

# Update and revision of the JRC 2019 MFA for plastics

## *Workshop*

DG GROW  
DG JRC Ispra – Unit D3  
09.04.24

# Welcome!

## Who are we? Meet the Team

**Laure Baillargeon**



*Policy officer*

*DG GROW Unit for Net-zero industries, sustainable and circular products*

*Acting as a secretariat for the Circular Plastics Alliance*

**Simone Manfredi**



*Raw Materials officer at JRC  
Environmental Engineer*

*Project Leader of Raw Materials Information System (RMIS) and supporting tasks on waste management & circular economy*

**Andrea Amadei**



*Environmental Engineer*

*Joined the JRC in 2019 and worked on life cycle assessment, material flow analysis and waste management*

# Welcome!



**Who are you, who do you represent, and where are you connecting from?**

**(Please type in the chat)**



# Housekeeping



Chatham house



Report only including points agreed or raised



Please raise your hand (or type in chat)



Turn off your mic when not speaking



Let's keep time



Listening and thinking with



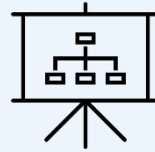
# Objectives of this workshop

- 1) Positioning this project in (y)our broader contexts
- 2) Reminder on MFA 2019: a tool that fairly reflects plastics materials flows in the EU (?) to support policy and market analysis
- 3) Presenting our ideas on what to improve in the MFA 2022
- 4) Seeking your views what & how to improve

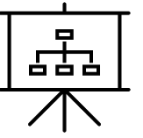


# Agenda

10:00	Welcome, introductions, housekeeping
10:15	Project overview (context, outcomes, timeline)
10:30	Presentation of the MFA 2019
10:50	Towards an improved MFA - overview
11:05	Short break
11:15	Towards an improved MFA – point by point
12:15	Process and timeline
12:30	End of workshop



# Project overview



# Context and expected outcomes

The Joint Research Centre (*unit D3 - Land Resources and Supply Chain Assessments*) has been requested by Commission Directorate (*DG GROW*) to further develop and refine the model of plastic flows in the Union.

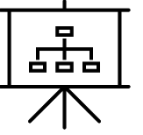


The JRC aims at **improving/updating** the 2019 MFA model to the year **2022**.

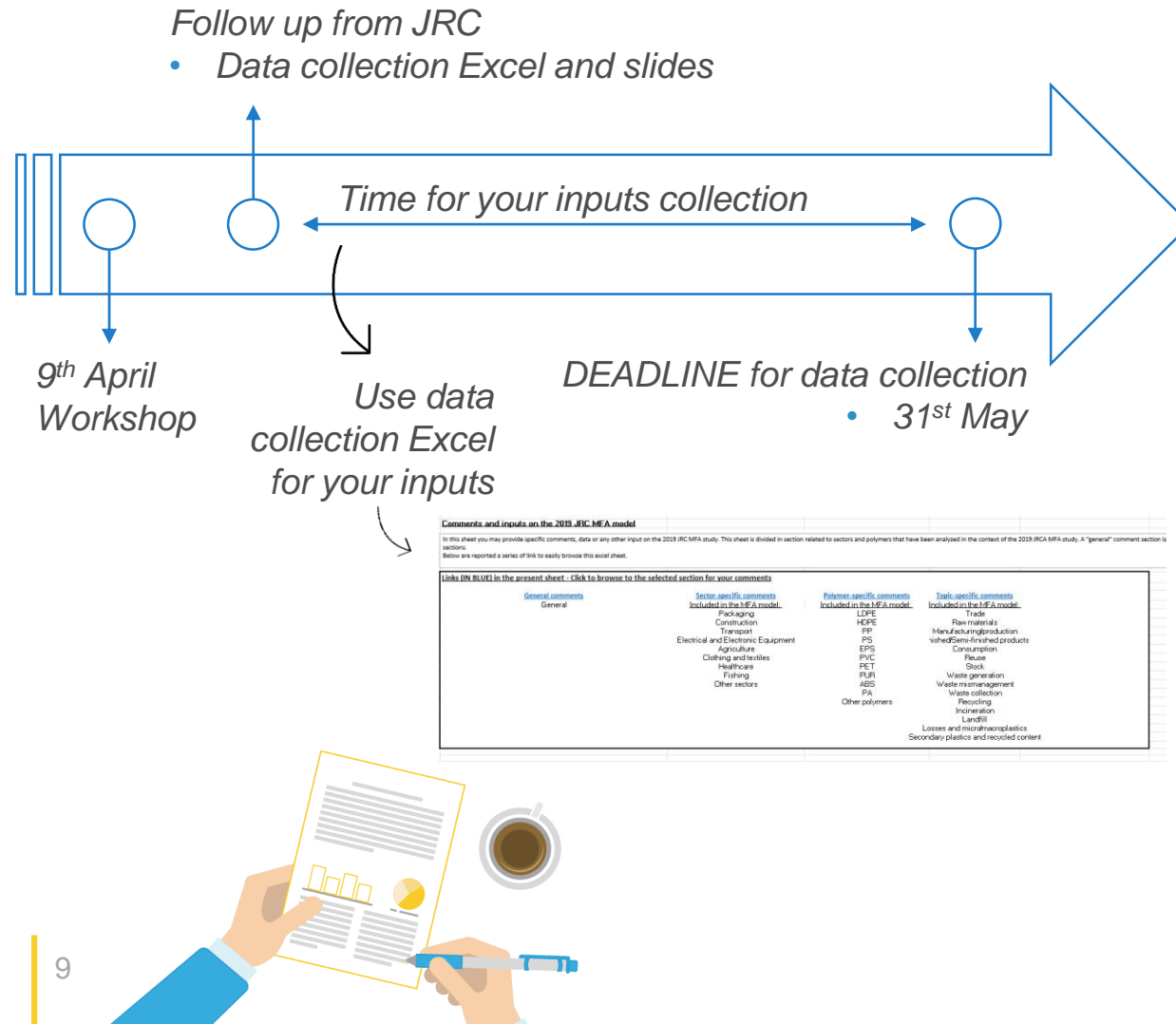


**Ultimate goal** → A MFA that properly reflects the EU market & plastics materials flows, in particular by improving the modelling of certain aspects (e.g., imports, pre-consumer waste) or plastics-using sectors (e.g., textiles, healthcare)





# Timeline for this project



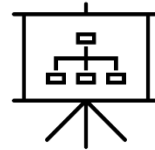
- **2019 MFA Report**

- **Where?** Reply to any of the received mail (e.g., workshop invitation) keeping the same mail object (for ease of mail collection from JRC side)

- **How?** Data collection Excel and or comments via mail/other

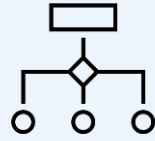
- **When?** Deadline for data collection  
**31<sup>st</sup> May**

# Context and expected outcomes of this project

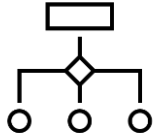


**How useful can this project be to your work and organisation?**

**(Please reply to survey – link posted in chat)**



# Presentation of the 2019 MFA model



# Overview of the report

## MFA for plastic flows (EU27 2019)

Starting with key statistics (e.g., Plastics Europe) and data on consumption & end of life

Paper - EU plastic consumption footprint <sup>[1]</sup>



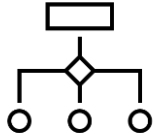
JRC study - Support to the Circular Plastic Alliance Report <sup>[2]</sup>



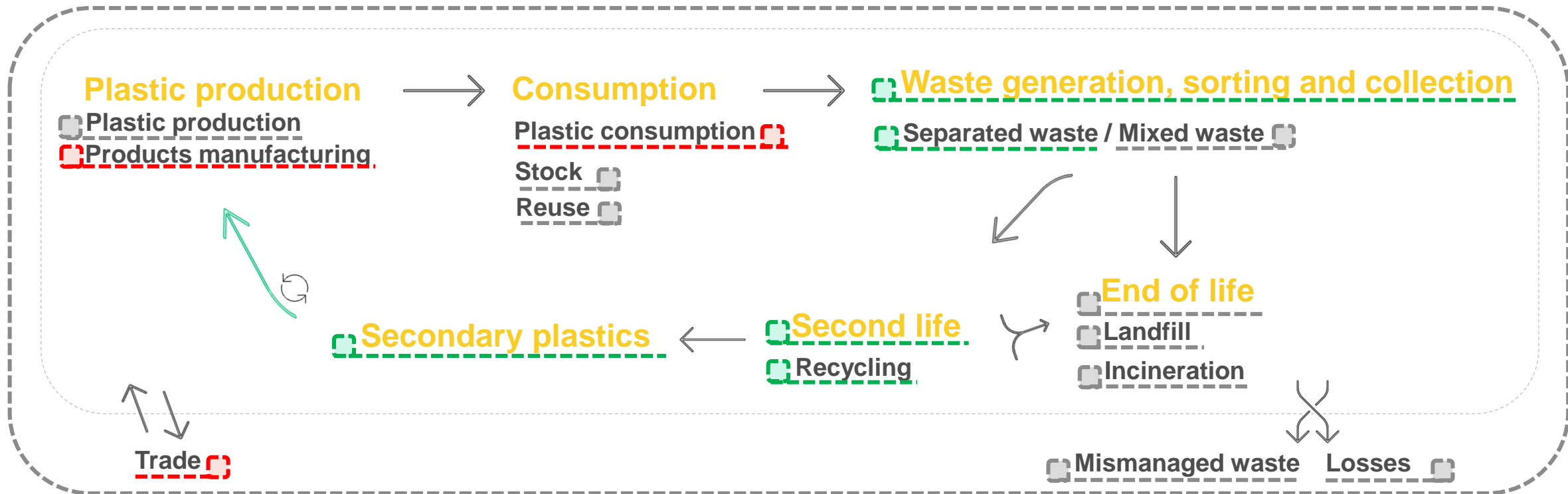
[1] <https://doi.org/10.1016/j.resconrec.2021.106086>

[2] <https://publications.jrc.ec.europa.eu/repository/handle/JRC122453>

[3] <https://publications.jrc.ec.europa.eu/repository/handle/JRC130613>

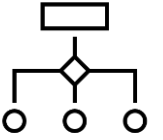


# Overview: (simplified) system boundaries



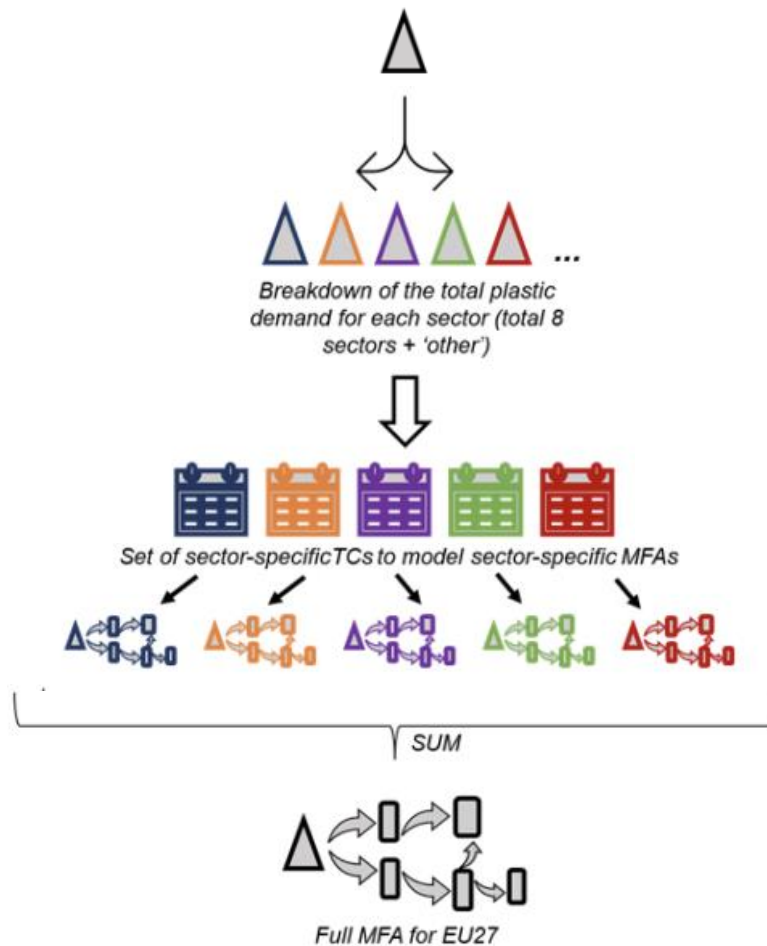
## Key references

- JRC study on plastic consumption
- JRC study supporting the *Circular Plastic Alliance*
- Other literature data (statistics e.g. Plastics Europe, peer-reviewed studies, reports, etc.)

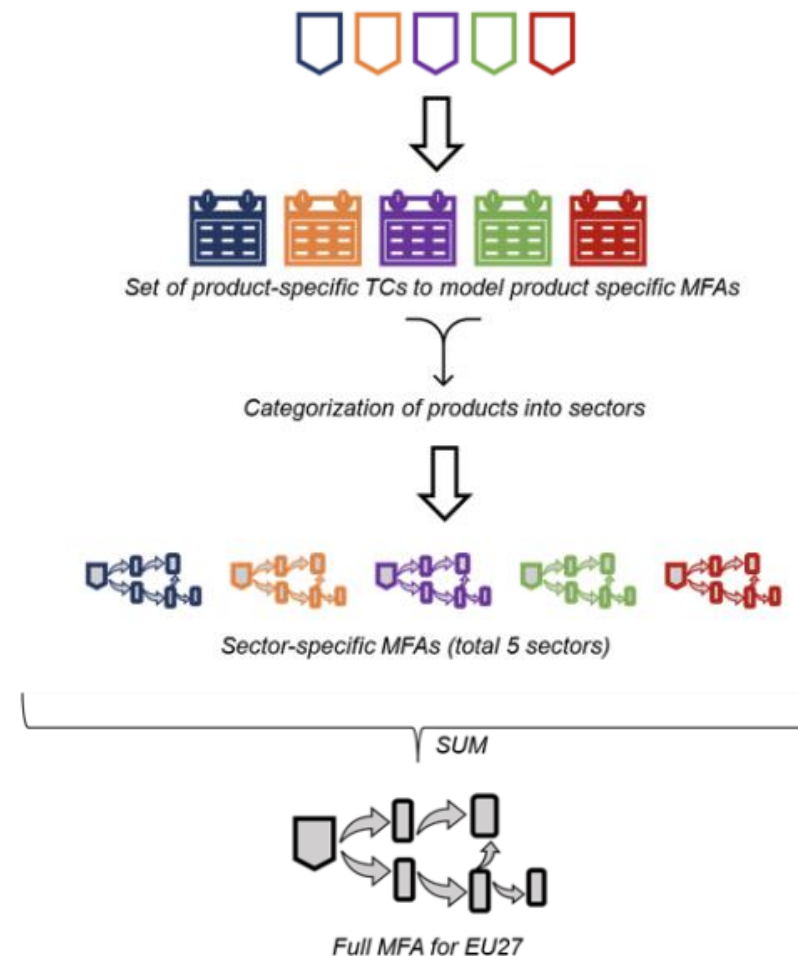


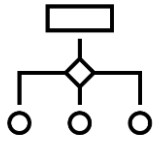
# A top-down approach to assess plastic flows

## Top-Down approach



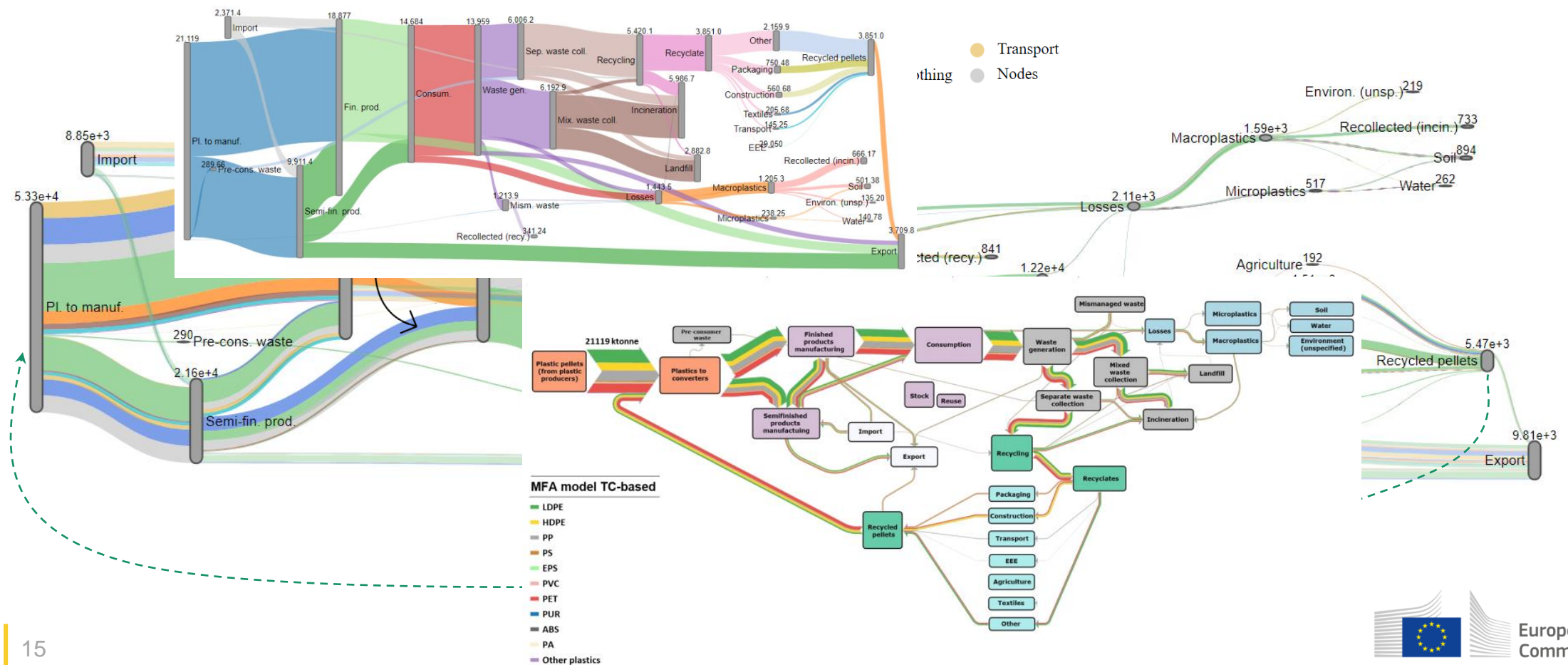
## Bottom-Up approach

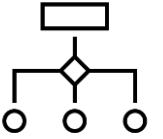




# The Material Flow Analysis models

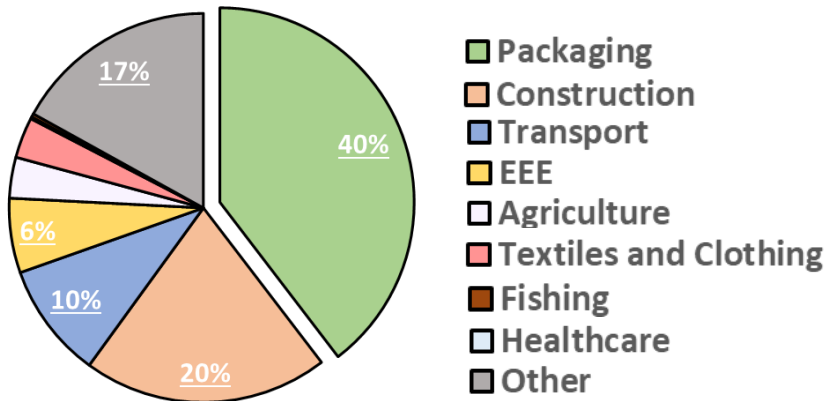
- **Sector-based MFA** (9 sectors; top-down approach based on transfer-coefficients)
- **Polymer-based MFA** (10 polymers; top-down approach based on sector-specific MFAs)





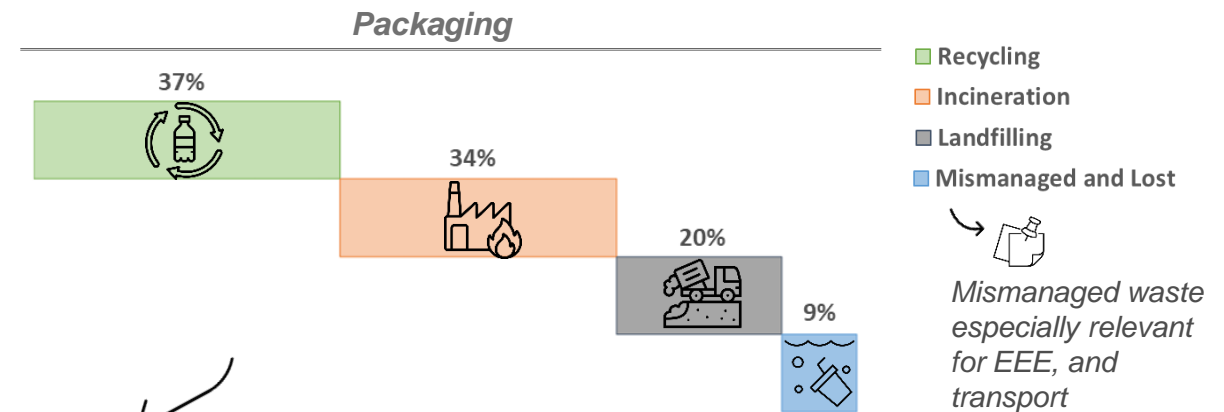
# Results highlights

How relevant is each sector? (53Mt)

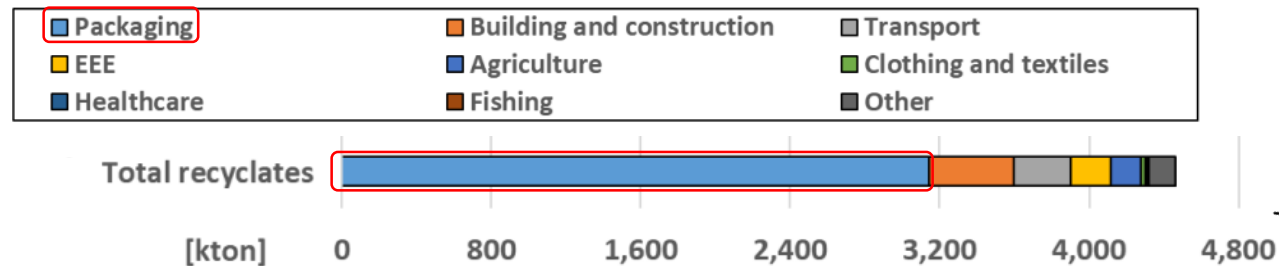


PP, LDPE, HDPE, PVC, PET cover more than half of the total production

Out of the **29Mt** of EU post-consumer waste generated, around **8Mt** are sent to European recyclers (65% coming from packaging)

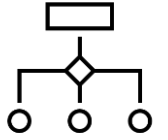


Around **1Mt** of the recycled plastics is **exported**, resulting in **4.5Mt** being **consumed** in the EU, out of which...



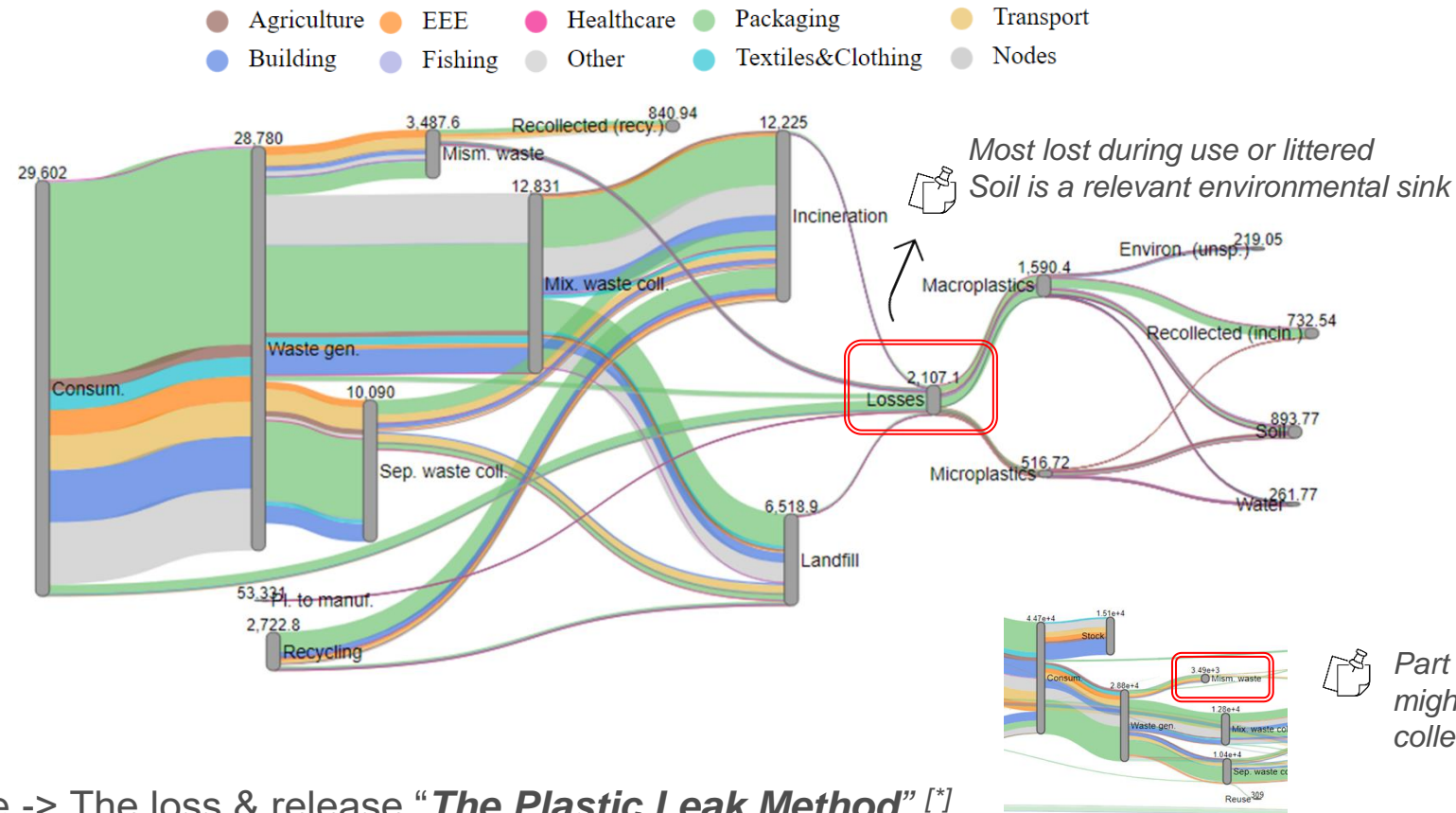
PET alone amounts to around 1Mt of recyclates



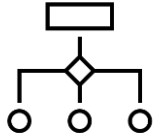


# Results highlights

## A focus on plastic losses and waste mismanagement

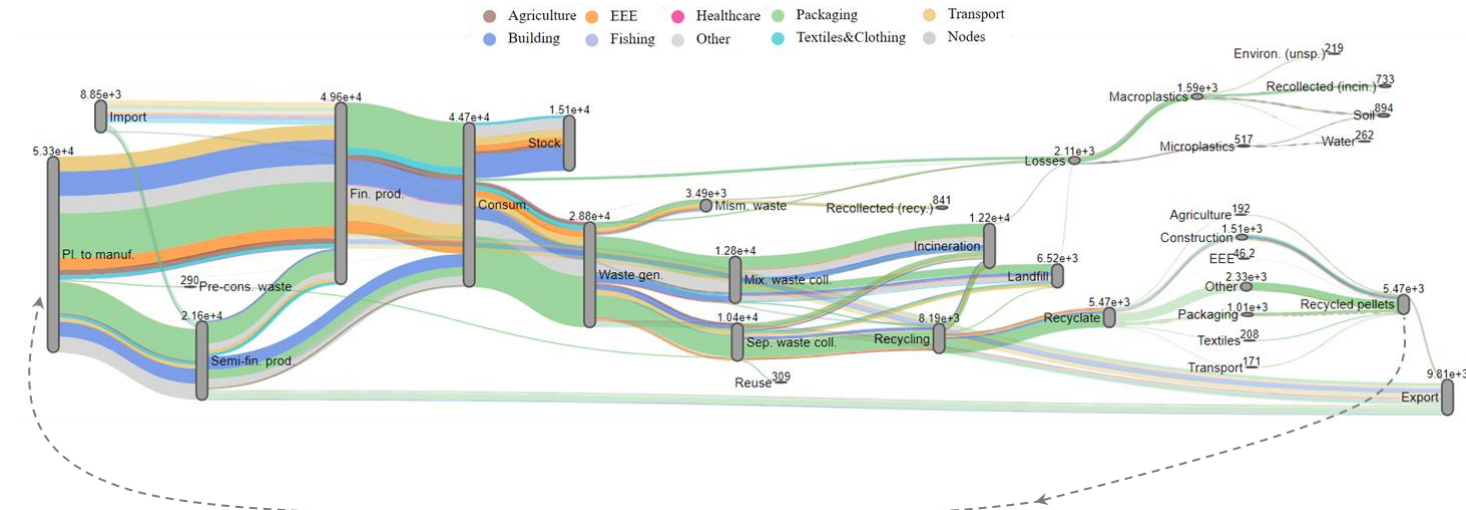


- Key source -> The loss & release “**The Plastic Leak Method**” [\*]
- Total losses: 2.1Mt. 4% of total plastic production... on top of the 3.5Mt mismanaged.



# MFA 2019 model overview

EU27 2019



Questions on the MFA 2019?

(please raise your hand or type in chat)



## **Towards an improved MFA**

*Overview of perceived points for improvement*



# Key takeaways from the 2019 MFA



## Promoting granular overviews

**sector-specific** and **polymer-specific** EU data from manufacturing to end-of-life



## What happens to...?

**Losses; mismanaged waste; recycled plastics** [key questions: What (polymer)? When (life cycle stage)? Where (e.g., final sink)?; etc.]



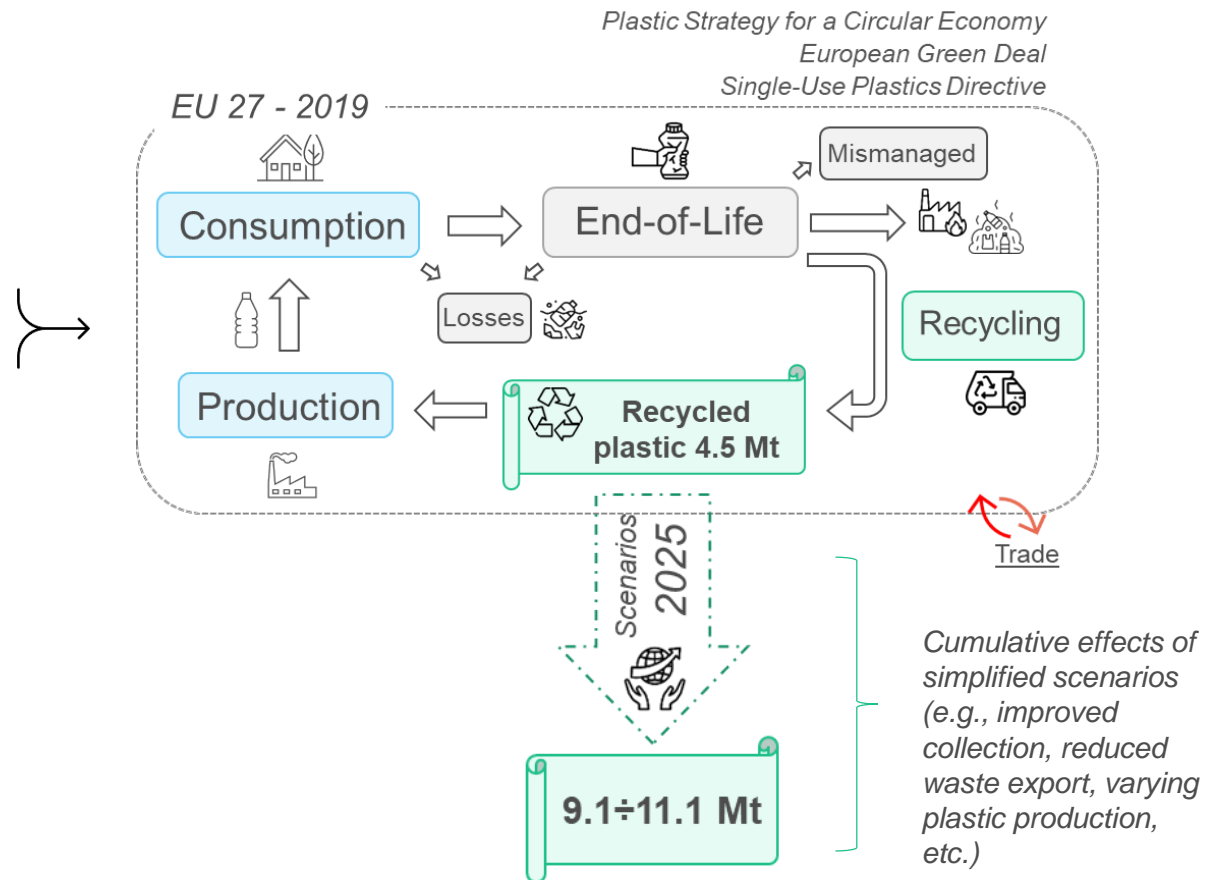
## Explore the unexplored

Enhance estimates on **less-known sectors** (e.g., healthcare, fishing) together with more explored ones (e.g., packaging, transport)



## Unveil the untapped potential

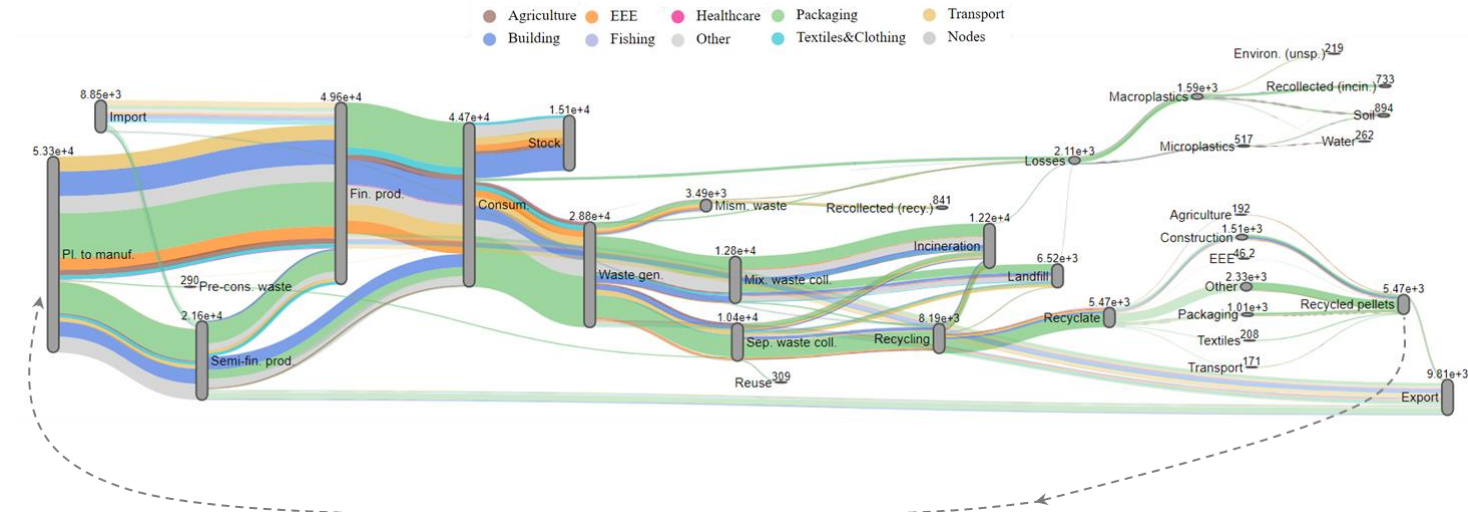
**Meeting the EU policy circularity and sustainability ambitions**



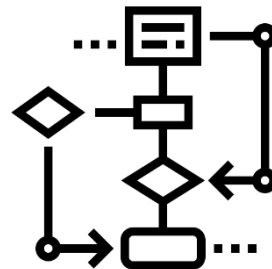


# Towards an updated MFA

EU27 2019

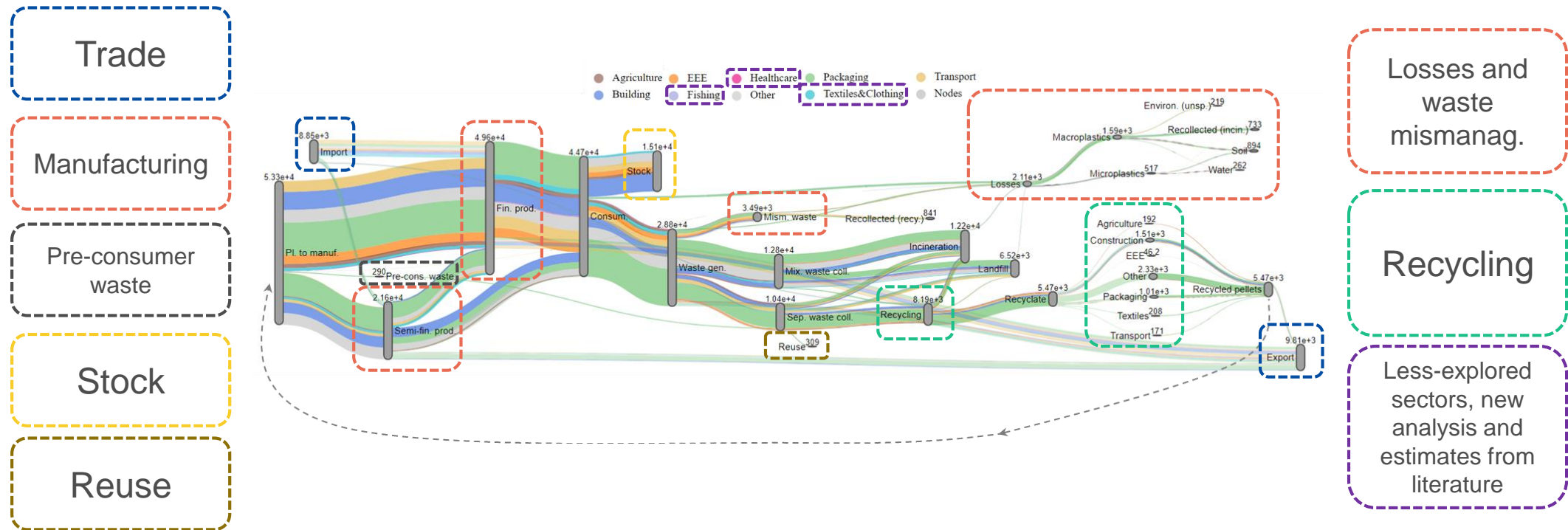


EU27 2022





# Main perceived needs for improvement

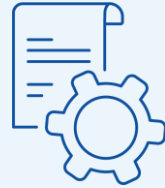


shido



**Coffee time!**

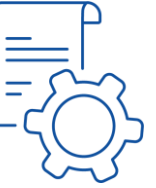
*Back at 11:30*



# **Towards an improved MFA**

*Point by point discussion*





# How this session will work



**ONE POINT FOR  
IMPROVEMENT**

*Overview and context*



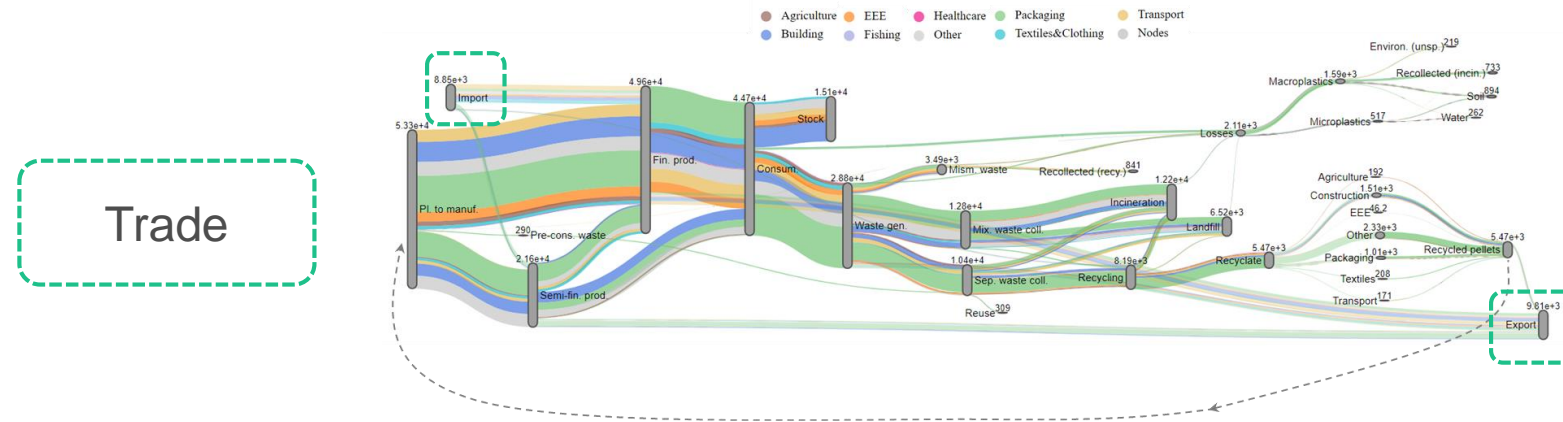
OR **slido**

***What are your suggestions for  
improvement?***

*(what to improve, how to improve)*

***In Slido you can like others' ideas & post  
replies***

# Plastic trade



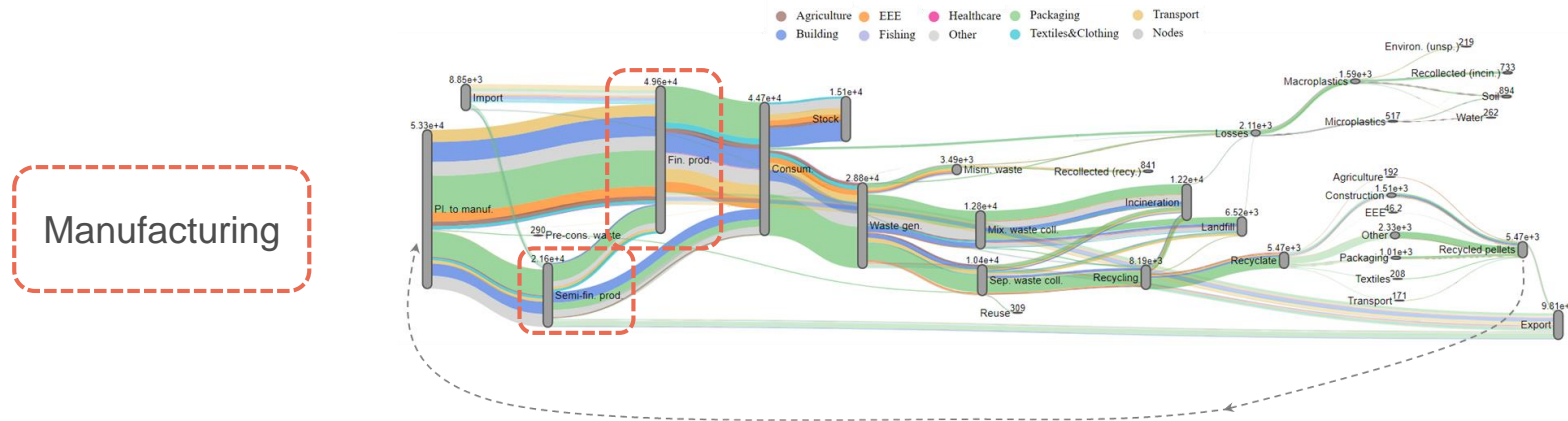
## Context

- Traded (*i.e. imported or exported*) plastic flows were estimated from various sources (*e.g. Eurostat statistics*).

## Our questions

- Improved mass flows estimates?
- Imported from? Exported to? Which plastics (*e.g., per sector*)?

# Products manufacturing



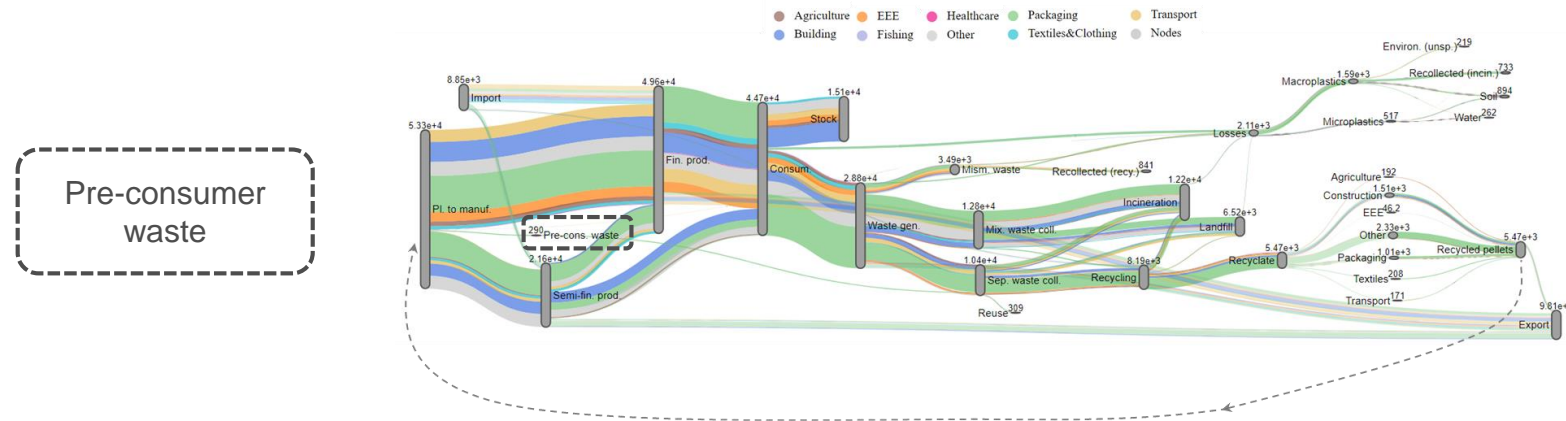
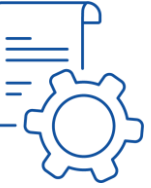
## Context

- “Finished-products” were differentiated from “semi-finished” products (*several sources, including Eurostat data*).

## Our questions

- How relevant are “semi-finished” products flows, and how should we account them?
- How many “semi-finished” products could be “directly” consumed (*double-counting; intended use of “semi-finished” products*)?

# Pre-consumer waste



## Context

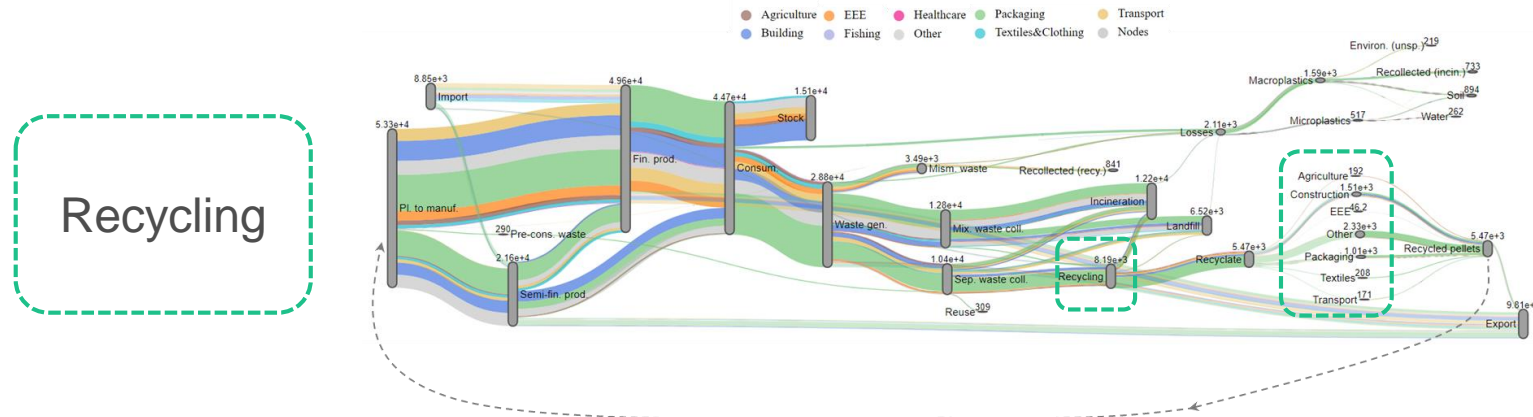
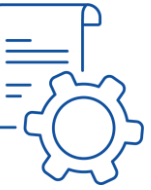
- Pre-consumer packaging waste was estimated albeit few literature data are available.

## Our questions

- How relevant is pre-consumer waste in the current plastic value chain?
- Mainly derives from conversion activities?
- How is this waste managed (*e.g., (internally) recycled, incinerated, other*)?



# Plastic recycling

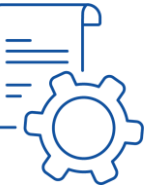


## Context

- Mechanical recycling was considered in the JRC model, including estimation of the sector-specific fate of the secondary (recycled) plastics (*sector of destination for 2<sup>nd</sup> life*).

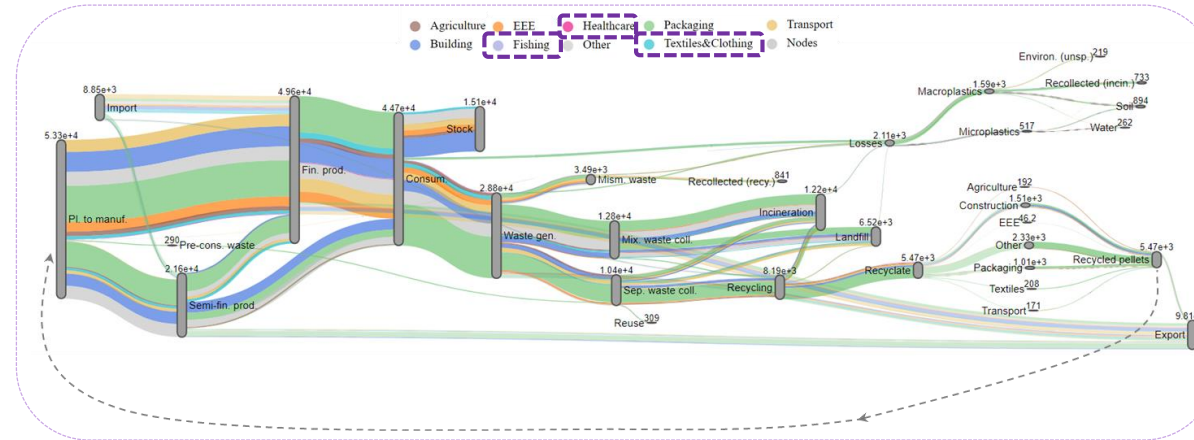
## Our questions

- How relevant could other recycling processes (*chemical recycling*) be in the updated model (*zoom: scenarios for future implementations*)? How could new recycling processes synergize with mechanical recycling?
- How could the estimates secondary (*recycled*) plastics' flows and fate be updated?



# Less explored sectors and flows

Less-explored sectors, new analysis and estimates from literature



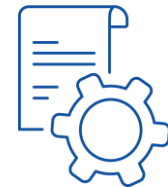
## Context

- Plastic flows for less-explored sectors were estimated (*e.g. healthcare and fishing*) from best-available literature data.

## Our questions

- How the JRC could revise and improve the data points to model these sectors?
- Which are key data points to consider, especially to properly capture the end-of-life flows?

# Wrap up

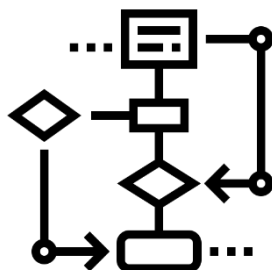


**Any further suggestions or comments?**

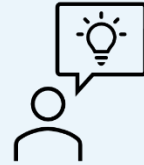


*Any other relevant aspect to flag to the JRC?*

**(please raise your hand or type in chat)**







# Data collection process and timeline

# Data collection Excel



- **Dedicated Excel sheet** for collecting your inputs in a systematic way on the 2019 MFA report

## Data inputs/comments on the MFA model

Links (IN BLUE) in the present sheet - Click to browse to the selected section for your comments

General comments	Sector-specific comments Included in the MFA model:	Polymers-specific comments Included in the MFA model:	Topic-specific comments Included in the MFA model:
General	Packaging Construction Transport Electrical and Electronic Equipment Agriculture Clothing and textiles Healthcare Fishing Other sectors	LDPE HDPE PP PS EPS PVC PET PLR ABS PA Other polymers	Trade Raw materials Manufacturing/production Finished/Semi-finished products Consumption Reuse Stock Waste generation Waste mismanagement Waste collection Recycling Incineration Landfill Losses and micro/macropastics Secondary plastics and recycled content

## Data inputs/comments on specific questions on certain topics/flows/products

Links in the present sheet - Click to browse to the selected section for your comments

<a href="#">Waste Recycling and Recycled material use</a> <a href="#">Reuse</a> <a href="#">Bio-Plastics</a> <a href="#">PET bottles</a> <a href="#">Passenger car and trucks</a> <a href="#">Electrical Equipment</a> <a href="#">Textiles</a>
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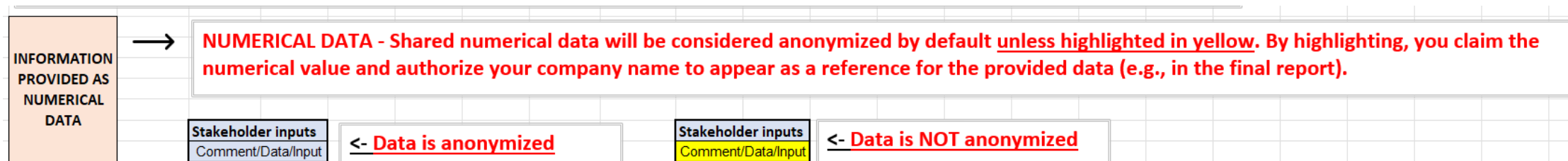
- **Using this Excel sheet is not mandatory but welcomed** (you may also share comments in written form via mail or attaching comments to the JRC report)

# How data/comments will be handled



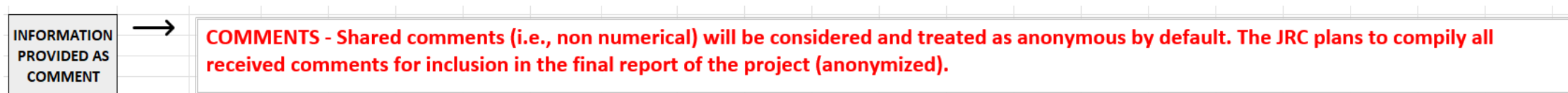
- **Numerical data** will be treated as **anonymous** by default, unless you flag that the data could be treated as not anonymized (*i.e., your company could be cited as reference for the numerical data*).

Specific detail of the “instruction” sheet



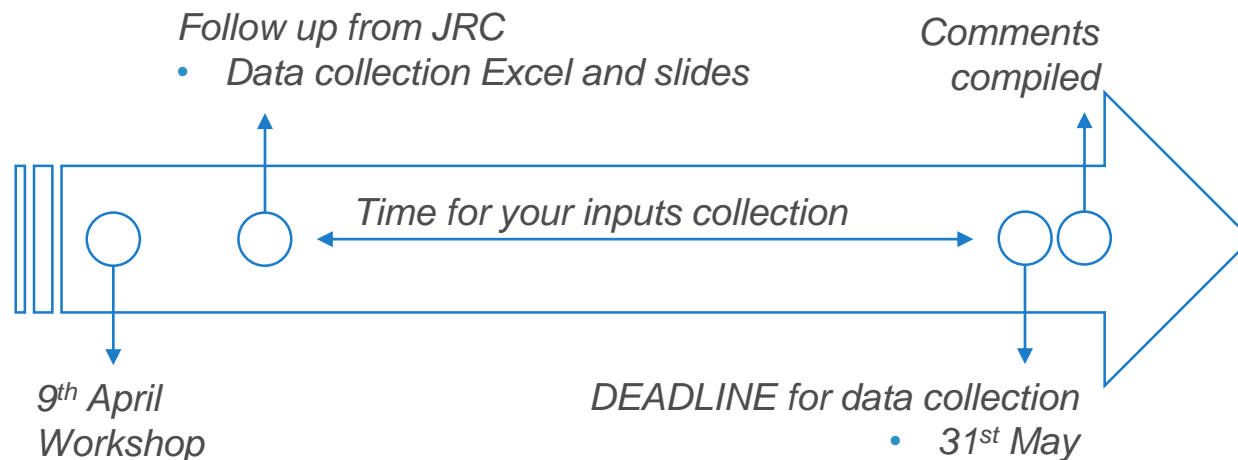
- **Comments** will be treated as **anonymous** by default. These will be compiled as an annex in the final report.

Specific detail of the “instruction” sheet



- Numerical data/comments received via other means (*e.g., mail, word, pdf, etc.*) will also be managed as described above.

# Timeline (reminder)



- 2019 MFA Report

- **Where?** Reply to any of the received mail (e.g., *workshop invitation*) keeping the same mail object (for ease of mail collection from JRC side)
- **How?** Data collection Excel and or comments via mail/other
- **When?** Deadline for data collection **31<sup>st</sup> May**

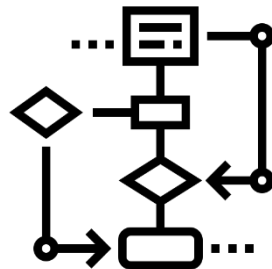
# A.O.B.



Queries or requests?



(please raise your hand or type in chat)



European  
Commission

# Thank you for your attention!