

# VinylPlus Definition of PVC Recycling and Converter Sector Interpretations

Update 8, approved by CLC 23.9.2021



# VinylPlus Definition of Recycled PVC

“Recycled PVC is prepared by processing PVC waste for the original purpose or other purposes, excluding energy recovery and fuel production”.

**VinylPlus 2021 / According to CPA methodology - Section D**

# Glossary / Terms 1

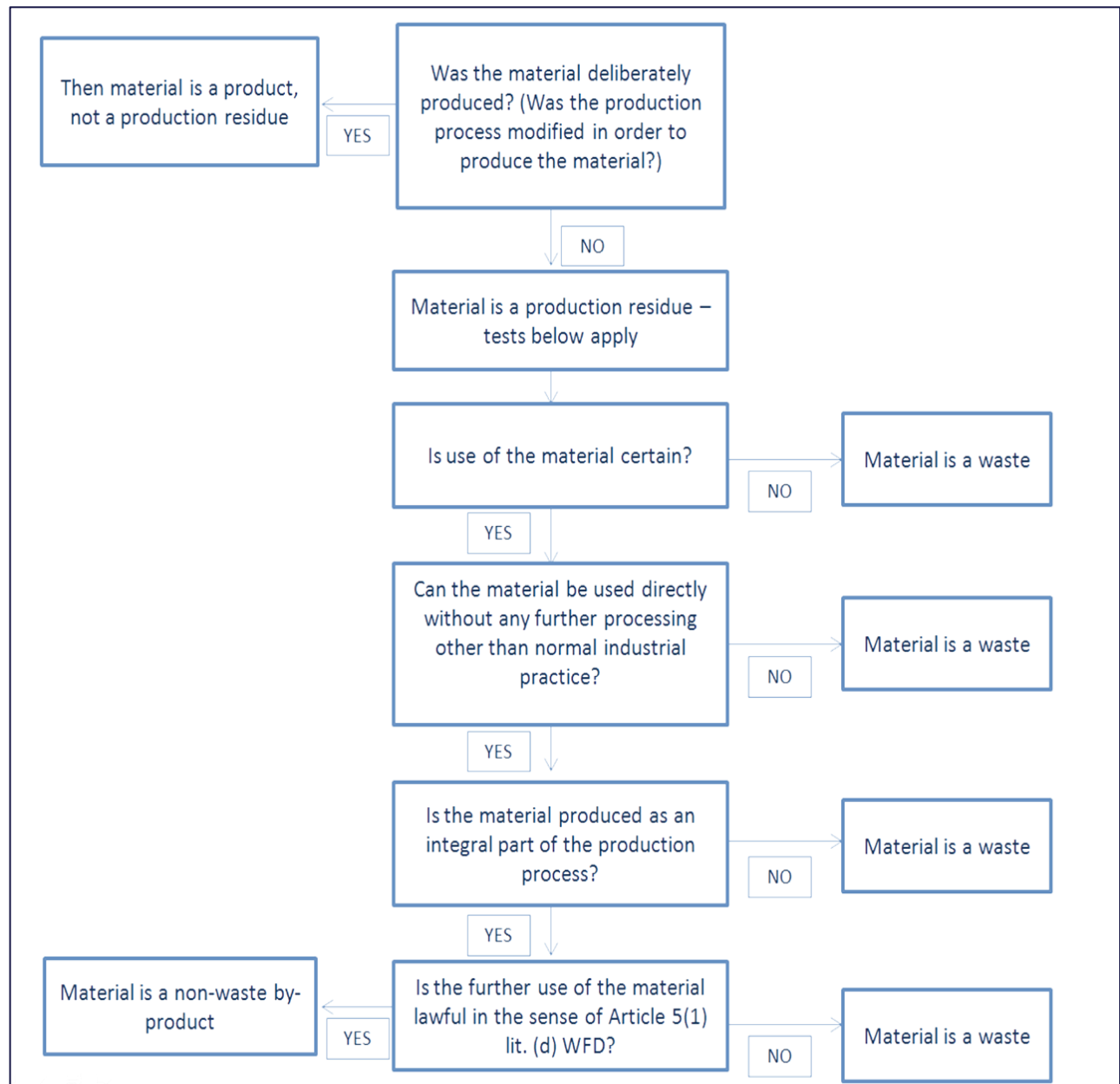
**By-product:** re-utilized material that has been generated as integral part of the production process and is capable of being reclaimed as part of normal industrial practice. Re-use of the material is certain and lawful. Sometimes also called „internally re-used material (IRM)“, „regrind“ or „rework“.

**PVC waste:** any PVC material which the holder discards or intends to or is required to discard.

**VinylPlus 2021 / According to CPA methodology - Section D**

*Decision tree  
to determinate  
whether the  
material is a  
“waste”*

*(Source: CPA  
methodology)*



# Glossary / Terms 2

**Pre-consumer** waste: material diverted during a manufacturing process and which the holder discards or intends or is required to discard.

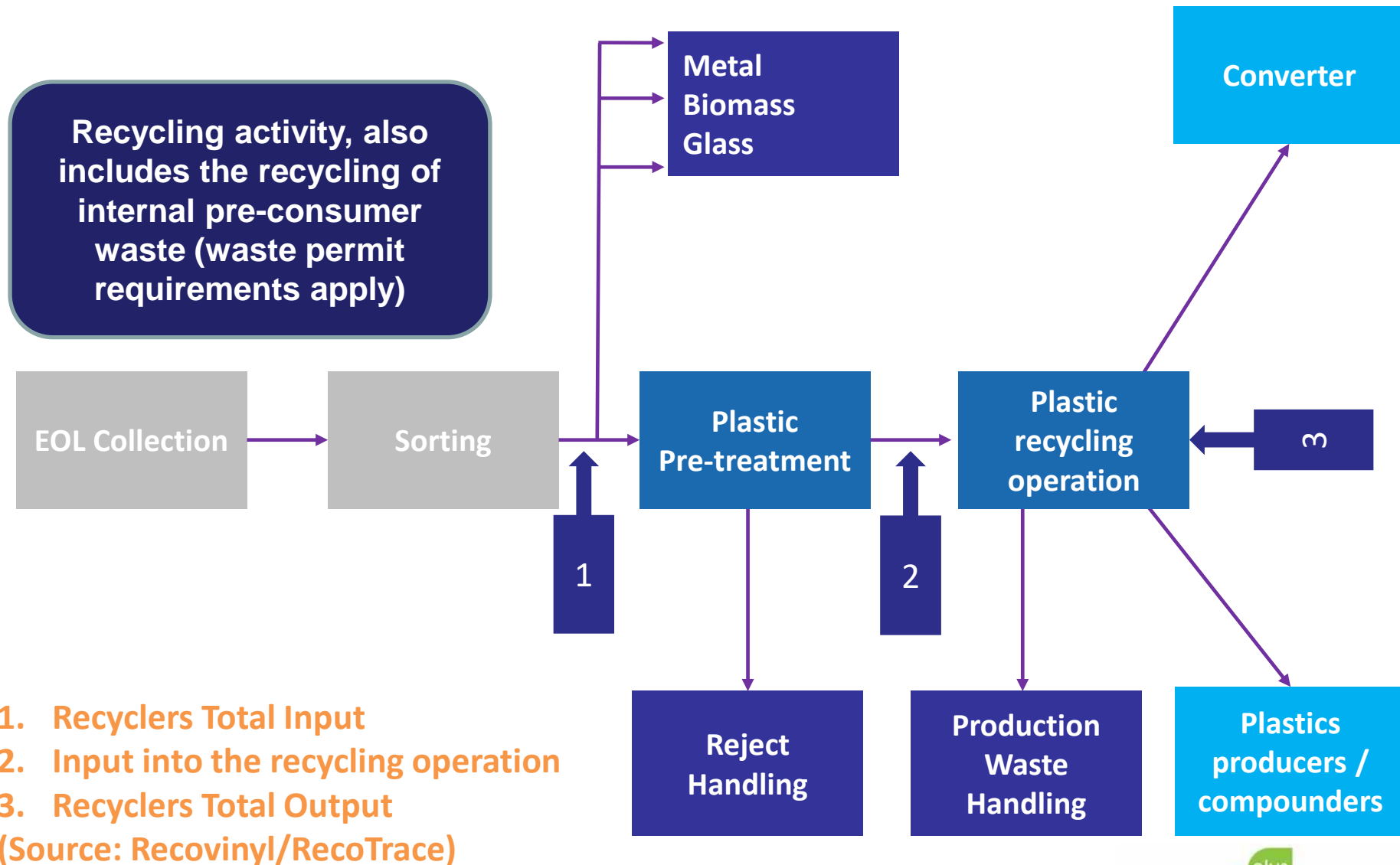
**Post-consumer** waste: material, returned from distribution or generated by the end-users of products, that has fulfilled its intended purpose or can no longer be used and which the holder discards or intends or is required to discard.

**VinylPlus 2021 / According to CPA methodology - Section D**

# Recycling pledge VinylPlus

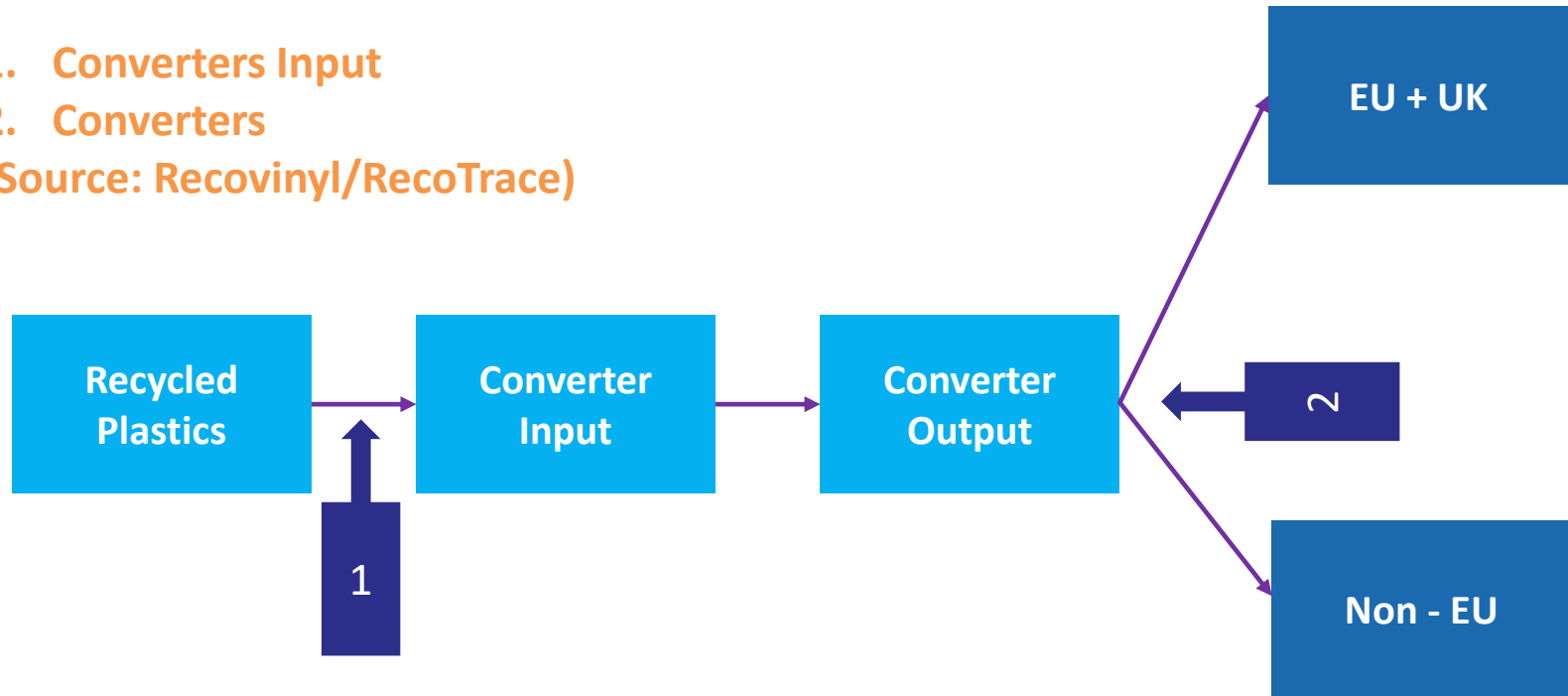
- **The Plastics industry** pledged to CPA to reuse 10 Mio tons of plastics recycling volumes in new products by 2025.
  - Only recycled plastics from EU+UK waste are taken into account
  - Norway and Switzerland are excluded (no EU countries)
  - Pre-consumer waste is monitored but not counted towards 10 mio. ton target (see exception VinylPlus below)
- **VinylPlus** pledged to CPA to reuse 900 ktons by 2025 and 1 Mio tons of PVC recycling volumes in new products by 2030
  - The European Commission accepted to count PVC pre-consumer waste from the B+C industry towards the 10 million ton target if reported through Recovinyl/RecoTrace.
- The **VinylPlus 2030 programme** targets 1 Mio tons of PVC recycling volumes with a potential stretch goal to be announced in 2025.
  - This includes pre and post-consumer waste from all sectors
  - This includes volumes from Switzerland and Norway
  - This includes non-EU waste if recycled in the EU
- VinylPlus organizes collection and reuse data gathering through **Recovinyl / RecoTrace**. Volumes are measured inline with CPA requirements at the level of recyclers and converters.
  - Recovinyl will collect data in line with CPA AND with VinylPlus requirements

# 3 Data Measurement Points – Recycling Activity



## 2 Data Measurement Points – Converting Activity

1. Converters Input
  2. Converters
- (Source: Recovinyl/RecoTrace)





# Industry sector interpretations

(VinylPlus CLC / agreed 23.9.2021)

- ✓ All industry sectors converting PVC have agreed to use the above generic VinylPlus definition of recycled PVC, inline with the CPA methodology.
- ✓ The charts below translate this common definition into the language common in each application sector, highlighting its specific manufacturing and distribution processes.
- ✓ The objective is to allow a consistent data collection at recyclers and converters level (measurement points see above) and to provide transparency for any external users, e.g. auditors for the VinylPlus product label.
- ✓ The colors used in the flow charts below indicate the nature of the material stream and whether it is counted in the pledge or not:
  - grey – By product or virgin material - not counted
  - green – PVC recyclate - counted in VinylPlus 2030
  - blue – Pre-consumer waste – counted
  - dark blue – Post consumer waste - counted

# Profiles: Interpretation of Recycled PVC

(EPPA / 23.9.2021 / CR)

RECYCLED PVC is prepared by processing PVC waste for the original purpose or other purposes, excluding energy recovery and fuel production.

## By-Product – not counted / excl.

- Internally reused material (IRM) = with clearly identifiable formulation
- Reused material from internally extruded virgin material, including mismeasured, unused products and offcuts
  - Different defined formulations shall not be mixed
  - “Internal” refers to the same manufacturing group even if located at different sites

## Pre consumer waste – counted / incl.

- ✓ Window manufacturers (Frame production) off cuts
- ✓ Broken profiles, quality failures and different defined mixed formulations
- ✓ Storage yard waste material

## Post-Consumer waste – counted / incl.

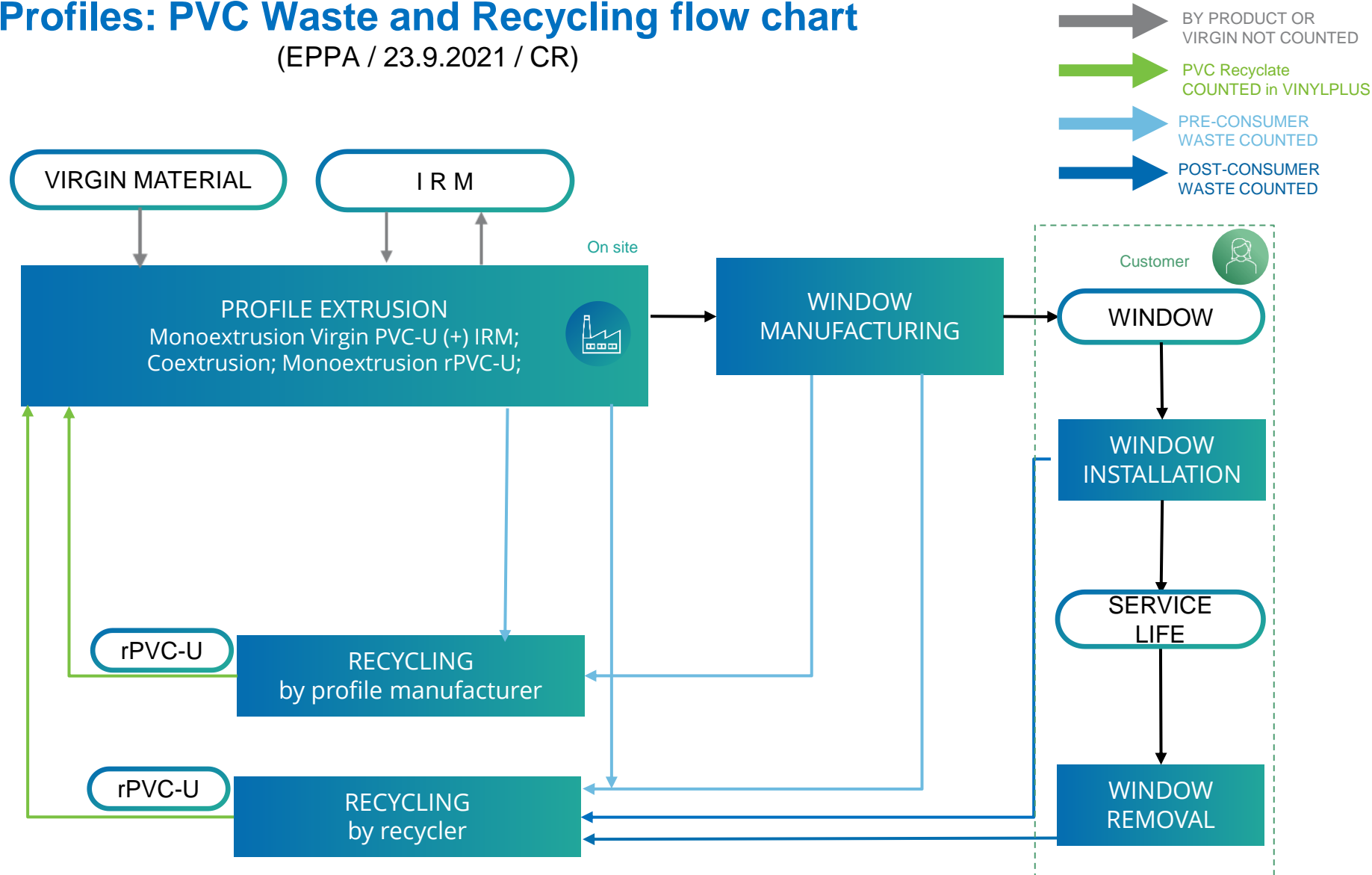
- ✓ Post use windows, shutters, claddings etc, but without metal parts, reinforcement, handles or glazing
- ✓ Installation waste

Examples include waste from:

- ✓ Deconstruction / demolition
- ✓ Sorting companies for B + C waste
- ✓ Municipal waste sites
- ✓ Waste management companies
- ✓ Dismantling by window manufacturers

# Profiles: PVC Waste and Recycling flow chart

(EPPA / 23.9.2021 / CR)



# Pipes: Interpretation of Recycled PVC<sup>1</sup>

## (TEPPFA / 23.9.2021 / LD)

RECYCLED PVC is prepared by processing PVC waste for the original purpose or other purposes, excluding energy recovery and fuel production.

### By-Product – not counted / excl.

*prEN 14541-1:2021 refers to reworked material which is comparable with VinylPlus “By-Product”*

REWORKED material: plastics material from rejected unused products or trimmings capable of being reclaimed within the same process that generated it.

Note 1 to entry: Reworked material does not change the status of the feedstock.

Note 2 to entry: This definition does not cover the conditions for the use of reworked material, which can be found in the applicable product standard.

Note 3 to entry: Previously referred to as “own reprocessed material”.

### Pre-consumer waste – counted / incl.

Plastics material diverted from the waste stream during a manufacturing process, excluding by-product / reworked (plastic) material

Note 1 to entry: Previously referred to as “post-industrial material”.

Note 2 to entry: Different categories of pre-consumer material may be considered in the applicable product standard.

### Post-Consumer waste –counted / incl.

Plastics material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose

Note 1 to entry: This includes returns of material from the distribution chain.

Note 2 to entry: Different categories of post-consumer material may be considered in the applicable product standard.

<sup>1</sup>Recycling definitions for plastic pipes are defined in prEN14541-1:2021. This prEN is based on EN ISO 472:2013, but rephrased to accommodate the needs for the plastic piping systems.

# Pipes: TEPPFA definitions - Reworked / By product and pre-consumer waste

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## Reworked material / By-product

1. Scrap that is reprocessed internally, or externally in a closed loop recycling system, which is used in the same process from which the scrap was generated. E.g. injection moulding to injection moulding or extrusion to extrusion.
2. All injection moulding is one process, All extrusion is another process – irrelevant of being single wall, structured wall, or spirally wound etc.

## Pre-consumer material

1. Any internal waste recycled either internally or externally that is used in a different process to that which it originates from is classed as pre-consumer.
2. All internal waste recycled by an external reprocessor without a closed loop recycling system to guarantee control of the process is classed as pre-consumer.
3. All internal waste recycled by an external reprocessor which undergoes any form of modification, other than a colour change, is classed as pre-consumer.

Note: An external recycler or reprocessor is a company not owned by the direct waste generating company, and not owned by the ultimate parent of the waste generating unit.

4. Any material bought in from an external company which has not been used for its final purpose is classed as pre-consumer.

## Pipes: TEPPFA definitions – Examples part 1

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1. An extrusion line for a PE pressure pipe is started. The first meters of the PE pressure pipe are out of spec (dimensions) and shredded to granulate material. This material is used for the same pressure PE pressure pipe in the same production line and is defined as reworked material / by-product
2. As example 1, and the material is used for the same PE pressure pipe, but in a parallel extrusion line for a different pipe diameter and is defined as reworked material / by-product.
3. As example 1 and 2, but the cut-offs are sent to an external company that shreds the cut-offs to granulate and ships the granulate back to the pipe manufacturer to be used for the same PE pressure pipe. The external company guarantees to keep the material separated from other streams and has an adequate quality control system in place. The material is defined as reworked material / by-product.
4. As example 3, but the external company cannot prove and guarantee that the granulate is solely from the producers PE pressure pipes. The material is defined as pre-consumer material as it is not under full control of the manufacture.
5. Pressure fittings are produced in an injection moulding process. The scrap is shredded and used for producing sewer fittings, and in a different dimension. The material is defined as reworked material / by-product.
6. Fittings are produced in an injection moulding process. The scrap is shredded and used for producing pipes for the same system and application. The material is defined as pre-consumer as it now is used in a different process
7. A production batch of Soil & Waste pipes has been rejected by the quality as they do not live up to the tolerances on wall thickness. The pipes are shredded, and the material are blended into virgin material for producing twin wall sewer pipes. The material is defined as reworked material / by-product.
8. Gray fittings for sewer pipes are injection moulded and the start-scrap is shredded. The material is blended into virgin materials and additional black colourant (carbon black) and the blend is used in an injection moulding process for production of black manholes. The material is defined as reworked material / by-product as the treatment process has changed colour only and not quality

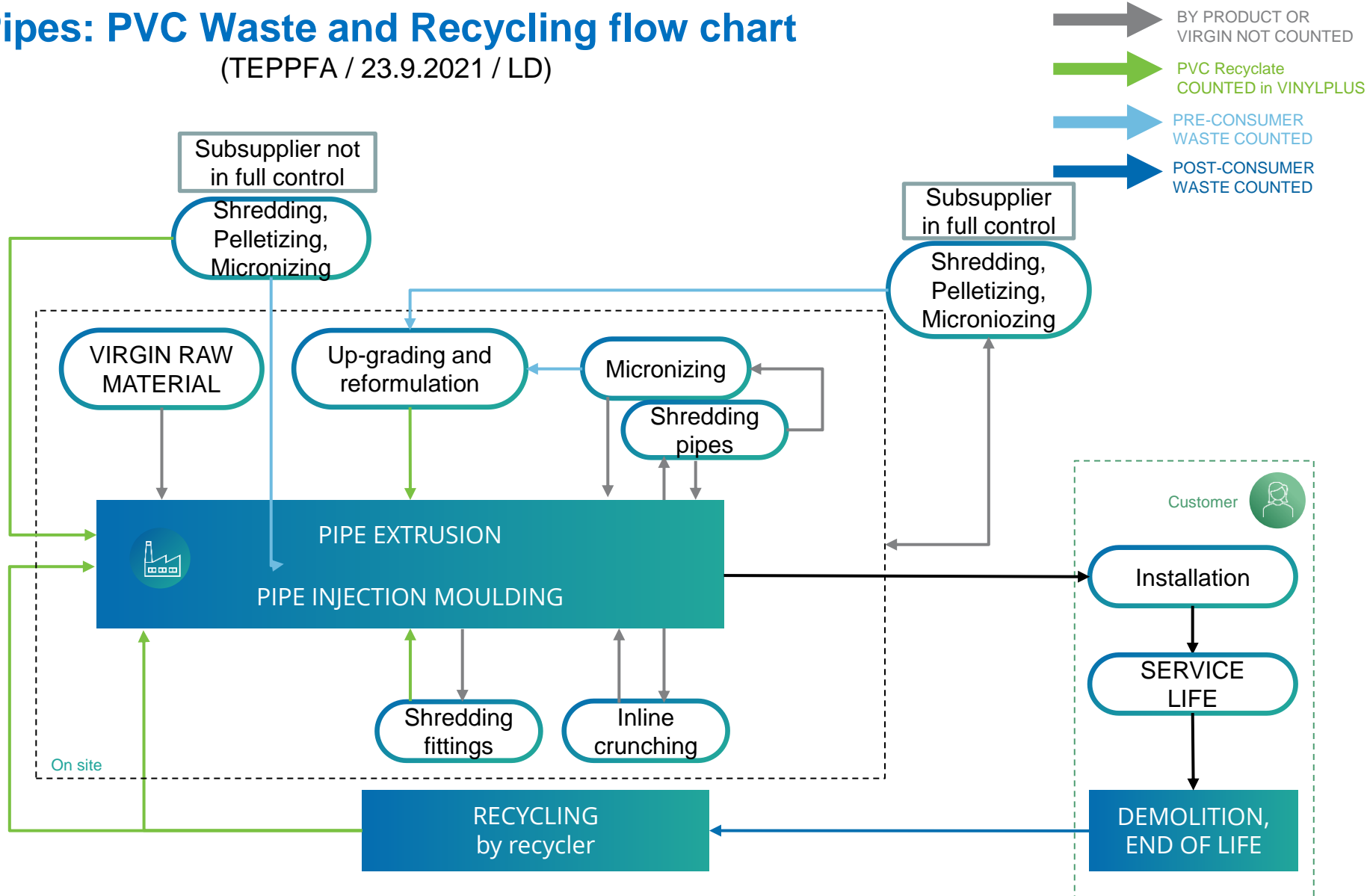
## Pipes: TEPPFA definitions - Examples part 2

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9. Sewer pipes are delivered to the wholesaler. After some days it is recognized that the dimensions of the pipes are out of specification. The pipes are sent back to the pipe manufacturer, who shreds the pipes to granulate and use the material for the next production of the same type of pipes. The material is defined as [pre-consumer](#) as it is not under full control of the manufacture
10. As example 8, but pressure pipes. After some days it is recognized that the pressure pipes are out of specification due to the material being out of spec. The pipes are sent back to the pipe manufacturer, who shreds the pipes to granulate. The material cannot be used for a same application again. It can be used for the production of plastic manholes due to the lower material requirement in these products. The material is defined as [pre-consumer](#) as it now has lost quality.
11. Soil & Waste pipes are stored outside for a long time and cannot be installed because of material damage due to UV radiation. The material needs reprocessing including determination of OIT, sorting, grinding, and an addition of stabilizer and pigments. After recycling, the material has the quality level of a virgin material and can be used for the production of the same Soil & Waste pipe. The material is defined as [pre-consumer](#) as it has undergone a treatment to improve the quality
12. Pipes are sold to an installer. The installer returns his offcuts to the wholesaler who returns the offcuts to the manufacturer for recycling. Material is [post-consumer](#) as it has reached its final consumer
13. Plastic pipes have been received from a wholesaler. The pipes are shredded to granulate and then used by a pipe manufacturer to produce similar sewer pipes. The material is defined as [post-consumer](#).

# Pipes: PVC Waste and Recycling flow chart

(TEPPFA / 23.9.2021 / LD)





# Flooring: Interpretation of Recycled PVC

(ERFMI / 23.9.2021 / JG)

RECYCLED PVC is prepared by processing PVC waste for the original purpose or other purposes, excluding energy recovery and fuel production.

## **By-Product – not counted / excl.**

- Processing material that is re-used immediately or continuously in the SAME process that generated the waste (IRM)

## **Pre consumer waste – counted / incl.**

- ✓ Processing waste that has been substantively adapted/reformulated prior to reprocessing (e.g.waste which is re-mixed with other compatible waste or virgin materials before being reintroduced into the same or separate sub-process. Waste which has to be disassembled by separating layers, before being reintroduced into any part of the process).
- ✓ Processing waste recycled and used in other internal processes or used by other flooring manufacturers or other converters.

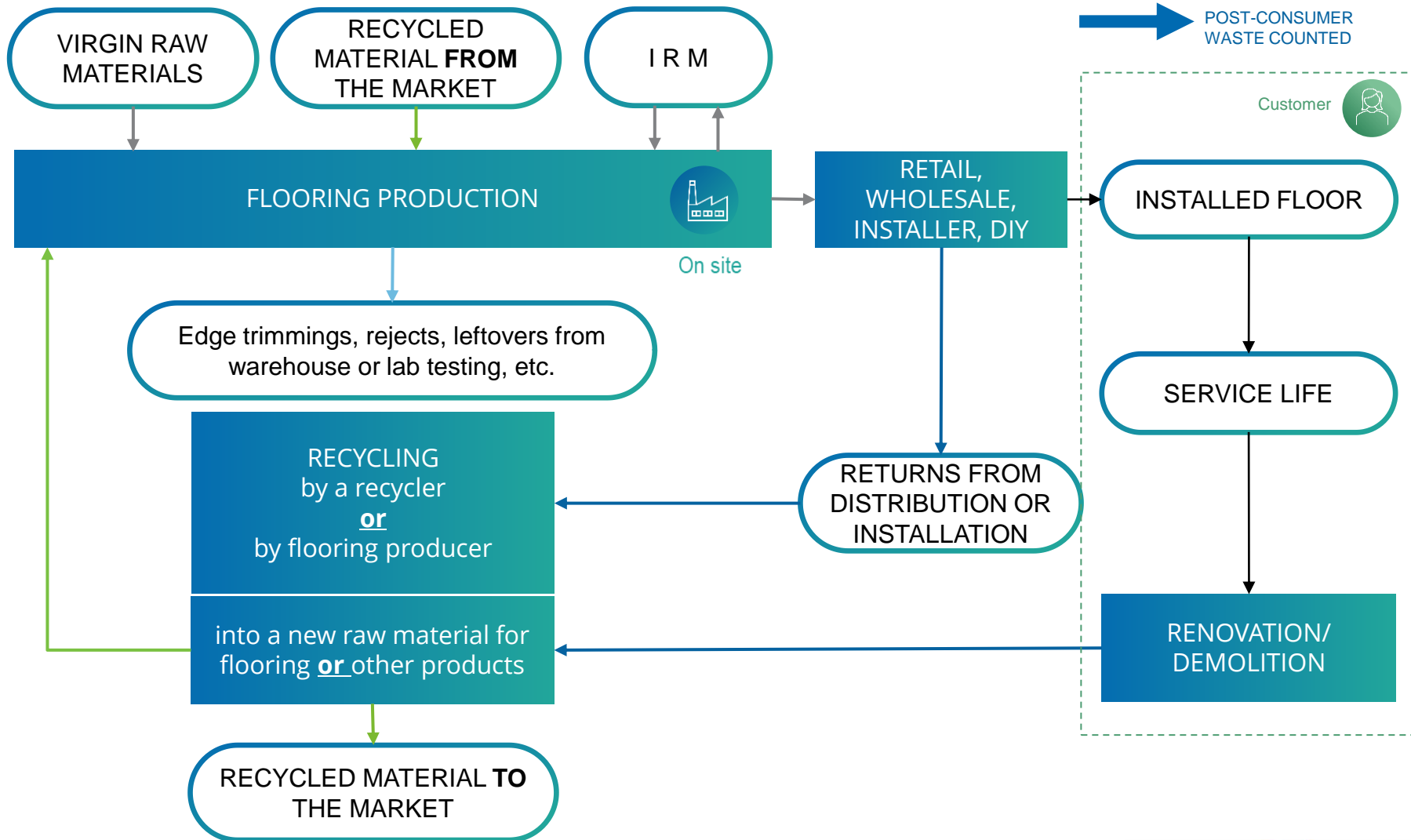
## **Post-Consumer waste –counted / incl.**

- ✓ Post-use waste from used flooring after renovation or demolition
- ✓ Off cuts collected from the site of flooring installation
- ✓ Waste from sorting companies for B+C waste, municipal waste sites, waste management companies
- ✓ Return material from the distribution chain

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# Flooring: PVC Waste and Recycling flow chart

(ERFMI / 23.9.2021 / JG+JZ)



# Roofing and waterproofing: Interpretation of Recycled PVC

(ESWA / 23.9.2021 / BM)

RECYCLED PVC is prepared by processing PVC waste for the original purpose or other purposes, excluding energy recovery and fuel production.

## By-Product – not counted / excl.

- Processing material that is used immediately or continuously in the same process that generated it (IRM)
- Processing material including kneading, clippings, sweepings, edge trims,

## Pre consumer waste – counted / incl.

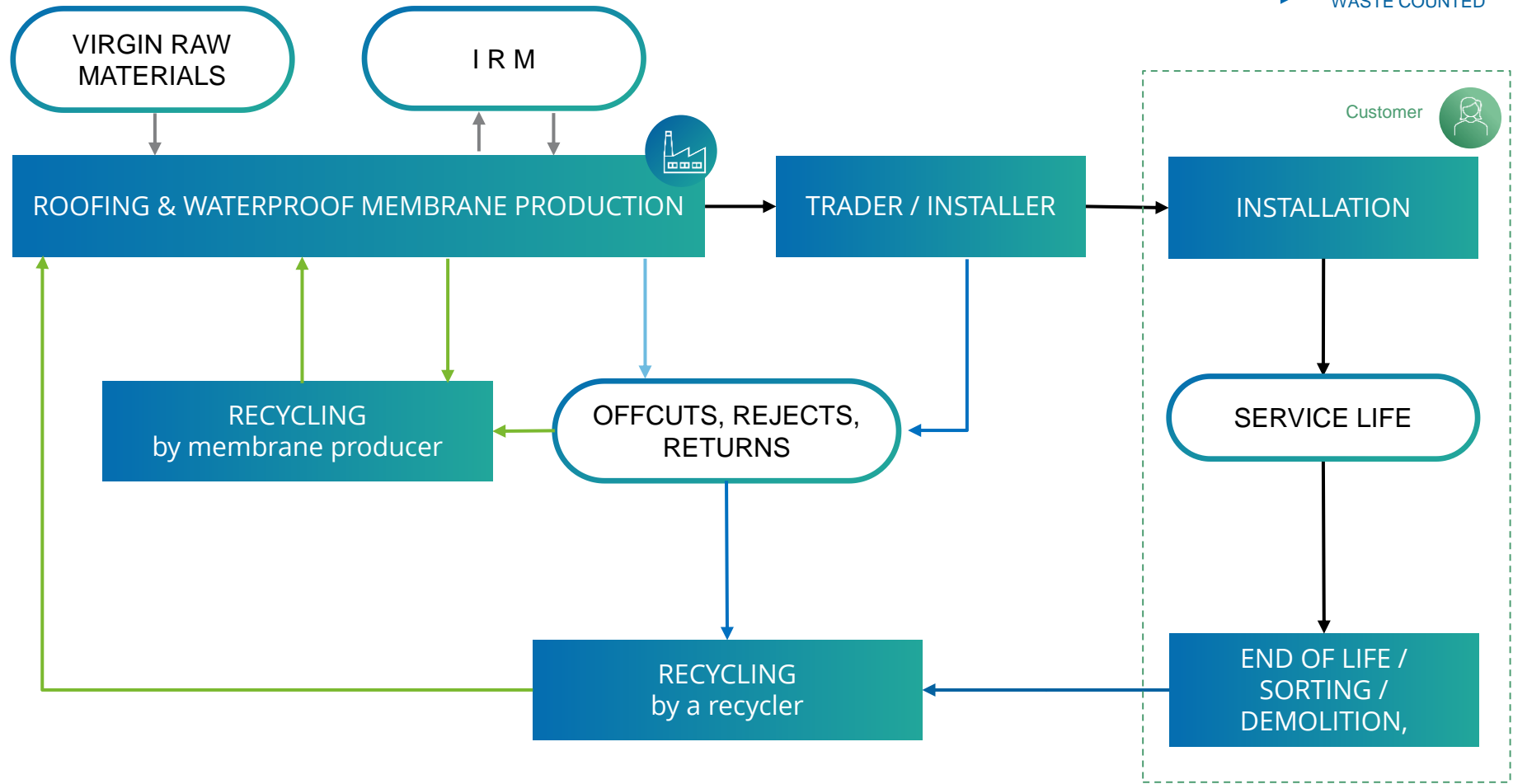
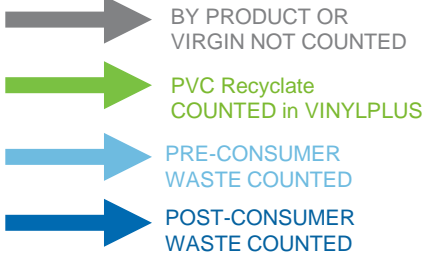
- ✓ Deselected products, quality failures with different defined mixed formulations
- ✓ Storage yard waste material at manufacturer
- ✓ Material that has been substantively adapted/reformulated prior to reprocessing
- ✓ Waste from Composites (PVC/PET)

## Post-Consumer waste –counted / incl.

- ✓ Installation waste / off cuts collected from the site of installation
- ✓ Post-use waste after renovation or demolition
- ✓ Waste from sorting companies for B+C waste, municipal waste sites, waste management companies
- ✓ Return material from the distribution chain

# Roofing: PVC Waste and Recycling flow chart

(ESWA / 23.9.2021 / BM)



# Films and Sheets: Interpretation of Recycled PVC

(IVK and VFSE / 23.9.2021 / KA and EI)

RECYCLED PVC is prepared by processing PVC waste for the original purpose or other purposes, excluding energy recovery and fuel production.

## By-Product – not counted / excl.

- Calender and extruder processing material that is re-used immediately or continuously in the same process that generated it (IRM)
- Processing material including kneading, sweepings, clippings, edge trims, hot grinding

## Pre consumer waste – counted / incl.

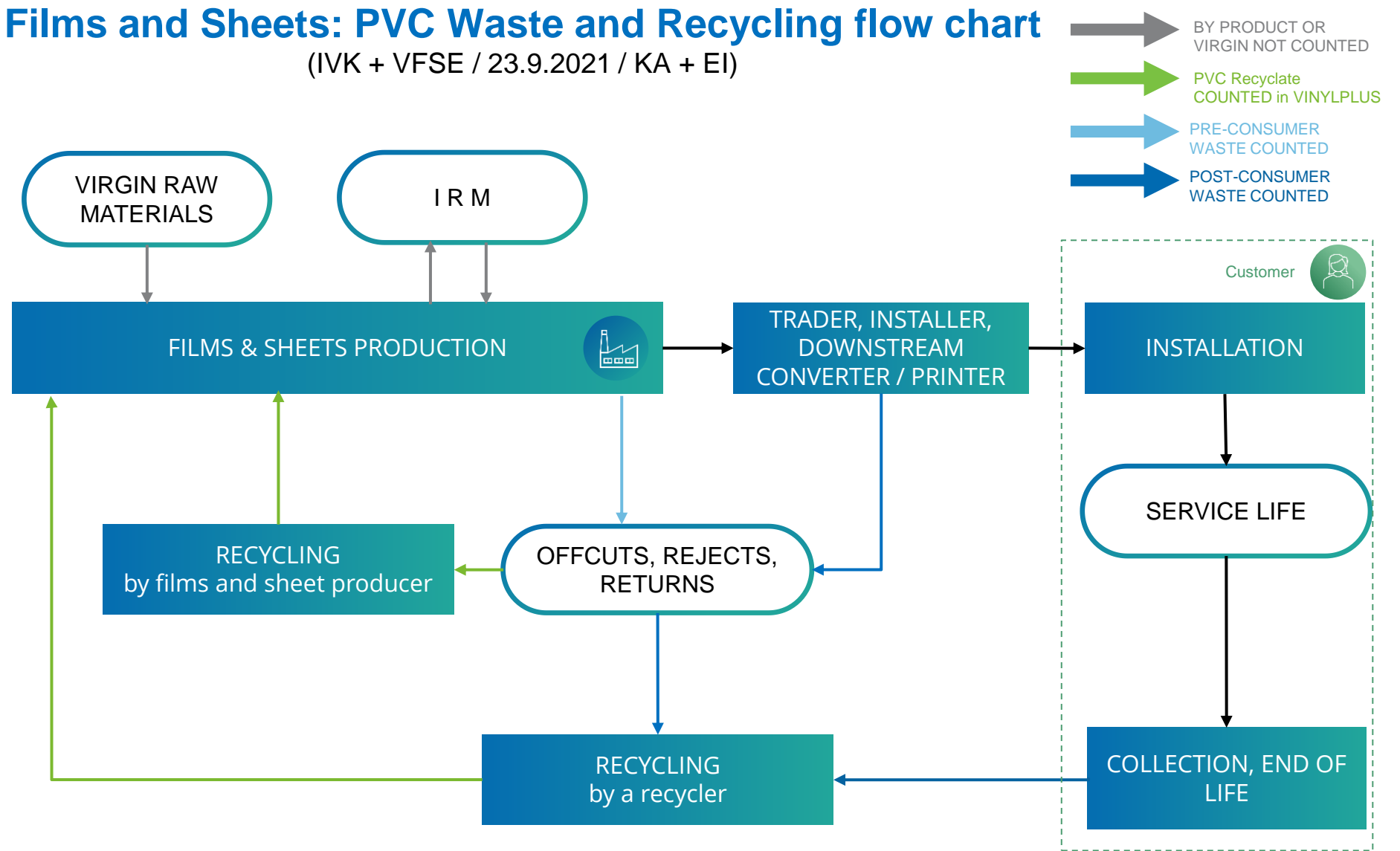
- ✓ Deselected material, quality failures with different defined mixed formulations
- ✓ Material substantively adapted / reformulated prior to reprocessing, cold grinding
- ✓ Storage yard waste material
- ✓ Waste from Composites (PVC/PE, PVC/PVDC, PVC/Substances Materials)

## Post-Consumer waste –counted / incl.

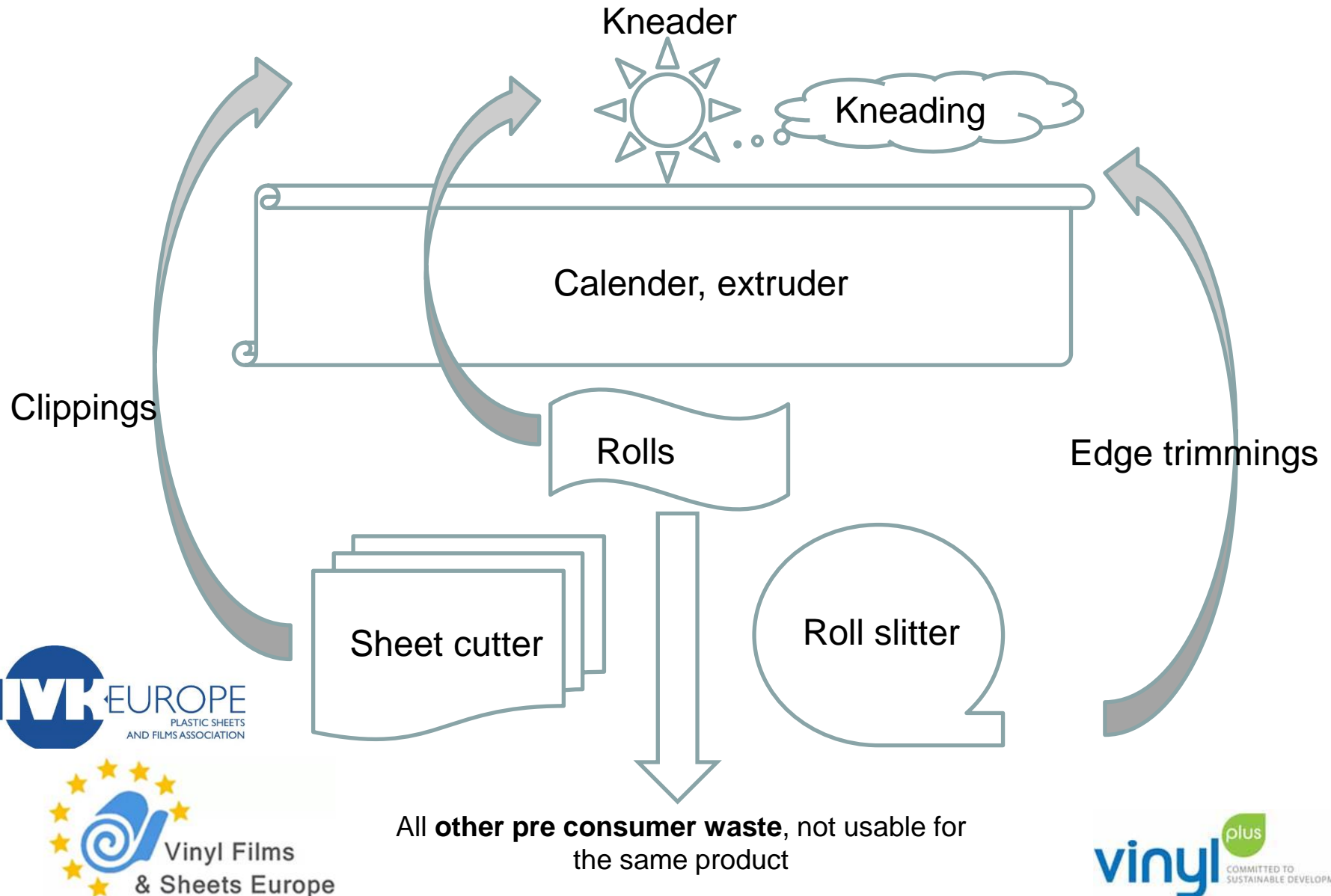
- ✓ Post-use waste
- ✓ Waste from sorting companies for B+C waste, municipal waste sites, waste management companies
- ✓ Return material from distribution
- ✓ Waste from and to the following industries:
  - ✓ Monofilms = PVC films
  - ✓ Laminates = PVC plates
  - ✓ Coated = PVC sheets
  - ✓ Painted/metallized / printed = PVC articles

# Films and Sheets: PVC Waste and Recycling flow chart

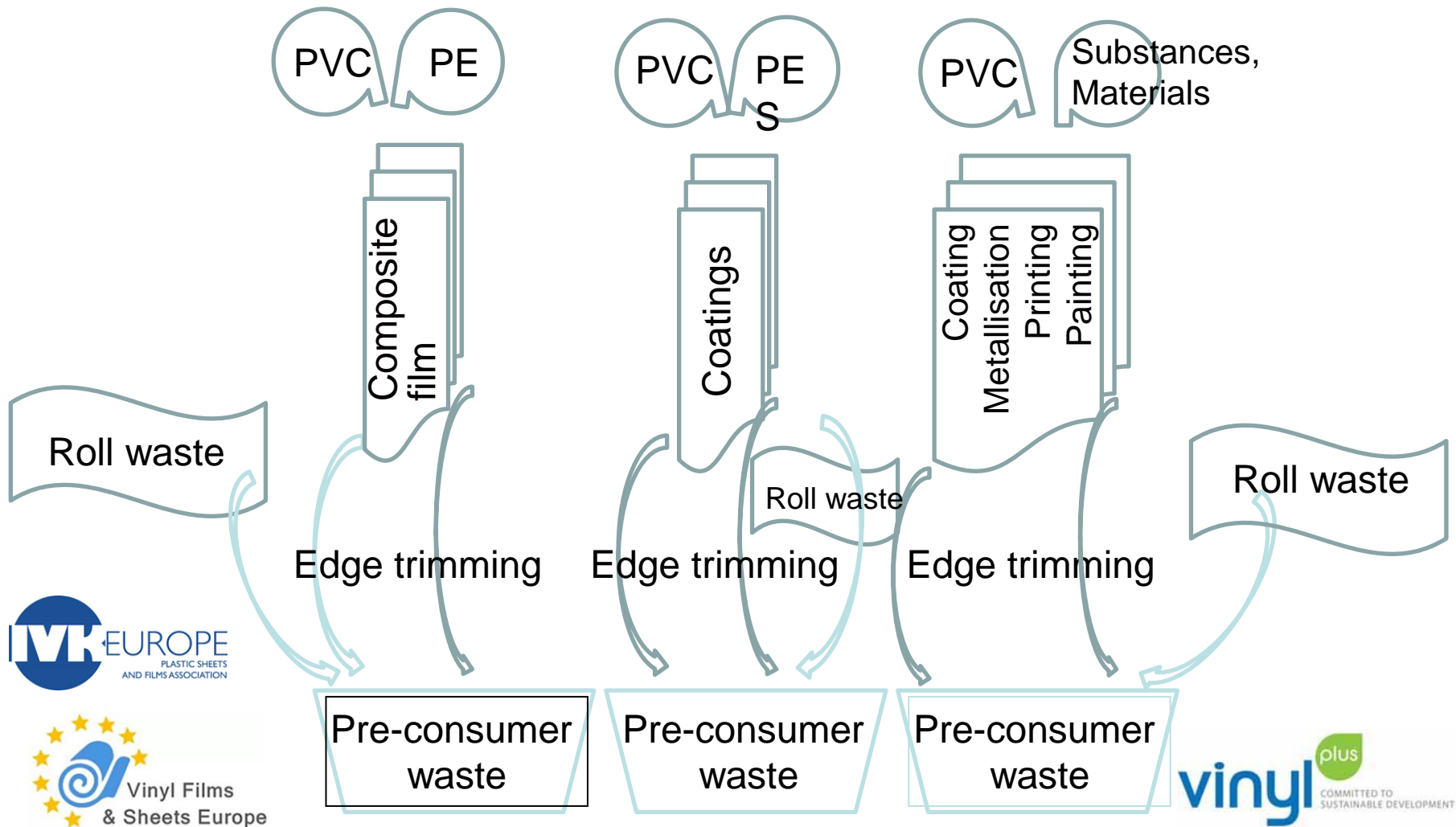
(IVK + VFSE / 23.9.2021 / KA + EI)



# Films and Sheets: By product / IRM waste of rigid and soft PVC films, **not counted in** the VinylPlus self-commitment

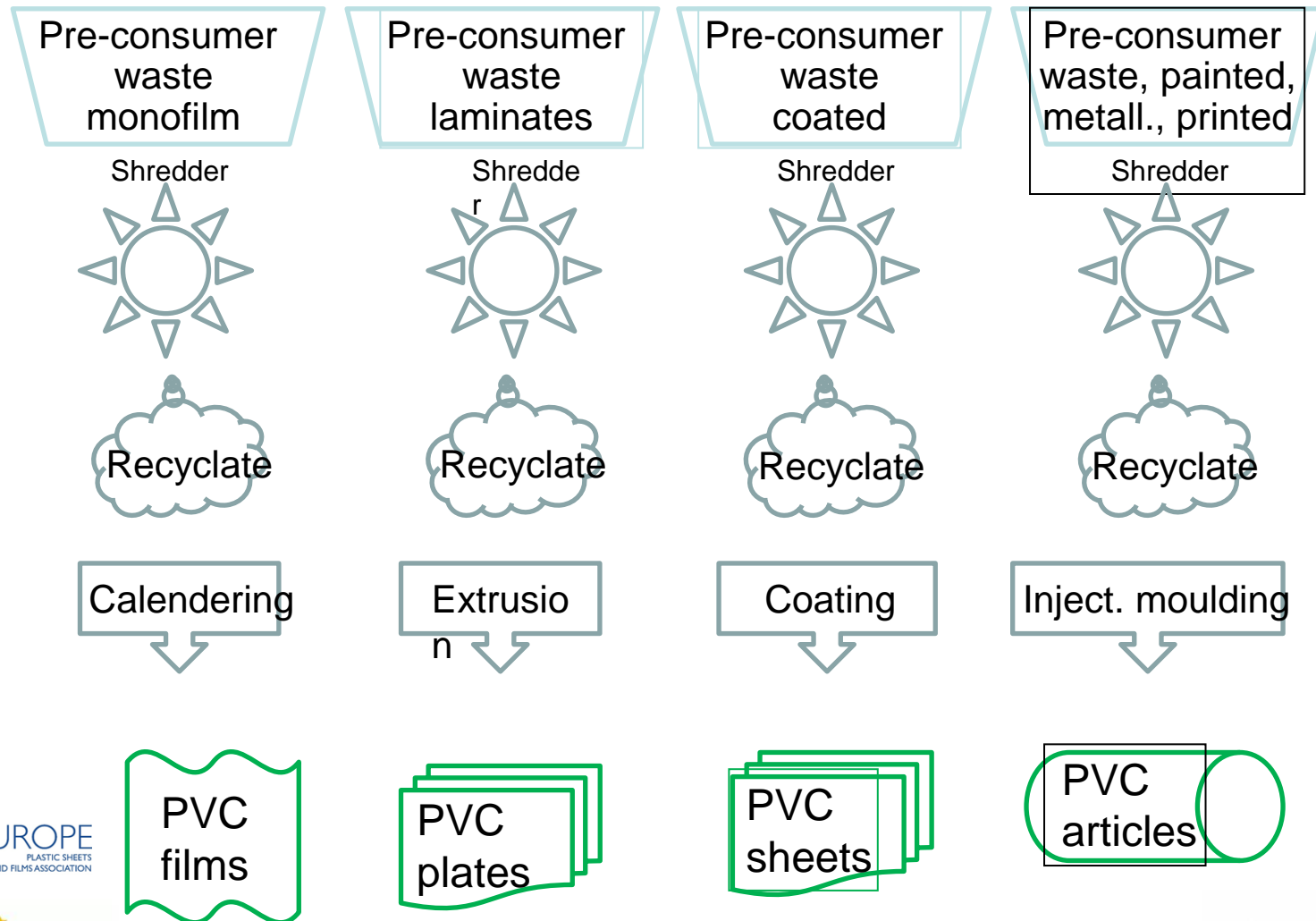


# Films and Sheets: Processing / Pre-consumer waste, **counted** in the VinyPlus self-commitment





# Films and Sheets: Processing / PVC Pre-consumer waste and re-use in new products



# Cables: Interpretation of Recycled PVC

(PVC 4 Cables / 23.9.2021 / CC)

RECYCLED PVC is prepared by processing PVC waste for the original purpose or other purposes, excluding energy recovery and fuel production.

## By-Product – not counted / excl.

- Extrusion processing material that is re-used immediately or continuously in the same process that generated it (IRM)
  - Start up scrap extruded directly back into the extruder

## Pre consumer waste – counted / incl.

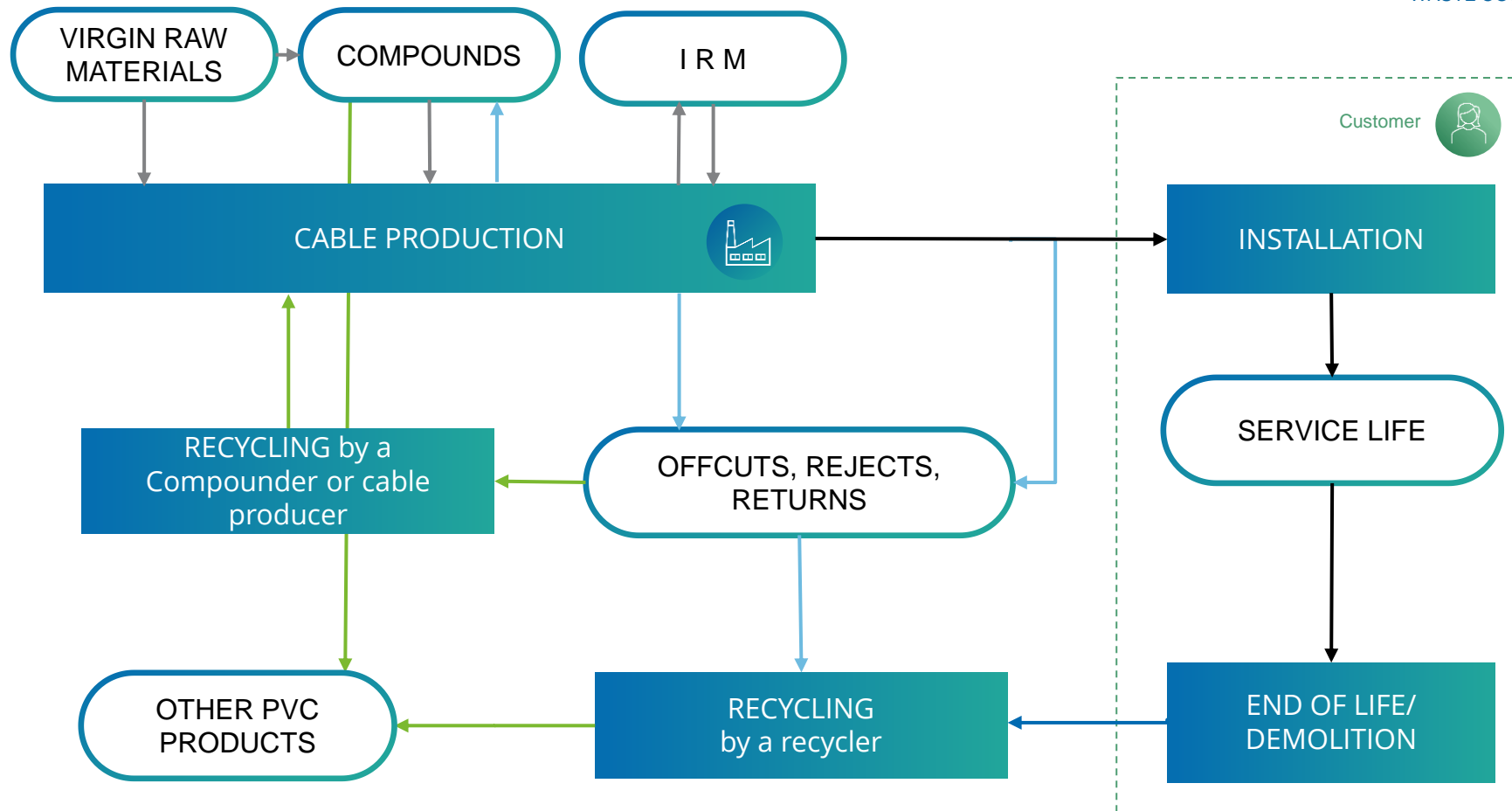
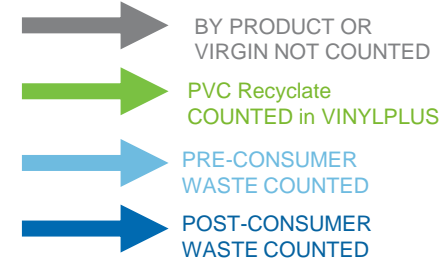
- ✓ Deselected material, quality failures with different defined mixed formulations
- ✓ Storage yard material including sweepings and chips
- ✓ Material contaminated with metal
- ✓ Material substantively adapted / reformulated prior to reprocessing, cold grinding, needed some specific treatment

## Post-Consumer waste –counted / incl.

- ✓ Post-use and end of life waste
- ✓ Waste from demolition industry
- ✓ Scrap cable from electrical industry which has been stripped of copper etc.
- ✓ Waste from sorting companies for B+C waste, municipal waste, waste management companies
- ✓ Return material from distribution

(PVC 4 Cables / 23.9.2021 / CC)

(PVC 4 Cables / 23.9.2021 / CC)



## PVC 4 Cables