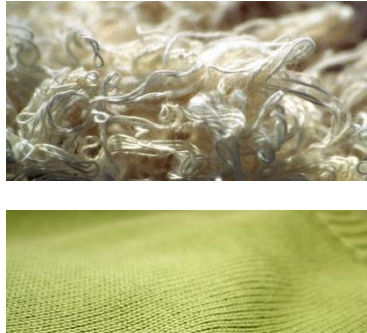




# RECYCLED MAN-MADE FIBERS

Performance Days, May 9 2012

# OUR MISSION



**We INSPIRE and EQUIP people  
to accelerate sustainable practices  
in the textile value chain.**



**TextileExchange**  
Creating Material Change

**Expertise, knowledge and information**



Relevant **publications, tools, and trainings**



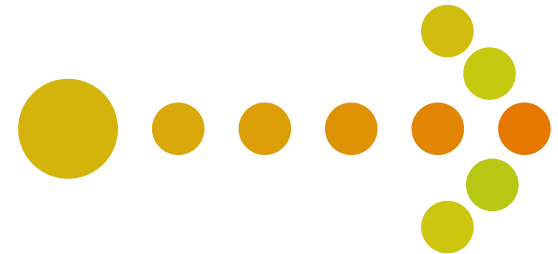
A **platform** for peer to peer discussion



A committed community to **network** and engage with



A **contribution** to a more sustainable textile industry



# SOME OF OUR MEMBERS



EILEEN FISHER



WILLIAMS-SONOMA

L.L.Bean®

Gap Inc.

portico  
BRAND GROUP

H&M



NORDSTROM

adidas®  
GROUP

Clothing at TESCO  
F&F

G-STAR RAW

ASOS  
discover fashion online



LEVI STRAUSS & CO.

hoss  
INTROPIA

deckers  
OUTDOOR CORPORATION

prAna

otto group



anvil®  
Earth-friendly Sportswear

HUNTSMAN  
Enriching lives through innovation

patagonia®

YOUR M&S

WOOLWORTHS W

UNIFI

INDITEX



ADOLFO DOMINGUEZ

POTTERY BARN

Clariant

LEADING

INFORMING

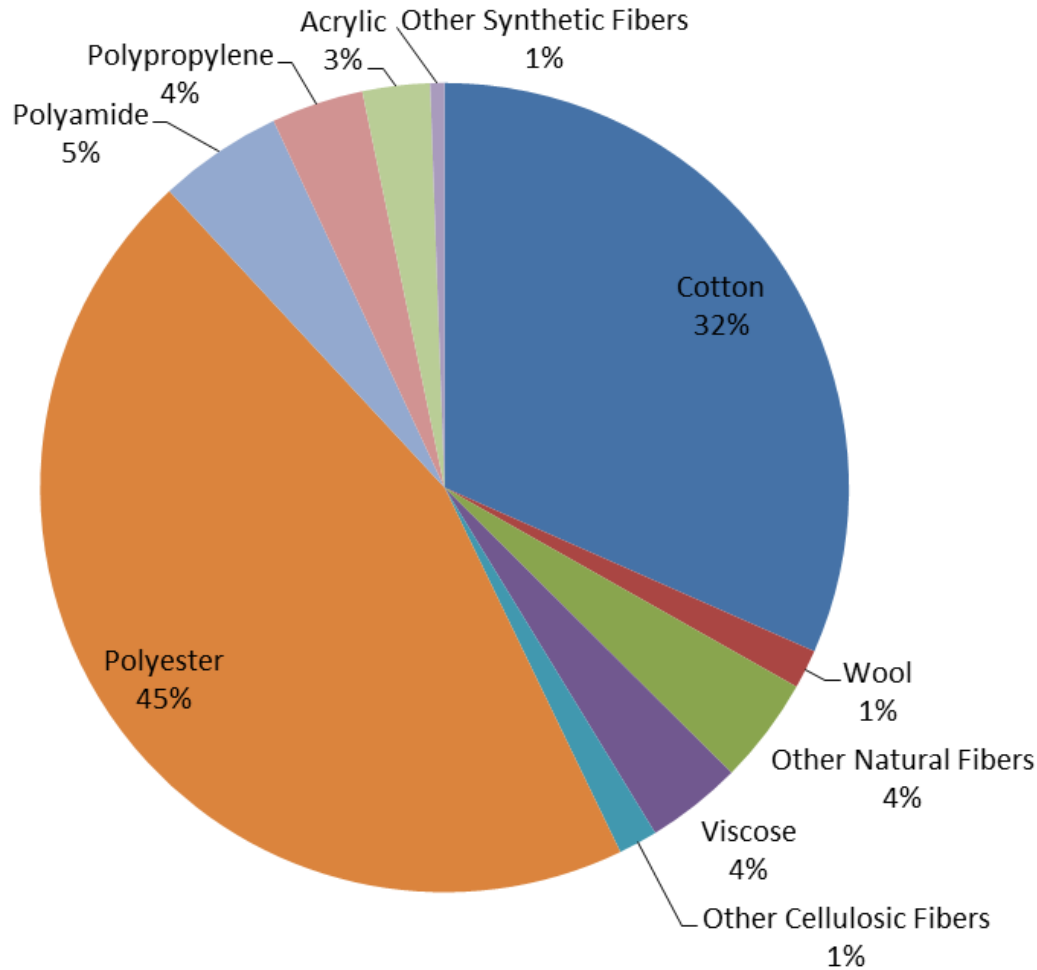
CONNECTING

# AGENDA

- 1- CONTEXT**
- 2- DEFINITIONS**
- 3- PRINCIPLES**
- 4- RECYCLING PROCESSES**
- 5- CERTIFICATION**
- 6- CONCLUSIONS**

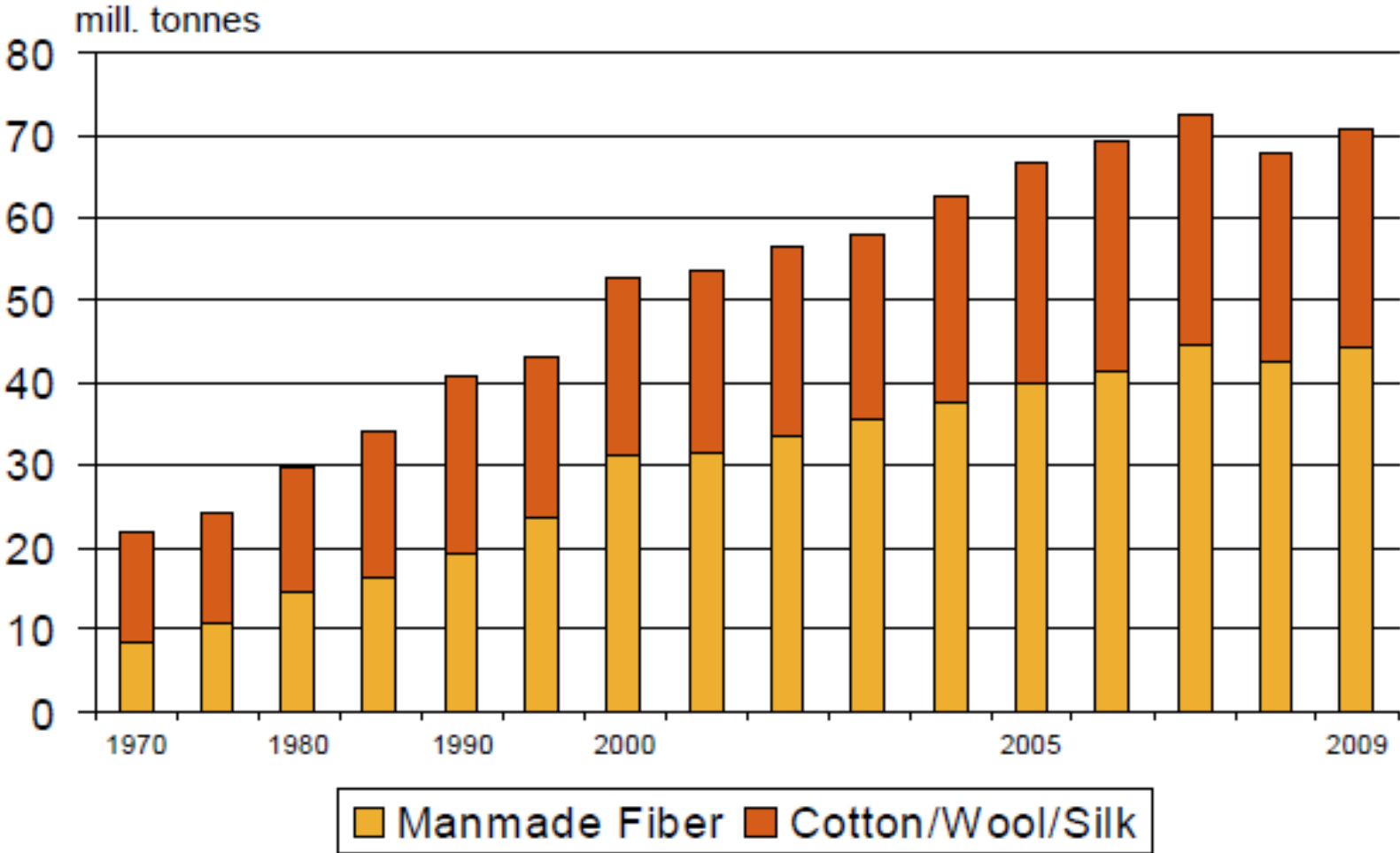
# CONTEXT

# GLOBAL FIBER PRODUCTION 2009-2010



Total fiber production: 70.5 Mo tons

# GLOBAL FIBER PRODUCTION 1970 - 2009



Source: The Oerlikon Textile "The Fiber Year 2009/10 Report"

# RAW MATERIALS: TRENDS

Increasing global demand

Scarcity of raw materials

Raw materials price volatility

Cost increases

More environmental awareness

# RELEVANCE OF RECYCLED MATERIALS

- Better resource management
- Increased efficiencies
- Raw material diversification
- Interesting environmental profile through:
  - Avoiding the burden associated with the manufacture of new raw material
  - Avoiding the disposal of waste

**Extracting the maximum benefits from raw materials and generating the minimum amount of waste**

# DEFINITIONS

## RECYCLED CONTENT: DEFINITION BY FTC (FEDERAL TRADE COMMISSION)

- A recycled content claim may be made only for **materials that have been recovered or otherwise diverted from the solid waste stream**, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer)
- Any express or implied claim about the specific pre-consumer or post-consumer content of a product or package must be **substantiated**
- For products that are only partially made of recycled material the **percentage of recycled content in the product must be stated clearly** to avoid consumer deception about the amount of recycled content in the finished product.

# RECYCLED CONTENT



## Example 1

A manufacturer routinely collects spilled raw material and scraps left over from the original manufacturing process.

**After a minimal amount of reprocessing**, the manufacturer combines the spills and scraps with virgin material for use in further production of the same product.

A claim that the product contains recycled material is **misleading** since **the spills and scraps are normally reused by industry** within the original manufacturing process, and would not normally have entered the waste stream.

# RECYCLED CONTENT



## Example 2

A manufacturer purchases material from a firm that collects discarded material.

All of the material was diverted from the solid waste stream and is **not normally reused by industry within the original manufacturing process**. The manufacturer includes the weight of this material in its calculations of the recycled content of its products.

A claim of recycled content based on this calculation is **not misleading** as it **would have entered the waste stream if not reused**.

# WASTE STREAMS



## Pre Consumer waste/Post Industrial:

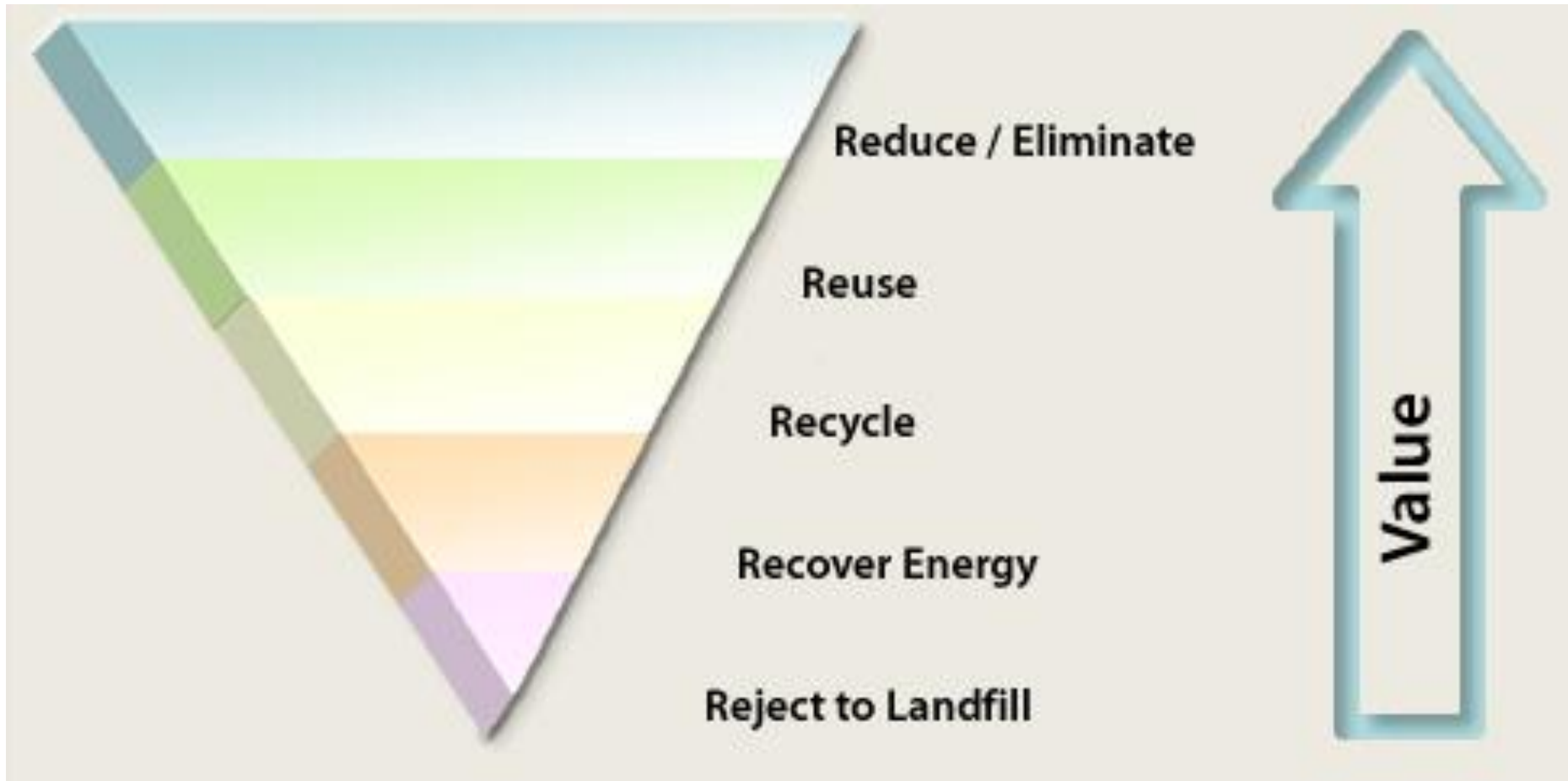
- yarn and fabric manufacture
- garment-making processes
- retail industry

## Post Consumer waste:

- house hold sources

# SOME PRINCIPLES

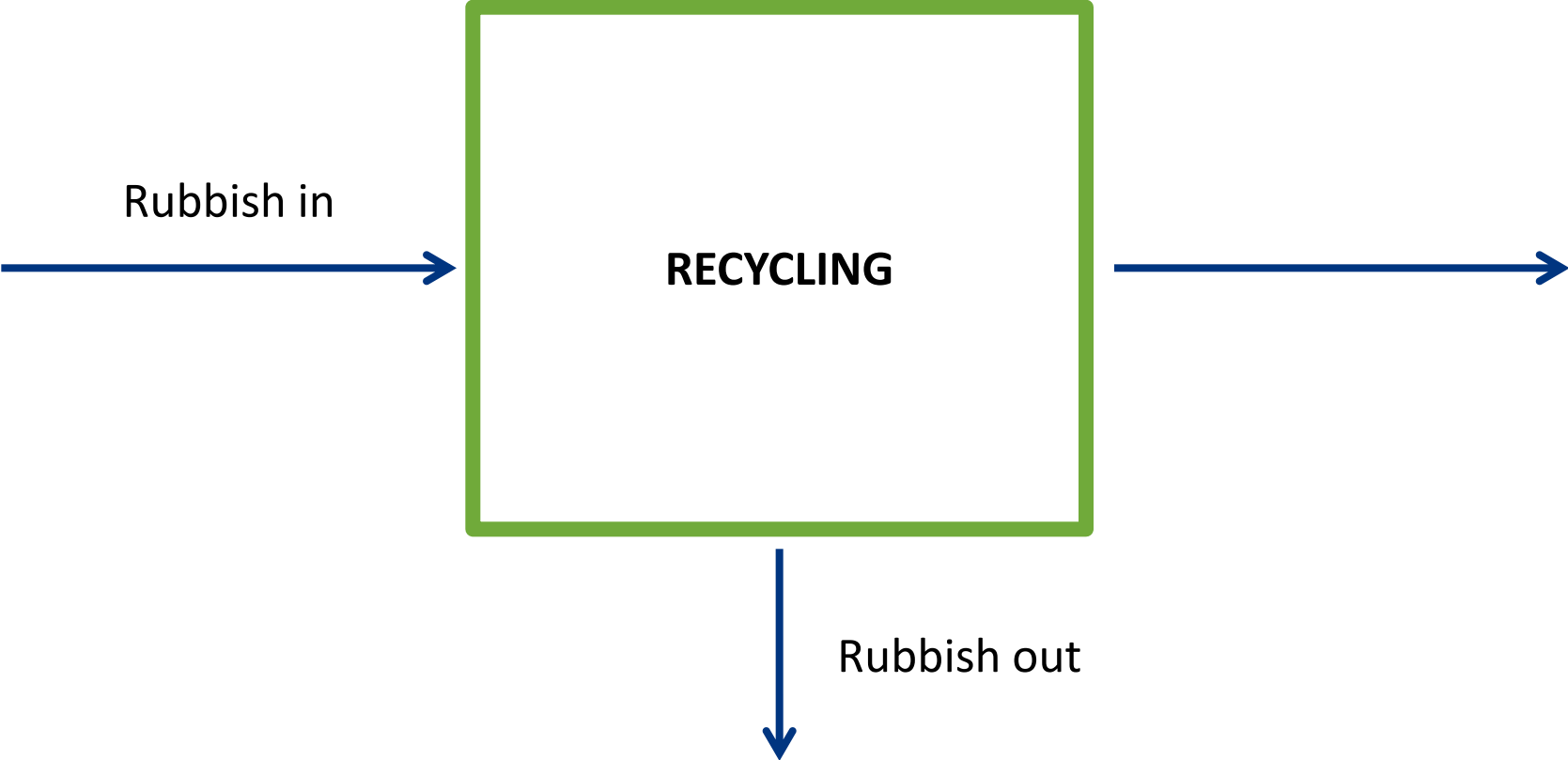
# THE WASTE HIERARCHY



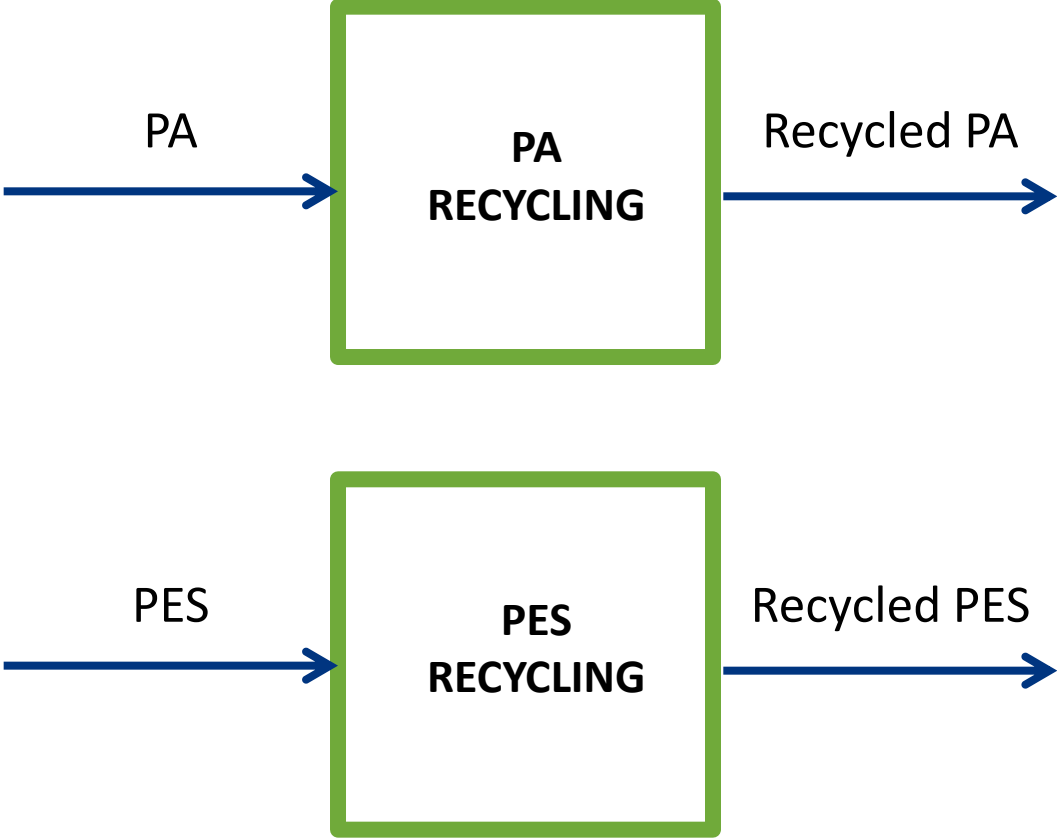
# RUBBISH IN, RUBBISH OUT



# RUBBISH IN, RUBBISH OUT

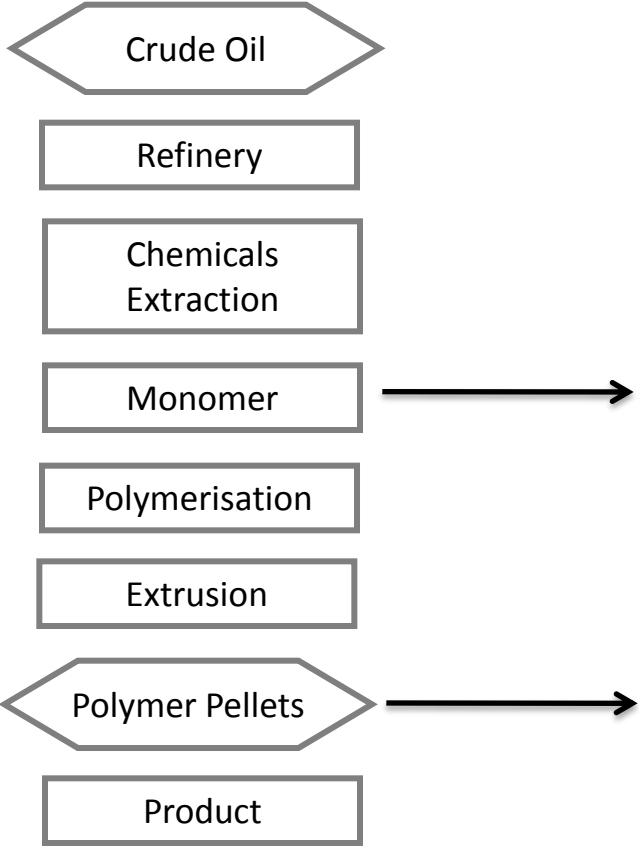



# ONLY ONE MATERIAL AT A TIME





# RECYCLING PROCESS

# VIRGIN PROCESS



**Monomer**   
An atom or a small molecule that may bind chemically to other monomers

**Polymer**   
Consists of an “unlimited” number of monomers. These monomers are typically connected by chemical bonds

**Oligomer**   
Consists of a few monomer units

## INPUT IN VARIOUS FORMS



### Examples of pre consumer waste used:

- yarn and fabric left over, selvedge
- cutting room waste
- Etc.



### Post Consumer waste:

- for polyester: bottles, garments



- for polyamide: fishing nets, carpets, garments



Often combined in differing amounts and possibly including some virgin polymer

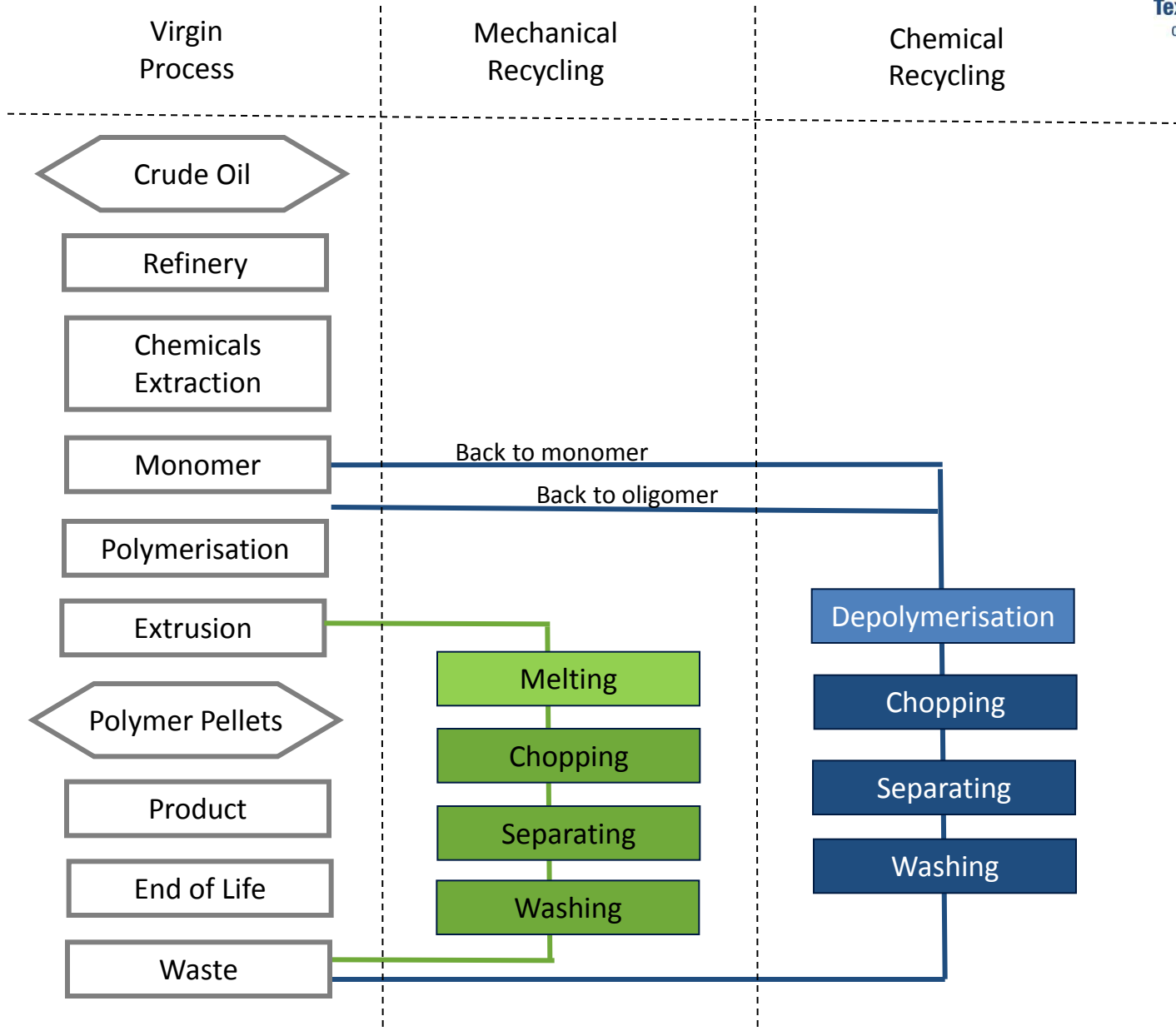


Cap  
**Polyethylene**  
**PE**

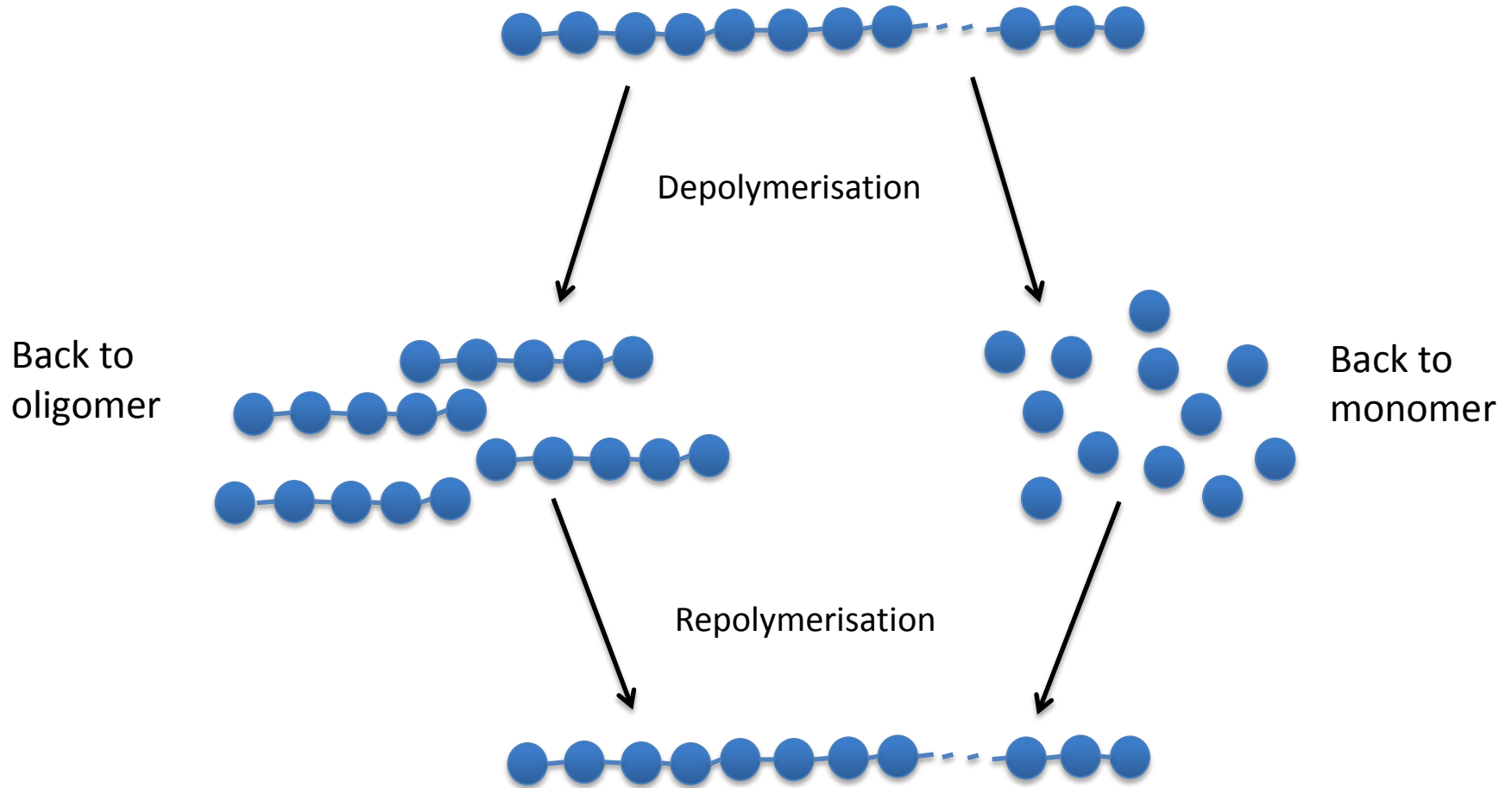
Label  
**Polyvinylchloride**  
**PVC**

Bottle  
**Polyester**  
**PES**

# MECHANICAL AND CHEMICAL RECYCLING



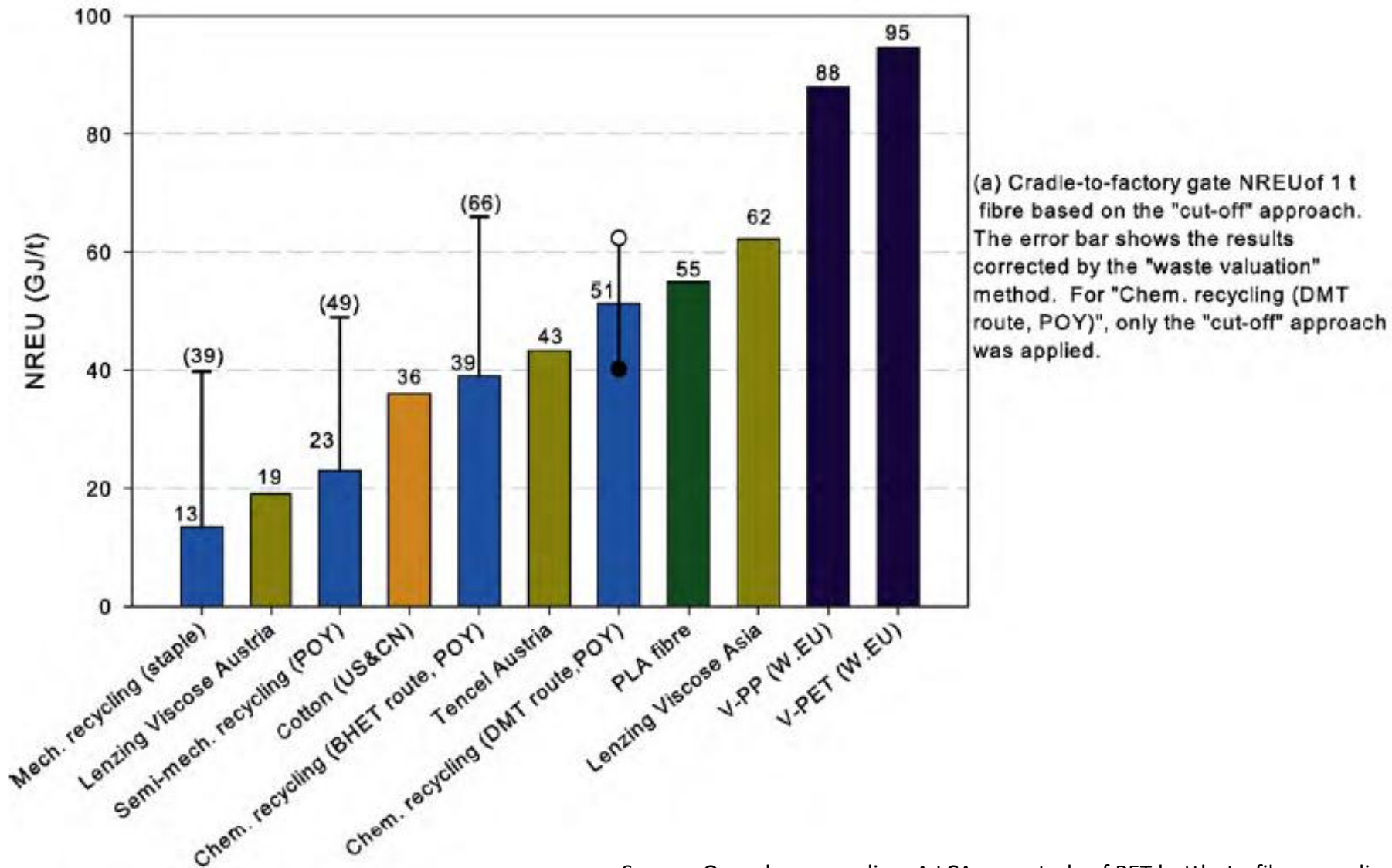
# DEPOLYMERISATION AND REPOLYMERISATION



# COMPARISON

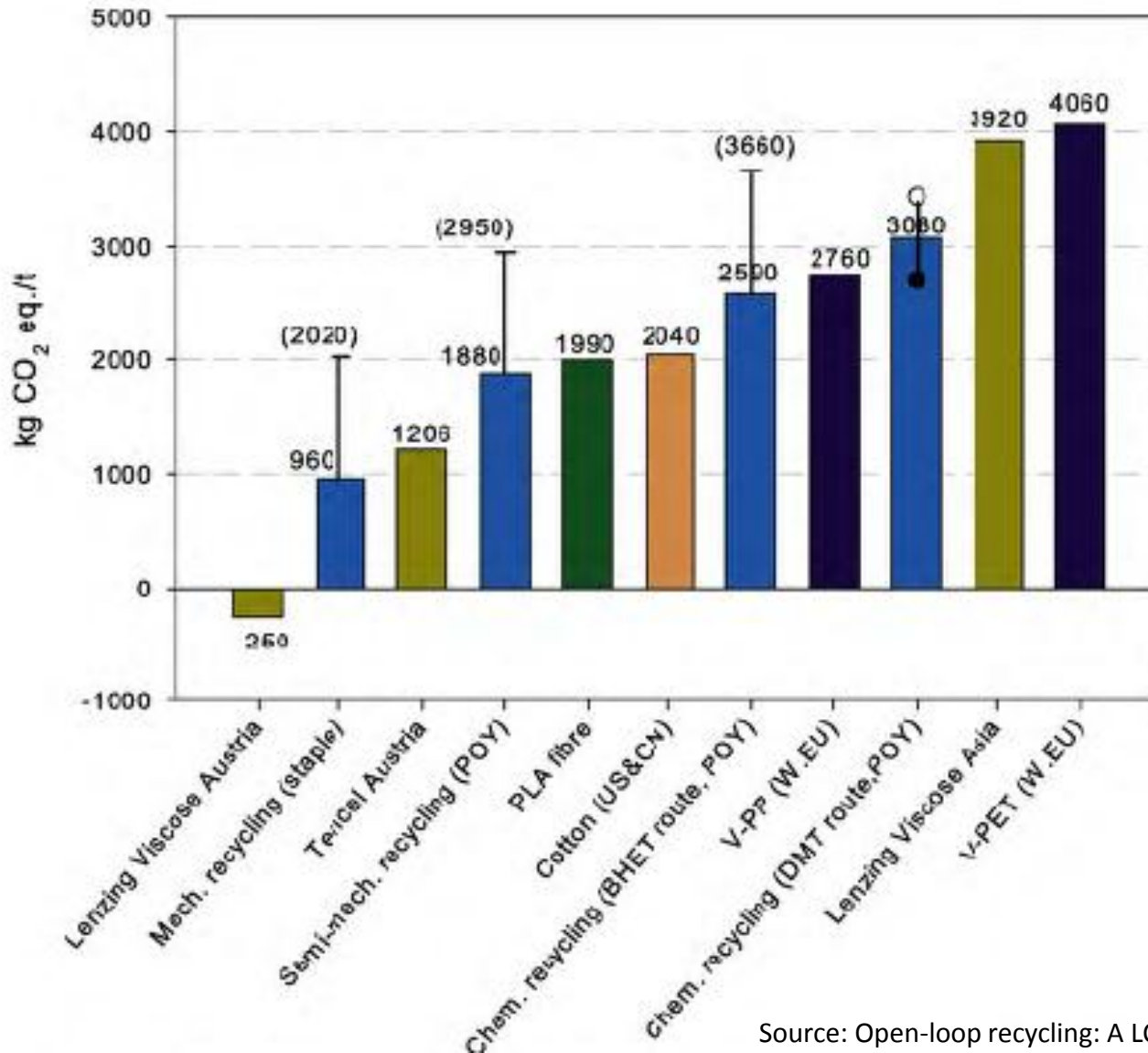
	Mechanical	Chemical (to Oligomer)	Chemical (to Monomer)
<b>Process</b>	Thermal decomposition through melting process	Decomposition into intermediary by chemical reaction	Decomposition into molecules by chemical reaction
<b>Waste stream</b>	Limited: Clear bottles & greige textiles	Limited: Clear bottles & greige textiles	Wider: Coloured goods
<b>Input</b>	Labour Water Energy	Labour Water, Energy Chemicals	Labour Water, Energy Chemicals
<b>Environmental Impact</b>	*	**	***
<b>Impurities</b>	Yes	Yes but limited	No
<b>Quality</b>	No microfiber Possible colour limitations and unevenness	Possible colour limitations	Same as virgin polymer
<b>Close Loop</b>	Materials' life extension	Materials' life extension	Close loop opportunity

# ENVIRONMENTAL IMPACT OF RECYCLED POLYESTER ENERGY



# ENVIRONMENTAL IMPACT OF RECYCLED POLYESTER

## GREEN HOUSE GAS EMISSIONS



(a) Cradle-to-factory gate GWP of 1 tonne staple fibre based on the "cut-off" approach. The error bar shows the results corrected by the "waste valuation" method. The carbon sequestration of bio-based fibres has been taken into account. For "Chem. recycling (DMT route, POY)" only the "cut-off" approach was applied.

# AVAILABILITY

## Recycled Polyester Spinners

- Far East: Taiwan, China, Japan, Korea
- Europe
- USA

Large quantities available  
Growing market

## Recycled Polyamide Spinners

- Far East: Japan, Korea, Taiwan (in development)
- Europe
- USA

Limited amount of suppliers  
Limited capacities

# END USE

## Generally similar to virgin polymers

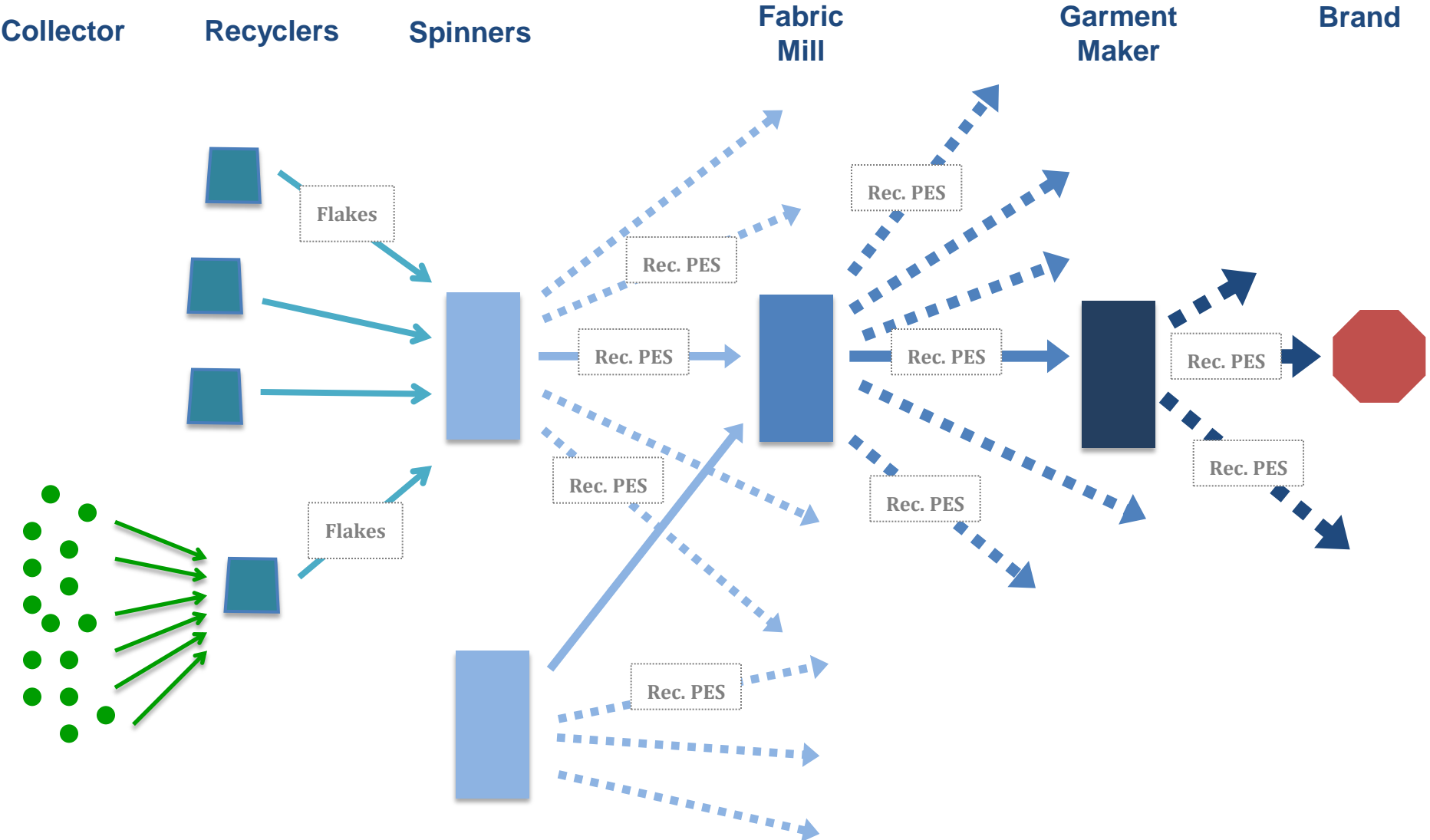
Recycled materials can be turned into a wide range of products for apparel, accessories and footwear

- Textiles: knits, woven, tapes, labels, cords, laces
- Molded/Injected items: zippers, buttons, pullers, stoppers
- Non woven: waddings, interlinings
- Others: packaging, sewing threads, ...etc



# CERTIFICATION

# ANY EXPRESS OR IMPLIED CLAIM MUST BE SUBSTANTIATED



"Certification" is an activity by which a **recognized party**, independent, **gives a written assurance** that an organization, a process, a service, a product are consistent with **requirements specified in a standard.**

Source: AFNOR



# STANDARDS

## Local Standards






## International Standards



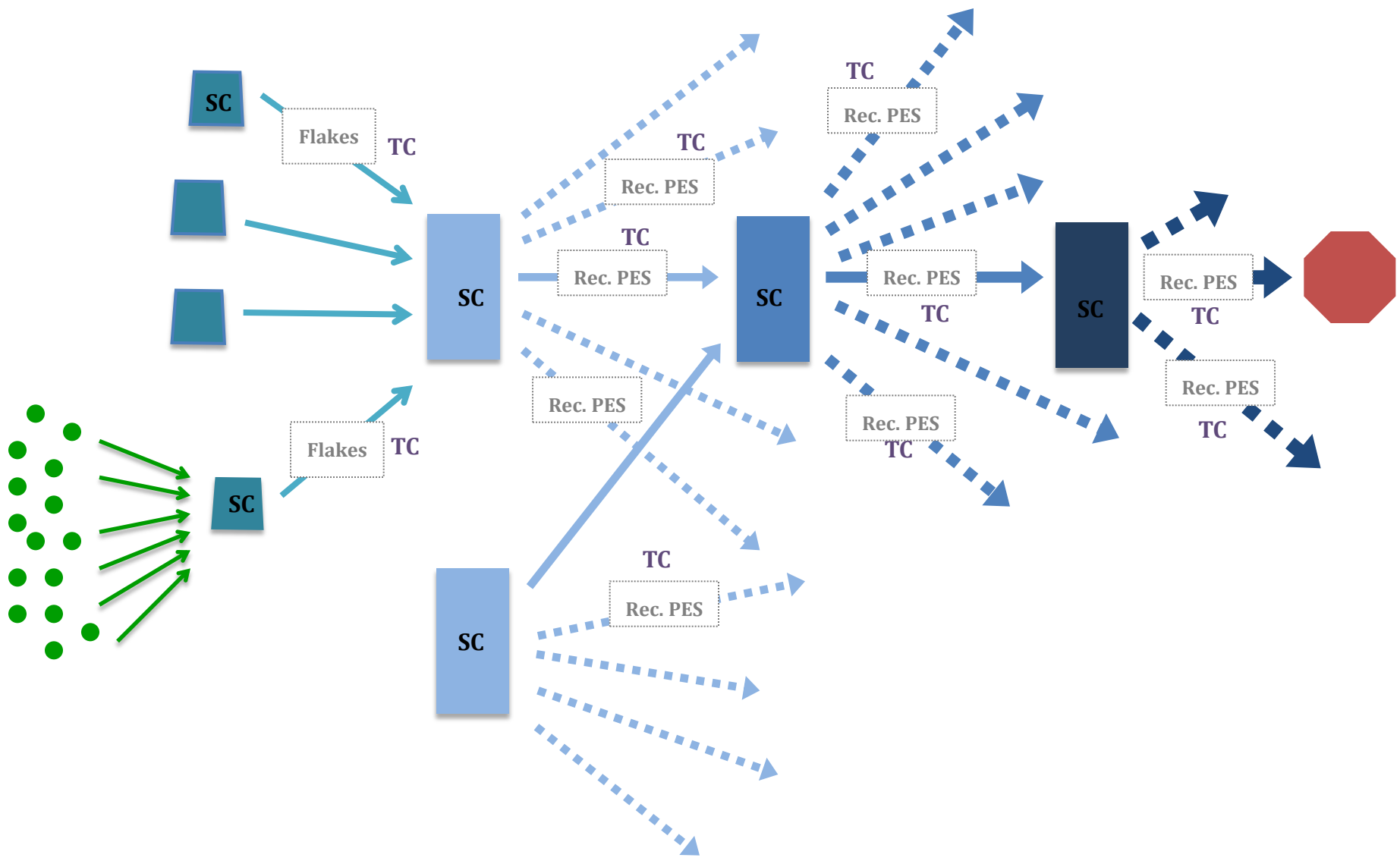
## Key Elements to Consider

- Raw material certification
- % Recycled content (pre / post consumer)
- Chain of Custody certification
- Processing criteria

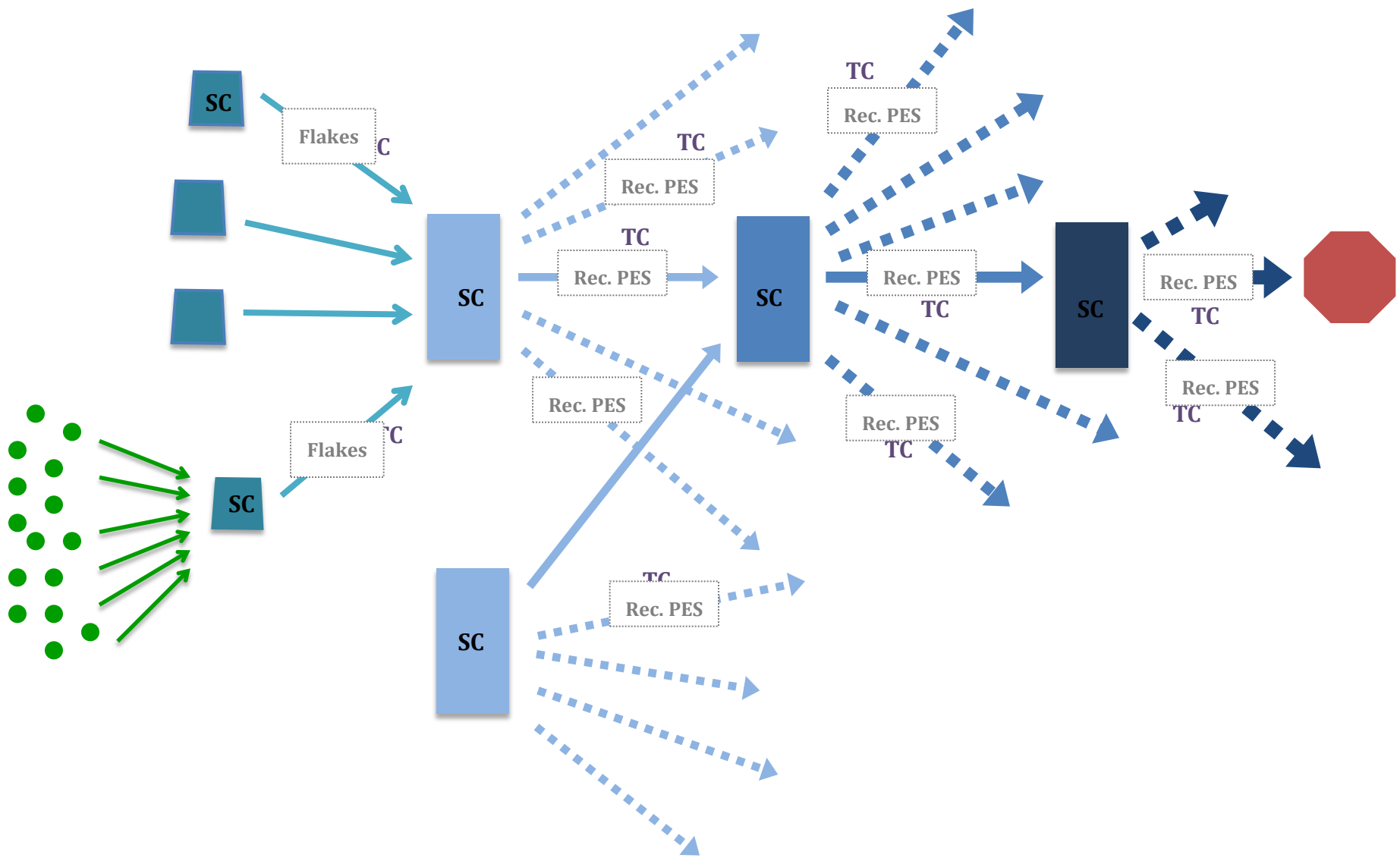
# INTERNATIONAL STANDARDS: OVERVIEW

	Recycled Content from SCS	Recycled PET Certification from Intertek	GRS from Textile Exchange
Raw materials	<b>Recycled materials</b>	<b>Recycled Polyester Only</b>	<b>Recycled materials</b>
Verification Method	3 <sup>rd</sup> party audit	3 <sup>rd</sup> party audit and testing	3 <sup>rd</sup> party audit
Scope	Semi finished and final product	Semi finished (fibers, yarns and fabrics)	Semi finished and final product
Chain of custody tracking system	Yearly audit	Yearly audit	Transaction certificates and yearly audit
Environmental issues addressed	None	None	Water treatment, environmental policy
Social issues addressed in	None	None	Based on ILO norms
Label claims allowed <i>* note that there are specific criteria in each standard for when the claims can be made</i>	<b>'Made with X% recycled , Y% pre-consumer and Z% post-consumer content'</b>	Labeling may mention that the production processes are certified recycled PET, and have been traced through the supply chain for product identification	<b>'Made with recycled - raw material – X% pre-consumer and Y% post-consumer'</b>
Logo			

**Collector      Recyclers      Spinners      Fabric Mill      Garment Maker      Brand**



**Collector      Recyclers      Spinners      Fabric Mill      Garment Maker      Brand**



# GLOBAL RECYCLE STANDARD (GRS) CERTIFICATE

Field of attention  
**RECYCLED PRODUCTS**

For project number: CU xxxxxx

Issued to

**Project in:**

Control Union Certifications declares to have inspected the processing unit(s), and/or product(s) of the above-mentioned project, and have found them in accordance with the standards mentioned below. This certificate covers the processing unit(s), and/or product(s), as mentioned in the authenticated annex of this certificate.

Standards  
GLOBAL RECYCLE STANDARD (GRS)  
Owned by Control Union Certifications

This certificate is in force until further notice, provided that the above-mentioned project continues to meet the conditions as laid down in the licensee contract with Control Union Certifications and/or is suspended or revoked in accordance with the GRS. Based on the annual inspections that Control Union Certifications performs, this certificate is updated and kept in force.

**This certificate is valid until:**

Place and date of issue:

Declared by:

On behalf of the Managing Director



Certifier  
Control Union Certifications  
P.O. Box 161  
8000 AD Zwolle The Netherlands

## Scope Certificate

Shows that a company is qualified to produce to a given standard.

**TRANSACTION CERTIFICATE  
FOR DELIVERY OF RECYCLED PRODUCTS**

1. Body issuing the certificate (name and address) Control Union certifications B.V. Meeruwijk 4-6 8011 BZ ZWOLLE NETHERLANDS		2. Standard: Global Recycle Standard Reference number of the certificate: PRJ 812424/142478	
3. Seller of the product (name and address) RSWM Ltd. Opp. L&T, Gate No.6, Solaris Bldg. No.1, B Wing, 3rd & 5th floor Mumbai Maharashtra INDIA		4. Inspection body* (name and address) Control Union certifications B.V. Meeruwijk 4-6 8011 BZ ZWOLLE NETHERLANDS	
5. Producer or processor of the product* (name and address) RSWM Ltd. Mayur Nagar, Village Lodha Banswara Rajasthan INDIA		6. Country of dispatch INDIA	
7. Consignee (name and address) Batshita International Ltd. Suite 1713 Nan Fung Tower 173 Des Voeux Road Central HONG KONG		8. Country of destination HONG KONG	
		9. Address and place of destination*	
10. Marks and numbers, container no(s), number and kind. Trade name of the product. Global Recycle Standard certified Products as specified in box 17 GRS certified products Invoice no.: BS20100338 d.d. 12-08-10 Transport document no.: AHM/LOS/10/02467 d.d. 01-09-10 Container no.: HLCU320973-7 Identification codes : Recycled Polyester :- 7967.72 kgs, Cotton :- 7967.72 kgs, Loss :- 6259.44 kgs.		11. Gross mass 10200.60 kgs	
		12. Net mass 9676.00 kgs	
		13. Alternative units *	
14. Declaration of the body issuing the certificate This is to certify that the products designated above have been obtained in accordance with the rules of the Global Recycle Standard and articles 15 & 16 of the CU Inspection Regulation and monitored by the inspection and certification body mentioned in box 4.			
15. Additional declaration (if appropriate)			
16. Place and date of issue Colombo-07, 01 October 2010 Name and signature of authorised person On behalf of Managing Director  Kumar Choudhury, Dr. B. (Binay)			

Stamp of the issuing body **COPY**



## Transaction Certificate

Shows that the goods being shipped are made of a **certified raw materials and processed according to the given standard**

\*Explanatory notes  
Box 4: The inspection and certification body for compliance with the rules on GRS certified products.  
Box 5: The firm which carried out the last operation (processing, packaging, labelling) on the batch.  
Box 9: The address of the firm where the batch will be delivered, if different from the address in box 7.  
Box 13: e.g. volume in meters, to be given, where appropriate, in supplement to the declarations in boxes 11 and 12.



# ESSENTIAL STEPS



1. Choose the standard that best suits your sustainability strategy
2. Confirm with your suppliers they can provide you with the certification you need. Ask for the scope certificate before you place your order
3. Use accredited certification agencies
4. Ask your suppliers for transaction certificates per order after shipment if applicable.
5. Study the labeling and logo use for the chosen standard

# CONCLUSION

# CONCLUSION

- Recycling should always come after Reducing and Reusing following waste hierarchy principles
- Recycling conserves resources by replacing the need for primary extraction
- It is beneficial both from an energy use and green house gas emissions perspective
- Certification documentation to garment level is critical to ensure material content
- Future developments should include
  - Maximizing materials recovery
  - Developing innovative textile to textile solutions



**Charline Ducas**

Sustainable Materials Specialist

[charline@textileexchange.org](mailto:charline@textileexchange.org)

