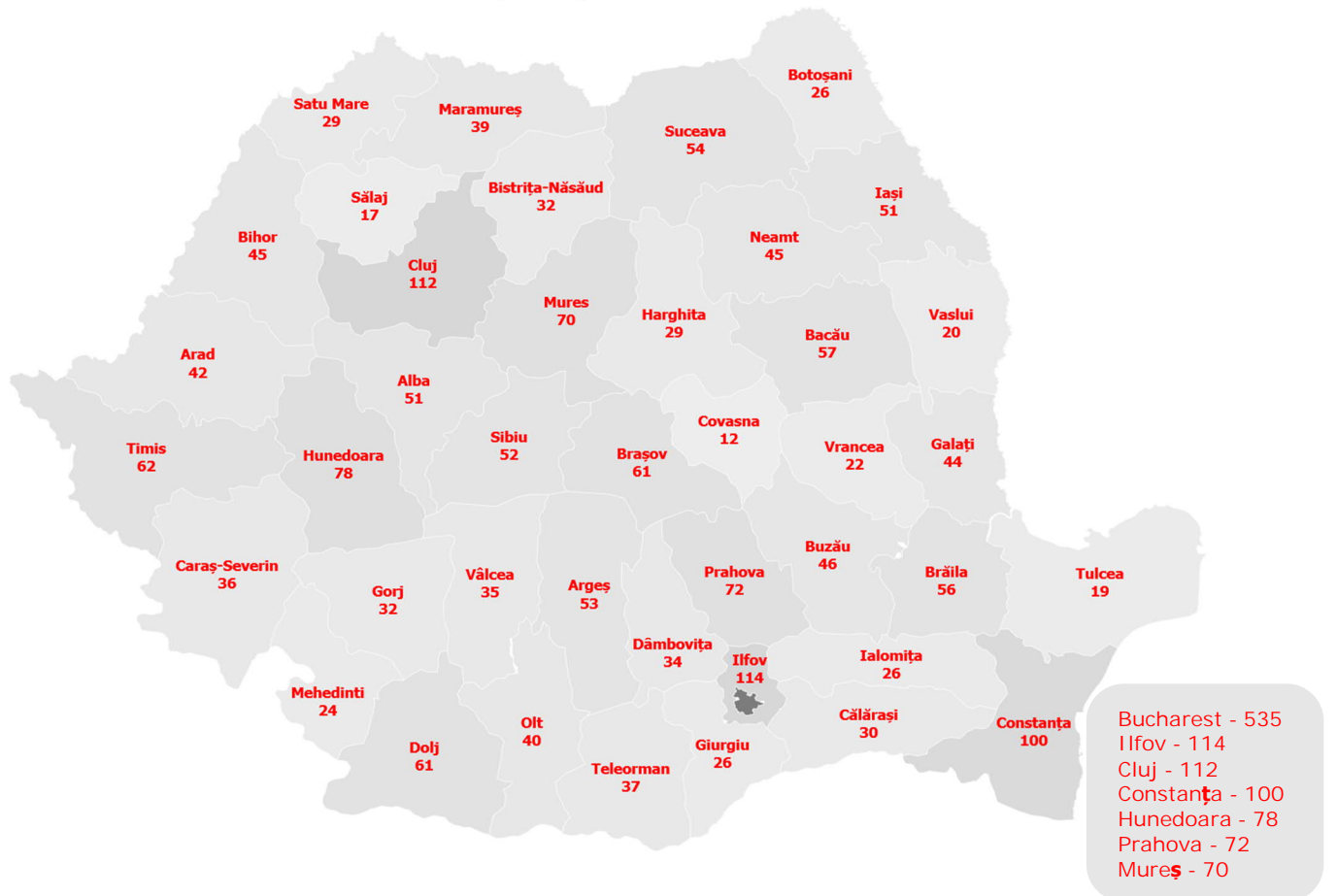
Regarding the distribution on county level of the parcel locker/PUDO locations, in Romania, the information centralised by the Authority showed that at end-2021, most of the total 4,916 points were accessible in Bucharest and in Ilfov, Braşov, Cluj, Constanţa, Iaşi and Timiş counties. The points are placed mainly in urban, densely populated areas, which confirms the trend registered at European level as well.

More specific data on this indicator, including information on the level of implementation of parcel lockers and PUDO at the level of development macro-regions and regions, can be consulted in Annex no. 3 to this document.

Parcel Lockers / county - Romania - 2021



PUDO / county - Romania - 2021



IV.7. Self-service traffic on counties

Concerning the distribution on counties of the traffic processed through parcel lockers, the data obtained by the Authority showed that during 2021 most items of this type (approx. 36%) were processed in Bucharest. The counties with more than 500 thousand postal items processed through parcel lockers were Braşov, Cluj, Constanţa, Iaşi, Ilfov and Timiş.

As for the distribution on counties of the traffic processed through PUDO, the data obtained by the Authority showed that during 2021 most items of this type (approx. 6%) were processed in Bucharest. The counties with more than 5 thousand postal items processed through PUDO were Cluj, Constanţa, Iaşi, Ilfov, Sibiu and Timiş.

More data on this indicator are available for consultation in Annex no. 4 to this document.

IV.8. Self-service in urban/rural area

Regarding the geographical coverage of the parcel locker infrastructures, in 2021 we noticed a growing trend for installing these systems in the rural area. Thus, 4 providers said they use such systems in the urban area (cities, towns), 2 of them saying they use these systems also in the rural area (communes, villages, small villages). By comparison, in 2020, all the 4 providers in the panel said they use such networks in the urban area.

Furthermore, according to the data made available to the Authority, 4 providers reported they use PUDO locations in urban area, and only 1 provider said it uses these types of networks also in the rural area.

V. Information from the market studies on the provision of self-service options

In 2021 and 2022, ANCOM undertook a *Quantitative study on the use of postal services by the end-users* (November 2021) and a *Quantitative study on the means of provision of postal services among end-users, natural persons* (October 2022), the two studies being available for consultation on ANCOM's website¹⁵.

From the data obtained following these studies, the following conclusions were drawn, among other:

- from notoriety point of view, the parcel services are the best known, more than 90% of the respondents saying they are aware of them;
- 73% of the respondents made online shopping in the last 12 months; the incidence of the online purchases is closely connected to the level of education (91% among the users with higher education), and is also higher among the respondents aged below 35 - 93%; the frequency of online purchases has grown in the users' preferences, 47% of them shopping online several times a year, 34% several times a month, and 9% weekly;
- 44% of the postal service users have used self-service systems in the last 12 months; respondents under 35 years old are the social category which uses most frequently the automated systems (61%); the less familiar category with this type of postal services is aged above 65 (10%);

¹⁵ <https://statistica.ancom.ro/sscpds/public/alldocuments/marketstudy> (section "Postal Services")

- regarding the acceptable timeframe necessary to reach the automated systems, one third of the respondents consider that between 6 and 10 minutes is a reasonable time, irrespective of whether they get there on foot, with their personal car or with the public transportation etc.

VI. Benefits generated by the implementation of self-service systems

With respect to the best practices existing on this market segment, we may mention that, at both European and national level, the measures taken by the providers in view of implementing self-service solutions have led to the reduction of the carbon footprint determined by the postal activity, as these clearance/delivery solutions are less polluting than the traditional postal processes. In this context, the *Green Last Mile Report*¹⁶ was conducted, a project of Last Mile Experts¹⁷, presenting the processes and evolutions registered by several large companies from the European Union to reduce the emission of harmful gas in the atmosphere. Parcel lockers are defined within the study as an eco-friendly option for postal processing which ensures not only a reduced carbon footprint but also reduces the traffic which the courier activity generates in the big cities. Furthermore, the *Study to assess and analyse the impact of e-commerce driven transport and parcel delivery on air pollution and CO2 emissions*¹⁸ commissioned by the European Commission¹⁹, shows that several initiatives can be considered to reduce the negative impact of the e-commerce generated deliveries on the environment. As well, the mentioned document identifies the benefits of such solutions for the reference period 2020 – 2030. Thus, among other, by expanding the parcel locker and PUDO infrastructure, the postal industry could reduce the CO₂ in the urban areas by at least 68% compared to today, and the online shopping could contribute in the best case scenario to the emission reduction by up to 91% until 2030. The hypotheses considered in the study determine, besides the direct aspects relating to the reduction of pollution, including benefits such as the reduction of the delivery time in the courier services, the decrease of the traffic in the residential areas, social benefits, the increase of the development potential in the rural areas, as well as the involvement of consumers in reducing the impact on the environment.

VII. Conclusions

Upon conducting the study on the development of the parcel locker and PUDO infrastructure in Romania, as well as on the general impact of the development of self-service systems on the postal market, analysing also the evolution and the implementation of such systems in Europe, we have drawn the following conclusions.

In Europe, in 2021, most parcel lockers were available in Poland, Spain and Germany. In Romania, the total number of parcel lockers has known a significant growth from about 1,000 parcel lockers in 2020 to almost 2,500 in 2021 (rise by approx. 145%). Also, more than 2,400 PUDO locations were operational in Romania in 2021.

In 2021, in Romania, within the total volume counting approx. 173 million postal items generated by electronic commerce, more than 20 million (approx. 11%) were delivered/cleared to/from parcel lockers (4 times increase from 2020 when the volume of postal items processed through parcel lockers was about 5 million); respectively more than 1 million items (approx. 1% of the postal traffic generated by electronic commerce) were processed through PUDO.

¹⁶ <https://sameday.ro/news/green-last-mile-report/> - "Green last mile Europe report, April 2022"

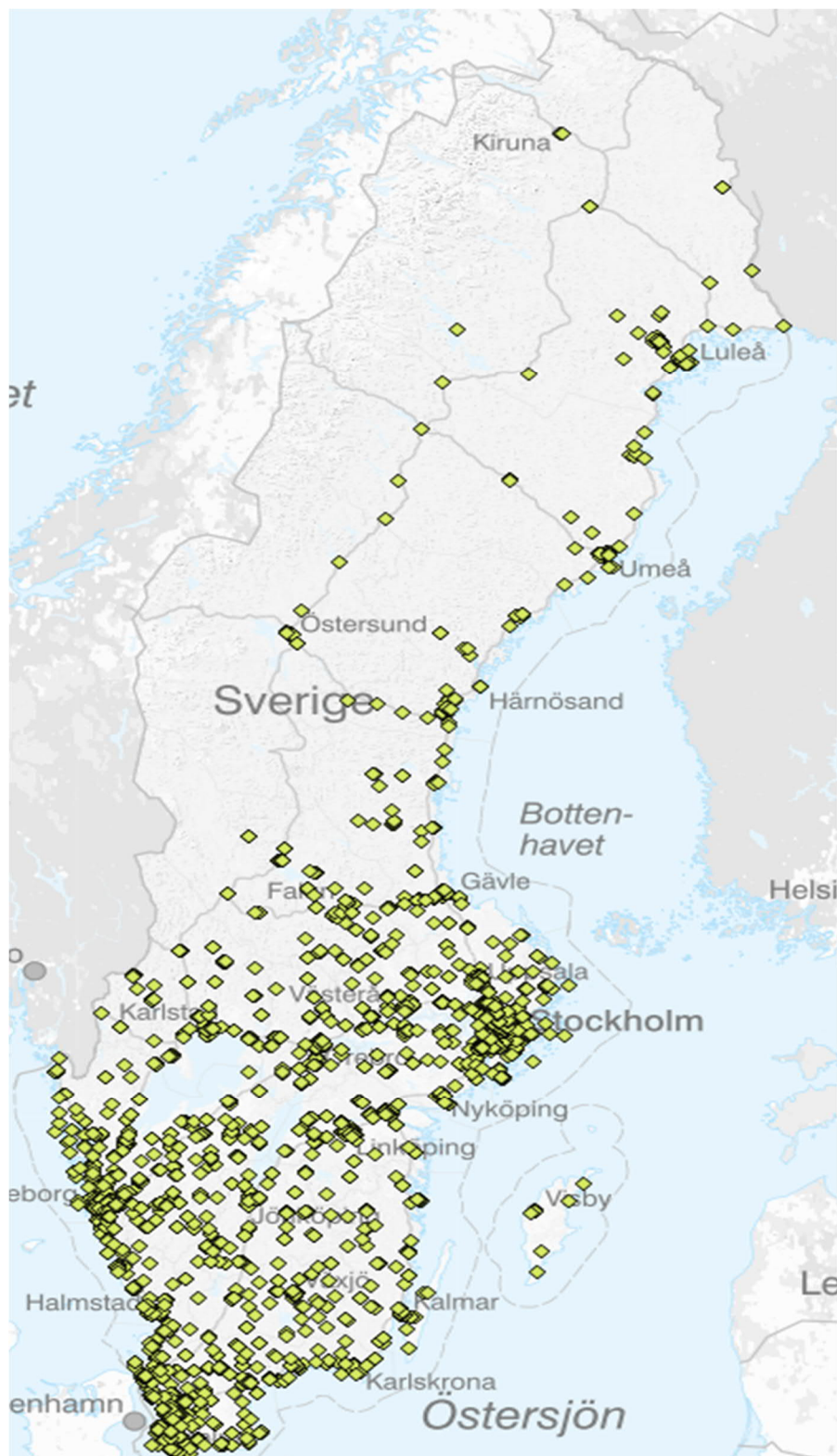
¹⁷ Consultancy company - <https://lastmileexperts.com/>;

¹⁸ <https://ec.europa.eu/docsroom/documents/49415> - „Study to assess and analyse the impact of e-commerce driven transport and parcel delivery on air pollution and CO2 emissions”;

¹⁹ The study was conducted by Sphera Solutions (USA) and KE Consult Kurte & Esser GbR (Germany), in cooperation with Prognos research center of the Basel University (Switzerland);

In the pandemic context during 2020-2021 and against the background of increased volumes of parcel traffic due to the users' quick orientation towards online shopping, some postal providers accelerated the implementation and development of self-service infrastructures both in urban and in rural areas, this solution of postal processing offering to courier companies and to users more efficiency and flexibility in the delivery process. As the expansion trend of these postal items processing means is expected to intensify in the coming years, ANCOM intends to keep monitoring the implementation of self-service postal services at national level.

Annex no. 1 – Sweden – parcel locker map



Source: <https://www.pts.se/en/documents/reports/post/2021/the-swedish-parcel-market-2020/>, "The Swedish Parcel Market 2020".

Annex no. 2 – No. of inhabitants/parcel locker, in Europe - 2021

No.	Country	Total Parcel lockers	Population ²⁰	No. of inhabitants/parcel lockers
1	Austria	700	8,932,664	12,761
2	Belgium	548	11,554,767	21,085
3	Bulgaria	116	6,885,864	59,361
4	Czechia	185	10,701,777	57,847
5	Cyprus	11	896,007	81,455
6	Croatia	175	4,036,355	23,065
7	Denmark	1,521	5,840,045	3,840
8	Estonia	725	1,330,068	1,835
9	France	n/a	67,656,682	n/a
10	Germany	8,454	83,155,031	9,836
11	Greece	325	10,678,632	32,857
12	Ireland	n/a	4,986,525	n/a
13	Italy	2,550	59,236,213	23,230
14	Latvia	820	1,893,223	2,309
15	Lithuania	1,323	2,795,680	2,113
16	Malta	36	516,100	14,336
17	Moldova	138	2,597,107	18,820
18	Norway	n/a	5,391,369	n/a
19	Poland	18,400	37,840,001	2,057
20	Romania	2.490	19,201,662	7,712
21	Slovakia	420	5,459,781	12,999
22	Slovenia	150	2,108,977	14,060
23	Spain	17,254	47,398,695	2,747
24	Sweden	4,779	10,379,295	2,172
25	The Netherlands	192	17,475,415	91,018
26	Hungary	892	9,730,772	10,909

²⁰ https://ec.europa.eu/eurostat/databrowser/view/DEMO_PJAN/default/table?lang=en&category=demo_demo_pop – Population as of 1 January 2021
(Source: Eurostat)

Annex no. 3 - Total no. of self-service systems per county level in Romania – 2021

No.	County	Parcel lockers	PUDO	Total
1	Alba	30	51	81
2	Arad	34	42	76
3	Argeş	46	53	99
4	Bacău	26	57	83
5	Bihor	60	45	105
6	Bistriţa-Năsăud	12	32	44
7	Botoşani	17	26	43
8	Brăila	21	56	77
9	Braşov	106	61	167
10	Bucharest	527	535	1,062
11	Buzău	22	46	68
12	Călăraşi	10	30	40
13	Caras-Severin	11	36	47
14	Cluj	221	112	333
15	Constanţa	125	100	225
16	Covasna	14	12	26
17	Dâmboviţa	24	34	58
18	Dolj	86	61	147
19	Galaţi	43	44	87
20	Giurgiu	12	26	38
21	Gorj	14	32	46
22	Harghita	20	29	49
23	Hunedoara	36	78	114
24	Ialomiţa	12	26	38
25	Iaşi	135	51	186
26	Ilfov	214	114	328
27	Maramureş	21	39	60
28	Mehedinţi	15	24	39
29	Mureş	56	70	126
30	Neamţ	31	45	76
31	Olt	21	40	61
32	Prahova	94	72	166
33	Sălaj	11	17	28
34	Satu Mare	31	29	60
35	Sibiu	69	52	121
36	Suceava	30	54	84
37	Teleorman	12	37	49
38	Timiş	162	62	224
39	Tulcea	8	19	27
40	Vâlcea	24	35	59
41	Vaslui	16	20	36
42	Vrancea	11	22	33
	Total	2,490	2,426	4,916

Parcel lockers per county level:

- 100 - 600 parcel lockers in the counties of: Bucharest (527), Cluj (221), Ilfov (214), Timiș 162), Iași (135), Constanța (125), Brașov (106);
- 30 - 100 parcel lockers in the counties of: Prahova (94), Dolj (86), Sibiu (69), Bihor (60), Mureș (56), Argeș (46), Galați 43), Hunedoara (36), Arad (34), Neamț (31), Satu Mare (31), Alba (30), Suceava (30);
- 1 - 30 parcel lockers in the counties of: Bacău (26), Dâmbovița (24), Vâlcea (24), Buzău (22), Brăila (21), Maramureș (21), Olt (21), Harghita (20), Botoșani (17), Vaslui (16), Mehedinți (15), Covasna (14), Gorj (14), Bistrița-Năsăud (12), Giurgiu (12), Ialomița (12), Teleorman (12), Caraș-Severin (11), Sălaj (11), Vrancea (11), Călărași (10), Tulcea (8).

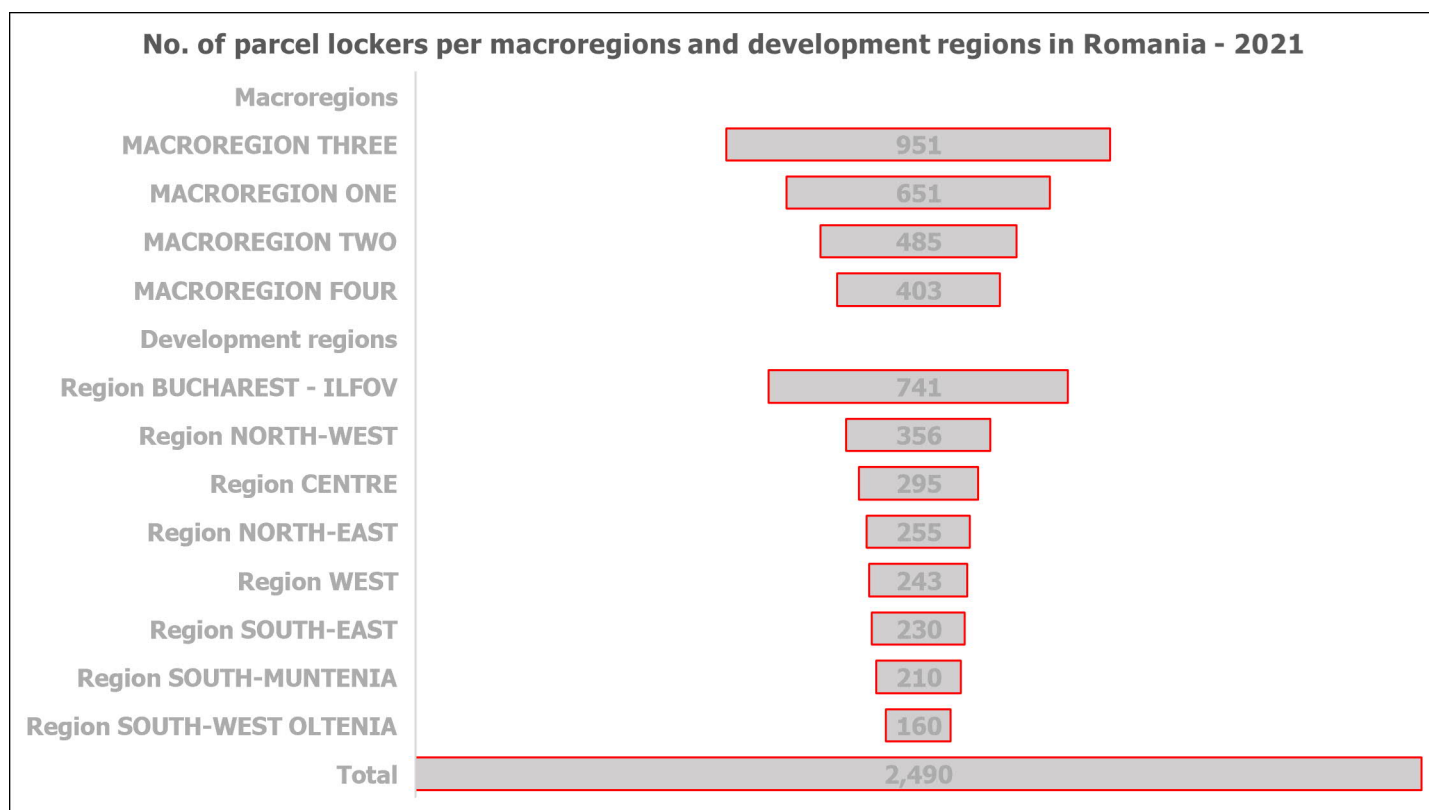
Self-service systems per macroregion and development region level, and per county level in Romania – 2021:

Development macroregions, regions and counties	No. of inhabitants ²¹	Parcel lockers	PUDO	No. of inhabitants /parcel locker	No. of inhabitants /PUDO
TOTAL	19,201,662				
MACROREGION ONE	4,839,850	651	549	7,434	8,816
Region NORTH-WEST	2,537,017	356	274	7,126	9,259
Bihor	557,290	60	45	9,288	12,384
Bistrița-Năsăud	276,257	12	32	23,021	8,633
Cluj	710,284	221	112	3,214	6,342
Maramureș	454,870	21	39	21,660	11,663
Satu Mare	329,272	31	29	10,622	11,354
Sălaj	209,044	11	17	19,004	12,297
Region CENTER	2,302,833	295	275	7,806	8,374
Alba	320,917	30	51	10,697	6,292
Brașov	553,256	106	61	5,219	9,070
Covasna	200,050	14	12	14,289	16,671
Harghita	299,075	20	29	14,954	10,313
Mureș	529,325	56	70	9,452	7,562
Sibiu	400,210	69	52	5,800	7,696
MACROREGION TWO	5,515,101	485	540	11,371	10,213
Region NORTH-EAST	3,163,465	255	253	12,406	12,504
Bacău	575,580	26	57	22,138	10,098
Botoșani	371,805	17	26	21,871	14,300

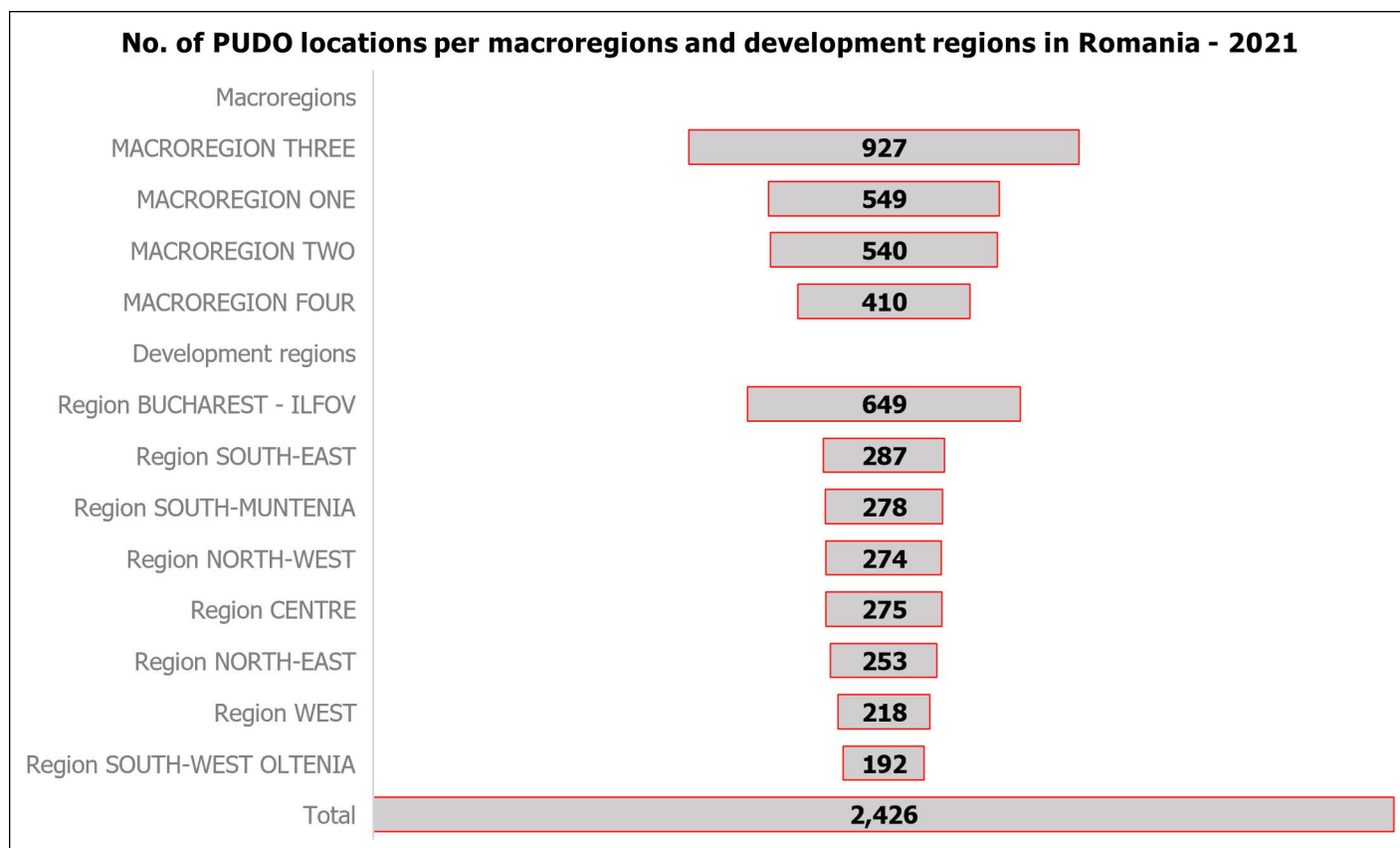
²¹ <http://statistici.insse.ro:8077/tempo-online/#/pages/tables/insse-table> - POP105A - Resident population as of 1 January per age groups and ages, sex and residence areas, macroregions, development regions and counties;

Iași	794,752	135	51	5,887	15,583
Neamț	432,986	31	45	13,967	9,622
Suceava	620,092	30	54	20,670	11,483
Vaslui	368,250	16	20	23,016	18,413
Region SOUTH-EAST	2,351,636	230	287	10,225	8,194
Brăila	280,679	21	56	13,366	5,012
Buzău	403,709	22	46	18,350	8,776
Constanța	668,065	125	100	5,345	6,681
Galați	495,149	43	44	11,515	11,253
Tulcea	189,707	8	19	23,713	9,985
Vrancea	314,327	11	22	28,575	14,288
MACROREGION THREE	5,196,051	951	927	5,464	5,605
Region SOUTH-MUNTENIA	2,868,994	210	278	13,662	10,320
Argeș	567,678	46	53	12,341	10,711
Călărași	277,701	10	30	27,770	9,257
Dâmbovița	483,102	24	34	20,129	14,209
Giurgiu	261,050	12	26	21,754	10,040
Ialomița	251,917	12	26	20,993	9,689
Prahova	703,368	94	72	7,483	9,769
Teleorman	324,178	12	37	27,015	8,762
Region BUCHAREST - ILFOV	2,327,057	741	649	3,140	3,586
Ilfov	503,531	214	114	2,353	4,417
Bucharest	1,823,526	527	535	3,460	3,408
MACROREGION FOUR	3,650,660	403	410	9,059	8,904
Region SOUTH-WEST OLTENIA	1,892,078	160	192	11,825	9,855
Dolj	615,962	86	61	7,162	10,098
Gorj	307,967	14	32	21,998	9,624
Mehedinți	236,460	15	24	15,764	9,853
Olt	385,775	21	40	18,370	9,644
Vâlcea	345,914	24	35	14,413	9,883
Region WEST	1,758,582	243	218	7,237	8,067
Arad	413,030	34	42	12,148	9,834
Caraș-Severin	266,283	11	36	24,208	7,397
Hunedoara	373,769	36	78	10,382	4,792
Timiș	705,500	162	62	4,355	11,379
Total	19,201,662	2,490	2,426	7,712	7,915

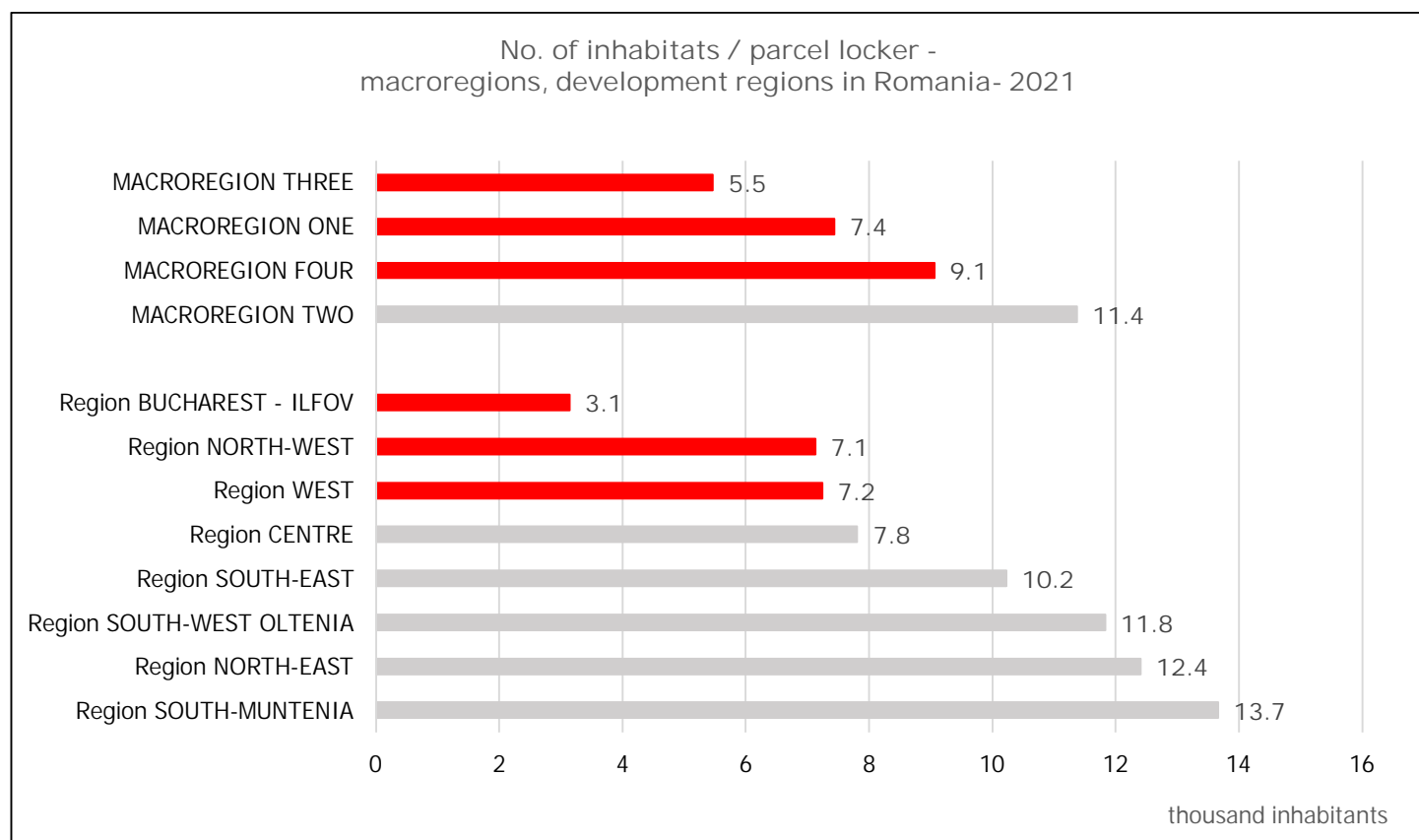
Number of parcel lockers per macroregions and development regions in Romania – 2021:



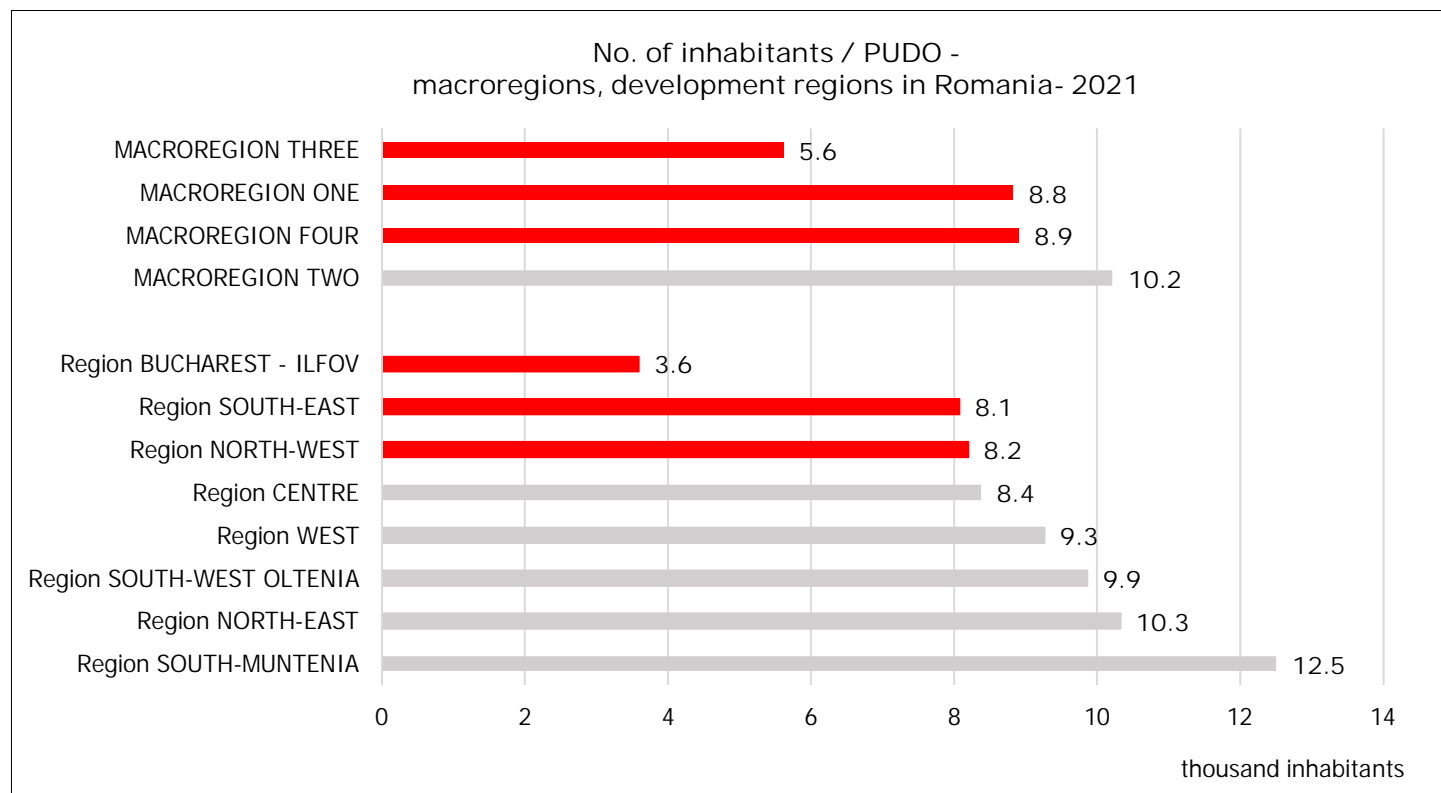
Number of PUDO locations per macroregions and development regions in Romania – 2021:



Number of inhabitants/parcel locker/ macroregions and development regions – 2021:



Number of inhabitants/PUDO/development macroregions and regions – 2021:



Annex no. 4 – Share of postal traffic per county level in the total self-service traffic – 2021

No.	County	TOTAL TRAFFIC					
		Parcel lockers			PUDO		
		Delivered	Cleared	Total	Delivered	Cleared	Total
1	Alba	0.6%	0.6%	0.6%	1.0%	0.3%	0.2%
2	Arad	0.9%	0.8%	0.9%	2.3%	2.1%	0.4%
3	Argeş	1.6%	1.9%	1.6%	1.3%	1.7%	0.3%
4	Bacău	0.9%	0.9%	0.9%	1.9%	1.5%	0.4%
5	Bihor	1.5%	1.2%	1.4%	2.1%	2.5%	0.4%
6	Bistriţa-Năsăud	0.4%	0.4%	0.4%	0.9%	0.9%	0.2%
7	Botoşani	0.4%	0.3%	0.4%	0.7%	0.5%	0.1%
8	Brăila	0.6%	0.5%	0.6%	1.3%	1.0%	0.3%
9	Braşov	4.0%	3.7%	4.0%	1.9%	3.1%	0.4%
10	Bucureşti	35.8%	41.3%	36.0%	29.7%	29.3%	5.8%
11	Buzău	0.8%	0.8%	0.8%	1.0%	0.6%	0.2%
12	Călăraşi	0.3%	0.3%	0.3%	0.6%	0.1%	0.1%
13	Caraş-Severin	0.3%	0.3%	0.3%	1.3%	0.4%	0.3%
14	Cluj	8.2%	7.0%	8.2%	7.9%	3.1%	1.5%
15	Constanţa	4.1%	3.9%	4.1%	4.4%	2.4%	0.8%
16	Covasna	0.3%	0.2%	0.3%	0.6%	0.6%	0.1%
17	Dâmboviţa	0.7%	0.7%	0.7%	0.7%	0.7%	0.1%
18	Dolj	2.4%	2.4%	2.4%	2.0%	1.6%	0.4%
19	Galaţi	1.4%	1.2%	1.4%	2.2%	2.2%	0.4%
20	Giurgiu	0.3%	0.3%	0.3%	0.4%	0.4%	0.1%
21	Gorj	0.3%	0.3%	0.3%	0.9%	0.6%	0.2%
22	Harghita	0.4%	0.2%	0.4%	1.0%	0.4%	0.2%
23	Hunedoara	0.6%	0.5%	0.6%	2.4%	0.8%	0.5%
24	Ialomiţa	0.2%	0.2%	0.2%	0.7%	0.4%	0.1%
25	Iaşi	5.2%	4.3%	5.2%	3.1%	2.4%	0.6%
26	Ilfov	10.3%	10.8%	10.3%	2.5%	22.3%	0.5%
27	Maramureş	0.7%	0.5%	0.7%	1.5%	1.2%	0.3%
28	Mehedinţi	0.3%	0.4%	0.3%	0.9%	0.8%	0.2%
29	Mureş	1.0%	0.7%	1.0%	2.0%	3.6%	0.4%
30	Neamţ	0.5%	0.5%	0.5%	1.0%	1.5%	0.2%
31	Olt	0.5%	0.5%	0.5%	0.9%	1.2%	0.2%
32	Prahova	2.8%	2.5%	2.8%	2.3%	1.1%	0.4%
33	Sălaj	0.3%	0.3%	0.3%	0.7%	0.1%	0.1%
34	Satu Mare	0.5%	0.4%	0.5%	1.1%	0.6%	0.2%
35	Sibiu	2.5%	2.1%	2.5%	2.9%	1.0%	0.6%
36	Suceava	0.6%	0.5%	0.6%	1.5%	1.8%	0.3%
37	Teleorman	0.3%	0.3%	0.3%	1.3%	0.6%	0.2%
38	Timiş	5.7%	4.4%	5.7%	4.6%	2.9%	0.9%
39	Tulcea	0.3%	0.3%	0.3%	0.8%	0.2%	0.2%
40	Vâlcea	0.7%	0.7%	0.7%	1.5%	0.9%	0.3%
41	Vaslui	0.4%	0.3%	0.4%	0.9%	0.2%	0.2%
42	Vrancea	0.4%	0.5%	0.4%	1.1%	0.5%	0.2%