

wasteinprogress

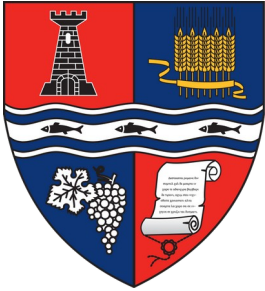
Sălacea & Bihor County – Romania

Are there social limits to the implementation of an identification system?

PhD PÁSZTAI ZOLTÁN-ATTILA
CEO of ECO BIHOR Ltd.
representative of AVE BIHOR Ltd.

Mr. HORVÁTH BÉLA
Mayor of Salacea



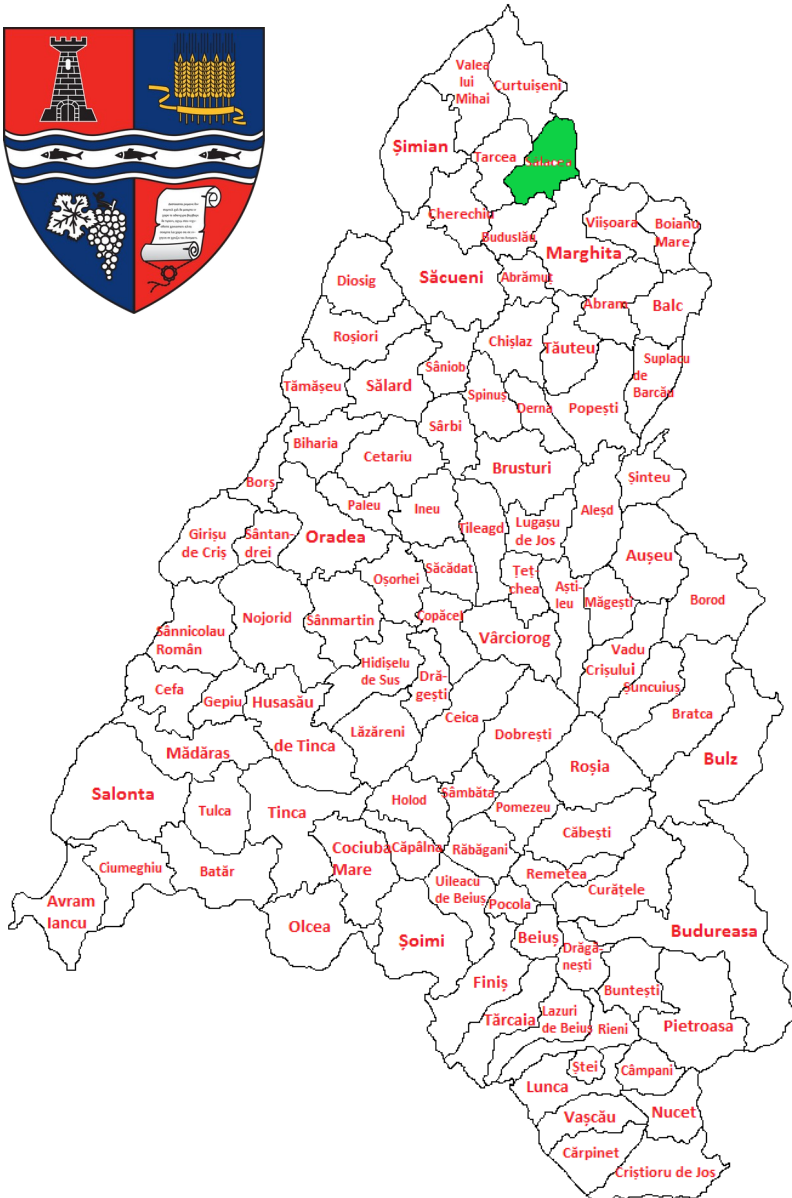


SĂLACEA AND BIHOR COUNTY

Sălacea is situated in Bihor county, which is located in the western part of Romania. They are known for their rich history, cultural heritage, and diverse population.

Here is an overview of the demographic characteristics of the Bihor county:

According to the 2020 census, Bihor has a population of 616.264 and a density of 79,56 people per square kilometer, below the national average density (93/km²)



COLLECTION SYSTEM IN SĂLACEA

Sălacea is a small Romanian town with rural characteristics of life. Historically, residents separated waste into recyclable and mixed waste which were collected curbside. Residents paid a monthly fee of 5 lei (approximately USD \$1)



Credit foto: Discover Bihor

COLLECTION SYSTEM IN SĂLACEA

Sălacea joined the international Zero Waste Cities Network in 2018 to aid their transition to a circular zero-waste economy.



IMPLEMENTATION OF THE SYSTEM

Volunteers supported the system's implementation and were essential to building community trust. Volunteers distributed waste disposal kits (3 bins, two types of bags, and information) to residents for free to sort their waste, and answered questions about the new collection system. Residual waste bins contained chips to allow the collection authority to monitor the volume of residual waste disposed.



- Blue bags collected paper and cardboard.
- Yellow bags collected plastic
- Two brown bins (23L and 10L) collected organic waste.
- Green bins for glass waste.
- Black bins (40 L) for residual waste

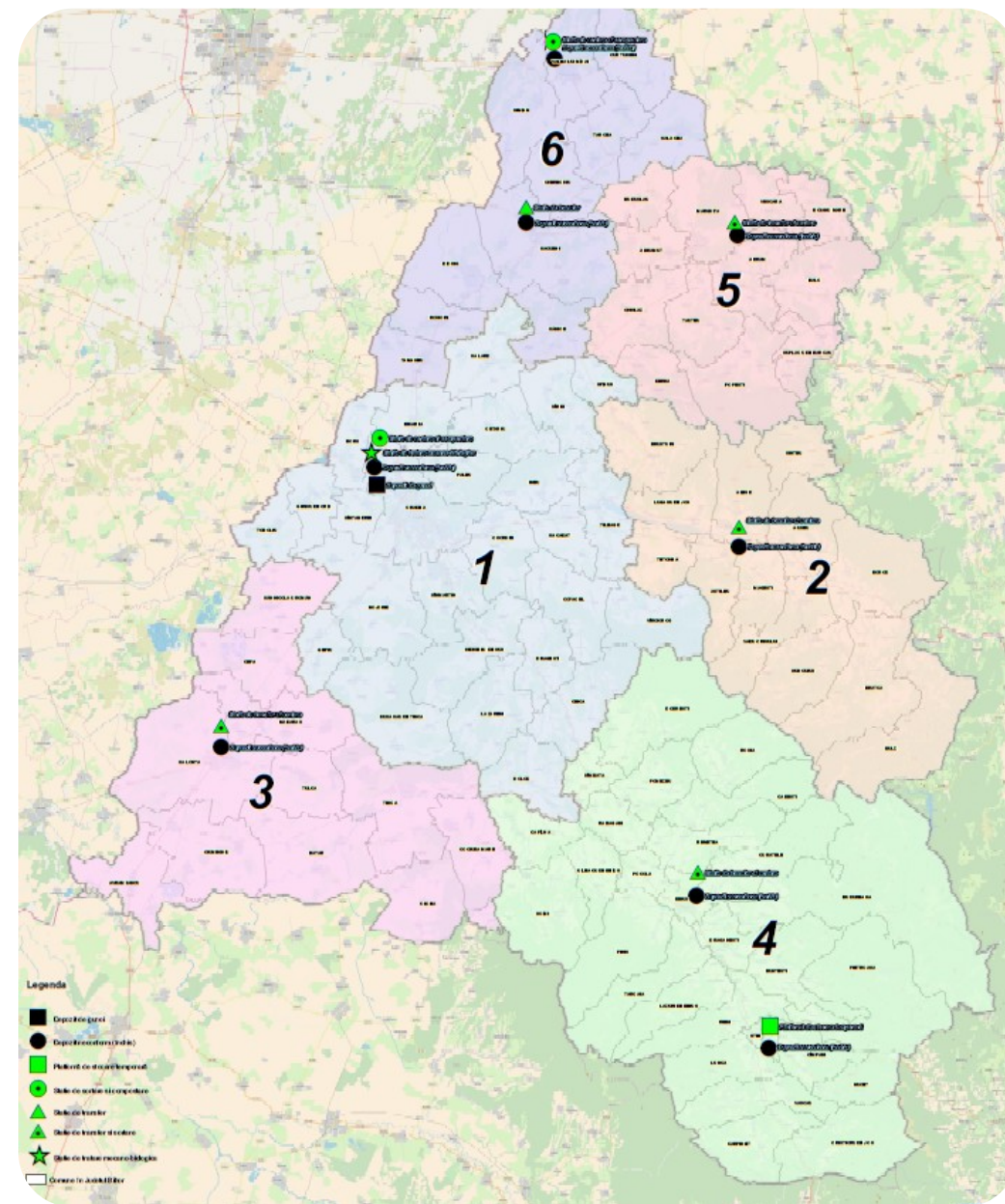
BIHOR COUNTY

Sălacea has become a model city for its progress on waste management, the three-month pilot reduced waste generation by 55% and increased source segregation rates to 97%.

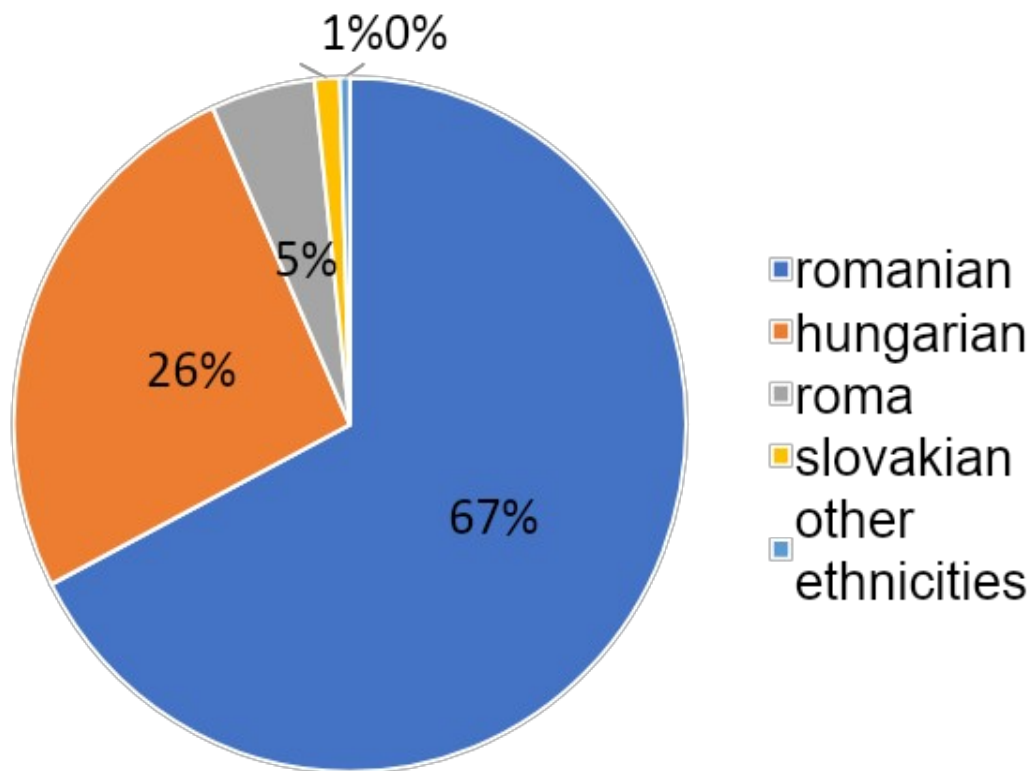
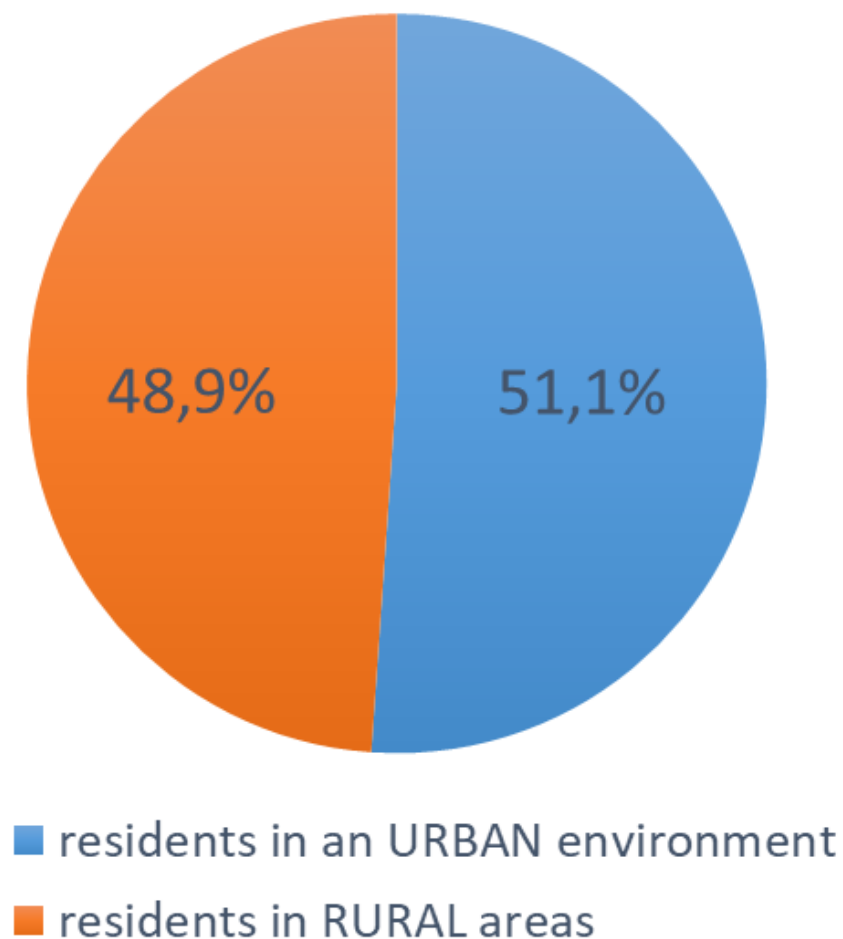
In 2022, 62,9% MSW (115,6 tons) was segregated at source, up from 15,1% (18,7 tons) pre-intervention.

Following the initiative's successful implementation in Sălacea, **political decision has been taken** and the source separation system expanded to all of Bihor County by public tendering the waste management service (616.264 inhabitants).

There are three waste collectors companies in Bihor county: AVE BIHOR, RER VEST, SALUBRI



STATISTICAL DATA OF THE BIHOR COUNTY

ETHNIC STRUCTURE OF BIHOR
COUNTY 2022DISTRIBUTION BY LIVING
ENVIRONMENT

IMPLEMENTATION OF THE SYSTEM IN BIHOR COUNTY



In implementing the revised system, residual waste disposal behaviors were particularly difficult to change. Despite the cities attempt to mitigate residual waste by using smaller bins, residents' established habits were difficult to change. 15 percent of residents improperly used the largest (120 L) bins for residual waste. Following the pilot's completion, this issue triggered a change in the SWM program's design; the 120L bin has now been removed from the disposal kit entirely.



IMPLEMENTATION OF THE SYSTEM IN BIHOR COUNTY



The different colored and sized bins and bags provided physical cues to guide waste disposal behavior and prioritize recycling and segregation over residual waste disposal.

To establish buy-in, community leaders engaged in a four-week education initiative prior to the system's launch. The city's mayor, priest, school director, and private operators met with community members at highly trafficked locations (e.g., church, schools, pubs, cultural center). They discussed the new system and provided demonstrations on proper waste sorting using the new waste bins.

The labels on the bins are written in five languages depending on the language spoken by the majority in the region.

COLLECTION CALENDAR AND FREQUENCY FOR EACH WASTE TYPE

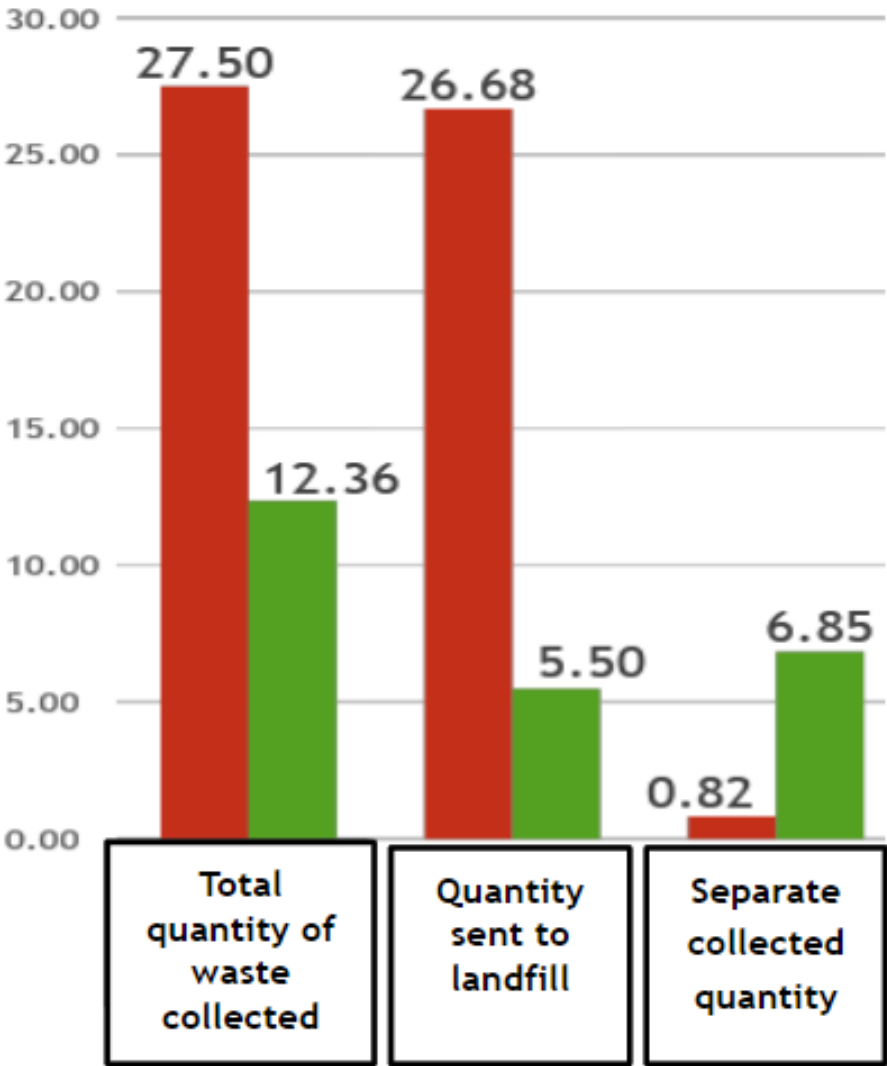
- Blue bags/blue bins collected paper and cardboard - once a month
- Yellow bags /blue bins collected plastic - twice a month
- Two brown bins (23L and 10L) collected organic waste - in cities once every week
- Green bins for glass waste - once a month
- Black bins (40 L) for residual waste - once every week



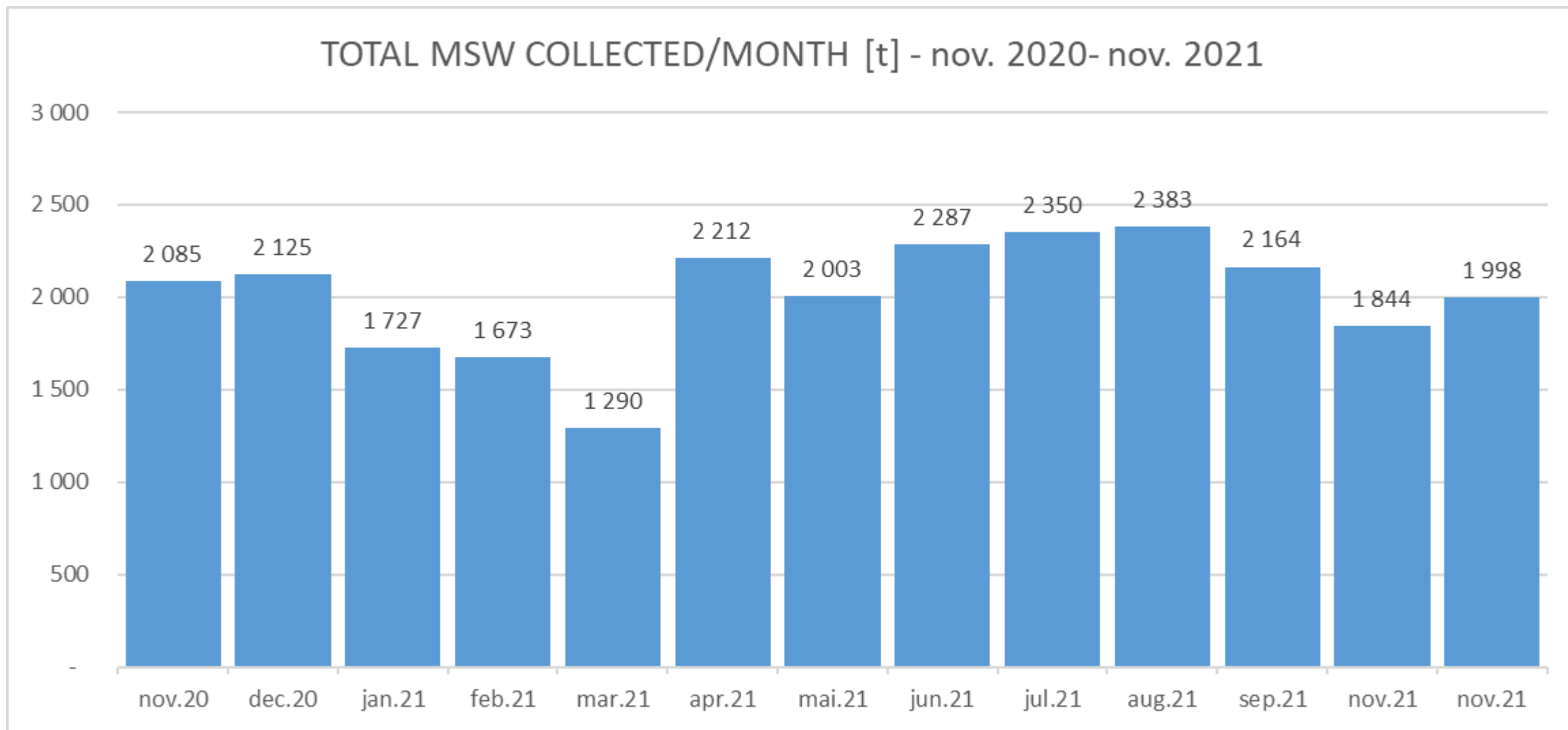
THE IMPACT OF 5 STREAM SEPARATE COLLECTION IN SALACEA IN 2018

Comparing 3 months before and after changing from dual to 5 stream collection

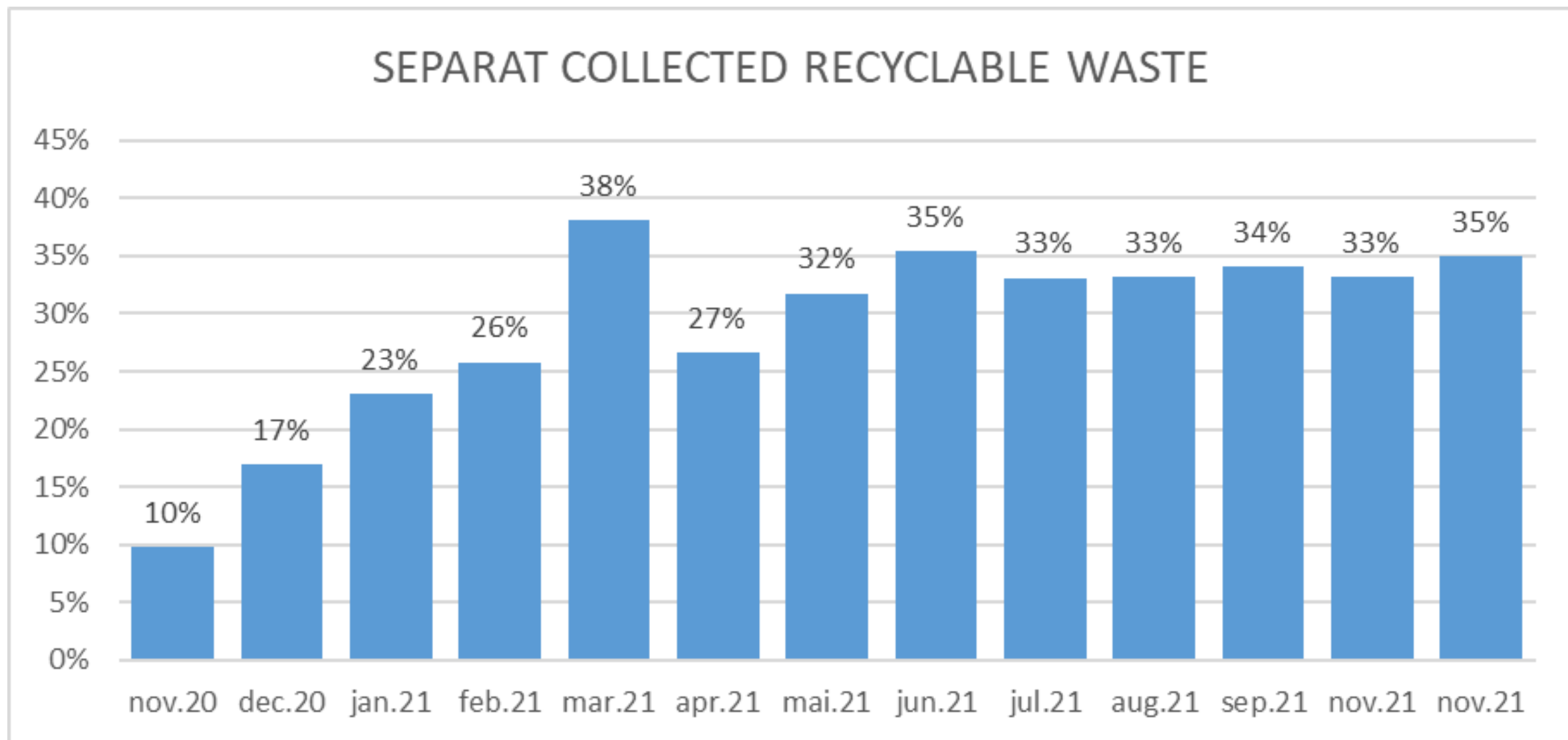
tonne / month	Before	%	After	%
Total quantity of waste collected	27,50	100%	12,36	100%
Quantity sent to landfill	26,68	97%	5,50	39%
Separate collected quantity	0,82	3%	6,85	61%



EVOLUTION OF COLLECTED QUANTITY IN BIHOR COUNTY

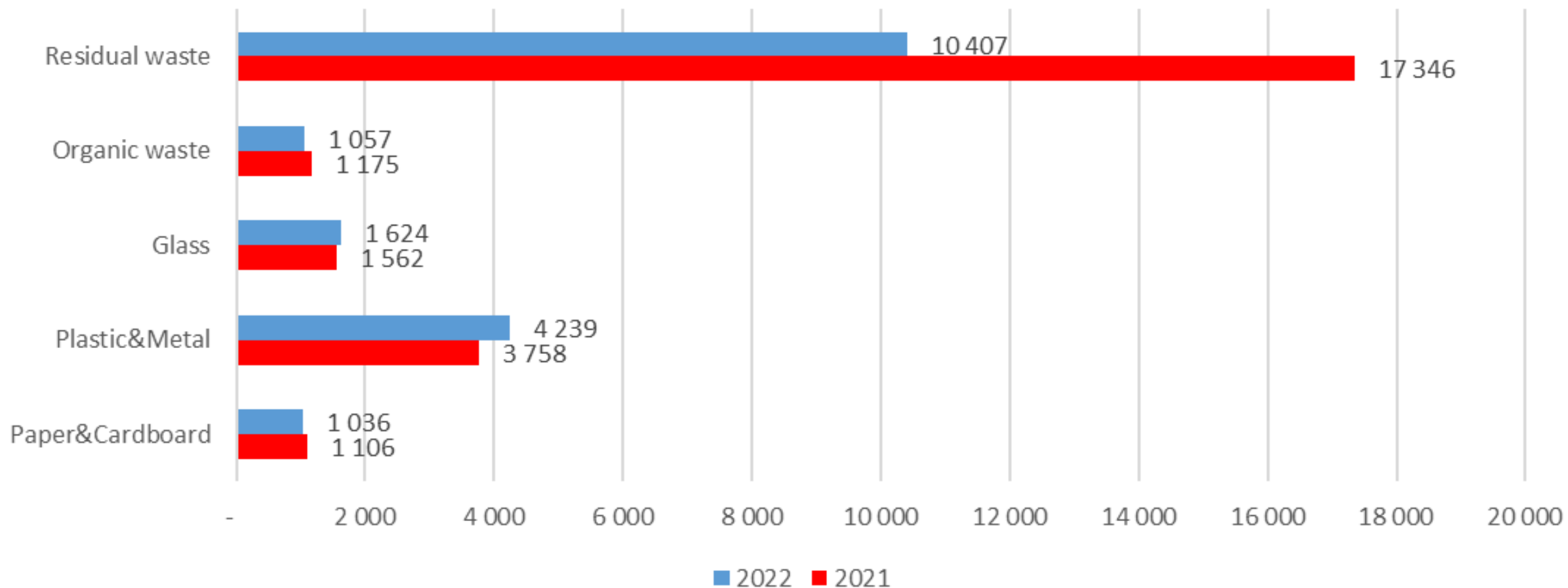


EVOLUTION OF SEPARATE COLLECTION IN BIHOR COUNTY



EVOLUTION OF COLLECTED QUANTITY IN BIHOR COUNTY

TOTAL WASTE COLLECTED/STREAM IN 2021 AND 2022 (tons)



IMPLEMENTATION CAMPAIGN

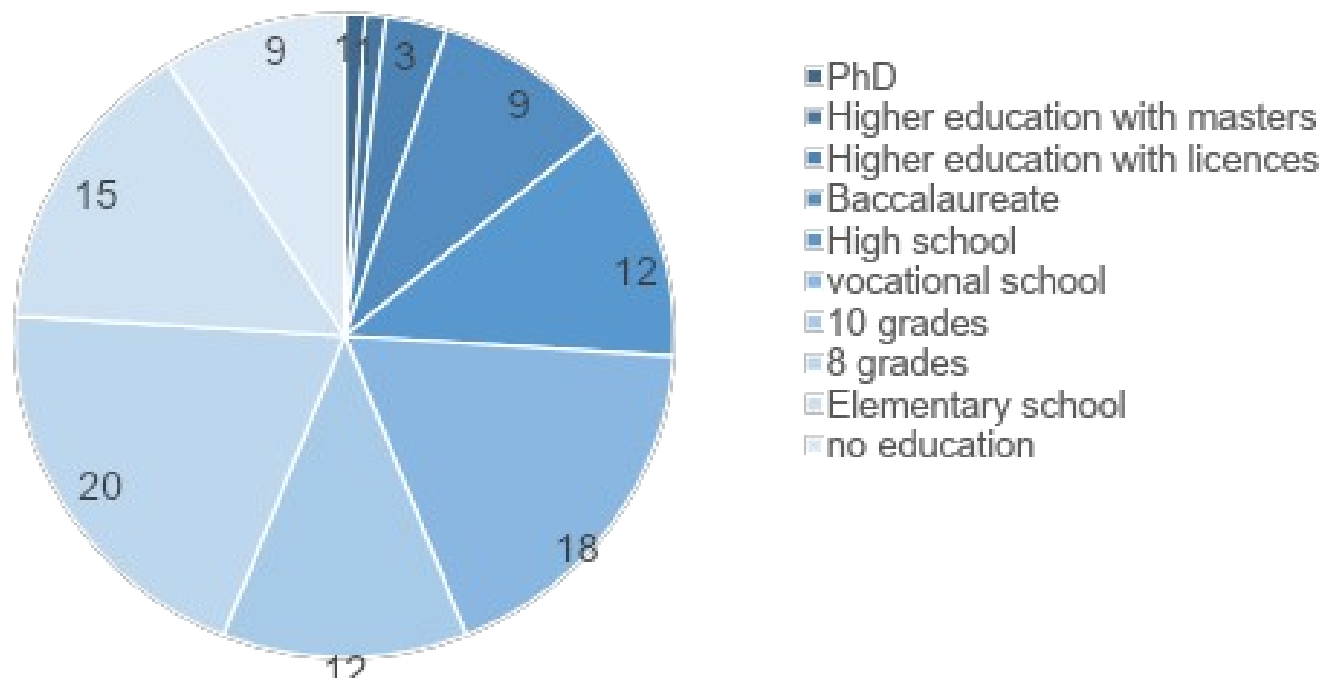


HEKS/EPER ROMANIA ACTIVITIES IN COLLABORATION WITH PARTNER COMPANIES FROM BIHOR COUNTY

- Following the collaboration agreements between the months of November 2019 - January 2020, data were collected through questionnaires
- The data were processed by a team of sociologists and are synthesized in a report

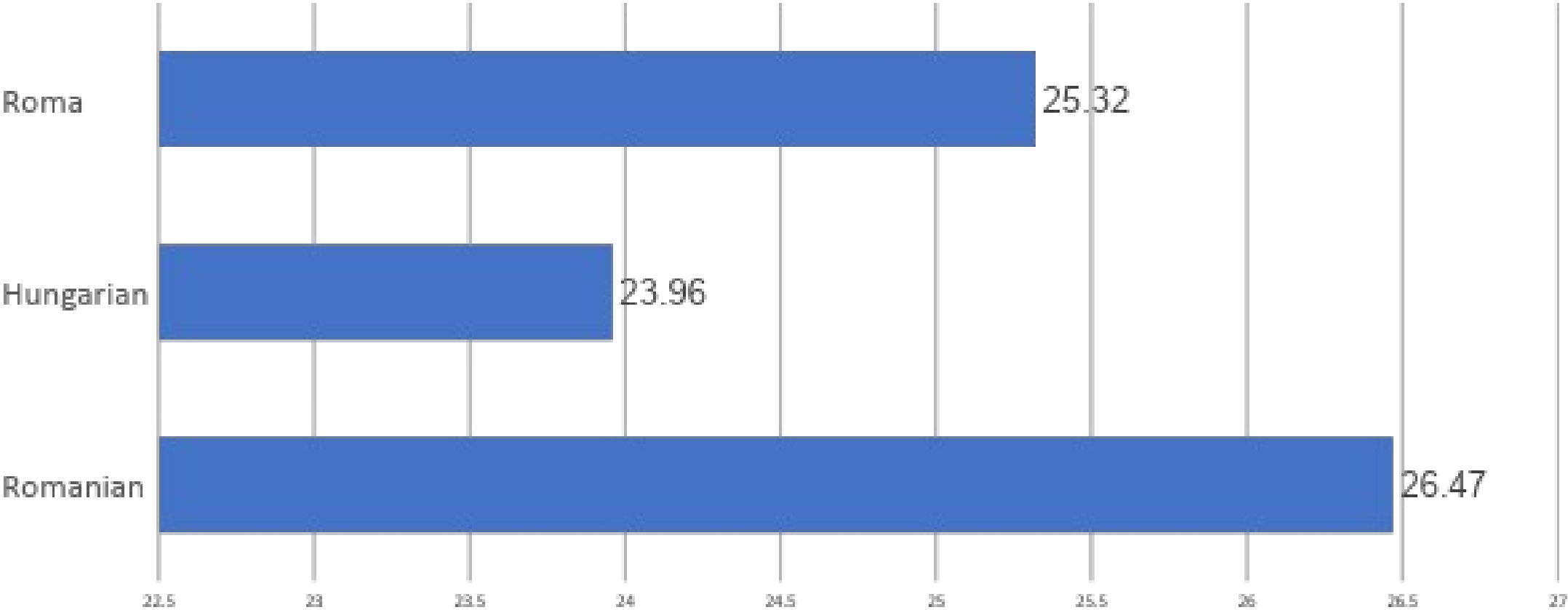


LEVEL OF EDUCATION OF SUBJECTS BY DATA SET %



AFFECTIVE COMMITMENT BY ETHNICITY

AVARAGE AFFECTIVE COMMITMENT BY ETHNICITY AND DATA SET



AFFECTIVE COMMITMENT BY ETHNICITY



BEHAVIOURAL TOOLS

Mixed Mechanisms

This initiative uses mixed mechanisms to promote source separation behaviors.



Financial Mechanisms:

Appealing to loss aversion: Research suggests that individuals are particularly motivated to avoid potential losses. In this case study, citizens were given the choice to opt-in to a tax to support the revised MSW collection service. If citizens opted into the new system, they were charged a lower monthly fee than those who did not participate in waste segregation. This encouraged residents to practice source separation to avoid incurring additional monetary losses.



System Design Mechanisms:

Simplifying behaviors & decisions: The design of waste management programs can influence their uptake. The municipality provided households with designated waste bins, eliminating the need for residents to procure their own. In tandem, waste bins were identified with stickers in Romanian, Hungarian, and Roma language to accommodate the cities multilingualism.



Timely messages:

Visual prompts can serve as a timely reminder to engage in waste-related behaviors. Included stickers on waste bins with examples of waste that each bin could accommodate. These stickers reduced the uncertainty surrounding which items went in which bin.

BEHAVIOURAL TOOLS

- The bins are equipped with RFID identification chips
- With the RFID system every bin emptying is recorded and added to the customer's invoice
- Client platform integrated to the waste collection & monitoring system

AVE

INFO

FACTURI

PCT. COLECTARE

CONTACT

LOGOUT

VARGA AUGUSTIN

Persoană fizică

Bogei, Principala 155 B

Pct. colectare

Bogei, Principala 155 B

Pubelă verde 30L

A0030S043302

Pubelă neagră 40L

A0040R008765

Facturile me

Nr. Factura	Data Factura	Scadenta	Val. Factura	Val. Neachitata
L5TAU10045	31.10.2021	15.11.2021	14,52	0
L5TAU10613	31.10.2021	31.10.2021	3,7	0

The collection trucks are tracked in real time

RAPORT RIDICĂRI

De la 30.11.2021

Furnizor -- Select --

Terminal 370 ORADEA BIROU

DOWNLOAD

Terminal	Data citirii	
370	30-11-2021 09:23:36	TODEA EMILIA
370	30-11-2021 11:17:57	MIHUTA DOREL
370	30-11-2021 10:44:14	BODENCIU AUREL
370	30-11-2021 11:23:51	GAVRA MIRCEA BUJOR
370	30-11-2021 10:07:45	TIRLA CORNEL
370	30-11-2021 11:40:37	PIRTEA IOAN COSTEL
370	30-11-2021 11:35:03	COSTE DORU
370	30-11-2021 11:58:04	VARGA NICOLETA ANDREEA
370	30-11-2021 09:40:45	STEF TRAIAN
370	30-11-2021 11:19:21	GRUIE AUGUSTIN
370	30-11-2021 10:42:58	BLAGA FLORIN

Térkép

Műhold

A0040R034293

413030343052303334323933

Poien

A0040R032004

413030343052303332303034

Poien

COMMUNICATION TOOLS



The type of waste collected is indicated on the waste collection truck, so residents realize that each type of waste is collected separately

The collection calendar is distributed to the residents



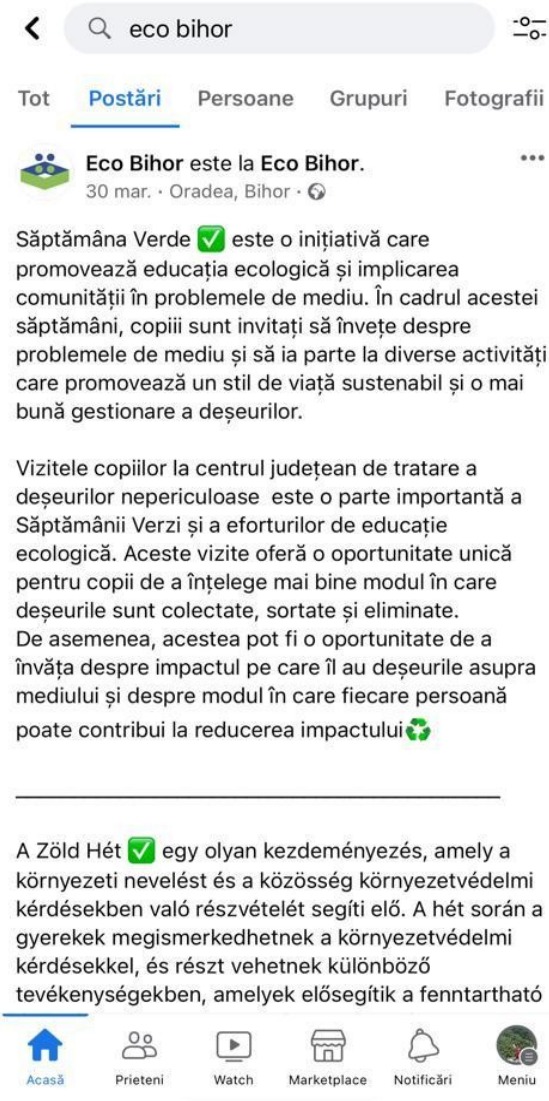
COMMUNICATION TOOLS



On all the collector trucks users can find the central phone number of the operator for suggestions and reclamation.

Also an identification number (47) for easy recognition even from the lateral view.

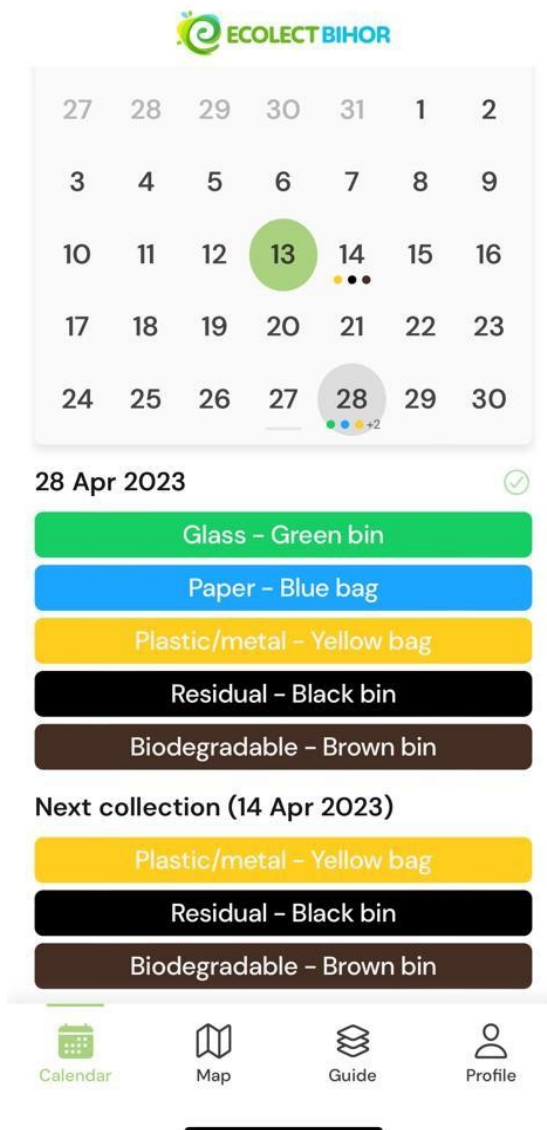
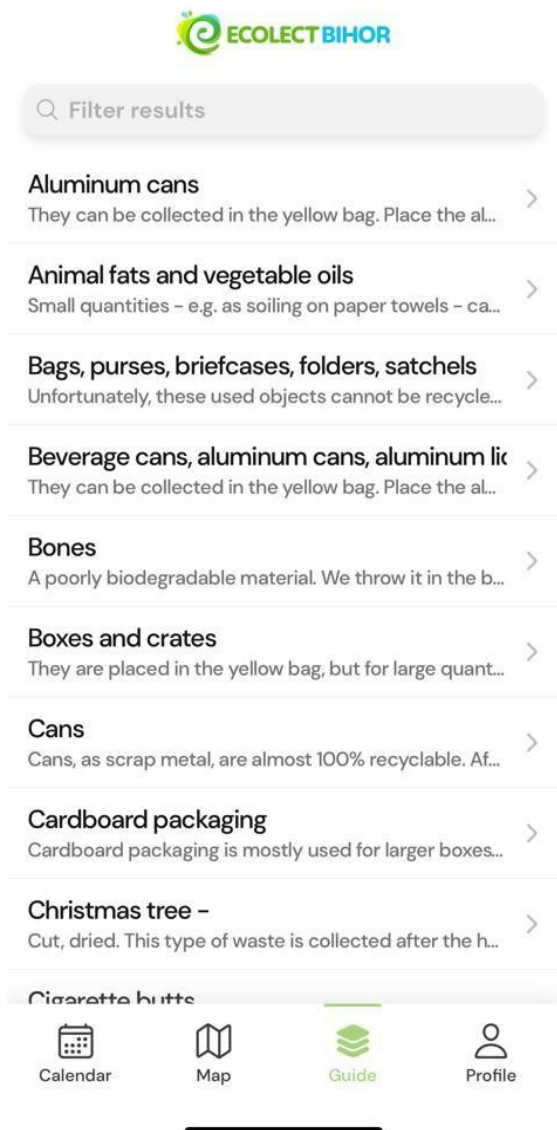
COMMUNICATION TOOLS



All the operators (collectors, treatment center) are actively present in social media.

The social media posts are bilingual, they appear both in romanian and hungarian language.

COMMUNICATION TOOLS



WasteBook

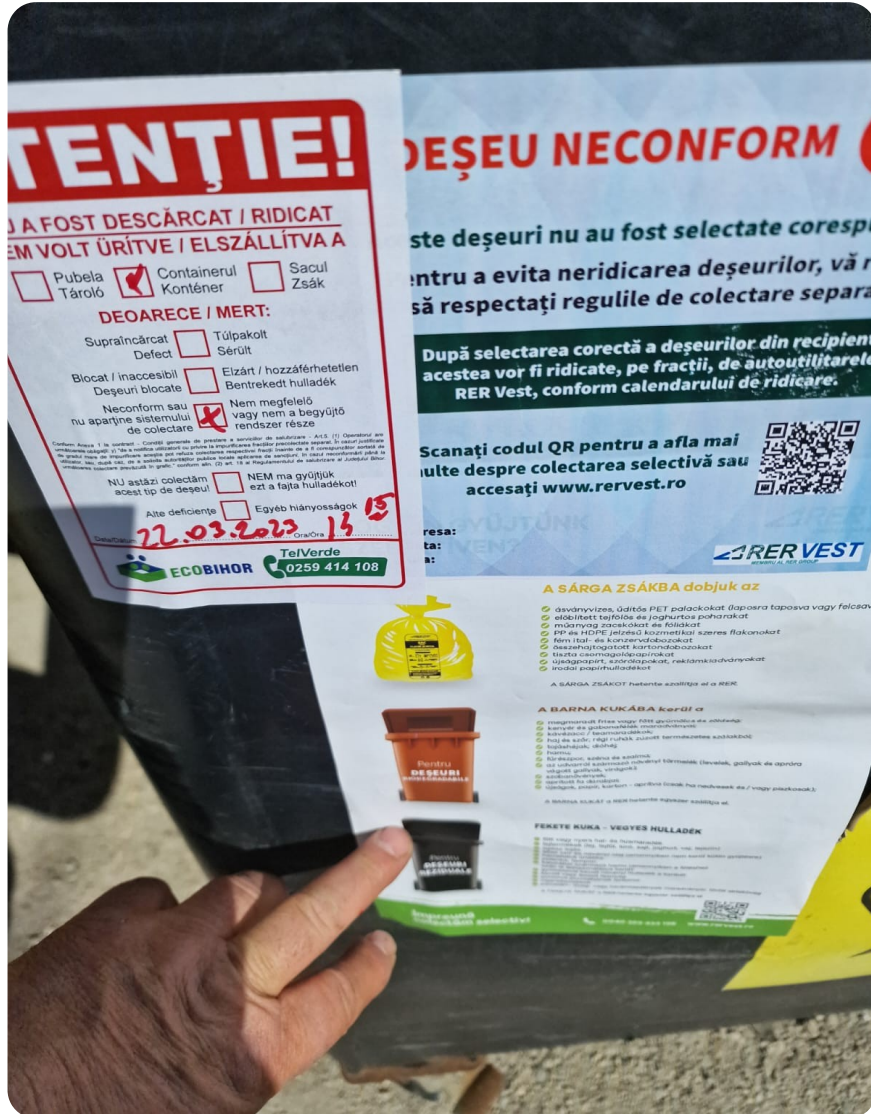
Bihor Curat (Cleen Bihor County)
phone application (Android and IOS)

"**Bihor Curat - WasteBook**" will provide useful data such as:

- waste sorting guide
- collection calendar (specific for the user's area)
- collection centers and points (timetables, prices, delivery method, what waste is accepted).

The application also gives citizens the opportunity to *report* abandoned waste in public places, to request individual waste transport from the operator in the area and to file notifications or complaints regarding the sanitation service

MONITORING AND CONTROL TOOLS TO IMPROVE CITIZENS BEHAVIOUR



- The waste collection trucks are *randomly* accompanied by control team.
- Bins with inappropriate content are not emptied
- The reason for the non-conformity is communicated each time by stickers
- After the correct separation of waste by the customer, the bins will be emptied according to the collection schedule
- The non-conformities are communicated to the users by using the bilingual labels put on the bins by the control team, or the collection workers

MONITORING AND CONTROL TOOLS TO IMPROVE CITIZENS BEHAVIOUR



Users who do not comply are warned the first time, and if the controllers continue to find non-compliance during the next control, users are fined by the local police.



AWARENESS CAMPAIGNS REGARDING THE IMPORTANCE OF SEPARATE COLLECTION



Educational facilities are also a major role model for children around the county and play a pivotal role in shaping waste habits for our younger generations.

With the amount of solid waste increasing in schools year on year, it's becoming even more difficult to manage, however there are major benefits that the schools could see from an improved system!

AWARENESS CAMPAIGNS REGARDING THE IMPORTANCE OF SEPARATE COLLECTION



The sanitation companies (collection/treatment companies) are also present at cultural activities and meet face-to-face with the users of the system.

AWARENESS CAMPAIGNS REGARDING THE IMPORTANCE OF SEPARATE COLLECTION



The communication specialists of waste collection companies are present at festivals and other cultural activities

AWARENESS CAMPAIGNS REGARDING THE IMPORTANCE OF SEPARATE COLLECTION



BIHOREANUL
„Voi face denunț!”
03 Aprilie 2023, 09:40
eBihoreanul \ AVE Bihor

O oază de sănătate și relaxare

Școala altfel la ECO și AVE Bihor (VIDEO)



CONTACT:
0259435768
0259455554

**STEFAN ZWEIG 19 A
CALEA SANTANDREI 16B**

INFORMAȚII LA
0748.228.822

Săptămâna care a trecut a fost una plină de activități cu copiii la sediile ECO și Bihor. În timp ce ECO Bihor gestionează toate deșeurile generate la nivel județ în cadrul depozitului ecologic amenajat pe strada Matei Corvin, AVE Bihor compania de salubritate se ocupă cu colectarea de la populație, companii instituții publice a deșeurilor generate în patru zone ale județului. Astfel că care ne-au vizitat zilele acestea au putut vedea îndeaproape cum funcționează acest sistem de colectare separată și cât este el de important pentru protecția mediului.



BIHOREANUL
„Voi face denunț!”
03 Aprilie 2023, 09:40
eBihoreanul \ AVE Bihor

O oază de sănătate și relaxare

Școala AVE Bihor - Educația, primul pas în protecția mediului



CONTACT:
0259435768
0259455554

**STEFAN ZWEIG 19 A
CALEA SANTANDREI 16B**

INFORMAȚII LA
0748.228.822

AVE Bihor își ia în serios misiunea de educare al tinerelor generații. În acest sens, am demarat ample acțiuni în unitățile de învățământ din Bihor, pentru a le explica celor mici importanța colectării separate a deșeurilor și impactul pozitiv al acestui demers asupra mediului. Săptămâna trecută am ajuns și la grădinița cu program prelungit "Toldi" din Salonta, care a organizat "Săptămâna Verde", dedicată educației și conștientizării cu privire la importanța protecției mediului înconjurător și a naturii.



BIHOREANUL
„Voi face denunț!”
06 Martie 2023, 10:21
eBihoreanul \ AVE Bihor

O oază de sănătate și relaxare

AVE Bihor: Lecție de salubritate cu elevii liceului Petőfi Sándor din Săcueni (FOTO)



CONTACT:
0259435768
0259455554

**STEFAN ZWEIG 19 A
CALEA SANTANDREI 16B**

INFORMAȚII LA
0748.228.822

Săptămâna trecută, elevii Liceului Petőfi Sándor din Săcueni au vizitat

Articles appears in the local press every week that deals with issues related to waste collection for educational and awareness purposes.

The cost of control and monitoring actions is 300,000 euros/year for Bihor County.

AWARENESS CAMPAIGNS REGARDING THE IMPORTANCE OF SEPARATE COLLECTION

PLANTROPOLIS project intended for schools - With local ONG's promoting circular economy concept by introduction compost in local kindergarten and elementary schools.

The project is destined for educational scoop regarding bio waste separate collection and organic gardening with vegetable and fruit cultivation

link: <https://www.youtube.com/watch?v=P0yvtRGDXpc>



AWARENESS CAMPAIGNS REGARDING THE IMPORTANCE OF SEPARATE COLLECTION

PLANTROPOLIS - GROWING TOGETHER WITH NATURE



AWARENESS CAMPAIGNS REGARDING THE IMPORTANCE OF SEPARATE COLLECTION



REFLECTIONS AND CONCLUSIONS

NO, there are no social limits to implementation of an identification system

- Against the efforts submitted, only 10% of the population did not comply
- It was found that the acceptance of a new implemented system cannot be correlated with ethnicity, as long as the appropriate communication paths are found for each group
- Monitoring and control is indispensable for the operation of the system
- Monitoring and control actions without imposing fines are not enough to achieve results
- The EPER-HEKS association helped in identifying the motivation of each monitored group by education level

wasteinprogress

THANK YOU FOR YOUR ATTENTION!

PhD PÁSZTAI ZOLTÁN-ATTILA

CEO of ECO BIHOR Ltd.
representative of AVE BIHOR Ltd.

Mr. HORVÁTH BÉLA

Mayor of Salacea

