



SMART WASTE

Interreg Europe



European Union
European Regional
Development Fund

“Action Plan Apeldoorn”

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Policy Instrument of Apeldoorn

SMART WASTE
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RECYCLESERVICE
2025



Een dag uit het leven
van de familie De Vries

Recycleservice 2025

Key elements of the policy

- **In 2025 30 kg fine residual waste per capita** (60 kg in 2021)
- **A separation rate of 75% in 2025** (81% in 2021)
- **Service on raw materials (including diapers)**
- **Curb side collection via wheelie-bins for food- and garden waste (1x 2 weeks), packaging waste (1x 2 weeks) and paper/cardboard (1x 4 weeks)**
- **Fine residual waste is collected via underground containers and pay-as-you-throw**
- **All year round, people can bring reusable items, resources, bulky waste, hazardous waste, construction and demolition waste and large garden waste to the recycling station**

AFVAL SCHEIDEN ZO DOET U DAT!

OPGEHAALD AAN HUIS



GFT
Groente-, fruit- en tuinafval

1 keer per 2 weken



PMD
Plastic verpakkingen, metalen verpakkingen en drankpakken

1 keer per 2 weken



Papier

1 keer per 4 weken



BEST - tas
Boeken, elektrische apparaten, speelgoed, textiel

3 keer per jaar

BRENGT U NAAR DE (ONDERGRONDSE) CONTAINER



Restafval



Luiers



Glas



Kleding



PMD



Papier

BRENGT U WEG NAAR HET RECYCLEPLEIN



Grofvuil



Klein chemisch afval

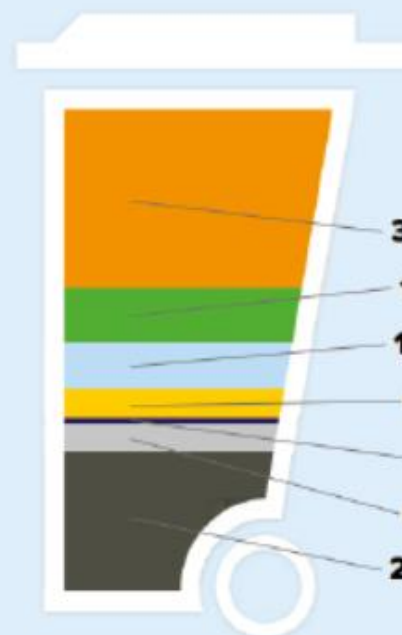


Oud ijzer



Snoeiafval

Hoeveel grondstoffen vinden we nu nog in het restafval?



OPTIONEEL



grijze container voor restafval

140 liter

€ 25,- aanschafkosten

€ 7,75 per lediging

Legen op aanmelding



Service voor medisch geïndiceerden

Recycleservice

Medische bijdrageregeling

Pay as you throw



140 l = € 7,75



60 l = € 1,50



30 l = € 0,75

Policy need addressed

Despite the successes of our policy Recycle Service 2025, we still struggle with some issues, such as:

- **The placement of waste near the containers, due to full containers or to valves stuck;**
- **The need to optimize waste collection processes, reducing CO₂-emissions and achieving effective use of resources and a high service level.**

A citizen evaluation carried-out fall 2020 reported in total 32% of the respondents were confronted with a full container – mostly with paper and textile containers



Policy improvement

Pilot with full level measuring in 23 containers: 1 textile, 7 paper and 15 PMD



Three sensors which emits ultrasonic sound from different angles scanning the container. It can also sense obstacles preventing normal usage.

Communication is standard three times a day. The information is send to the logistic system of Circulus-Berkel using open communication standards.

Results of the pilot: technically reliable. Can be used by our customer service.

Next step:

- all containers will get full level measuring
- dynamic planning



Results of the pilot

- **Know (almost instantly) when a container is full or when an obstacle sticks the valve.**
- **Be able to act quick on such matters in order to prevent extra placements or dumping.**
- **Be able to inform the customer – via the service desk – with the correct information. ‘Correct’ in terms of what is the issue and what (and when) will be done about it.**

Costs:

- **306 fill level measures each €350 per container**
- **Data communication €120 per year per container**

Actions taken

- 1. We piloted fill-level sensors on a small number of containers;**
- 2. Upon successful completion of the pilot, we equipped all containers of the municipal area with fill-level sensor;**
- 3. We developed dynamic route planning, using data coming from fill-level sensors.**

Dynamic route planning means that the route planned by the waste collector for their trucks is based on the containers that are almost full and need to be emptied.

Input from Smart Waste

- **New knowledge and input to design and implement our actions**
- **A structured method to evaluate our policy and identify all our stakeholders**
- **Sparring with our EU-partners on our policy needs (dumping and placements near the container) – with the full consortium and via bilateral/trilateral meetings**
- **We established a particular fruitful collaboration with the Municipality of Kolding**
- **We learned about the fullness measuring in small bins in Florence**

Next steps & results until now



January – July 2022

Introduce dynamic planning and start working with it with a small group of containers.

July – December 2022

Refine dynamic planning in order to enroll it for all personnel.

Result until now:

- **10% CO₂-reduction because of less miles driven**
- **In a small area of Apeldoorn**



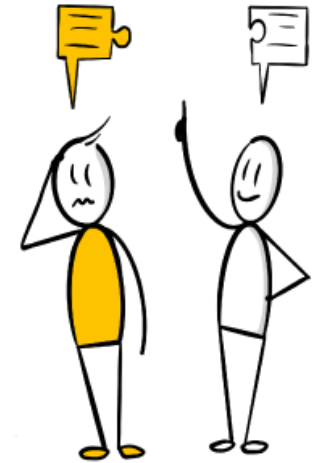
Pilot projects

- Citizen involvement is key
- Designing and executing interventions together
- 7 sites, different approaches and interventions (customized)



Learning by doing

- **Monitoring pilot**
 - Collecting data (number of dumpings)
 - Interviewing project participants
 - Consulting Online Citizen Panel
- **Upscaling citizen involvement and interventions (if proven successful)**
- **Implementing findings in policy**
- **Communication: building and execution an integral strategy**
- **If nothing works: increasing surveillance and fining**



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Thank you!

<https://www.interregeurope.eu/smartwaste/>

