



What's going on in PET trays recycling?



Roberto Tangorra

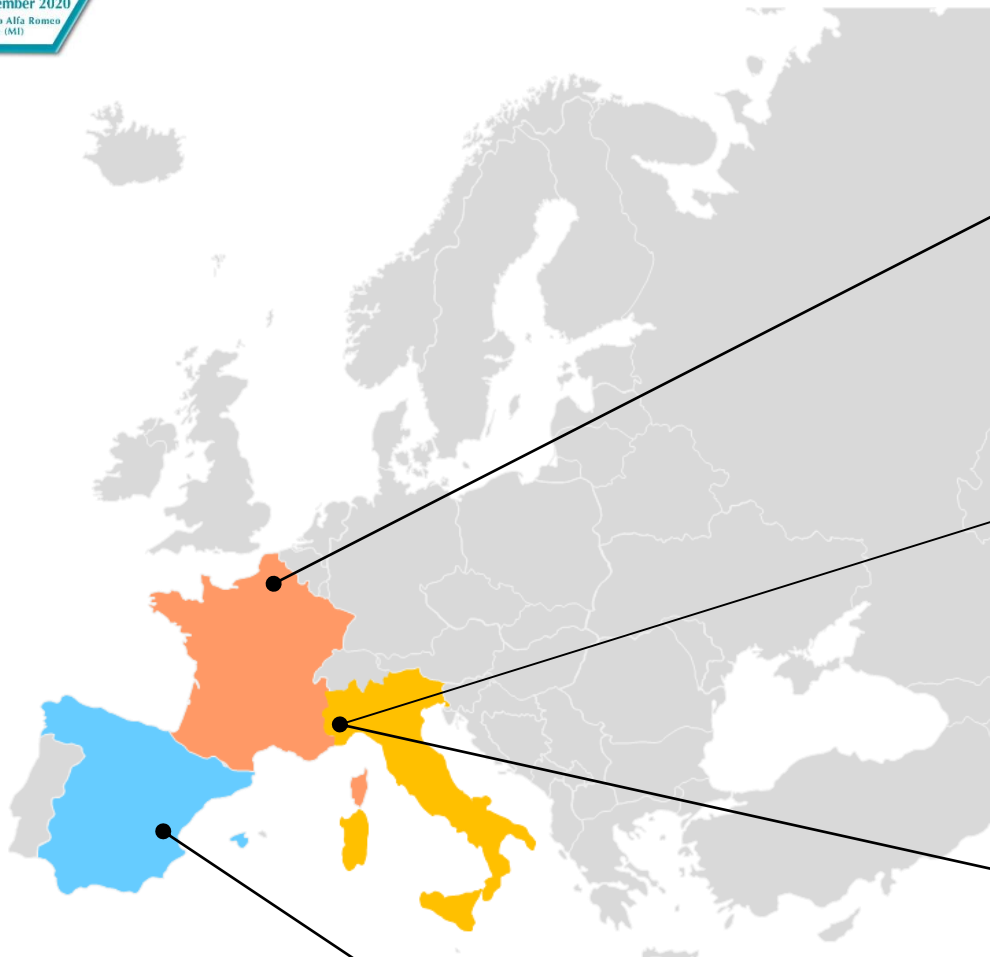
Quality – R&D Manager

qualita@dentispet.it



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Where we are



NORD PAL PLAST

Nord Pal Plast - Lesquin (France)
PET Recycling Facility

**DENTIS
TECH**

Dentis Tech - S. Albano Stura (Italy)
Engineering Company

**DENTIS
Recycling
ITALY**

Dentis Recycling Italy - S. Albano Stura (Italy)
PET Recycling Facility
Group Head Office

PETCOMPañÍA
PARA SU RECICLADO

Pet Compañía Para su Reciclado
Chiva (Spain)
PET Recycling Facility

The Dentis Group today

DENTIS
Recycling
ITALY

Dentis Recycling Italy S.r.l. (Italy)

- HQ, operating in Italy with Input capacity of 40.000 ton/y

PETCOMPANÍA
PARA SU RECICLADO

Pet Compania para su reciclado s.a. (Spain)

- The largest plant of group with a Input capacity of 90.000 ton/y

NORD PAL PLAST

Nord Pal Plast (France)

- New acquisition of the Group. Two lines facility with a input capacity of 20.000 ton/y

DENTIS
TECH

Dentis Tech s.r.l. (Italy)

- Dentis's specialized department in process design and engineering

Dentis Group Snapshot



Turnover in 2019 > 82 M€



+150 employees



Over 150 Kton/y bottles PET bottles processed

ISO 14001 9001 and 28000 certified



Product certification



EuCertPlast



Global Recycled Standard

Why PET?



- PET key technical advantages: versatility, durability, heat resistance, light weight, cost-competitiveness
- **PET is 100% recyclable**
- **PET is the most recycled plastic polymer** and the only with an established supply chain and market



Plastics today: key challenges



A shared common feeling:
«a plastic polluted ocean»

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The importance of the extended producer responsibility (EPR)

- According to the current legislation, packaging “producers” are responsible to manage all the entire lifecycle of their products on the market, especially for **the product end-of-life**, including waste selective collection and recycling.
- To fulfill those requirements, the packaging producers might directly manage the packaging end-of-life, or, **sub-contracting to an authorized company/consortium** the packaging waste collection by paying a fee proportional to the product volume amount placed into the marketplace.



The New European Strategy for Plastics in a Circular Economy

The European Green Deal

Commission will develop requirements to ensure that **all packaging** in the EU market is **reusable or recyclable in an economically viable manner by 2030 !!**



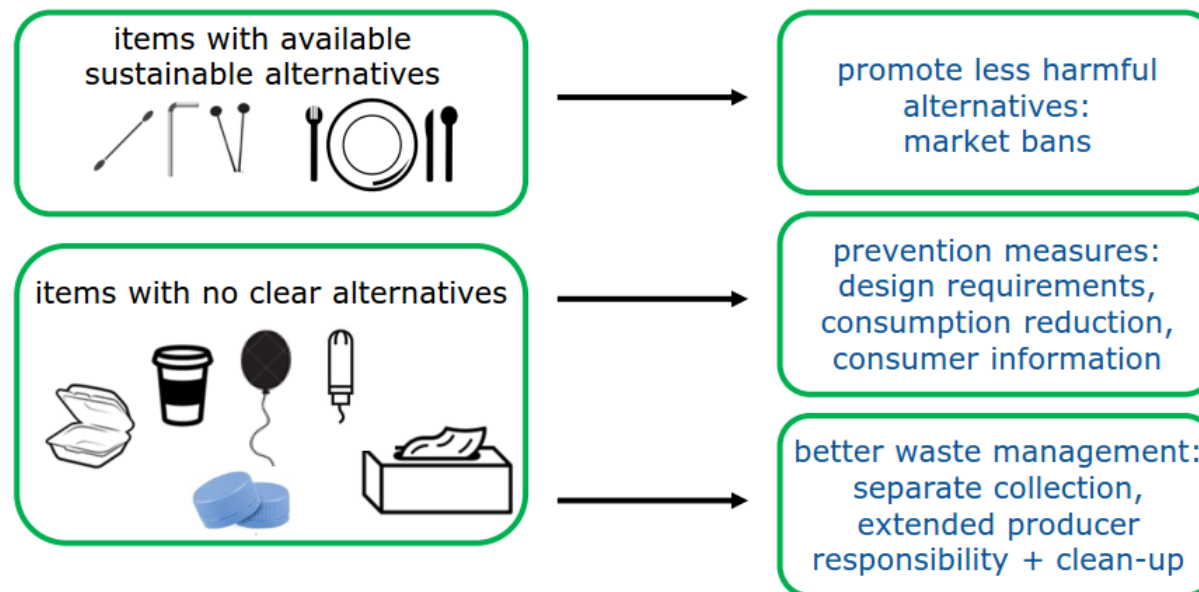
- ✓ Expand and improve the **separate collection of plastic waste**, to ensure quality inputs to the recycling industry;
- ✓ Improve **ecofriendly packaging design** and support innovation to make plastics and plastic products easier to recycle, pushing on the extended producer's responsibility.
- ✓ Create **viable markets** for recycled and renewable plastics, boosting the recycled plastic demand.



Implementation of Directive EU 2019/904 – SUP

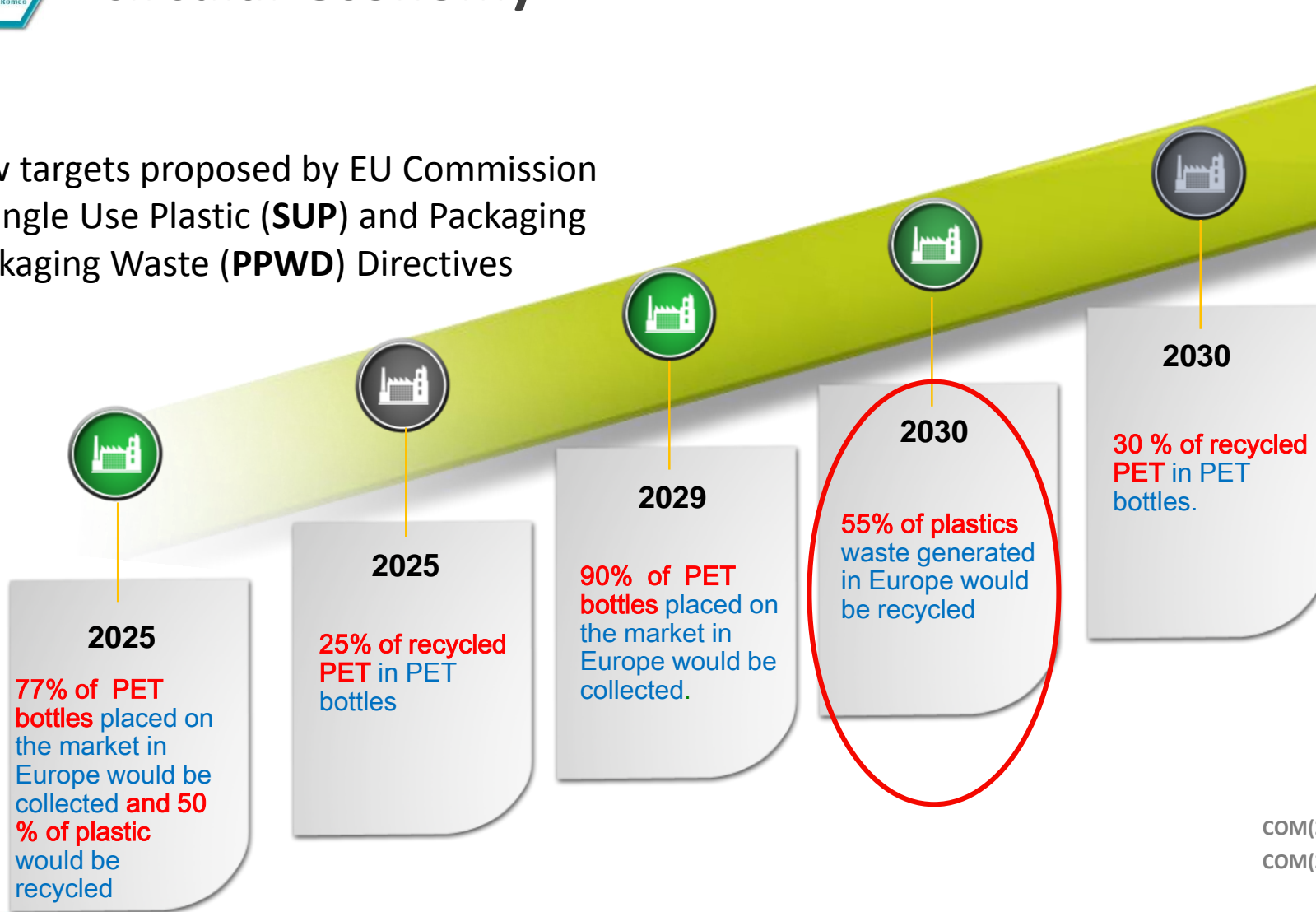
(12) “...examples of food containers to be considered as **single-use plastic products** for the purposes of this Directive are fast-food containers or meal, sandwich, wrap and **salad boxes with cold or hot food, or food containers of fresh or processed food that does not need further preparation, such as fruits, vegetables or desserts..**”

Different SUP products – different measures



EU Roadmap towards a plastic strategy in a circular economy

The new targets proposed by EU Commission in the Single Use Plastic (**SUP**) and Packaging and Packaging Waste (**PPWD**) Directives



COM(2018) - 2018/852 Amendments to 96/62/EC
COM(2019) - 2019/904 Single-use plastic Directive

National Member States initiatives for circular economy for plastic waste

Overview of policies aimed at the plastic waste recycling industry



- The EU Council President's proposal for the budget for the period 2021-2027 provides for the introduction of a levy on non-recycled packaging plastic of 0,80 €/kg. **Proposal to partially finance the Recovery Fund by the EU Plastic Tax incomes.** Member State not obliged to introduce a plastic tax.



- Plastic Tax on non recycled single-use plastic packaging of 0,45 €/kg postponed to Jan of **2021**. **Recycled packaging** excluded by the taxation!



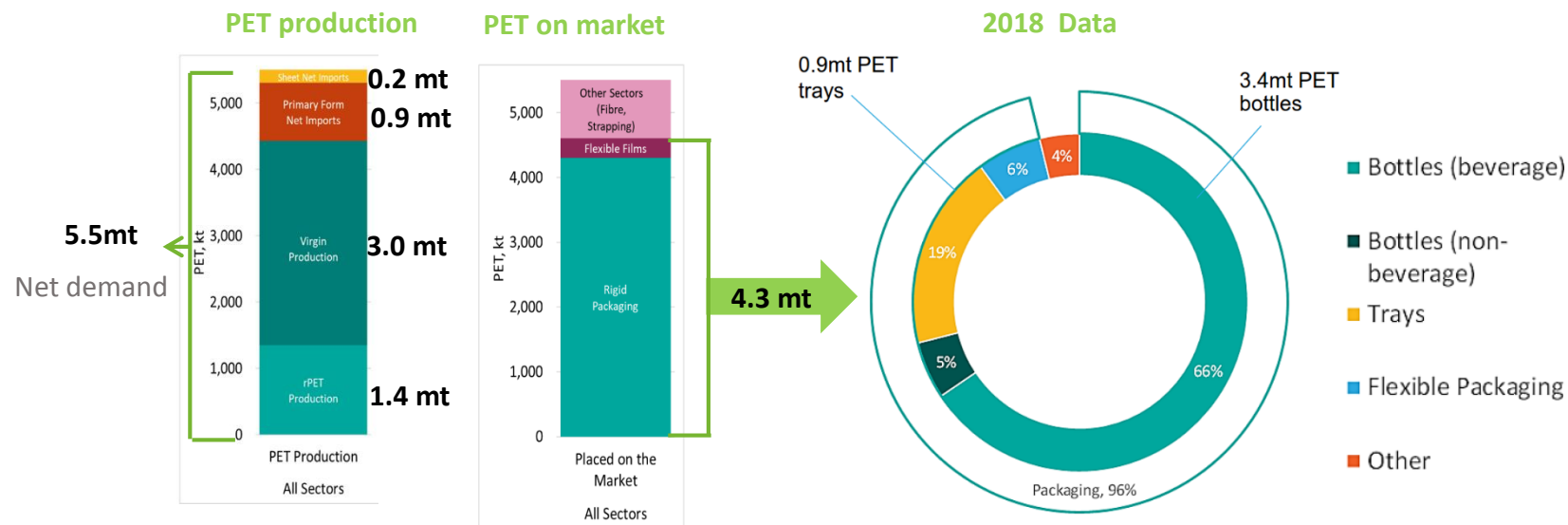
- Spain introduced recently a proposal for a tax on non recyclable plastic starting of 0,45 €/kg from **01/07/2021 for plastic packaging producers.**



- Plastic tax starting on **Q4/2022 of £200/ton of Plastic Packaging manufactured/imported with less than 30% of recycled material.** Current proposal easily separable components will count as two separate items of packaging and each will fall within the scope of the tax.
- DRS scheme in Scotland (2021) and proposal in UK (2023/2024)

Use of Recycled Plastic will get shortly mandatory !

PET placed on Market in EU 28+2

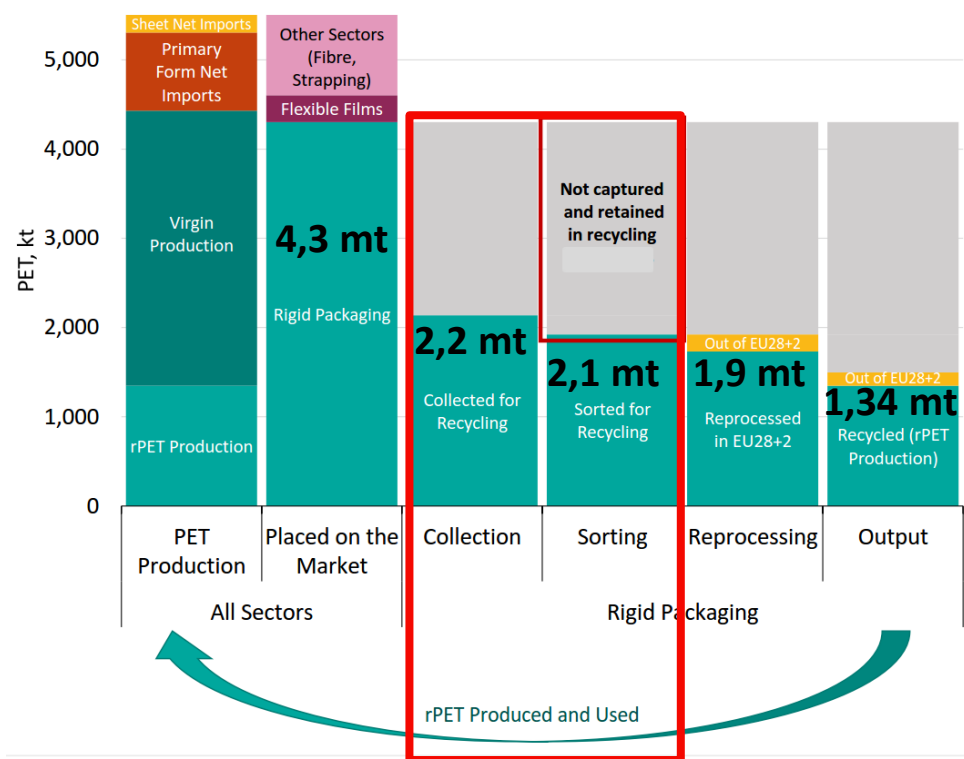


Demand for PET exceeds production (within EU28+2 boundaries). i.e. Net Importer

- Net (of imports/exports) demand in EU28+2 = 5.5mt
- Net imports = 0.9mt (plus 0.2 mt of sheet imports)
- Virgin = 3.0mt
- rPET = 1.4mt

Estimation of a total of **3.4mt PET bottles** and **0.9mt PET trays** placed on the market in the eu28+2 in 2018

Overall 2018 PET Mass Balance in EU



The PET recycling chain bottleneck*

*By 2020, the calculation of the recycling targets based on the **effective weight** of packaging waste which enters **in recycling** process

An estimated of 4.3 mt of PET **rigid packaging** ended its cycle-life and available for collection in 2018:



PET Amount for recycling 1,9 mt
(45% of PET placed on market)

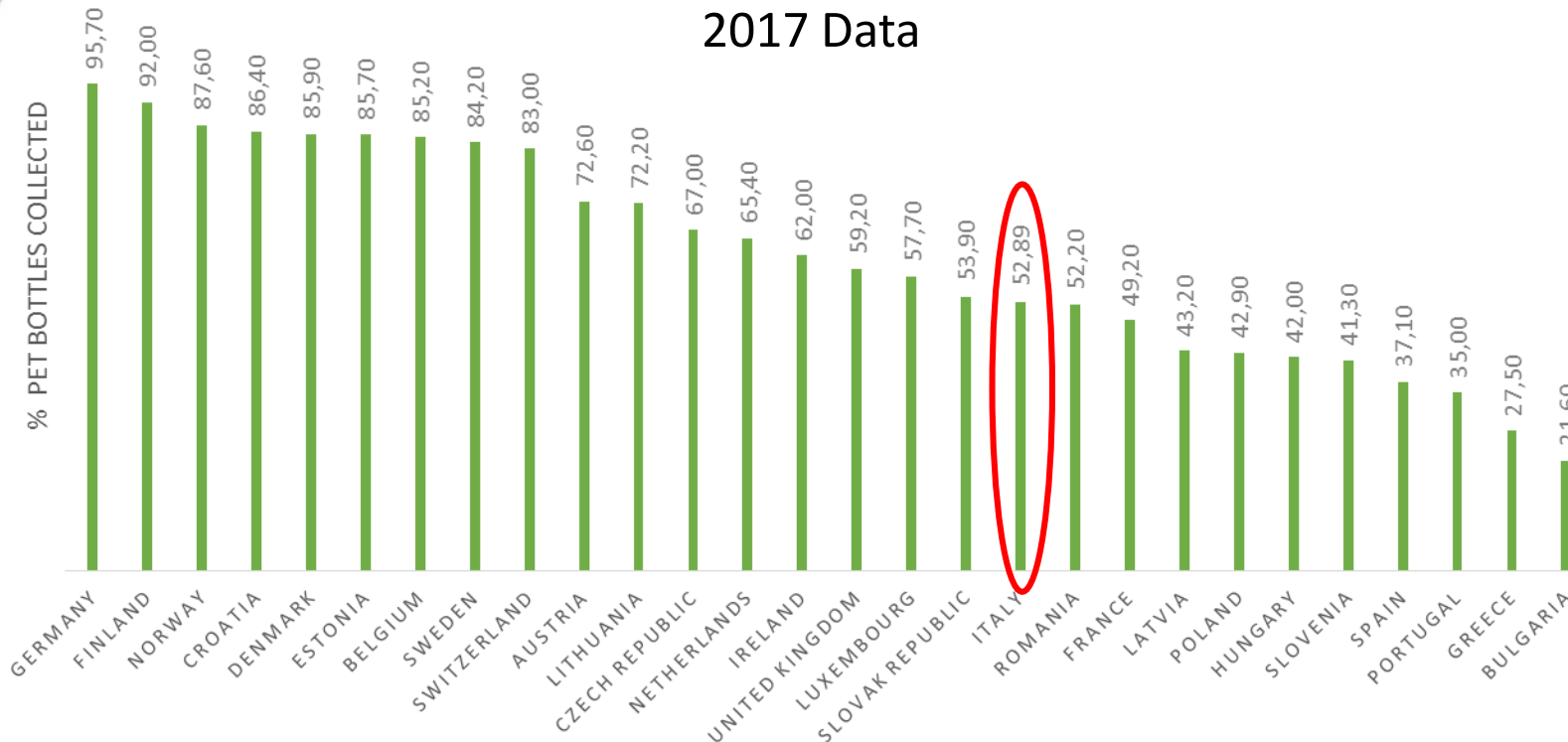
1,78 mt (on 3,4 mt on market)
52 % for PET bottles

0,12 mt (on 0,9 mt on market)
~15 % for PET trays (diuted in PET bottle Streams)



1,34 rPET production

European Rates for PET bottle collection

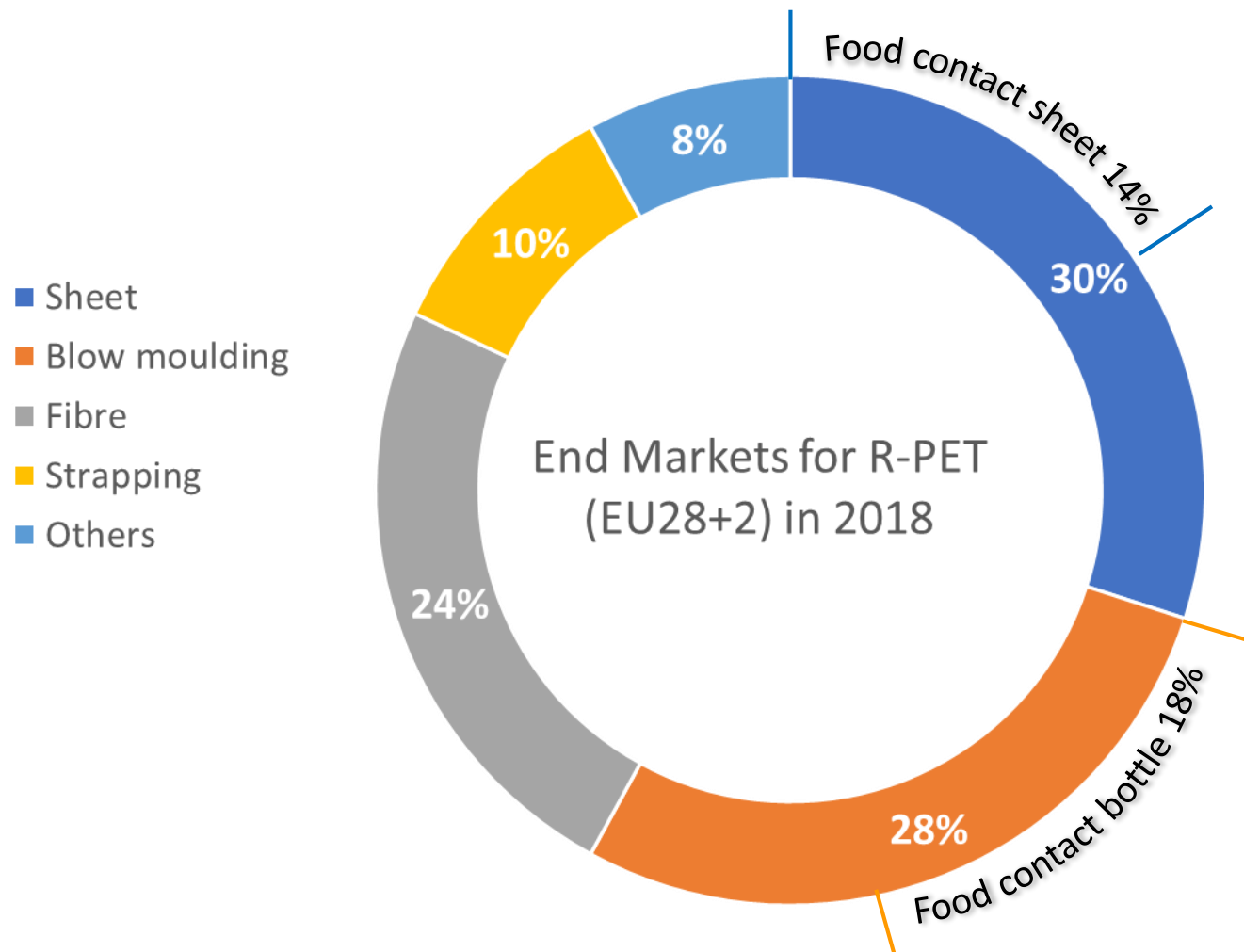


SOURCE: ICIS and Petcore Europe Annual Survey on the European PET Recycle Industry 2017

- In **2019** in Italy
- 458 000 tons of PET bottles put on the market
 - 267 000 tons of PET bottles collected
 - **58 %** PET bottle collection rate

SOURCE: Relazione su gestione 2019 - COREPLA

1,34 Mton of R-PET used for...

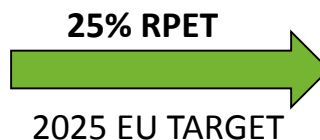


1,34 Mton of R-PET used for...

	rPET to Product Application 2018, kt	Use in EU28 Production, 2018, kt	Estimate of Recycled Content in 2018
Blow-moulding (food contact)	238	3,400	11%
Blow-moulding (other)	135		
Sheet (food contact)	190	900	45%
Sheet (other)	215		
Other sectors (fibre, strapping, injection-moulding)	569		
TOTAL	1,348		

The effect of “Pledging Era”

In Italy **458 000 tons** (2019) of
PET bottles on the market



At least 115 000 tons, the **45%**
of total current R-PET
production would be addressed
only to PET bottles

With increased demand for R-PET in bottles:

- The sole PET Bottle collection will be enough for all R-PET supply chain?
- Will bottle eat the entire R-PET segment?
- Where will trays source their R-PET?

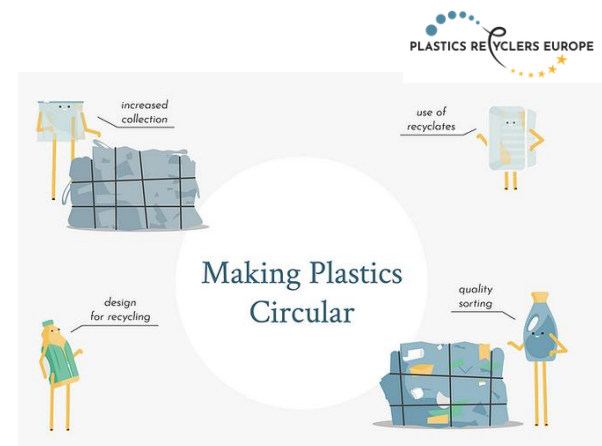
Mandatory a **new paradigm**: From **Bottle2Tray** to **Tray2Tray**



Making PET trays circular!

- ❑ Improve the amount of PET available as input for PET mechanical recycling

Develop new **industrial model of PET collection and sorting** in order to fill the gap of R-PET needed to catch the EU goals by 2025



- ❑ Develop new homogenous and selected PET streams for increasing the input material quality of R-PET

Create selected PET streams:

- PET bottles
- PET trays



Dedicated PET trays selected stream

Design for recyclability

*By 2030, the Commission proposed that **at least 55 %** of all plastics packaging in the EU should be recycled.*

- Avoid plastic packaging turn into waste after one **very short first-use cycle***.
- Rethink the **packaging design** towards an **eco-friendly** ones including **recyclability** as one of the first **requirements** as well as marketing, shelf-life and aesthetic ones in packaging design.



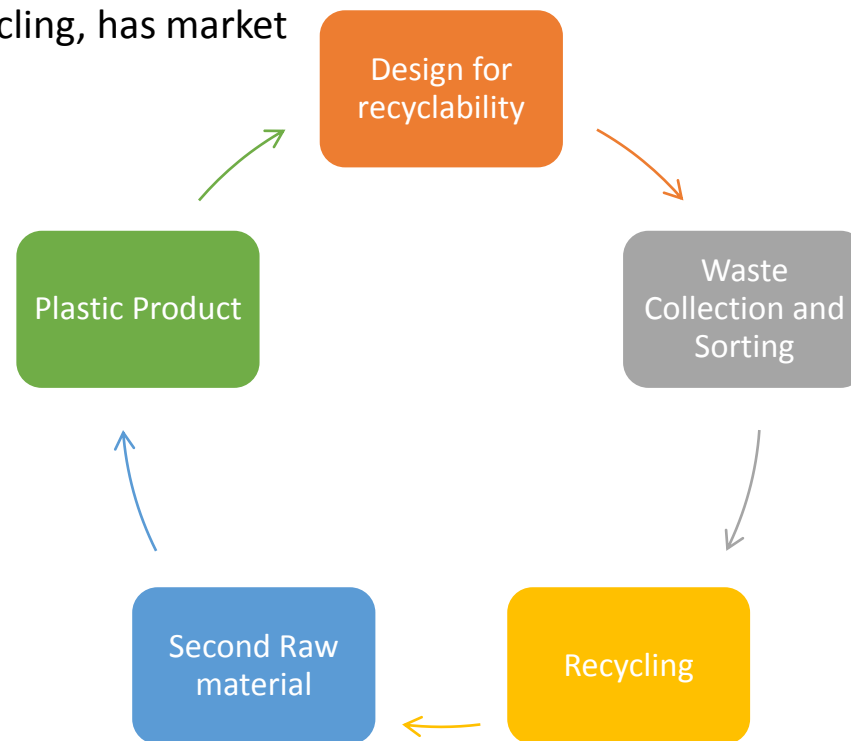
*Ellen MacArthur Foundation, The New Plastics Economy: Catalyzing action, January 2017.

The concept of «recyclability»

Lack of a unique definition of “recyclable” at EU level

Definition by APR, PRE and PETCORE

- The product must be made with a plastic that is collected for recycling, has market value and/or is supported by a legislatively mandated program.
- The product must be sorted and aggregated into defined streams for recycling processes.
- The product can be processed and recycled with commercial recycling processes.
- The recycled plastic becomes a raw material that is used in the production of new products.



The status of Art of Trays recyclability

Recyclability criteria	Monomaterial Trays	Multimaterial/layer Trays
Overall	Partially recycled , undeveloped potentialities	No recyclable , rPET would be made only by PET blended polymers
Collection	No comprehensive collection scheme available throughout European regions	Not collected for recycling
Sorting	Currently sorted into bottle streams (in Italy max 1%) or into “mixed plastics” for energetic recovery. Colored trays (IR detectable) can be sorted!	No sorted! Certain combinations can be mis-sorted by sensor based sorters (PETG, EVOH...)
Mech. Recycling	Underdeveloped capacity for separate reprocessing of trays. High yield losses if reprocessed on bottle lines. High adhesives and labels content.	Different polymer layers cannot be cost-effectively separated and affect quality of resulting rPET. No reprocessing capacity at present
End-Market	Undeveloped market for r-PET derived from trays	rPET that could be derived would be mixed polymer with very low market demand

SOURCE: PET MARKET IN EUROPE : STATE OF PLAY – EUNOMIA (2020)



- RecyClass™

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Conclusions

To move towards the ambitious EU targets, we need to create a **close networking cooperation among** all the players, **packaging producers, waste collectors and recyclers**, involved in the product end-of life to create a virtuous valuable chain.

- Expand and improve the **separate collection of plastic waste**, to ensure quality inputs to the recycling industry, creating dedicated stream, especially for PET bottles and PET trays;
- **Expand the capacity of PET sorting and collection** to fulfill the EU targets within 2025-2030;
- Support the **packaging design** and innovation to make plastic products easier to recycle, especially for PET trays;
- Create and support **viable market for r-PET**, developing established chain for PET trays recycling.



Thanks for
the
attention!

**PET COMPAÑÍA PARA
SU RECICLADO**

S/N Polígono Industrial La Pahlilla,
46370 Chiva
Valencia, Spain
Tel. +34 9625 24148

**DENTIS RECYCLING ITALY
DENTIS TECH**

Via Mondovì, 15
12040 S. Albano Stura
Cuneo, Italy
Tel. +39 0172 67802

NORD PAL PLAST

10 AV. des sports
59814 Lesquin Cedex
Lille, France
Tel. +33 06 98657166



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