

# Challenges of chemical recycling for household plastic packaging recycling in France

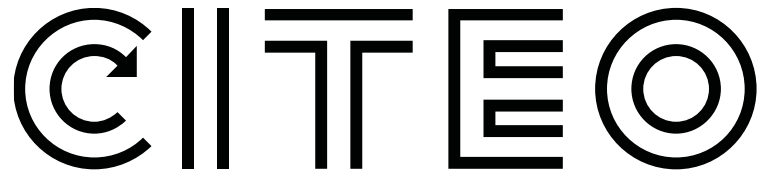
---

Guillaume GAMON – Recycling Development Project Manager – 28/11/2023



Donnons ensemble une  
nouvelle vie à nos produits.





Citeo is a mission-led company set-up 30 years ago by the fast-moving consumer goods and retail market to reduce the environmental impact of their packaging and paper waste by proposing solutions for waste reduction, reuse, sorting and recycling.

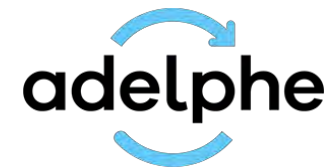
Citeo manages regulatory obligations regarding

- the [packaging EPR scheme](#)
- the [paper EPR scheme](#)

to combine economic and environmental performance



Citeo + offers a [range of customised out-of-agreement services](#) for even more comprehensive advice on the circular economy



Adelphe, a subsidiary of the Citeo group, manages regulatory obligations regarding the [packaging EPR scheme](#) mainly for customers in the [wines & spirits](#) and [medicines](#) sectors



# 01

---

## General overview of the French separate collection



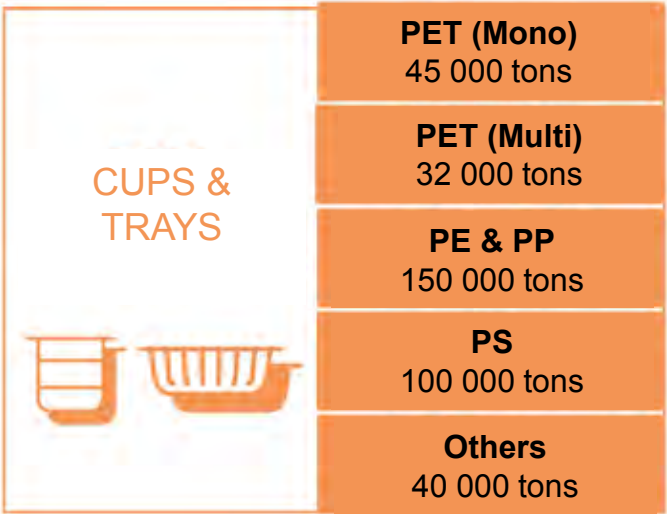
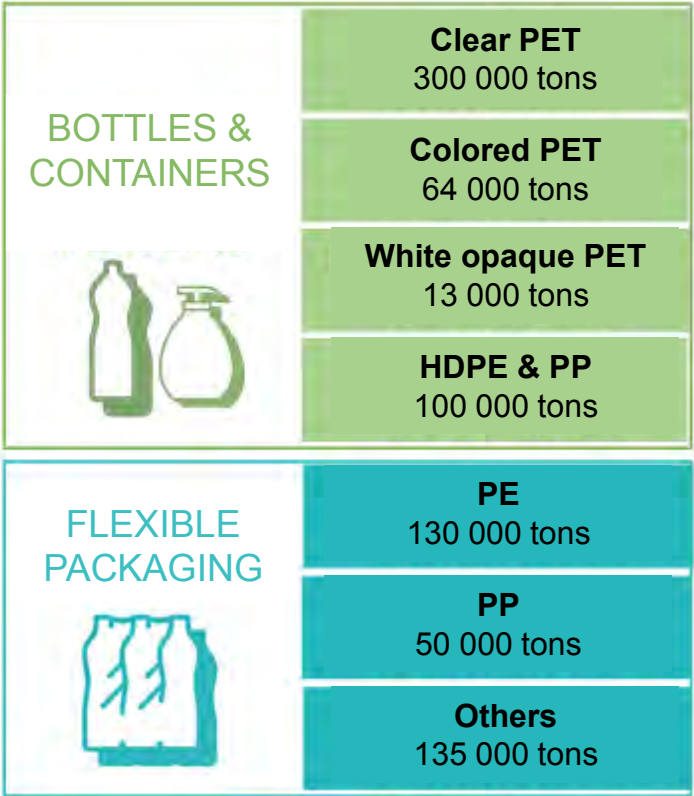
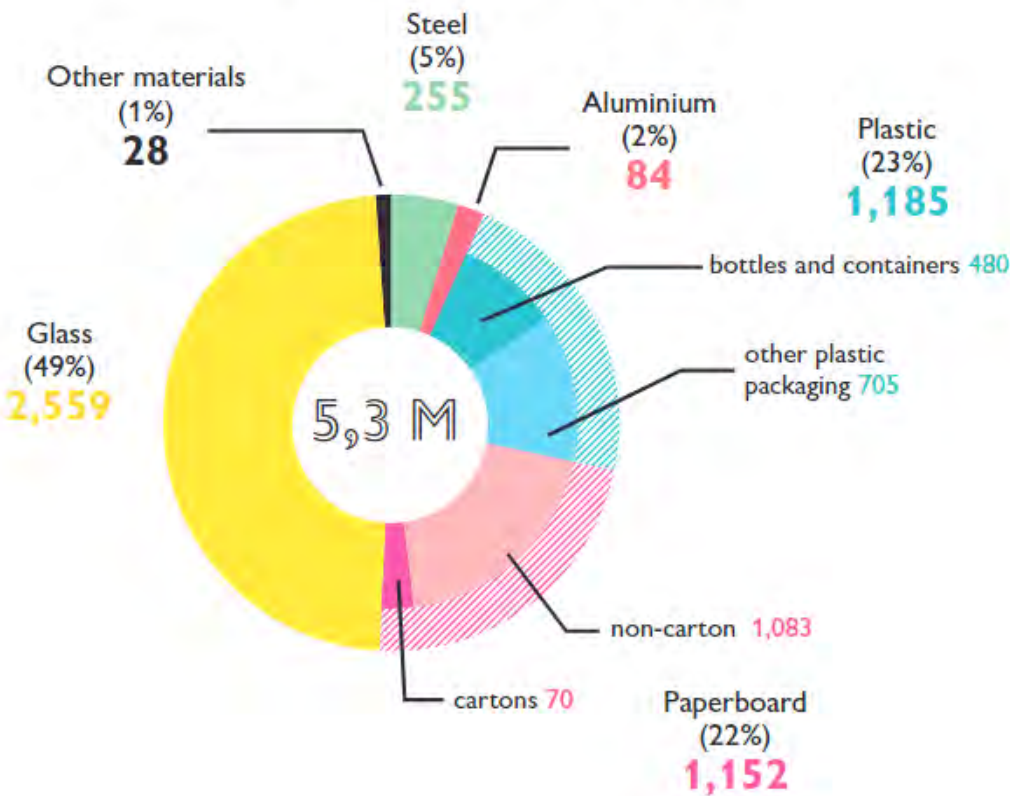
# Household packaging breakdown in France

More in Citeo's [Annual report 2021-2022](#) to learn more (in French)

Source : Annual report Citeo 2021

## Breakdown of the packaging deposits that contribute to financing of the sector

(in thousands of tonnes - rounded figures)

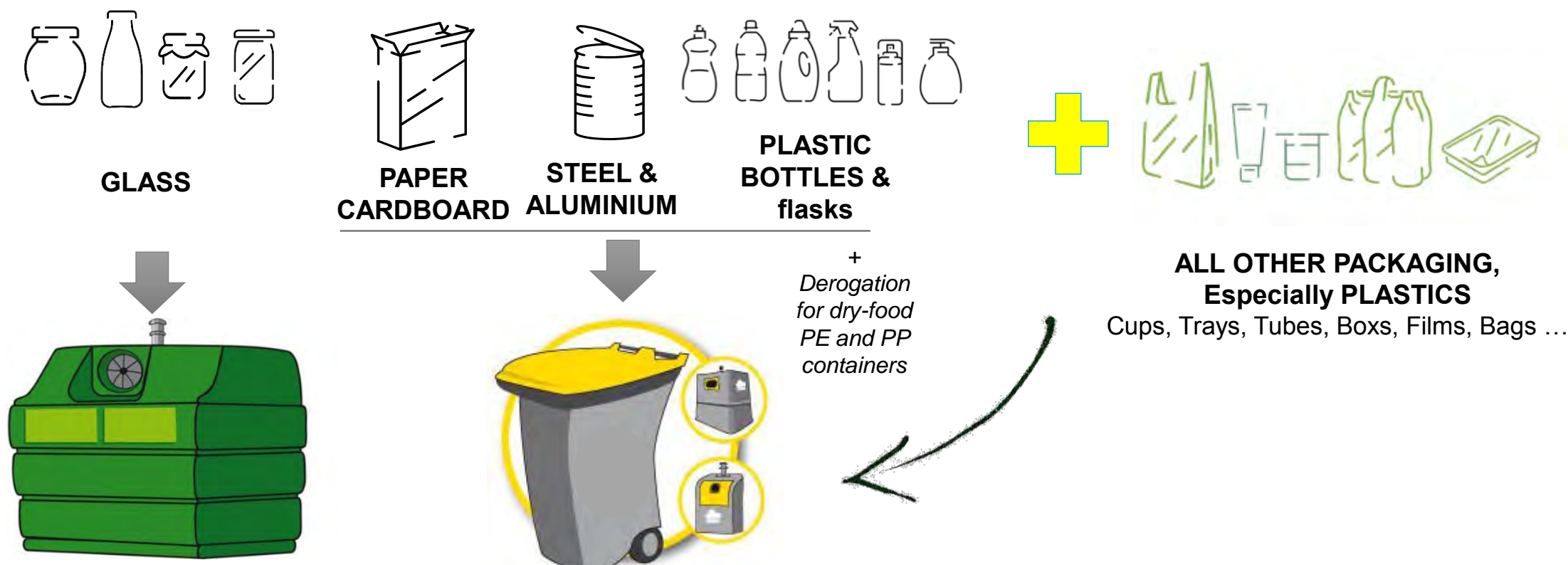


Source : COTREP - 2021 estimations



# Extension of collection to all plastic packaging

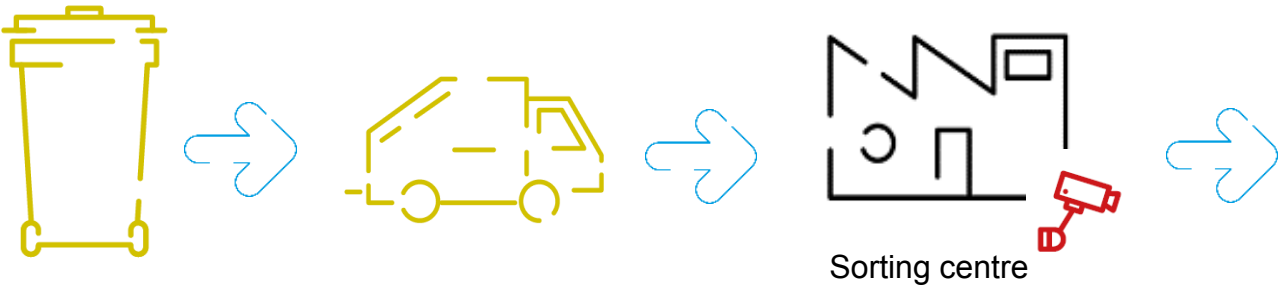
The extended collection scheme is being deployed gradually since 2016 allowing collection to all other plastic packaging







# Existing recycling streams in France & projects



**Green** = Existing recycling streams with strenghtening efforts  
**Orange** = On-going projects or actions to develop recycling streams by 2025-2030

	Clear PET bottles
	Colored and opaque PET bottles
	Other PET containers (without lids)
	PE rigid packaging
	PP rigid packaging
	PE flexible packaging
	Other PET containers (with lids)
	PS rigid packaging d> 1
	PP and PO flexible packaging
Glass	
Steel	
Aluminium	
Paper / Cardboard	
Beverage cartons	
Wood	



# 02

---

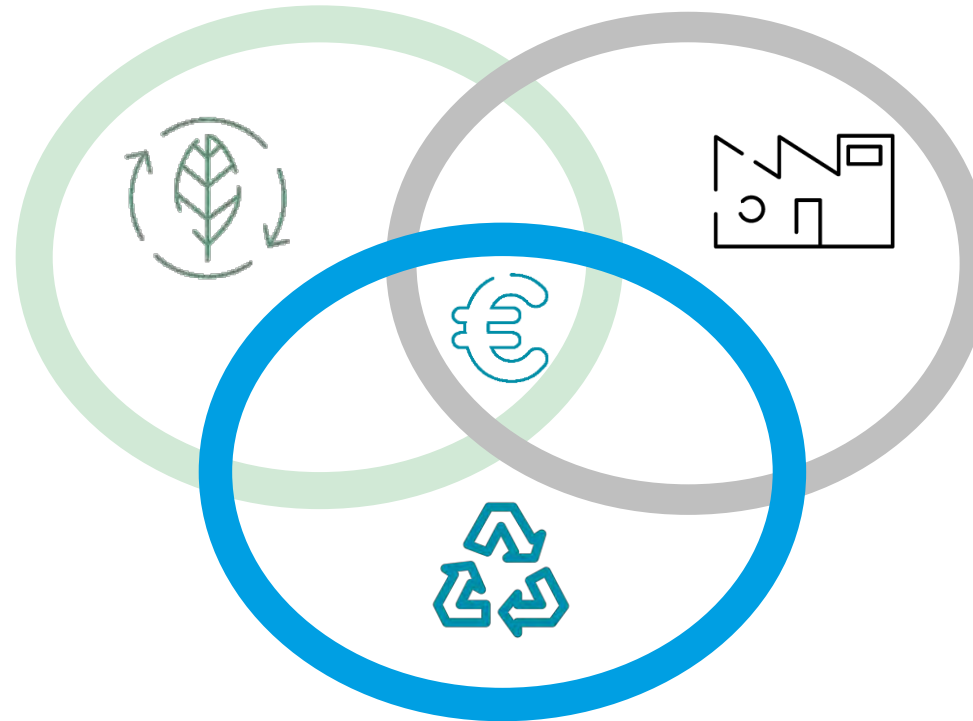
## The development of new recycling streams towards circularity



# Necessary conditions for a recycling path implementation

## A global balance

✓ **A packaging feedstock designed for recycling, with secured sufficient volumes over time**



✓ **Efficient technologies for sorting and recycling**

✓ **Sufficient and sustainable outlets**



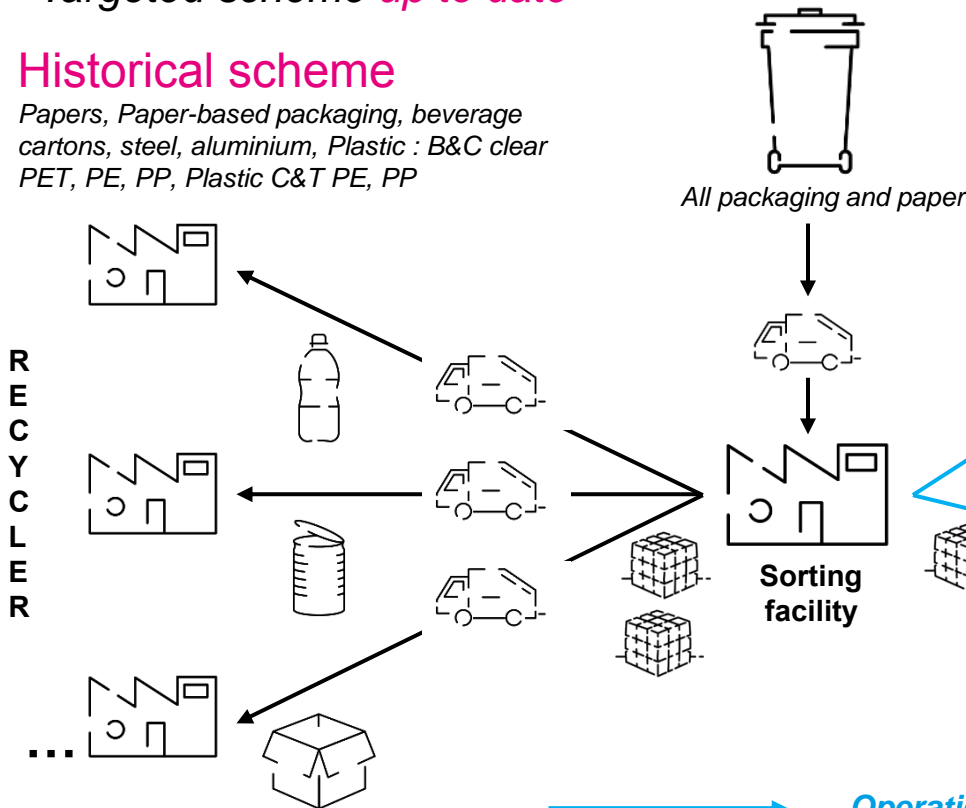
# A new operational role for CITEO for recycling stream development

B&C : Bottles & Containers  
C&T : Cups & Trays (Others rigids)

Targeted scheme *up to date*

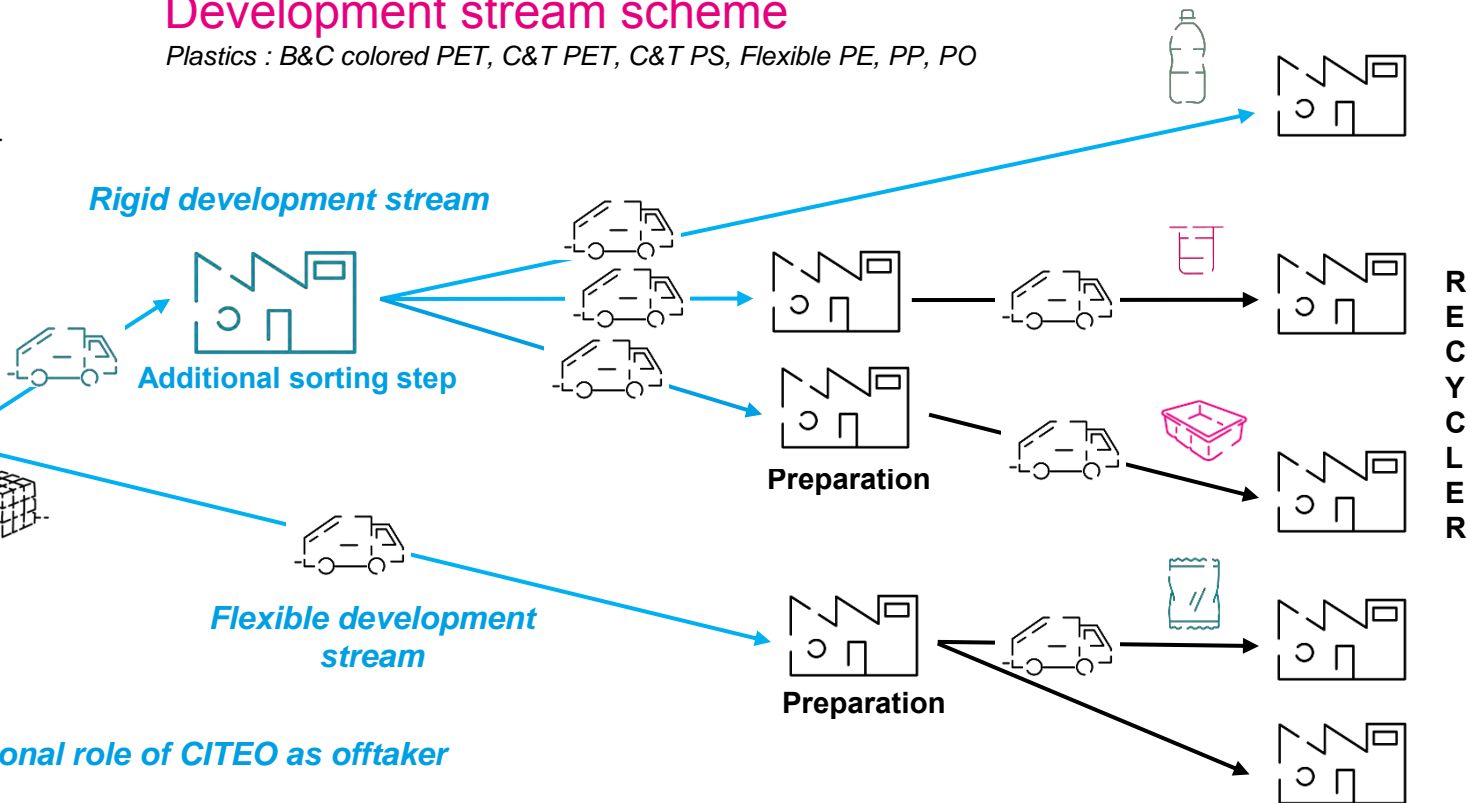
## Historical scheme

Papers, Paper-based packaging, beverage cartons, steel, aluminium, Plastic : B&C clear PET, PE, PP, Plastic C&T PE, PP



## Development stream scheme

Plastics : B&C colored PET, C&T PET, C&T PS, Flexible PE, PP, PO



Operational role of CITEO as offtaker

Streams managed by local authorities, regular offtakers and recyclers



# Recycling call for offer in 2022 : to create the favorable conditions to investments in new preparation and recycling units

## Selection of recycling technologies the most relevant and supply securing for them

To reach recycling objectives set by the law, CITEO has launch in March 2022 a call for offers for recycling starting 2023 of household packaging waste coming from development streams.

One aim was to give visibility to recyclers with long-term supply contract in order to ease their investments.

**High ambition for close loop and food-contact ability**

### PET streams



Colored  
FD10

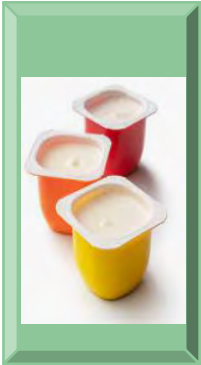


White opaque  
FD11



Trays  
FD12

### PS

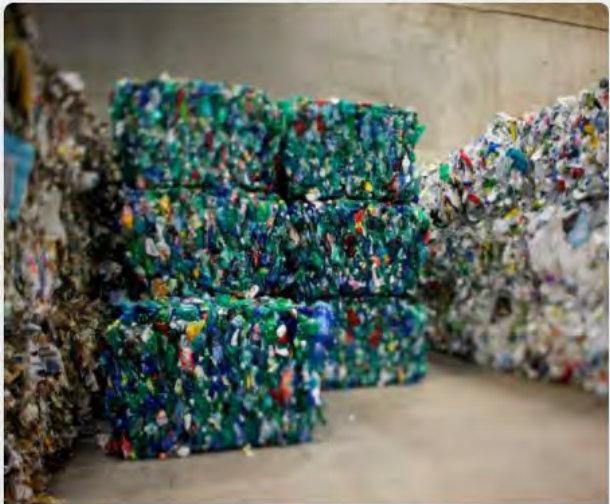


FD4

### Flexibles



FD20



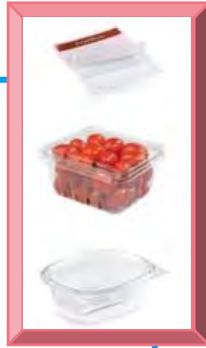
**Appel d'offres : recyclage des emballages en plastique ménagers pour les années 2023 et suivantes**

#recyclage #plastiques



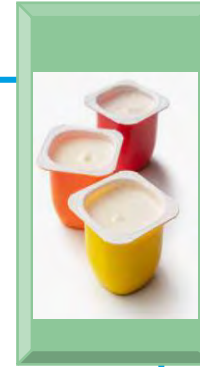
# Recycling streams where chemical recycling is involved

## PET Trays



- Projects involving mechanical recycling and [depolymerization processes](#), both allowing closed-loop applications.
- **Partners** : Paprec, Eastman, Wellman Recycling, Carbios, Valorplast.
- More info [here](#).

## Rigid PS



- Projects involving mechanical recycling in opened-loop applications and [depolymerization by pyrolysis](#) allowing closed-loop applications.
- **Partners** : Indaver P2C, Eslava Plasticos, Valorplast.
- More info [here](#).

## Flexibles



- Projects involving mechanical recycling in opened-loop applications for PE films and [chemical recycling by pyrolysis](#) allowing closed-loop applications.
- **Partners** : Machaon, Paprec, Total Energies, Indaver P2C.
- More info [here](#).



# Challenges related to chemical recycling

- ➔ **Scale-up** of the recycling plants on the period 2024 – 2026.
- ➔ Technical and environmental **performances at scale**.
- ➔ **Regulatory framework** and uncertainties around it :
  - ➔ Chemical recycling recognition in EU regulatory targets (recycling rate and recycled content regulation).
  - ➔ End of waste status for pyrolysis oils.
  - ➔ Mass balance acceptance.
- ➔ **Business models** of the new value chains.

## Mass balance and waste traceability

CITEO is ISCC PLUS certified since 23/09/2023 to cover waste under its operational activities.

Certification will guarantee to our partners that the supplied waste are conformed with ISCC PLUS requirements.





# 03

---

## CITEO position on Mass Balance



# A shared position between French PROs (Adivalor, Citeo, Ecologic, Ecomaison, Ecosystem, Refashion, Valdelia)



Full document [here](#)

## Key points :

- ➔ Mass balance – credit method can be used **when necessary** but others chains of custody (segregation, controlled blending, rolling average) should be preferred.
- ➔ When applied, a **fuel-exempt allocation** method and **no credit transfert** between site are preferred.



# A shared position between French PROs (Adivalor, Citeo, Ecologic, Ecomaison, Ecosystem, Refashion, Valdelia)



Full document [here](#)

## Key points :

- ➔ Need of **traceability about waste origin** along the value chain
- ➔ **Communication to consumers** on certified material use **should be different from physical use** of recycled material (At brand sourcing level, not the product item)
- ➔ Communication should be **honest and transparent** about the origin of the certified material.
- ➔ **Need of common rules set by authorities at European level.**





# merci

*This document remains the property of Citeo/Adelphe. It is provided for information purposes only and does not constitute legal advice or recommendations. While every effort has been made to ensure that the information contained in this document is correct and up to date, Citeo/Adelphe accepts no liability-for any errors or omissions. Citeo/Adelphe does not guarantee the continuity or completeness of the information contained in this document, particularly with regard to changes and regulatory interpretations in force, the state of the art and the EPR systems for household packaging and Graphic paper. As such, the holder remains solely responsible for the use of this document.*

**Guillaume GAMON**

Recycling Development Project  
Manager

[guillaume.gamon@citeo.com](mailto:guillaume.gamon@citeo.com)

+33 7 61 12 63 59



50 boulevard Haussmann  
75009 Paris

01 81 69 06 00  
[contact@citeo.com](mailto:contact@citeo.com)



