



in association with



Cost-benefit analysis of policy measures  
reducing unintentional release of microplastics  
**A study for the European Commission (DG Environment)**

Second stakeholder workshop – 24 November 2021

Background note on pellets

## 1. INTRODUCTION

The aim of this study is to provide environmental and techno-economic analysis and support to the Commission on possible actions to reduce the presence of unintentionally released microplastics in the environment, in particular from plastic pellets, synthetic textiles and automotive tyres.

A first stakeholder workshop was held on September 30<sup>th</sup>, 2021 and presented the scope methodology and initial analysis.

A second series of stakeholder workshops will be held as following:

- > Textiles, on November 22<sup>nd</sup>, 2021
- > Tyres, on November 24<sup>th</sup>, 2021
- > Pellets, on November 25<sup>th</sup>, 2021

This background paper is intended to inform discussions at the stakeholder workshop for pellets. It provides a short summary of the problem definition and baseline assessment and an initial long list of possible measures for addressing microplastic emissions from pellets. Key points for discussion at the workshop are also presented.

The main aim of the workshop is to discuss and develop a list of measures that could be implemented to tackle the release of microplastics from pellets.

A tentative agenda of the workshop is as follows.

- > Plenary - Introduction (10 minutes)
- > Plenary - Presentation by the project team (30 minutes)
- > Breakout sessions (the participants will be divided into four groups) (1h30)
- > Plenary - reporting from the groups (40 minutes)
- > Plenary - Next steps (10 minutes)

## 2. PROBLEM DEFINITION

Pellet losses represent a threat for the environment, being synthetic polymers, they do not degrade in the environment. Their release to the environment cause damage to eco-systems and biodiversity loss and incurs costs to local communities for environment cleaning. The economic impact on activities such as fishing and tourism is also vast.

Figure 1 summarises the general and specific problem drivers.

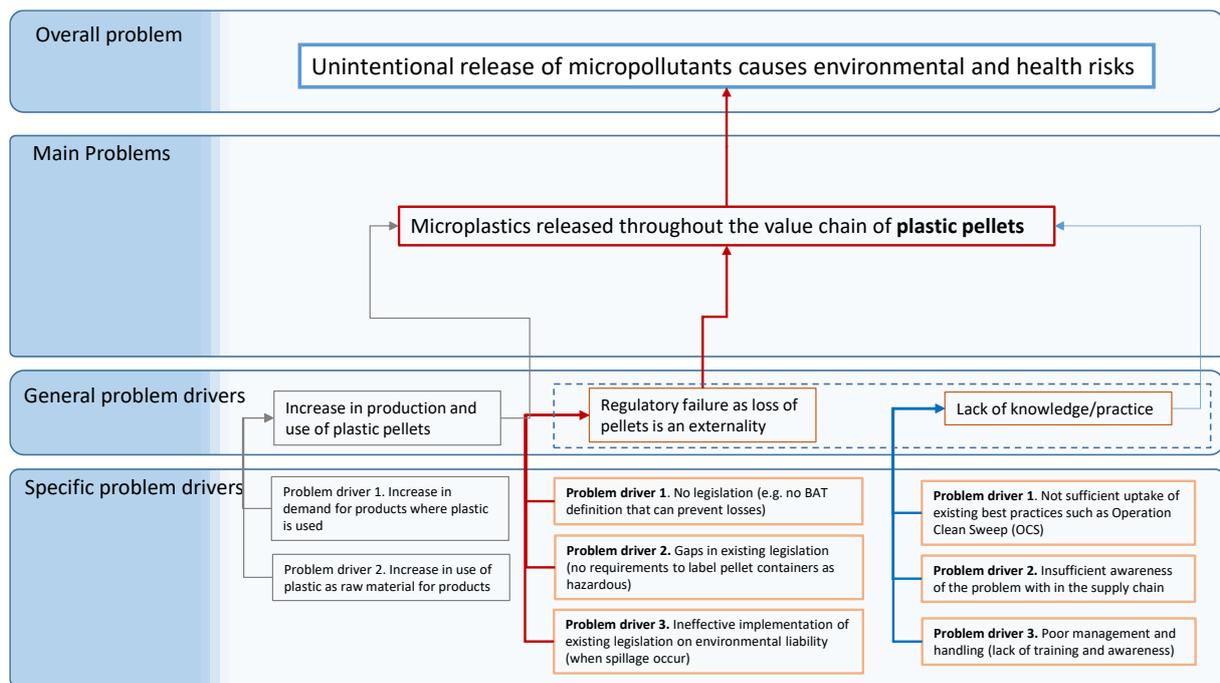


Figure 1: Problem definition tree

### 3. SCALE OF THE PROBLEM

Previous studies have quantified pellet losses in Europe between 3,000 tonnes and 78,000 in 2015 in a report for DG Environment<sup>1</sup> and between 16,888 and 167,431 tonnes in 2018<sup>2</sup>. This upward trend in the emissions (which follows the consumption increase worldwide) was confirmed by our own calculations which yielded pellet losses in the EU in 2019 between 118,475 tons and 182,675 tons. Given the upward trend in emissions, there is a possible need for legislative action to act on the factors that influence the most pellet emissions, which are:

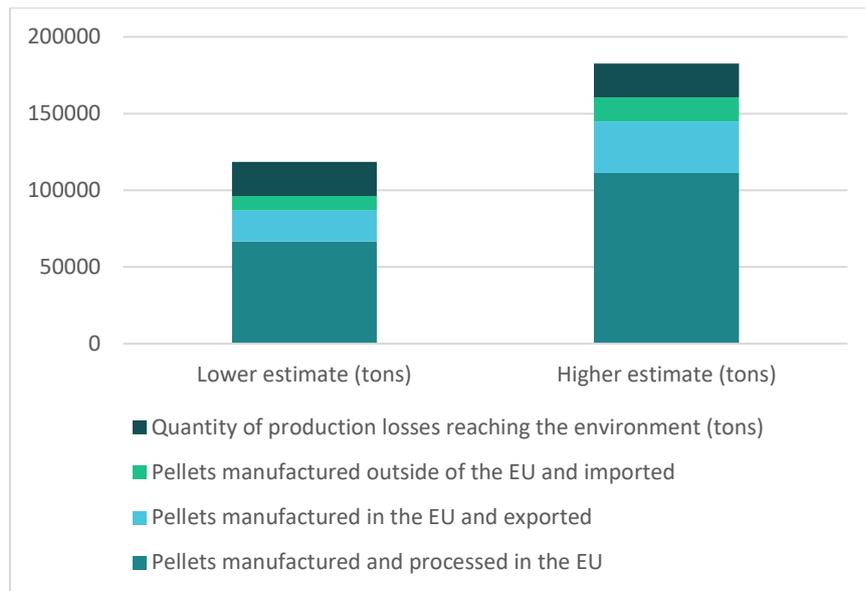
- > Improper storage of pellets at both production and use site.
- > Improper transferring protocol from storage to containers when leaving pellet production site.
- > Improper sealing of transport containers (25 kg bags, octabins, large plastic bags and containers or silos).
- > Improper handling of containers during transportation.
- > Improper unloading of containers into storage at the pellet use site.

Moreover, accidents during cargo transportation at sea may result in huge amount of pellets released in the environment showing there is a possible need for legislative action also to act on remediation and disaster response.

To establish the baseline, an extensive literature review was performed to review scientific publications, NGO and Government reports and legislative texts. Figure 2 summarises the pellet losses in the EU in 2019 as calculated during our study.

<sup>1</sup> Investigating options for reducing releases in the aquatic environment of microplastics emitted by (but not intentionally added in) products, 2018

<sup>2</sup> OSPAR Commission (2018) OSPAR Background document on pre-production Plastic Pellets. Available at: <https://www.ospar.org/documents?v=39764>



**Figure 2: Pellet losses in Europe in 2019<sup>3</sup>**

There are several data gaps to fill to improve the reliability of the numbers presented in Figure 2.

- > The pellet loss rate at production and during transportation bear a lot of uncertainty (they were extrapolated from data provided by a single Norwegian plant<sup>4</sup>).
- > Detailed data about stormwater catchment and sewer overflow could not be found which increases the uncertainty on the quantities of pellets lost to the environment and then caught in treatment systems.
- > Market data could also be improved to ensure that the number of times pellets are processed and transported on European soil or at sea is accurate in the baseline calculation.

#### 4. POTENTIAL MEASURES

During the 2<sup>nd</sup> stakeholder workshop, we will work together to establish a long list of potential measures to reduce the microplastics emissions from pellets.

Below is a list of measured identified so far:

- > Supply chain accreditation
- > Reporting requirements
- > Obligatory visual materials on site and minimum requirements for information and labelling on all pellet packaging and containers, clearly denoting environmental impact of pellet spills and the importance of responsible handling
- > Installations can only operate according to an environmental permit issued by a competent authority

<sup>3</sup> Based on own calculations and data from several studies for loss rate and market data from Plastics Europe.

<sup>4</sup> Sources of microplastic pollution to the marine environment, Report for Norwegian Environment Agency, 2014, accessed 11 November, 2021, from:

[https://d3n8a8pro7vhm.cloudfront.net/boomerangalliance/pages/507/attachments/original/1481155578/Norway\\_Sources\\_of\\_Microplastic\\_Pollution.pdf?1481155578](https://d3n8a8pro7vhm.cloudfront.net/boomerangalliance/pages/507/attachments/original/1481155578/Norway_Sources_of_Microplastic_Pollution.pdf?1481155578)

## Microplastics workshop - Background note on Pellets

- > Target (legislative or voluntary agreement) within industry to reduce losses (accidental releases)
- > Setting up an environmental damage remediation fund to which companies producing, handling, transporting, processing, etc. pellets must contribute.

Secondly, the measures will be discussed according to different criteria e.g.

- > Technical feasibility
- > Effectiveness
- > Cost
- > Etc.