TEXTE
42/2022

EU Single-Use Plastics Directive - analysis of provisions and potential measures regarding extended producer responsibility

Final report

German Environment Agency

Umwelt Bundesamt

TEXTE 42/2022

Project No. 112 447

Report No. (UBA-FB) FB000556/ENG

EU Single-Use Plastics Directive - analysis of provisions and potential measures regarding extended producer responsibility

Final report

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On behalf of the German Environment Agency

Imprint

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/umweltbundesamt

Report performed by:
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Germany

Report completed in:
August 2020

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Publication as pdf:
http://www.umweltbundesamt.de/publikationen

ISSN 1862-4804

Dessau-Roßlau, April 2022

Abstract: EU Single-Use Plastics Directive - analysis of provisions and potential measures regarding extended producer responsibility

The study was to undertake a legal analysis of the Extended Producer Responsibility (EPR) provisions of the SUPD with a view to its implementation in the Member States. In particular, the study aims to identify the Member States´ margin of discretion to transpose the directive.
In a first step the EPR concept of the SUPD is compared with the EPR concept in other pieces of EU waste law. The study also analyses the conformity of the SUPD´s EPR provisions with higher-ranking EU law. The focus of this analysis lays on those aspects that represent novelties as compared to other EU legislation on EPR, and thus raise legal questions that have not been addressed before, especially regarding the cleaning up of litter from relevant SUP products.
A second objective of the study was to analyse potentially relevant EPR measures for the eight different SUP products covered by Art. 8 of the SUP-Directive (EPR provisions) regarding their collection, transport, treatment, clean-ups and awareness raising. The same was elaborated for the relevant provisions for fishing gear. Based on reviews of relevant literature and conducted complementary expert interviews, these data formed the basis of analysing (1) which EPR measures could be effective; (2) what costs could potentially be associated with these measures; and (3) who should be responsible for (i) implementing and (ii) covering the costs for these measures. A third and final part presents two proposals for a specific mechanism to implement the EPR provisions of the SUPD: a littering fund for SUP products and an insurance fund for fishing gear.

Kurzbeschreibung: EU-Einwegkunststoff-Richtlinie – Analyse der Vorgaben und möglichen Maßnahmen bezogen auf die Erweiterte Herstellerverantwortung

Die Studie nimmt eine rechtliche Analyse der Bestimmungen der Erweiterten Herstellerverantwortung (EHV) der EKRL im Hinblick auf ihre Umsetzung in den Mitgliedstaaten vor. Insbesondere zielt sie darauf ab, den Ermessensspielraum der Mitgliedstaaten bei der Umsetzung der Richtlinie zu ermitteln.
In einem ersten Schritt wird das EHV-Konzept der EKRL mit dem EHV-Konzept in anderen Teilen des EU-Abfallrechts verglichen. Die Studie analysiert auch die Übereinstimmung der EHV-Bestimmungen der EKRL mit höherrangigem EU-Recht. Der Schwerpunkt dieser Analyse liegt auf jenen Aspekten, die im Vergleich zu anderen EU-Rechtsvorschriften EHV Neuheiten darstellen, und wirft rechtliche Fragen auf, die bisher nicht behandelt wurden, insbesondere im Hinblick auf die Reinigung von Abfällen der relevanten EK-Produkte.
Ein zweites Ziel der Studie war die Analyse potenziell relevanter EHV-Maßnahmen für die acht verschiedenen EK-Produkte, die unter Art. 8 der EK-Richtlinie in Bezug auf Sammlung, Transport, Behandlung, Aufräumarbeit und Sensibilisierung fallen. Dasselbe galt für die einschlägigen Bestimmungen für Fanggeräte. Auf der Grundlage von Überprüfungen einschlägiger Literatur und ergänzender Experteninterviews, bildeten diese Daten die Grundlage für die Analyse (1), welche EHV-Maßnahmen wirksam sein könnten; (2) welche Kosten möglicherweise mit diesen Maßnahmen verbunden sein könnten; und (3) wer für i) die Durchführung und ii) die Kosten für diese Maßnahmen verantwortlich sein sollte.
Ein dritter und letzter Teil stellt zwei Vorschläge für einen spezifischen Mechanismus (Fonds) zur Umsetzung der EHV-Bestimmungen der EKRL vor.

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ALDFG	Abandoned, lost, derelict fishing gear
CFP	Common Fisheries Policy
CRS	Cost Recovery System
CJEU	Court of Justice of the European Union
EPR	Extended Producer Responsibility
GATT	General Agreement of Tariffs and Trade
MARPOL	International Convention for the Prevention of Pollution from Ships
MSFD	Marine Strategy Framework Directive
OJ	Official Journal
PR	Producer Responsibility
PRF	Port Reception Facility
PRO	Producer Responsibility Organisations
SUP	Single-use Plastic
SUPD	Single-use Plastic Products Directive
WFD	Waste Framework Directive
WTO	World Trade Organisation

Summary

Recommendations for implementation

- Member States should avoid specifying the term "cleaning up litter" in their transposing legal acts, since this might lead to an implementation deficit and ultimately to infringement procedures. Accordingly, it would be preferable for Member States to simply adopt the term "cleaning up litter" in their implementing acts and leave it to the administration and the national courts to enforce and interpret this term in a manner that conforms to fundamental rights, especially the principle of proportionality.
- Member States should consider approaching the European Commission in order to reach at least some certainty regarding the scope of "cleaning up litter". In their upcoming guidelines for criteria on the cost of cleaning up litter, the Commission could give, in consultation with Member States, at least some (non-binding) indication on the scope of cleaning up litter according to the SUPD.
- In order to conform to Article III:4 GATT, Member States should, when transposing Article 8 (6) SUPD into national systems, also allow producers established outside the EU to appoint an authorised representative for the purpose of fulfilling producer´s obligations regarding EPR schemes on their territories.
- When calculating producer contributions to a fund ("Waste-free environment fund"), a wide scope of potentially relevant systems where SUP product waste could accumulate, is needed in order to clarify the system boundaries for financial producer responsibility. Focal areas to be included in clean-up cost coverage should encompass: (i) Beach clean-ups to clean up marine litter washed onshore and left behind (littered), regardless of whether beaches are for bathing or not; (ii) Clean-ups of banks to clean up litter along waterways, rivers, creeks, ditches, canals, lakes and ponds; (iii) Terrestrial clean-ups to clean up litter along roads, streets, motorways and their shoulders, in green strips/spaces, rest areas, public parking areas, public places, green areas and parks. This is not meant as a legal definition.
- Across all phases (from awareness raising to waste collection and cleaning up litter) we suggest that producers of SUP products shall pay for SUP waste-related measures already implemented by municipalities as well as for additional ones to encourage public authorities to undertake further measures in order to advance (SUP) reusable products, waste prevention and related activities. Only a certain share of the money collected in the fund could be earmarked for covering the costs of existing activities, while the remaining share could be earmarked for additional activities.
- In order to assess the appropriateness of producers' financial responsibility under Art. 8 of the SUP Directive, a plausible and transparent methodology for calculating costs and financial contributions will be needed. We suggest looking at least at the following two options for calculating costs and financial contributions of producers: (i) Determining a percentage share per product based on the quantities of products that a producer places on the market in a country or in the EU; (ii) Determining a percentage share per product based on clean-up

monitoring results of littered items found on beaches, along shores, along rivers, in green spaces and parks / fishing-for-litter results. These findings should be used to pro-rate the different SUP products' relative contribution to the clean-up costs (based on beach and marine litter clean-up monitoring data in terms of number of product items found or weight of product items found).

- Member States should establish a transparent, cost-effective and fair mechanism to distribute the collected producer payments under the EPR scheme to public authorities and thus ensure adequate compensation for their SUP-related activities. Public authorities (at a municipal level) should be free to choose suitable and appropriate clean-up, collection and treatment systems for their area. To avoid conflicts with producers regarding the cost-efficiency of chosen measures, Member States should consider introducing a reference formula/reference cost approach. This might increase producers' willingness to participate, as it ensures a certain level of fairness regarding the costs of measures. In addition, municipalities should be obligated to report their activities in order to receive money from the fund.

- Control mechanisms should be in place to monitor the effectiveness of the EPR system and to make deposits and expenditures transparent. An independent body that administers the fund could at the same time be in charge of monitoring the EPR system and settling disputes between local authorities and producers.

- Single-use plastic products include a diverse range of commonly used short-lived products that are discarded after having been used once for the purpose for which they were provided, are rarely recycled, and are prone to becoming litter. The German Packaging Law did raise the recycling quote which does not solve the problem of the high consumption rate of an average German related to packaging. More important is avoiding packaging waste with an avoidance target of 90 kg per capita and year until 2030. In addition, an obligatory multi-use quota would be desirable to avoid the destruction of single-use packaging. Chain stores should be obliged to avoid single-use plastic products and to share costs of multi-use systems.

- EPR schemes could be used to force producers to make single-use products more expensive and to include indirect costs like littering or climate change. This could be also achieved by the general fee of 20 cent for all typical single-use plastic packages, mainly constituting of the items mentioned in the SUPD. With the revenues, avoidance and multi-use concepts have to be fostered and incentivised.

- EPR schemes can also support the better design of unavoidable single-use plastic products to improve their recycling capability. Obligatory quota for recyclates to increase secondary raw materials that can be used to make high-quality products.

- In the European Union, 80 to 85 % of marine litter, measured as litter items recorded on beaches, are plastics, with fishing-related items representing 27 % of the total. A significant proportion of fishing gear placed on the market is not collected for treatment end-of-life. Short- mid and long-term EPR measures like trans-boundary cooperation in separate collection of waste fishing gear, establishment of specialised recycling companies in different

EU regions, marking gear or support of awareness-raising among the fisheries and aquaculture sectors, should be taken up to solve these problems.

- EPR can support to push producers towards a circular economy instead of a linear growth in order to eliminate waste and keep resources in use for as long as possible, with materials recovered and reused at the end of life. First examples of companies like Renault show that such a strategy boosts sales and cuts resource use. This potential can be further fostered by EPR. An analysis of the state of global circularity[1] concluded that the global economy is just around 9% circular.

- The establishment of an EPR scheme for fishing gear takes away costs for the separate collection and treatment of waste, which currently fall under the responsibility of the port facility. These costs are normally passed through to ship operators including fishers as part of the indirect fee.[2] Experience shows that in competitive markets (for fishing gear materials, 60% of the material is imported) producers tend to absorb all or part of the EPR scheme's costs. It is therefore unlikely that the full cost of the EPR scheme would be passed on to fishing operators.

- Member States accessing marine waters will have to ensure that end-of-life fishing gear are collected separately for recycling with a national minimum annual collection rate of waste fishing gear.[3] The SUPD, however, does not demand a specific collection rate. This has to be decided on by national governments and specific commissions, dealing with detailed questions; these expert groups have also to specify the group of addressees of the measures (the producers) and to concretise the way of implementation of measures.

- Marine litter stemming from sea-based activities is also significant. According to the Impact Assessment for the revision of the Directive on Port Reception Facilities (PRFD)[4] much on-board ship-generated waste that should be delivered to ports is potentially discarded illegally at sea (up to 30%).[5] Preamble 23 of the PRFD states that the Common Fisheries Policy (CFP) approaches are insufficient and the PRF has to be expanded. But the new PRFD provisions do not tackle the retrieval of ALDFG in a systematic manner either. Until now, this aspect is more or less left to voluntary actions, Therefore, also due to the unclear definition under the PRFD, it is recommended to develop strategies how to include ALDFG into all EPR activities like collection or treatment, in parallel to end-of-life products.

- Separate container need to be provided for end-of-life gear directly disposed after use and derelict fishing gear retrieved from the marine environment. Whereas the former has a good chance to be recycled this is not the case for the latter due to organic contamination, bio-fouling and different gear getting entangled. Therefore. it needs to be ensured that end-of-life

[1] Circle Economy (2021).
[2] see European Commission (2018b)
[3] as defined in point 1 of Article 3 of Directive 2008/56/EC
[4] DIRECTIVE (EU) 2019/883 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC
[5] See European Commission (2018b)

gear is not mixed with retrieved gear. Nevertheless, new ways to treat ALDFG and to avoid losing these resources need to be evaluated.

- In order to encourage the fisheries and aquaculture industry to participate in the EPR and to avoid looking for loopholes, it should be clearly shown on which data the cost calculations are based.

The concept of Extended Producer Responsibility (EPR)

The concept of Extended Producer Responsibility (EPR) is not only used in Article 8 of the Single Use Plastics Directive (SUPD)[6], but also in several other pieces of EU legislation, although it is partly named Producer Responsibility (PR). Regarding Single Use Plastic (SUP), the most prominent EU legislation is the Waste Framework Directive (WFD)[7], the Packaging Directive (PD)[8], the Batteries Directive (BD)[9], the Electric and Electronic Waste Directive (WEEED)[10] and the End-of Life Vehicles Directive (ELVD)[11]. For fishing gear, the Port Reception Facility Directive[12] as well as the Marine Strategy Framework Directive[13] are most relevant.
Most (E)PR schemes are mandatory, partially with optional elements. The PD has switched from a voluntary to a mandatory establishment of (E)PR schemes. According to the WFD, if EPR schemes are established, they have to conform to minimum requirements.
All directives contain minimum waste management targets, which are relevant for EPR schemes. However, for the SUPD this is only the case for PET bottles. Both the WFD and the PD include recovery targets for plastic. In all directives, addressees of EPR obligations include producers as defined in the respective directive except for the PD, which refers to the producer definition in the WFD. In the BD, the WEEED and the ELVD, also distributors and/or economic operators are or may be addressees of EPR obligations. Producers are defined differently in most of the relevant directives, and partly exclude distributors (e.g., in the WFD), partly include them (explicitly in the WEEED). Regarding operational responsibility, all directives require some kind of separate collection/take-back, transport, and recovery/disposal of the relevant waste streams. For the SUPD, however, this is only the case for PET bottles, while other SUP packaging waste is already managed as packaging waste according to the PD and the WFD.
In all (E)PR schemes, producers/economic operators are financially responsible for their operative obligations. In addition, they have to cover certain costs of services provided by the respective Member State. First, they have to cover the costs of certain awareness-raising measures, as well as the costs of data gathering and reporting. However, this is not the case for

[6] Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment
[7] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives
[8] European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste
[9] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC
[10]Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE)
[11] Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles
[12] Directive (EU) 2019/883 of the European Parliament and of the Council of 17 April 2019 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC
[13] Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

the BD (with the exception of information campaigns), the WEEED and the ELVD to which the financial minimum requirements of the WFD do not apply. Secondly, only producers of certain SUP packaging and of tobacco products have to contribute to the cost of the waste management of public systems regarding SUP waste discarded "en route" in systems of public collection. Finally, only producers of certain SUP have to cover the costs of litter clean ups in the environment by public authorities or on their behalf. Except for the ELVD, all directives include further financial provisions. Moreover, in most (E)PR schemes certain deviations from financial obligations are possible. In this regard, the WFD contains a remarkable provision; it stipulates that Member States may decide under certain conditions (inter alia compliance with EU waste management targets) that producers will (only) have to cover at least 80% of the costs and original waste producers or distributors the remaining costs. However, this deviation applies only to the costs for measures listed in the WFD, not for the additional ones provided for in the SUPD. Moreover, this deviation does not allow producers to lower their costs under EPR schemes established before 4 July 2018. All directives, except the WFD, allow at least certain (E)PR-related provisions to be transposed via agreements between the competent authorities and the economic sectors concerned. Regarding the relationship of the SUPD with the other directives, there is no overlap with the BD, the WEEED and the ELVD. In contrast, SUP waste is also waste in the sense of the WFD and SUP packaging waste is packaging waste in the sense of the PD. In case of conflict, the SUPD prevails over the WFD and the PD as lex specialis. Regarding EPR, however, the SUPD is intended to supplement the WFD and PD.

Conformity of EPR provisions with EU Law

The SUPD´s provisions on EPR raise the question whether they are compatible with higher-ranking EU law, especially the producers´ freedom to conduct a business according to Article 16 and the principle of equality before the law according to Article 20 of the Charter of Fundamental Rights of the European Union (EU Charter). Whether this is the case has been analysed in relation to those SUPD provisions that contain new and additional obligations as compared to other EU legislation on EPR, and, thus, raise legal questions not addressed before: the financial responsibility of producers for the collection, transport and treatment of relevant SUP waste discarded "en route" in systems of public collection, as well as the cleaning up of litter from relevant SUP. The EU was allowed to legislate because the **subsidiarity principle**'s requirements are satisfied: the problem of plastic pollution and marine litter is trans-boundary in nature; thus, joint efforts at EU level have much greater potential to prevent and reduce the impacts from litter than measures by single Member States. The **principle of proportionality** is also observed: of the available legislative measures, the less intrusive one was chosen, since directives constrain Member States less than regulations do.
When assessing a legal act's compatibility with fundamental rights, different standards apply depending on the nature of the legal act. As a rule, the Court of Justice of the European Union (CJEU) reviews directives only to the extent that they grant Member States no margin of discretion for transposing the directive. If a directive grants a margin of discretion, the Court only requires that the directive can be transposed in a manner that conforms to the requirements of the EU Charter of Fundamental Rights. However, in the recent case Digital Rights which involved particularly extensive and serious infringements of the right to privacy, the CJEU required that directives specify the extent of possible interferences with fundamental rights and ensure that they are limited to what is strictly necessary. However, if fundamental rights of an economic nature are involved, as in the case of the SUPD, the CJEU grants broad discretionary powers to the relevant EU institutions and carries out merely a limited judicial review.

By obliging producers to cover the costs of waste management for SUP discarded in public collection systems and of cleaning up SUP litter, the SUPD limits the producer´s freedom to conduct a business according to their own ideas. In addition, by treating all producers equally regardless of different circumstances, such as whether being based in a landlocked country or a coastal state, the relevant SUPD provisions also touch upon the principle of equality before the law. However, these limitations are justified as they serve legitimate objectives and are appropriate, necessary and not manifestly disproportionate to the aims pursued.
The SUPD´s legitimate objectives are to prevent and reduce the impact of SUP on the environment, in particular the aquatic environment, and to promote the transition to a circular economy. Obliging producers to cover the costs of waste management and cleaning up activities regarding certain SUP waste contributes to this aim and is therefore appropriate.
These measures are also necessary to achieve the objectives because less onerous measures that would be equally effective are not available. Financial penalties for littering already exist in Member States, but they are apparently insufficient to tackle the problem as a stand-alone solution, even combined with information campaigns and other awareness-raising measures. Financing the envisaged measures with public funds (e.g., via taxes), as currently done to a large extent, is not equally effective because it is not in line with the polluter-pays principle. Finally, sharing the financing of EPR measures with other actors is an option that Article 8a (4) WFD allows under strict conditions, but that does not apply to waste discarded “en route” in systems of public collection and to cleaning-up activities related to SUP waste. Extending financial responsibility to more actors than provided for in the WFD does not seem to be equally effective since other actors, such as distributors, do not have the same influence on the supply chain as producers that decide whether the product is placed on the market.
Moreover, weighing the benefits and disadvantages of the obligations of producers to cover the costs for waste management of SUP waste discarded “en route” in systems of public collection and for cleaning up SUP litter, does not result in these provisions being manifestly disproportionate to the aims pursued by the SUPD. First, the concept of EPR is an expression of the polluter-pays principle, according to which the setting of any condition for pollution, in this instance the production of products leading to waste, is sufficient to bear responsibility. In addition, due to the function of certain SUP, producers arguably still retain a certain degree of responsibility for both the discarding of SUP waste in non-separate public collection “en route” and the littering of SUP waste, even if they do not directly cause the pollution. Second, the SUPD imposes on producers the financial responsibility only for measures to tackle the most important pollution by SUP, based on the SUP found most frequently on European beaches. Third, while the lack of definition of the term “cleaning up litter” in the SUPD makes it difficult to estimate the amount of costs to be covered by producers, the SUPD provides some limitations, the most important being that litter has to be cleaned up by public authorities or on their behalf in a cost-efficient way. Concerning the treatment of producers regardless of different circumstances, such as their location in a landlocked or a coastal state, it is justified to treat them equally for reasons of efficiency and simplicity. A cost distribution according to producers’ actual contribution to marine litter is not practicable, since the causal chain is too complicated.
The SUPD provisions related to cost-coverage of SUP waste management and cleaning up SUP litter by public systems grant the Member States a certain margin of discretion to transpose the directive. While establishing EPR schemes is challenging with regards to the cleaning up of SUP litter due to the lack of definition of this term in the SUPD, difficulties in determining the content of provisions in EU directives are not uncommon and do not prevent transposition as such. Thus, transposition in conformity with the fundamental rights of the Charter is possible, as required by the CJEU.

Regarding the Member States´ obligation to transpose the relevant SUPD provisions in a manner that conforms to the Charter of Fundamental Rights, defining the term "cleaning up litter" in the transposing legal act is not recommendable. The more restrictive a national definition of the term, the higher is the risk that the European Commission questions the conformity of such a national definition with the general term in Article 8 SUPD, and initiates infringement proceedings against the relevant Member State. Accordingly, it would be preferable for Member States to simply adopt the term "cleaning up litter" in their implementing acts and leave it to the administration and the national courts to enforce and interpret this term in a manner that is in line with fundamental rights, especially the principle of proportionality. However, when designing the EPR schemes to be established according to Article 8 SUPD, Member States may need to make some assumptions regarding the amount of costs for cleaning up litter, and thus indirectly on the extent of cleaning measures. At least some certainty for Member States could be provided by the European Commission: when publishing guidelines for criteria on the cost of cleaning up litter, in consultation with Member States, as required by Art. 8 (4) subparagraph 2 SUPD, the Commission could provide at least some (non-binding) guidance on the scope of cleaning up litter according to the SUPD. The principle of legal certainty is not directly relevant for the conformity of the directive with EU law because it concerns acts that are directly addressed at (natural and legal) persons. However, Member States are bound by this principle when transposing the SUPD into their national systems. Although challenging in regards to the term "cleaning up litter", this can be achieved within the Member States´ margin of discretion.

EPR for waste fishing gear

The SUPD also applies to fishing gear, containing plastics[14], according Art. 8. The main objective is to prevent abandoned, lost or otherwise discarded fishing gear (ALDFG) by incentivising the correct collection and disposal of end-of-life gear in ports/harbours and improving its handling there.[15] Member States have to ensure that the producers of fishing gear cover the costs of the separate collection of waste fishing gear, the costs of its subsequent transport and treatment (Art. 8, para 9) as well as awareness raising measures (Art. 10). However, there is no requirement for producers of fishing gear to bear the costs for clean-ups of beaches. Comparing the pathways of single use plastics and fishing gear it is obvious that the producer cannot influence the behaviour of the littering person, be it accidental or with intention. It can be argued that it is not proportional to make producers responsible for issues outside their scope. To solve this question, decisions about broad and narrow interpretations of the polluters pays principle, as fundamental part of the operational instrument, the EPR, have been considered. To find a realistic solution, Member States could include the aspect of clean-ups for fishing gear into national legislation. One can also argue with the revised Port Reception Facility Directive (PRFD)[16], which aims to reduce discharges of ship-generated waste and cargo residues into the sea. Complementary to reporting obligations for end-of-life gear under the SUPD, information collected in the waste delivery receipts on passively fished waste has to be reported, similar to the procedures for lost gear, according to the PRFD. [17]

The original directive 2000/59/EC as well as the revised one align with MARPOL,[18] which

[14] In the following, fishing gear stands always for the term 'fishing gear containing plastic'.
[15] European Commission (2018b)
[16] Directive (EU) 2019/883 of the European Parliament and of the Council of 17 April 2019 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC (OJ L 151, 7.6.2019, p. 116).
[17] See e.g., Preamble No.s 23 and 49 of the PRFD
[18] IMO Convention MARPOL 73/78 (International Convention for the Protection of Pollution from Ships, 1973, as modified by the Protocol 1978)

focuses mostly on operations at sea and does not provide for an effective enforcement mechanism. Therefore, the PRFD is a way to enforce concepts and obligations of MARPOL into EU law. To avoid different policies in ports, further harmonisation at EU level was seen as necessary. Member States can decide on their own how to structure the operational measures applicable at port level, based on local considerations and administrative set-up and ownership. For the SUPD, this approach can be transferred. Here, the Member States can decide about the scope of the collection target and in a next step, clean-up provisions for fishing gear to close the cycle. Therefore, proportionality and conformity aspects would not be breached by the extension of the existing SUPD for clean-ups of fishing gear. However, to be realistic, the directive will not be opened too soon to alter specific aspects. Therefore, it is up to the Member States to include this aspect into national legislation and implementation requirements of the SUPD.

Conformity with International Law

So far, no international convention addresses plastic waste in a comprehensive way. Thus, there is no indication that the EPR provisions of the SUPD might not conform to international environmental agreements. However, they must conform to the law of the World Trade Organisation (WTO), by which the EU and its Member States are bound. The most relevant provisions are contained in the General Agreement on Tariffs and Trade (GATT), in particular Art. III:2, III:4 and Art. XX GATT.

Art. III:2 GATT first sentence states that "[t]he products of the territory of any contracting party imported into the territory of any other contracting party shall not be subject, directly or indirectly, to internal taxes or other internal charges of any kind in excess of those applied, directly or indirectly, to like domestic products." While in principle a detailed and product-specific analysis is required for each of the SUPs in question to conclude whether or not imported SUPs are "like" domestic SUPs, it is very likely that this would be the case. EPR rules in Art. 8 SUPD do not entail a different financial treatment of imported and domestic products, however. In the absence of such different treatment, Art. III:2 GATT does not appear to be violated, irrespective of the exact definition of "internal taxes" and "charges".
Article III:4 GATT contains a non-discrimination clause, stating that WTO Members must accord the products imported from another WTO Member treatment "no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use". Article 8 SUPD is relevant in this context, since it requires Member States to impose certain EPR obligations on producers of certain SUP, which also has the potential to make these products more expensive. Article 8 (6) SUPD obliges each Member State to allow the producers established in another Member State and placing products on its market, to appoint an authorised representative for the purposes of fulfilling producer´s obligations regarding EPR schemes on its territory. This makes it easier for the producer to fulfil these obligations. The SUPD does not contain a similar clause for producers established outside the EU, however; this seems to constitute a less favourable treatment of non-EU producers of the SUP concerned, who place product on the EU market, as compared to EU producers. Thus, Art. 8 (6) SUPD seems to be in violation of Art. III:4 GATT. Violations of Article III:4 GATT could be justified by Art. XX GATT, in particular Art. XX (b) GATT that allows WTO Members to take measures that are "necessary to protect human, animal or plant life or health". It is, however, not immediately evident that the limitation to producers from other EU states in Article 8 (6) SUPD serves an environmental or health purpose. For the same reason, Art 8 (6) of the Directive is unlikely to be "necessary" in the sense of Art. XX (b) GATT. Otherwise, Article 8 of Directive 2019/904 appears to be compatible with WTO law.

Analysing potential EPR measures for different single-use plastic products

This analysis served to investigate measures under EPR, which could ensure that producers of the following single-use plastic products bear financial responsibility for the management of the waste stage of their product's life cycle:

1. Food containers;
2. Packets and wrappers;
3. Beverage containers with a capacity of up to three litres;
4. Cups for beverages, including their covers and lids;
5. Lightweight plastic carrier bags;
6. Wet wipes;
7. Balloons;
8. Tobacco products with filters and filters marketed for use in combination with tobacco products.

We reviewed relevant scientific and grey literature as well as news articles, in order to identify and analyse (arguments for) potential measures under EPR for the above products along the five different SUP waste-related activities collection, transport, treatment, clean-ups and awareness raising. In order to ensure that we obtain and analyse relevant information on the different SUP products, we conducted complementary guideline-based expert interviews by telephone with NGOs, a producer-responsibility organisation and a municipality. Through the literature review and complementary interviews, we aimed to answer the following three questions:

- What could be effective EPR measures for the different products and the different waste-related activities?
- Who should be responsible for carrying out these measures, and for covering the costs?
- What costs could potentially be associated with the measures identified?

Key findings regarding EPR measures for SUP waste collection

The obligation for producers to pay for collecting waste discarded via public collection systems applies to the following six SUP products: Beverage containers; Cups for beverages; Food container; Lightweight plastic carrier bags; Packets and wrappers; and Tobacco products/filters. As many of these products end up in the environment although being disposed of in public waste receptacles – and hence need to be cleaned-up – improving bin infrastructure, using adequate bin design and ensuring frequent collection (depending on visitor numbers, season, public events and weather conditions) appear to be key measures to help implement EPR during the waste collection phase. Bin design and infrastructure should ensure that

- bins for recyclable waste and residual waste are placed next to each other in order to ease and enable source separation of plastics and other wastes;
- bins are easy to differentiate, e.g., through colour coding, icons or simple wording (signage of bins can include a few examples – best in both words and images – of what should go into the bin); and
- bins are placed so that they can be easily and conveniently reached (e.g., close to potential littering or SUP waste generation hotspots, e.g., beaches, parking lots).

Cost estimates for collection and treatment of the above six SUP products are available from the impact assessment of the SUP Directive. Accordingly, annual average costs for collection and treatment are estimated to amount to:

- 0.67 million EUR for cigarettes
- 112 million EUR for drinks bottles
- 11 million EUR for wet wipes
- 59 million EUR for drinks cups and lids
- 73 million EUR for food containers
- 48 million EUR for crisp packets and sweet wrappers

Key findings regarding EPR measures for SUP waste transport

The obligation for producers to pay for transporting waste discarded via public collection systems applies to the same six SUP products as for waste collection.
If public waste bins are designed for source separation, then a key measure to help implement EPR during the transport phase is that waste transport vehicles should maintain waste separation through separate compartments. There are no overarching cost estimates for transport-related EPR measures concerning the SUP products covered by Art. 8 of the SUP Directive.

Key findings regarding EPR measures for SUP waste treatment

The obligation for producers to pay for treating waste discarded via public collection systems applies to the same six SUP products as for collection and transport. Treatment of the SUP products covered under Annex E of the SUP Directive encompasses recycling, incineration and landfilling as waste management options. Depending on the SUP product in question, treatment options will (have to) differ. For instance, while lightweight plastic carrier bags are recyclable in principle, their recycling involves high efforts and costs due to the plastic bags' thin and lightweight nature, as well as due to their composition, which usually is a mix of polymers. Moreover, recycling of lightweight plastic carrier bags requires that a sufficient amount of them is collected. Yet, their lightweight nature makes transporting them expensive and washing the thin bags requires high amounts of water. Therefore, incinerating lightweight plastic carrier bags (with energy recovery) is economically much more attractive. For packets and wrappers containing metals, in particular metallised plastic films in crisp packets, recycling is either not easy technically or only at rather high costs. In addition, metallised packaging confuses consumers as to which waste stream to put the packets into: metal recycling or with plastic recycling. Tobacco products/filters are typically incinerated. Similarly, incineration is the standard treatment for wet wipes because (a) blended natural and synthetic fibres complicate recycling; (b) synthetic fibres do not break down in compost and the chemicals used destroy the compost's soil ecology; and (c) polyester fibres in wet wipes take up to 100 years to biodegrade in landfill sites and the antibacterial alcohol used in wet wipes kills bacteria and enzymes working on breaking down solid waste in landfill sites. As the impact assessment of the SUP Directive estimates annual average costs for collection and treatment together, please refer to the cost estimates presented for waste collection above.

Key findings regarding EPR measures for clean-ups of SUP waste

Obligation for producers to pay for clean-up of waste applies to all eight SUP products: Balloons; Beverage containers; Cups for beverages; Food container; Lightweight plastic carrier bags; Packets and wrappers; Tobacco products/filters; and Wet wipes. Clean-up measures often encompass a combination of a machine-based mechanical basic cleaning followed by manual cleaning by hand, pincer or rake. Typically, clean-ups are not SUP product specific. The variety of technologies and machinery brings with it different advantages and disadvantages, for instance as regarding the depth with which beaches are cleaned of cigarettes and filters vs. the amount of biota being removed during clean-ups in order to reach deep beach cleaning. While technically not a challenge, beach cleaning poses an economical challenge because costs are high and so far mostly borne by municipalities. According to Art. 8 (3), (4) SUP Directive, clean-up costs for SUP products should be borne by the corresponding producers, but shall be limited to activities undertaken by public authorities or on their behalf. Furthermore, the term clean-up is not legally defined. Therefore, there is no clarity on the scope of clean-ups, i.e. which areas clean-ups, and hence cost coverage for clean-ups, encompass: bathing beaches, other beaches, waterways, streets, roads, public places, green areas and parks. Wet wipes, which are often flushed down the toilet, do not decompose in the sewer system due to the plastic content and thus not only lead to sewer blocking and pump clogging, but also find their way into rivers and seas and onto beaches. Hence, there are discussions whether or not wet wipe producers should also pay for sewer unblocking. Cost estimates for clean-ups of different SUP products are available from the impact assessment of the SUP Directive. Accordingly, annual average costs for terrestrial, riverine and marine litter clean-ups amount to:

- ~3 billion EUR for cigarettes
- 558 million EUR for drinks bottles
- 15 million EUR for wet wipes
- 240 million EUR for drinks cups and lids
- 167 million EUR for food containers
- 58 million EUR for crisp packets and sweet wrappers

However, costs for clean-ups differ depending on a number of factors (e.g. beach and waterway lengths, cleaning intervals, tourism relevance, population size) from one locality to the next and are hence very context specific.

Key findings regarding EPR measures for awareness raising

Obligation for producers to pay for awareness raising measures for sustainable choices and appropriate waste disposal applies to all eight SUP products: balloons; beverage containers; cups for beverages; food container; lightweight plastic carrier bags; packets and wrappers; tobacco products/filters; and wet wipes. Awareness raising measure shall inform consumers about the (a) the availability of reusable alternatives, reuse systems and waste management options for those products; (b) the impact of littering and other inappropriate waste disposal of those products on the (marine) environment; (c) the impact on the sewer network of inappropriate waste disposal of those products. Using labels should be part of awareness raising measures. Art. 7 SUP Directive foresees product marking via labels for wet wipes and sanitary towels. Because of hygienic concerns regarding the disposal of used wet wipes (in particular if used as a supplement to toilet paper), convenience or lack of knowledge, consumers often flush

wipes down the toilet, maybe unaware or ignorant of the impacts of flushing.
Cost estimates for awareness raising measures regarding different SUP products are available from the impact assessment of the SUP Directive. Accordingly, annual average costs for awareness raising amount to:

- 76 million EUR for cigarettes
- 14 million EUR for drinks bottles
- 6 million EUR for drinks cups and lids
- 4 million EUR for food containers
- 1 million EUR for crisp packets and sweet wrappers.

Regarding wet wipes, a cost estimate from New York City, US, may showcase potential costs for awareness raising: the city launched a $2 million campaign in 2018 aiming to sensitise residents also via subway ads to "respect the flush".

Potential mechanism to implement EPR for SUP products: suggesting a fund to foster reusable products and waste prevention

General idea and scope

The idea of introducing and setting up a fund to foster reusable products (maybe starting with, but in the long run extending beyond, plastics) and waste prevention is to create both enabling structures (e.g., institutions, new practices) and incentives to foster and prioritise the use of reusable products over single-use products (e.g., beverages in reusable cups). We suggest setting up an earmarked fund for Germany that covers all eight single-use plastic (SUP) products as addressed in Article 8 on EPR in the SUPD. In our view, this fund should encourage and enable the use of funds to provide financial contributions to public authorities (earmarked for reducing certain SUP, fostering reuse and also for preventing SUP waste. Hence, we suggest that the fund's general idea is to

- make SUP producers pay contributions into the fund. These contributions should be designed so as to incentivise producers to foster waste and litter prevention, better eco-design and reusable products, and
- allow public authorities to receive compensations from the fund-to-fund waste prevention activities and SUP reuse as well as SUP waste management activities, clean-ups and infrastructures.

A fund solution seems sufficiently flexible to be adapted to emerging new knowledge and thus to accommodate changes. For instance, the type and scope of SUP waste-related activities that the fund covers could be expanded or modified according to new insights.
This raises the question which title is appropriate for the fund as suggested here. The title "Littering Fund" is not a suitable title, as the fund's principal idea is to beyond removing littered plastic items from the environment (through clean-ups) and, instead, explicitly encompasses the prevention or reduction of littering behaviour (e.g., through incentivising design for reuse and waste prevention or through awareness raising). We therefore suggest to use a more encompassing title for the fund, oriented towards the goal of the SUPD, such as "Waste-free Environment Fund", "Fund to Foster Reusable Products and Waste Prevention" or "Reuse and Waste Prevention Fund".

Considerations on institutions that could be tasked with collecting contributions and administering the fund

The role of the national government within the EPR scheme needs to be defined. Generally, it can be distinguished between (a) government-run and (b) producer-run EPR systems. In the European Union, the most common way to implement EPR schemes is (b), through the establishment of one or several PROs, which typically lead to a producer-run scheme (such as the dual system in Germany). As a collective entity acting on behalf of the producers, the PRO takes over the responsibility for meeting the EPR obligations. In such systems, the role of public authorities is often limited to setting and monitoring (mandatory) targets and conditions, while economic operators are free to decide how to achieve the targets. Alternative to encouraging or requiring a PRO, governments could establish an EPR scheme by setting up and administering a governmental fund (that is (a), government-run). The central question that arises now is who should administer the fund: Should the government manage the fund, should it be producer-led or should an independent body be established to be in charge? As one task of the fund will be to reimburse public authorities for on-going and additional waste management activities covering SUP waste from producers that pay into this fund, it can be argued that an independent body, such as a clearing house, would be most suitable to manage the fund. For example, this could be small subdivision affiliated to the Federal Ministry for the Environment or German Environment Agency or the recently introduced Central Agency Packaging Register (Zentrale Stelle Verpackungsregister – ZSVR). Such a central clearing-house could have a similar function to the ZSVR in Germany. Since January 2019, the ZSVR has taken up its work to ensure a proper and fair distribution of disposal and recycling costs of packaging waste. Before that, the competitively run dual systems used to have an own clearing unit that registered the amounts of packaging put on the market by associated producers, and defined the fees. Due to transparency issues and susceptibility to errors, the centralized clearing-house in form of the ZSVR was introduced. The ZSVR is organised as a foundation of private law, empowered with sovereign rights and thereby under the supervision of the German Environment Agency (UBA). Because of the obligation of producers and PROs to report data about packaging put on the market and the ZSVR's power to examine the data and to estimate the amounts if necessary, the ZSVR is able to determine the market shares of PROs and therefore helps to allocate the costs properly.
The founders of the ZSVR and also the members of the advisory council are mainly economic operators. However, with regard to the SUPD there is no incentive for economic operators to clean the environment from (plastic) waste to a high degree. Therefore, in the case of the fund suggested here, the advisory council should not only include economic operators, but also representatives of environmental organisations and other environmental protection institutions.

How to calculate the financial contributions of responsible producers?

The general concept of making producers financially or financially and organisationally responsible for end-of-life management of their products via EPR hinges on the true cost principle. This principle foresees that the actual costs related to end-of-life management of a product should be considered as completely as possible when designing producers' financial contributions to EPR schemes. Designing an appropriate level of cost coverage is a challenging task and the method(s) for calculating cost coverage levels need to be transparent.
There seem to exist two main mechanisms to calculate producers' financial contributions to – as suggested here – a fund to foster reusable products and waste prevention:

a) Determining a percentage share per SUP product based on the quantities of products that a producer places on the market in a country or in the EU;

b) Determining a percentage share per SUP product based on clean-up monitoring data of littered items found on beaches, along shores, along rivers, in green spaces and parks / fishing-for-litter data.

The first calculation option (1) seems easier to calculate, justify and implement if the data for quantities placed on the market are readily available for use – which seems unlikely given concerns around confidentiality of company data in competition. However, this approach means that producers would have to pay a percentage per product placed on the market, even if only parts of their products end up littered and another (hopefully larger) part is properly disposed of. Therefore, while determining market shares might be relatively easy, relating them by percentages to end-of-life management costs likely will not because this necessitates making potentially controversial assumptions about item-specific waste management costs.
The second calculation option (2) seems more challenging to apply. First, it requires a closer understanding of the term clean-up since Article 8 SUPD does not provide any geographical limits within EU territory. Secondly, for some spatial foci for clean-ups, such as beach clean-ups, data are available that could be used to pro-rate producers' financial contributions to such a fund based on the share of littered items found (in terms of numbers found) that represent a producer's product. However, for other spatial foci (e.g., highways/roads, green areas/parks), data for littered quantities might be scarce or lacking. Depending on the scope of the term clean-up and the data availability, the financial contributions of producers can be based on actually littered quantities. These are allocated to producers in percentages according to observation data for different products found littered (e.g., x wet wipes per 100 m of beach clean-ups as a percentage of overall litter items found gives the cost allocation to wet wipe producers). Thus, the financial contribution could appear directly related to only a narrow focus of the fund, i.e. preventing and cleaning up littering. In their impact assessment of measures to reduce marine litter from single use plastics, ICF and Eunomia use a combination of the two aforementioned approaches. They calculate compliance costs for EPR cost coverage for different SUP products by dividing the SUP product specific overall costs for compliance (including collection, treatment, litter clean-ups and awareness raising/information) by the respective number of SUP products sold on European markets in a base year (2016). Thus, they arrive at relative compliance costs per item put on the market, ranging from 0.2% for food containers to 2.6% for wet wipes.

For a German fund to foster reusable products and waste prevention we suggest

a) either using these figures as the basis for the financial contributions of producers to the fund (e.g., 0.004 EUR per any cigarette placed on the European market by a producer; etc.)

b) or using the calculation method to commission an in-depth study to collect data for both compliance costs in Germany and SUP items sold in Germany.

Option a) is a readily available figure, which is based on a robust impact assessment by ICF and Eunomia with transparent documentation of assumptions and data sources used. However, for a fund to foster reusable products and waste prevention focusing on Germany, commissioning an own in-depth study based on national data could provide a more tailor-made solution. But this would require investing more financial resources and time until such a study could be delivering results to use for advancing the idea of such a fund further. In addition, we recommend introducing differentiated fees for producers, in order to incentivise waste prevention, e.g. through designing for reuse. For example, fees can be differentiated according to the amount of reusable products of a producer: the higher the share of reusable products of a producer, the lower its financial contribution to the fund should be. Generally, contributions should be so high

as to "be felt" by producers, and if passed on to the consumers through increased product prices, consumers might shift to other producers. Hence, if producers shift to reusable products, they pay lower contributions to the fund and therefore the product price should be lower compared to products from manufacturers without/with fewer reusable products. Eco-modulation or environmental weighting of fees could help motivate producers' efforts for eco-design and design-for-environment. In order to ease the calculation of producer fees based on market data, the EPR scheme requires producers of all eight SUP items to a) annually report on and b) declare quantities (or weights) and quality (in terms of reusable vs. single use products, etc., to ease implementing eco-modulation of fees) of equipment placed on a given market. Requiring producers to declare quantities could also ease the calculation of producers' contributions without having to monitor other market data. However, quantities are part of business secrets and should be treated confidentially, hence not be made public or accessible by the institution managing the fund. Furthermore, these reports/declarations must be accredited or reviewed by the fund (organisation) to cover against false claims and freeriding.

Considerations on principles to use to allocate financial means from the fund

Key challenges for Member States are: (i) to establish a clear mechanism that ensures an adequate reimbursement of public authorities for their activities related to foster reusable products and waste prevention; (ii) to encourage local authorities to undertake additional SUP waste-related activities aimed at fostering reusable products and waste prevention, on top of the on-going activities. In terms of fairness a key question is how much each municipality should receive from the fund. Here it needs to be noted that waste management structures greatly differ between German municipalities, as do their geographic conditions (e.g., some encompass beaches; size of urban areas differs; population density differs, etc.). Thus, funds that local authorities allocate to waste management operations and infrastructures differ. Such "local particularities" need to be accounted for, as they could result in different claims for compensation related to SUP waste-related activities. In addition, as local authorities organise SUP waste-related activities, they are free, within the limits given by public procurement law, to choose suitable and appropriate measures and systems, e.g., for clean-up, collection and treatment, for their area. From the perspective of producers who are obliged to contribute financially, this can be a controversial issue. Producers may challenge whether the methods chosen by local authorities are cost-efficient, since Article 8 (4) SUPD limits the costs to be covered by producers to the costs necessary to provide the relevant services in a cost-efficient way. To illustrate this, in particular when municipalities have systems in place or want to introduce systems that deviate from the standard, this could lead to an unfair financial burden on producers. In order to allow municipalities free choice of their SUP waste-related activities and at the same time ensure fair cost sharing of producers, applying a reference formula or reference cost could help to determine the financial sum that needs to be covered. A reference cost approach could be a way to allocate financial means from the fund to local authorities, and it might increase producers' willingness to participate as it ensures a certain level of fairness. In such a scenario, based on calculation guidance provided by the public institution managing the fund, each municipality would calculate the reference cost and make it transparent. One advantage of a fund solution is that it enables the distribution of revenues more specifically. For example, only a certain share of the money collected in the fund may be earmarked for covering the costs of existing activities. The remaining share should be earmarked to cover costs for additional activities (or extension of existing measures in time, space, etc.), such as an expansion of the bin infrastructure, establishment of reusable systems, etc. One particularity in the case of producer responsibility for SUP is of course that only producers of eight products (so far) are obligated to contribute financially to an EPR scheme. Yet, SUP waste-related activities at municipal level are carried out for all waste collected in public waste bins. Producers obligated

under the SUPD are thus not responsible to cover the complete sum of the reference costs, but only a certain share of it. An independent body that administers the fund could at the same time be in charge of monitoring the EPR system and settling disputes between local authorities and producers.

Analysing potential EPR measures for fishing gear

For fishing gear as well – end-of-life gear and ALDFG brought back to ports - measures under EPR, which could ensure that producers bear financial responsibility for the management of the waste stage of their product's life cycle have been analysed. Based on the review of relevant scientific and grey literature and interviews conducted with relevant stakeholders of the fisheries and aquaculture sector as well as waste management and NGOs, potential measures under EPR for fishing gear along the four different SUP waste-related activities collection, transport, treatment, and awareness raising have been analysed. In addition, potential measures for cleaning-up have been outlined. Through the literature review and complementary interviews, we aimed to answer the following three questions:

a) What could be effective EPR measures for the different fishing gear types (like end-of-life and ALDFG) and the different waste-related activities?

b) Who should be responsible for carrying out these measures, and for covering the costs?

c) What costs could potentially be associated with the measures identified?

Key findings regarding EPR measures for fishing gear collection

The separate collection is the most efficient and cost-effective way to reduce marine litter derived of fishing and aquaculture gear and to achieve the acceptance of the producers for the new EPR scheme. The following measures are therefore focusing on this option with some information on two other options, the deposit/return system and the organization of retrieval operations. Separate container need to be provided for end-of-life gear directly disposed after use and derelict fishing gear retrieved from the marine environment. Whereas the former has a good chance to be recycled this is not the case for the latter due to organic contamination, bio-fouling and entanglement of different kind of gear. Therefore, it needs to be ensured that end-of-life gear is not mixed with retrieved gear. In addition, waste collection systems and services have to be improved and labelling introduced to achieve higher collection rates. To motivate relevant sectors to support collection efforts, economic incentives could be provided. In addition, cooperation in collecting waste between different harbours and recycling companies may be economically beneficial. Those harbours having already permanent collection facilities for end-of-life fishing gear installed can support those without dedicated collection areas to raise the amount of recyclable materials. In parallel, facilities for ALDFG need to be installed to explore waste management options for these materials and to develop large-scale practices.

Key findings regarding EPR measures for fishing gear transport

One way to decrease the cost of transportation would be to invest in local recycling options or to provide appropriate storage containers for recycling that are only picked up when full. A study[19] suggests a mix of decentralised and centralised logistics for optimal and cost-efficient processing of fishing gears. This would increase the gear volumes coming from the relatively small number of commercial fisheries in Germany (especially in the Baltic Sea). Overall, it is recommended to wait whether the new requirements of the SUPD provide sufficient end-of-life fishing gear for the establishment of new recycling companies. To minimise transport costs, pre-processing, i.e. the removal of large metal items and rocks, should be in or near the reception harbour. The

[19] See Bertling, R. & J. Nühlen (2019), p. 26

separation between clean, single-polymer materials (end-of-life gillnets) and low-quality mixed ALDFG need to take place early in the process, ideally at the fishing harbour. This can be achieved by installing different containers for a clear separation from the very beginning. Nevertheless, pre-processing efforts by fishermen, divers or other professionals are very time-consuming and need to be financially supported. It is recommended to share costs for these activities between producers, municipalities or national authorities, eventually supported by national funding schemes to establish a value chain. According to the SUPD, costs for producers related to waste management should not exceed the costs that are necessary to provide those services in a cost-efficient way and should be established in a transparent manner between the actors concerned.[20] Especially end-of-life gillnets are systematically treated by fishermen to remove swim- and sink-lines for re-use. The net material is well-suited for recycling as nets are composed of the high-value polymers PA6 and PET. End-of-life fishing nets are already recycled into yarn by companies, e.g., in Spain or Slovenia. Material collection and distribution to disposal or recycling facilities could be organised with minimal transport ways through collecting end-of-life gears and ALDFG at the same time during a few tours along the entire coast of a country.

Key findings regarding EPR measures for fishing gear treatment

Some harbours already offer collection points for end-of-life gear. In Germany this is true for Fishing-for-Litter waste only. Other countries like The Netherlands, Portugal or Sweden have already installed such collection points by some port authorities.[21] Certainly the management of its treatment needs to be improved and should be the focus of recycling activities. In contrary, no pathway for retrieved fishing gear in the existing waste management infrastructures exists: There are no facilities to collect such kind of gear. It is therefore discarded in unsorted municipal or commercial waste (household/residual waste) ending up in incineration facilities or landfills[22]. But even the fibres in trawl fragments and gillnets are hazardous to cutting machinery, as they can wind around rotors and get trapped between blades. At present, only the scenario – centralised pre-shredding with lead extraction followed by incineration – is available for mixed ALDFG materials in the existing waste management systems. Every other way requires investments into new facilities and infrastructure to enable polymer recycling. Although not yet realistic, the intention should be to also use e.g., single-polymer ALDFG[23] for recycling and to incinerate bad quality ALDFG. Large trawl net fragments and ropes provide the easiest recycling samples as they are more readily separated from trapped marine litter such as large metal items, rocks and cables. They also provide more uniform materials that might be used in small-scale production series.[24] In any case recycling of ALDFG or end-of-life fishing gear does not automatically foster the maritime circular economy. This can only be achieved if recycling products are designed to have a high recycling potential again after their life span.
Measures outline ways to achieve this aim and also strengthen the recycling of end-of-life fishing gear. Eco-modulation fees and the establishment of a fund to transform processes have been discussed as well.

Key findings regarding *potential* EPR measures for fishing gear clean-up

The willingness to prevent losses is very different among fishermen and across sea basin regions. There exist several reasons why gear of fisheries and aquaculture are lost. Measures

[20] SUPD, Preamble 21
[21] See Sandra, M. et al. (2019), p. 6 and https://aqua-lit.eu/toolbox as well as https://aqua-lit.eu/faq
[22] This practice still occurs in some EU countries. In Germany it is not allowed to bring high-caloric waste including fishing gear containing plastic to landfills.
[23] However, even gillnet-dominated ALDFG samples often contain a complex multi-component material mix of at least 4 types of polymers.
[24] See Stolte, A. et al. (2019)., p. 5, p. 18 and Stolte, A. & F. Schneider (2018), pp. 97.

discussed are research in new technologies and beach-clean-up devices as well as a new insurance fund for fishermen to increase the collection rate of ALDFG. More data assessments are necessary as well as studies, analysing the quantity share and differentiating along the fractions of gear (end-of-life gear, ALDFG, sectors) to generate important basic data and first cost assessments of clean-up activities, e.g., in communities.

Potential mechanism to implement EPR for fishing gear: suggesting an insurance fund to foster the support of fishermen to bring back ALDFG

The revision of the Port Reception Facilities Directive is a step in the right direction in terms of lessening the disincentive for fishers to return ALDFG to shore, but there are two issues remaining. First, the revision does not focus specifically on ALDFG, and second, there are no direct incentives for fishermen to return ghost gear. In addition, Member States are free to design their national cost-recovery systems, and so there is discrepancy among states and confusion remains for fishermen operating in EU waters. A homogenous solution must be found that covers either full sea basins or rather, implemented EU-wide. An institutionalised fund needs to be designed to support fishermen with bringing ashore containers of old fishing gear, as well as to support the costs of their treatment (recycling or incineration). An insurance fund for fishing gear would need to be coordinated by an independent body that ensures that the measures to manage ALDFG are implemented effectively and efficiently, and to ensure that fishermen returning ghost gear both pay their insurance fees to satisfaction and are subsequently rewarded appropriately.

Zusammenfassung

Umsetzungsempfehlungen

- Die Mitgliedstaaten sollten den Begriff "Reinigungsaktionen im Zusammenhang mit Abfällen" in ihren Umsetzungsrechtsakten nicht definieren, da dies zu einem Umsetzungsdefizit und letztlich zu Vertragsverletzungsverfahren führen könnte. Dementsprechend wäre es vorzuziehen, wenn die Mitgliedstaaten den Begriff einfach in ihre Umsetzungsakte übernehmen und es der Verwaltung und den nationalen Gerichten überlassen würden, diesen Begriff in einer Weise anzuwenden und auszulegen, die im Einklang mit den Grundrechten der Grundrechte-Charta der Union, insbesondere dem Grundsatz der Verhältnismäßigkeit, steht.

- Die Mitgliedstaaten sollten erwägen, sich an die Europäische Kommission zu wenden, um wenigstens etwas Gewissheit über den Umfang des Begriffs "Reinigungsaktionen im Zusammenhang mit Abfällen" zu erlangen. In ihren bevorstehenden Leitlinien für die Kosten von Reinigungsaktionen im Zusammenhang mit Abfällen könnte die Kommission in Abstimmung mit den Mitgliedstaaten zumindest einige (unverbindliche) Angaben zum Umfang des Begriffs nach der Einwegkunststoff-Richtlinie (EKRL) machen.

- Um Artikel III:4 GATT zu entsprechen, sollten die Mitgliedstaaten bei der Umsetzung von Artikel 8 (6) EKRL in nationales Recht auch den außerhalb der EU ansässigen Herstellern erlauben, einen bevollmächtigten Vertreter zu benennen, um die Verpflichtungen der Hersteller bezüglich der EPR-Regelungen auf ihrem Hoheitsgebiet zu erfüllen.

- Bei der Berechnung der Herstellerbeiträge zu einem Fonds sollten zur Ermittlung der Reinigungskosten die folgenden Schwerpunktbereiche einbezogen werden: (i) Strandreinigungen zur Säuberung von an Land gespültem Meeresmüll, unabhängig davon, ob die Strände zum Baden bestimmt sind oder nicht; (ii) Uferreinigungen zur Säuberung von Müll entlang von Wasserstraßen, Flüssen, Bächen, Gräben, , Kanälen, Seen und Teichen; (iii) Reinigungen zur Säuberung von Müll entlang von Straßen, Wegen, Autobahnen und deren Schultern, in Grünstreifen/-plätzen, Rastplätzen, öffentlichen (Park)Plätzen, Grünflächen und Parks. Dies ist nicht als gesetzliche Definition des Begriffs Reinigung gemeint.

- Herstellerbeiträge sollten sowohl für die Finanzierung von kommunalen Maßnahmen genutzt werden, die von den Kommunen bereits umgesetzt wurden, als auch für zusätzliche Maßnahmen, um die Kommunen zu ermutigen, zusätzliche Maßnahmen zu ergreifen, um Wiederverwendung und Abfallvermeidung voranzubringen. Nur ein bestimmter Anteil der im Fonds gesammelten Gelder könnte für die Deckung der Kosten bestehender Aktivitäten vorgesehen werden, während der verbleibende Anteil für zusätzliche Aktivitäten vorgesehen werden könnte.

- Eine plausible und transparente Methode wird benötigt, um angemessen Herstellerbeiträge zu entwickeln. Wir schlagen vor, zumindest die beiden folgenden Optionen zur Berechnung der Kosten und finanziellen Beiträge der Produzenten zu prüfen: (i) Bestimmung eines prozentualen Anteils pro Produkt auf der Grundlage der Produktmengen, die ein Produzent in einem Land oder in der EU auf den Markt bringt; (ii) Bestimmung eines prozentualen

Anteils pro Produkt auf der Grundlage von Daten aus dem Clean-up-Monitoring von an Stränden, Ufern, Flüssen, in Grünflächen und Parks gefundenen Abfallgegenständen. Diese Daten sollten verwendet werden, um den relativen Beitrag der verschiedenen EK-Produkte zu den Reinigungskosten anteilsmäßig zu berechnen.

- Mitgliedstaaten sollten einen transparenten, kostenwirksamen und fairen Mechanismus einrichten, um die im Rahmen des Fonds gesammelten Zahlungen der Hersteller an die öffentlichen Behörden zu verteilen und so eine angemessene Entschädigung für ihre EK-bezogenen Aktivitäten zu gewährleisten. Die öffentlichen Behörden (auf kommunaler Ebene) sollten frei geeignete und angemessene Reinigungs-, Sammel- und Behandlungssysteme für ihr Gebiet wählen können. Um Konflikte mit den Herstellern hinsichtlich der Kosteneffizienz der gewählten Maßnahmen zu vermeiden, sollten die Mitgliedstaaten die Einführung einer Referenzformel/eines Referenzkostenansatzes erwägen. Dies könnte die Bereitschaft der Produzenten zur Teilnahme erhöhen, da es ein gewisses Maß an Fairness hinsichtlich der Kosten der Maßnahmen gewährleistet. Darüber hinaus sollten die Gemeinden verpflichtet werden, ihre Aktivitäten zu melden, um Geld aus dem Fonds zu erhalten.

- Kontrollmechanismen sollten etabliert werden, um die Wirksamkeit des EHV-Systems zu überwachen und Einnahmen und Ausgaben transparent zu machen. Eine unabhängige Stelle, die den Fonds verwaltet, könnte gleichzeitig für die Überwachung des EHV-Systems und die Beilegung von Streitigkeiten zwischen Kommunen und Produzenten zuständig sein.

- Einweg-Plastikprodukte umfassen ein vielfältiges Sortiment von Konsumgütern, die für den einmaligen Gebrauch konzipiert sind, und danach entsorgt werden. Sie werden selten recycelt und häufig unsachgemäß entsorgt. Das deutsche Verpackungsgesetz hat zwar die Recyclingquote erhöht, doch löst das nicht das Problem der hohen Konsumrate eines durchschnittlichen deutschen Bürgers an Verpackungsmaterialien. Wichtiger wäre, die Vermeidung von Verpackungsmüll mit einem Reduktionsziel von 90 kg pro Kopf und Jahr bis 2030. Zusätzlich ist eine verbindliche Mehrwegquote erstrebenswert, um die Einwegplastik-Verpackung zurückzudrängen. Filialen sollten verpflichtet sein, Einweg-Plastikprodukte zu vermeiden und sich die Kosten eines Mehrwegsystems zu teilen.

- EHV Schemata können genutzt werden, Produzenten zu zwingen, Einwegprodukte teurer zu machen und Gemeinkosten wie Vermüllung oder Klimawandel einzuberechnen. Dies könnte auch mit der allgemeinen Gebühr von 20 Cent für alle gängigen Einwegplastik- Verpackungen, insbesondere Güter aus der EKRL, erreicht werden. Mit diesen Einnahmen sind dann Vermeidungs- und Mehrwegkonzepte zu fördern.

- EHV Schemata können außerdem besseres Design unvermeidbarer Einweg-Plastikprodukte zur Verbesserung ihrer Recyclingfähigkeit fördern. Verbindliche Quoten für Rezyklate können die Menge sekundärer Rohstoffe erhöhen und diese wiederum können zur Produktion neuer, qualitativ hochwertiger Produkte genutzt werden.

- In der Europäischen Union bestehen 80 bis 85% der Müllfunde an Stränden aus Kunststoffen. 27% der Strandmüllfunde lassen sich dabei mit der Fischerei in Verbindung bringen. Ein signifikanter Anteil des Fischereizubehörs auf dem Markt wird nicht für eine weitere

Aufbereitung gesammelt. Kurz-, Mittel- und Langzeit EHV-Maßnahmen, wie grenzüberschreitende Zusammenarbeit bei der getrennten Sammlung von ausgedienten Fischereigeräten, der Etablierung von spezialisierten Recyclingunternehmen in verschiedenen EU-Regionen, die Markierung von Fischereigerät für ein schnelles Auffinden und Zuordnen oder unterstützende Maßnahmen, um mehr Aufmerksamkeit auf das Thema unter den Akteuren zu lenken, sollten zur Lösung des Problems ergriffen werden.

- EHV unterstützt Produzenten dabei, nicht ein lineares Wachstum im Blick zu haben, sondern sich in Richtung einer Kreislaufwirtschaft zu bewegen, in der Abfall verringert, Ressourcen so lange wie möglich in Gebrauch gehalten und am Ende ihres Lebens die Materialien rückgewonnen und wiederverwendet werden. Erste Beispiele von Firmen wie Renault zeigen, dass eine solche Strategie Verkaufszahlen wachsen lässt und gleichzeitig den Ressourcenverbrauch verringert. Dieses Potenzial kann durch EHV weiter gefördert werden. Eine Analyse über den Zustand globaler Zirkularität[25] kam zu dem Schluss, dass erst 9% des Weges geschafft sind.

- Die Einrichtung eines EHV-Systems für Fanggeräte übernimmt die Kosten für die getrennte Sammlung und Behandlung von Abfällen, die ansonsten in der Hafenanlage anfallen. Diese Kosten werden normalerweise als Teil der indirekten Gebühr an Schiffsbetreiber, einschließlich der Fischer weitergegeben. Die Erfahrung zeigt, dass auf wettbewerbsintensiven Märkten (für Fanggeräte werden 60% des Materials importiert) die Hersteller dazu neigen, die Kosten des EHV-Systems ganz oder teilweise zu übernehmen. Es ist daher unwahrscheinlich, dass die vollen Kosten des EHV-Systems an die Fischereibetreiber weitergegeben werden.

- Die Mitgliedstaaten mit Küstengewässern müssen sicherstellen, dass Altfanggeräte getrennt für das Recycling gesammelt werden und eine nationale jährliche Mindestsammelmenge festgelegt wird. Die EKRL verlangt zwar keine spezifische Sammelrate. Dies muss von den jeweiligen Regierungen und eingerichteten Kommissionen beschlossen werden, die sich mit Detailfragen befassen; diese Sachverständigengruppen können auch die Gruppe der Adressaten der Maßnahmen (die Hersteller) genau festlegen und die Art und Weise der Durchführung der Maßnahmen konkretisieren.

- Meeresmüll, der von Aktivitäten auf See stammt, hat schwerwiegende Folgen. Nach der Folgenabschätzung zur Überarbeitung der Richtlinie über Hafenauffangeinrichtungen (PRFD)[26] werden viele an Bord entstandene Abfälle, die an Häfen geliefert werden sollten, möglicherweise illegal auf See entsorgt (bis zu 30 %).[27] In der Präambel 23 der PRFD heißt es, dass die Ansätze der Gemeinsamen Fischereipolitik (GFP) unzureichend sind und die Hafenauffangeinrichtungen erweitert werden müssen. Was im Meer entsorgtes, verlorenes

[25] Circle Economy (2021).

[26] Richtlinie (EU) 2019/883 des Europäischen Parlaments und des Rates vom 17. April 2019 zu Hafenauffangeinrichtungen für die Anlieferung von Abfall von Schiffen, als Veränderung der Richtlinie 2010/65/EU und der aufgehobenen Richtlinie 2000/59/EC

[27] Siehe die Folgenabschätzung der Einwegkunststoff-Richtlinie in: European Commission (2018e):

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oder aufgegebenes Fanggerät (ALDFG) angeht, so sehen die neuen Bestimmungen zu Hafenauffangeinrichtungen deren Herausnahme aus dem Wasser nicht konsequent vor. Bisher ist dieser Aspekt mehr oder weniger freiwilligen Maßnahmen überlassen. Auch aufgrund dieser unklaren Definition wird empfohlen, Strategien zu entwickeln, wie ALDFG in alle EHV-Schemata, wie Sammlung und Weiterbehandlung, parallel zu Altgeräten, einbezogen werden kann.

- Alte, an Bord gesammelte Geräte (End-of-Life) und solche aus der Meeresumwelt geholte, zurückgelassene oder verlorene Fanggeräte müssen getrennt entsorgt werden. Während erstere eine gute Chance haben, recycelt zu werden, ist dies bei ALDFG aufgrund organischer Verschmutzung, Biofouling und Verknäulung meist nicht der Fall. Daher muss sichergestellt werden, dass die End-of-Life-Ausrüstung nicht mit ALDFG vermischt wird. Dennoch müssen neue Wege zur Behandlung von ALDFG und zur Vermeidung des Verlusts dieser Ressourcen evaluiert werden.

- Um die Fischerei- und Aquakulturindustrie zur Teilnahme an EHV zu motivieren und Schlupflöcher zu vermeiden, sollte klar aufgezeigt werden, auf welchen Daten die Kostenberechnungen basieren.

Das Konzept der erweiterten Herstellerverantwortung (EHV)

Das Konzept der erweiterten Herstellerverantwortung (EHV) wird nicht nur in Artikel 8 der Einwegkunststoff-Richtlinie (EKRL), sondern auch in mehreren anderen Rechtsakten der EU verwendet, wobei es teilweise als Herstellerverantwortung (HV) bezeichnet wird. In Bezug auf Einwegkunststoffe (EK) sind die wichtigsten EU-Gesetzgebungsakte die Abfallrahmenrichtlinie (ARRL), die Verpackungsrichtlinie (VRL), die Batterierichtlinie (BRL), die Richtlinie über Elektro- und Elektronik-Altgeräte (WEEE-RL) und die Richtlinie über Altfahrzeuge (AFRL). Für Fanggeräte sind die Richtlinie über Hafenauffangeinrichtungen sowie die Meeresstrategie-Rahmenrichtlinie am wichtigsten. Die meisten (E)HV-Regime sind verpflichtend, teilweise mit freiwilligen Elementen. Die VRL ist von einer freiwilligen zu einer verpflichtenden Einführung von (E)HV-Regimen übergegangen. Gemäß der ARRL müssen EHV-Regime, wenn sie eingerichtet werden, bestimmte Mindestanforderungen erfüllen. Alle Richtlinien enthalten Mindestziele für die Abfallbewirtschaftung, die für EHV-Regime relevant sind. Bei der EKRL ist dies jedoch nur für PET-Flaschen der Fall. Sowohl die ARRL als auch die VRL enthalten Verwertungsziele für Kunststoffe. In allen Richtlinien gehören zu den EHV-Verpflichteten die Hersteller (wie in der jeweiligen Richtlinie definiert mit Ausnahme der VRL, die auf die Herstellerdefinition in der ARRL verweist). In der BRL, der WEEE-RL und der AFRL sind oder können auch Vertreiber und/oder Wirtschaftsakteure EHV-Verpflichtete sein. Die Hersteller werden in den meisten der relevanten Richtlinien unterschiedlich definiert und schließen Vertreiber teilweise aus (z.B. in der ARRL), teilweise ein (ausdrücklich in der WEEE-RL). Hinsichtlich der Organisationsverantwortung verlangen alle Richtlinien irgendeine Art von getrennter Sammlung/Rücknahme, Transport und Verwertung/Beseitigung der relevanten Abfallströme. Bei der EKRL ist dies jedoch nur für PET-Flaschen der Fall, während andere EK-Verpackungsabfälle bereits als Verpackungsabfälle gemäß der VRL und der ARRL behandelt werden. Bei allen (E)HV-Regimen tragen die Hersteller/Wirtschaftsakteure für ihre organisatorischen Verpflichtungen die Finanzierungsverantwortung. Darüber hinaus müssen sie bestimmte Kosten für staatliche Dienstleistungen decken. Erstens müssen sie die Kosten für bestimmte Sensibilisierungsmaßnahmen sowie die Kosten für die Datenerhebung und Berichterstattung tragen. Dies ist jedoch nicht der Fall für die BRL (mit Ausnahme von

Informationskampagnen), die WEEE-RL und die AFRL, für die finanzielle Mindestanforderungen der ARRL nicht gelten. Zweitens müssen sich nur die Hersteller bestimmter EK-Verpackungen und von Tabakprodukten an den Kosten der Abfallbewirtschaftung von EK-Abfällen beteiligen, die "unterwegs" in öffentlichen Sammelsystemen entsorgt werden. Und schließlich müssen nur die Hersteller bestimmter EK-Verpackungen und Tabakprodukte die Kosten für die Reinigungsaktionen im Zusammenhang mit Abfällen dieser Produkte durch die Behörden oder in ihrem Auftrag übernehmen. Mit Ausnahme der AFRL enthalten alle Richtlinien weitere finanzielle Bestimmungen. Darüber hinaus sind in den meisten (E)HV-Regimen gewisse Abweichungen von finanziellen Verpflichtungen möglich. In dieser Hinsicht enthält die ARRL eine bemerkenswerte Bestimmung; sie sieht vor, dass die Mitgliedstaaten unter bestimmten Bedingungen (u.a. Einhaltung von EU-Vorgaben für die Abfallbewirtschaftung) beschließen können, dass die Hersteller (nur) mindestens 80% der Kosten und die ursprünglichen Abfallerzeuger oder Vertreiber die restlichen Kosten tragen müssen. Diese Abweichung gilt jedoch nur für die Kosten der in der ARRL aufgeführten Maßnahmen, nicht für die in der EKRL vorgesehenen zusätzlichen Kosten. Darüber hinaus erlaubt es diese Abweichung den Herstellern nicht, ihre Kosten im Rahmen von EHV-Regimen zu senken, die vor dem 4. Juli 2018 eingeführt wurden. Abgesehen von der ARRL erlauben alle Richtlinien, zumindest bestimmte (E)HV-bezogene Bestimmungen durch Vereinbarungen zwischen den zuständigen Behörden und den betroffenen Wirtschaftssektoren umzusetzen. Was das Verhältnis der EKRL zu den anderen Richtlinien betrifft, gibt es keine Überschneidungen mit der BRL, der WEEE-RL und der AFRL. Im Gegensatz dazu ist EK-Abfall auch Abfall im Sinne der ARRL, und EK-Verpackungsabfall ist Verpackungsabfall im Sinne der VRL. Im Konfliktfall geht die EK-Richtlinie der ARRL und der VRL als lex specialis vor. In Bezug auf die EHV ist die EKRL jedoch als Ergänzung zu ARRL und VRL gedacht.

Vereinbarkeit der EHV-Bestimmungen mit Europarecht

Die Bestimmungen der EKRL zur EHV werfen die Frage auf, ob sie mit höherrangigem Europarecht vereinbar sind, insbesondere mit der unternehmerischen Freiheit der Hersteller nach Artikel 16 und dem Grundsatz der Gleichheit vor dem Gesetz nach Artikel 20 der Charta der Grundrechte der Europäischen Union (EU-Charta). Ob dies der Fall ist, wurde in Bezug auf diejenigen EKRL-Bestimmungen analysiert, die im Vergleich zu anderen EU-Rechtsvorschriften zur EHV neue und zusätzliche Verpflichtungen enthalten und somit rechtliche Fragen aufwerfen, die bisher nicht behandelt wurden: die Finanzierungsverantwortung der Hersteller für die Sammlung, den Transport und die Behandlung von relevanten EK-Abfällen, die "unterwegs" in öffentlichen Sammelsystemen entsorgt werden, sowie die Reinigungsaktionen im Zusammenhang mit Abfällen aus relevanten EK. Die EU durfte gesetzgeberisch tätig werden, weil die Anforderungen des Subsidiaritätsprinzips erfüllt sind: Das Problem der Verschmutzung durch Plastik und Vermüllung der Meere ist grenzüberschreitender Natur; daher haben gemeinsame Anstrengungen auf EU-Ebene ein viel größeres Potenzial als Maßnahmen einzelner Mitgliedstaaten, die Auswirkungen von Vermüllung zu verhindern und zu verringern. Auch der Grundsatz der kompetenziellen Verhältnismäßigkeit zum Schutz der Befugnisse der Mitgliedsstaaten wird eingehalten: Von den verfügbaren gesetzgeberischen Maßnahmen wurde die weniger einschneidende gewählt, ist, da Richtlinien die Mitgliedstaaten weniger einschränken als Verordnungen. Bei der Beurteilung der Vereinbarkeit eines Rechtsakts mit den Grundrechten gelten je nach Art des Rechtsakts unterschiedliche Maßstäbe. In der Regel überprüft der Gerichtshof der Europäischen Union (EuGH) Richtlinien nur insoweit, als sie den Mitgliedstaaten keinen Umsetzungsspielraum einräumen. Gewährt eine Richtlinie einen Umsetzungsspielraum, verlangt der Gerichtshof lediglich, dass die Richtlinie in einer Weise umgesetzt werden kann, die den Anforderungen der EU-Grundrechtscharta entspricht. In der jüngeren Rechtssache „Digital Rights“, in der es um besonders weitreichende und

schwerwiegende Verletzungen des Rechts auf Privatsphäre ging, verlangte der EuGH jedoch, dass Richtlinien das Ausmaß möglicher Eingriffe in die Grundrechte festlegen und sicherstellen, dass sie auf das unbedingt notwendige Maß beschränkt bleiben. Wenn jedoch Grundrechte wirtschaftlicher Art betroffen sind, wie im Fall der EKRL, räumt der EuGH den zuständigen EU-Institutionen einen weitreichenden Gestaltungsspielraum ein und führt lediglich eine begrenzte gerichtliche Überprüfung durch. Indem die Hersteller verpflichtet werden, die Kosten für die Abfallbewirtschaftung von EK, die in öffentlichen Sammelsystemen entsorgt werden, und für die Reinigungsaktionen im Zusammenhang mit EK-Abfällen zu übernehmen, schränkt die EKRL die Freiheit der Hersteller ein, nach eigenen Vorstellungen zu wirtschaften. Durch die Gleichbehandlung aller Hersteller unabhängig von unterschiedlichen Umständen, z.B. ob sie in einem Binnenstaat oder einem Küstenstaat ansässig sind, berühren die einschlägigen Bestimmungen der EKRL zudem den Grundsatz der Gleichheit vor dem Gesetz. Diese Einschränkungen sind jedoch gerechtfertigt, da sie legitimen Zielen dienen und im Hinblick auf die verfolgten Ziele angemessen, erforderlich und nicht offenkundig unverhältnismäßig sind. Die legitimen Ziele der EKRL bestehen in der Verhinderung und Verringerung der Auswirkungen von EK-Abfällen auf die Umwelt, insbesondere die aquatische Umwelt, und die Förderung des Übergangs zu einer Kreislaufwirtschaft. Die Verpflichtung der Hersteller, die Kosten für die Abfallbewirtschaftung und Reinigungsaktionen in Bezug auf bestimmte EK-Abfälle zu übernehmen, trägt zu diesem Ziel bei und ist daher angemessen.
Diese Maßnahmen sind auch erforderlich, um die verfolgten Ziele zu erreichen, weil weniger einschneidende Maßnahmen, die ebenso wirksam wären, nicht zur Verfügung stehen. Finanzielle Sanktionen für Vermüllung gibt es bereits in den Mitgliedstaaten, aber sie reichen offenbar nicht aus, um für sich allein das Problem zu lösen, auch nicht in Kombination mit Informationskampagnen und anderen Sensibilisierungsmaßnahmen. Die Finanzierung der geplanten Maßnahmen mit öffentlichen Mitteln (z.B. über Steuern), wie sie derzeit weitgehend erfolgt, ist nicht gleichermaßen wirksam, da sie nicht mit dem Verursacherprinzip in Einklang steht. Schließlich ist die Teilung der Finanzierungsverantwortung für EHV-Maßnahmen mit anderen Akteuren eine Option, die Artikel 8a (4) ARRL unter engen Voraussetzungen zulässt, die aber nicht für Abfälle gilt, die "unterwegs" in öffentlichen Sammelsystemen entsorgt werden, sowie für Reinigungsaktionen im Zusammenhang mit EK-Abfällen. Die Ausweitung der finanziellen Verantwortung auf mehr Akteure als in der ARRL vorgesehen dürfte nicht gleichermaßen wirksam sein, da andere Akteure, wie z.B. Vertreiber, nicht den gleichen Einfluss auf die Lieferkette haben wie die Hersteller, die darüber entscheiden, ob das Produkt in Verkehr gebracht wird. Darüber hinaus führt eine Abwägung der Vor- und Nachteile der Verpflichtung der Hersteller, die Kosten für die Bewirtschaftung von EK-Abfällen, die "unterwegs" in öffentlichen Sammelsystemen entsorgt werden, und für Reinigungsaktionen im Zusammenhang mit EK-Abfällen zu übernehmen, nicht dazu, dass diese Bestimmungen in einem offenkundigen Missverhältnis zu den von der EKRL verfolgten Zielen stehen. Erstens ist das Konzept der EHV Ausdruck des Verursacherprinzips, wonach das Setzen jeglicher Bedingung für eine Verschmutzung, in diesem Fall die Herstellung von Produkten, die zu Abfällen führen, für eine Verantwortlichkeit ausreicht. Darüber hinaus behalten die Hersteller aufgrund der Funktion bestimmter EK wohl ein gewisses Maß an Verantwortung sowohl für die Entsorgung von EK-Abfällen in nicht getrennten öffentlichen Sammlungen "unterwegs" als auch für Reinigungsaktionen im Zusammenhang mit solchen Abfällen, selbst wenn sie die Verschmutzung nicht direkt verursachen. Zweitens erlegt die EKRL den Herstellern die Finanzierungsverantwortung nur für Maßnahmen zur Bekämpfung der wichtigsten Verschmutzung durch EK auf, basierend auf den EK, die am häufigsten an europäischen Stränden vorkommen. Drittens ist es aufgrund der fehlenden Definition des Begriffs "Reinigungsaktionen im Zusammenhang mit Abfällen" in der EKRL zwar schwierig, die Höhe der

von den Herstellern zu tragenden Kosten abzuschätzen; Die EKRL sieht jedoch einige Begrenzungen vor, von denen die wichtigste darin besteht, dass Reinigungsaktionen von Behörden oder in ihrem Auftrag kosteneffizient erfolgen müssen. In Bezug auf die Behandlung von Herstellern unabhängig von unterschiedlichen Umständen, wie z.B. ihrem Standort in einem Binnen- oder Küstenstaat, ist es aus Gründen der Effizienz und Einfachheit gerechtfertigt, sie gleich zu behandeln. Eine Kostenverteilung nach dem tatsächlichen Beitrag der Produzenten zur Vermüllung der Meere ist nicht praktikabel, da die Kausalkette zu kompliziert ist.
Die EKRL-Bestimmungen zur Kostenübernahme des EK-Abfallmanagements und der Reinigungsaktionen durch öffentliche Systeme räumen den Mitgliedstaaten einen gewissen Umsetzungsspielraum ein. Während die Einführung eines EHV-Regimes in Bezug auf Reinigungsaktionen im Zusammenhang mit Abfällen aufgrund der fehlenden Definition dieses Begriffs in der EKRL eine Herausforderung darstellt, sind Schwierigkeiten bei der Bestimmung des Inhalts von Regelungen in EU-Richtlinien nicht ungewöhnlich und verhindern nicht die Umsetzung als solche. Somit ist eine Umsetzung in Übereinstimmung mit den Grundrechten der Charta, wie vom EuGH gefordert, möglich. Im Hinblick auf die Verpflichtung der Mitgliedstaaten, die einschlägigen EKRL-Bestimmungen in einer Weise umzusetzen, die mit der Charta der Grundrechte in Einklang steht, ist eine Definition des Begriffs "Reinigungsaktionen im Zusammenhang mit Abfällen" im Umsetzungsrechtsakt nicht empfehlenswert. Je restriktiver eine nationale Definition des Begriffs ausfiele, umso größer wäre das Risiko, dass die Europäische Kommission die Übereinstimmung einer solchen nationalen Definition mit dem allgemeinen Begriff in Artikel 8 EKRL in Frage stellt und letztlich ein Vertragsverletzungsverfahren gegen den betreffenden Mitgliedstaat einleitet. Dementsprechend wäre es vorzuziehen, wenn die Mitgliedstaaten den Begriff „Reinigungsaktionen im Zusammenhang mit Abfällen" einfach in ihre Umsetzungsakte übernehmen und es der Verwaltung und den nationalen Gerichten überlassen würden, diesen Begriff in einer Weise anzuwenden und auszulegen, die mit den Grundrechten, insbesondere dem Grundsatz der Verhältnismäßigkeit, in Einklang steht. Bei der Ausgestaltung der nach Artikel 8 EKRL einzuführenden EHV-Regimen müssen die Mitgliedstaaten jedoch möglicherweise einige Annahmen über die Höhe der Kosten der Reinigungsaktionen und damit indirekt über ihren Umfang treffen. Zumindest eine gewisse Orientierung für die Mitgliedstaaten könnte die Europäische Kommission bieten: In den Leitlinien für die Kosten von Reinigungsaktionen im Zusammenhang mit Abfällen gemäß Art. 8 Abs. 4 Unterabsatz 2 EKRL könnte die Kommission in Abstimmung mit den Mitgliedstaaten zumindest einige (unverbindliche) Angaben zum Umfang des Begriffs nach der EKRL machen. Der Grundsatz der Rechtssicherheit ist für die Vereinbarkeit der EKRLR mit dem Europarecht nicht direkt relevant, da er Rechtsakte betrifft, die sich direkt an (natürliche und juristische) Personen richten. Allerdings sind die Mitgliedstaaten bei der Umsetzung der EKRL in ihr nationales System an diesen Grundsatz gebunden. Auch wenn dies im Hinblick auf den Begriff „Reinigungsaktionen im Zusammenhang mit Abfällen" eine Herausforderung darstellt, kann diesem Grundsatz im Rahmen des Umsetzungsspielraums der Mitgliedstaaten genügt werden.

EHV für Fanggeräte im Fischereibereich

Die EKRL gilt auch für Fischereiausrüstung, die Kunststoffe enthält, gemäß Art. 8. Das Hauptziel besteht darin, die Zahl der aufgegebenen, verlorenen oder anderweitig weggeworfenen Fanggeräte (ALDFG) in den Meeren zu verringern, indem Anreize für ihre ordnungsgemäße Entsorgung und Sammlung in Häfen und eine Verbesserung der Handhabung dort angeboten werden. Dies gilt auch für alte Fanggeräte, sogenannte „End-of-Life“-Fischereiausrüstung, die von den Fischern (oder Aquakulturfarmern) noch auf den Booten ausgesondert und in die Häfen zurückgebracht werden.

Die Mitgliedstaaten müssen sicherstellen, dass die Hersteller (dazu gehören auch die Zwischenhändler und Vertreiber) von Fanggeräten die Kosten für die getrennte Sammlung von Fanggeräten sowie die Kosten für den anschließenden Transport und die anschließende Behandlung (Art. 8 Abs. 9) sowie Sensibilisierungsmaßnahmen (Art. 10) übernehmen. Bislang besteht für Hersteller von Fanggeräten jedoch keine Pflicht, die Kosten für die Reinigung von Stränden zu tragen. Vergleicht man die Wege von Einwegkunststoffen und Fanggeräten, so ist es offensichtlich, dass der Hersteller das Verhalten der vermüllenden Person bzw. der Fischer, die Fanggeräte im Meer zurücklassen oder versehentlich verlieren, nicht beeinflussen kann. Es wird daher argumentiert, dass es nicht verhältnismäßig ist, die Hersteller von Fanggeräten auch für die Säuberung von Stränden (und Meeren) von Netzen, Leinen, Körben und anderen Gegenständen, die aus Plastik sind und im Fischereibereich genutzt werden, heranzuziehen. Um diese Frage zu lösen, wurden vorliegend Entscheidungen über eine weite und enge Auslegung des Verursacherprinzips als grundlegender Bestandteil des operationellen Instruments, der EHV, geprüft. Um eine praktikable Lösung zu finden, könnten Mitgliedsstaaten den Aspekt der Säuberung von Stränden um Fischereigeräte erweitern und in ihre nationale Gesetzgebung aufnehmen. Man kann auch mit der überarbeiteten Hafenauffangrichtlinie argumentieren, die darauf abzielt, die Einleitungen von Schiffsabfällen und Ladungsrückständen ins Meer zu reduzieren. Ergänzend zu den Berichtspflichten von ausgedientem Fischereigerät (End-of-Life) im Rahmen der EKRL, sieht auch die Hafenauffangrichtlinie eine Berichtspflicht für passiv gefischtes sowie – in ähnlicher Weise - für verlorenes Fanggerät (ALDFG), vor.[28]
Die ursprüngliche Richtlinie 2000/59/EG sowie die überarbeitete entsprechen den MARPOL-Vorgaben, die sich hauptsächlich auf Operationen auf See konzentriert und keinen wirksamen Durchsetzungsmechanismus vorsieht. Daher bietet die Hafenauffangrichtlinie eine Möglichkeit, Konzepte und Verpflichtungen von MARPOL in EU-Recht umzusetzen. Um unterschiedliche Politiken in den Häfen zu vermeiden, wurde eine weitere Harmonisierung auf EU-Ebene als notwendig erachtet. Die Mitgliedstaaten können selbst entscheiden, wie die für Häfen geltenden operativen Maßnahmen durch lokale Erwägungen, der zuständigen Verwaltung und den Eigentümern nuanciert werden sollen. Für die EKRL kann dieser Ansatz übertragen werden. Hier können die Mitgliedstaaten Ziele für die Sammlung von End-of-Life Fanggeräten und ALDFG sowie deren weiterer Behandlung (Recycling oder Verbrennung oder Lagerung) selbst entscheiden. Es sollte nur ein geschlossener Produktkreislauf angestrebt werden. Daher würden Verhältnismäßigkeits- und Konformitätsaspekte durch die Ausweitung der bestehenden EKRL in Hinblick auf die Reinigungspflichten von Fanggeräten durch die Hersteller nicht verletzt. In der Realität wird die EKRL wohl nicht so bald einer Revision unterzogen, um z.B. diesen Aspekt zu ergänzen. Aber die Mitgliedstaaten können unter bestimmten Voraussetzungen diese Thematik in die nationalen Rechtsvorschriften und Umsetzungsanforderungen aufnehmen.

Vereinbarkeit mit Völkerrecht

Bislang gibt es kein internationales Übereinkommen, das sich umfassend mit Kunststoffabfällen befasst. Daher gibt es keinen Hinweis darauf, dass die EHV-Bestimmungen der EKRL nicht mit internationalen Umweltabkommen übereinstimmen könnten.
Sie müssen jedoch mit dem Recht der Welthandelsorganisation (WTO) übereinstimmen, an das die EU und ihre Mitgliedstaaten gebunden sind. Die wichtigsten Bestimmungen sind im Allgemeinen Zoll- und Handelsabkommen (GATT) enthalten, insbesondere in Art. III:2, III:4 und Art. XX GATT.

[28] Siehe, z.B. Präambel Nr.23 und 49, und Art. 13

Art. III:2 Satz 1 des GATT besagt:

- "Auf Waren aus dem Gebiet einer Vertragspartei, die in das Gebiet einer anderen Vertragspartei eingeführt werden, dürfen weder unmittelbar noch mittelbar höhere inländische Steuern oder sonstige inländische Abgaben irgendwelcher Art erhoben werden, als sie unmittelbar oder mittelbar auf gleichartige inländische Waren erhoben werden".
- "dass „[d]ie aus dem Gebiet eines Vertragspartners in das Gebiet eines anderen Vertragspartners eingeführten Erzeugnisse […] weder direkt noch indirekt mit irgendwie gearteten Steuern oder anderen inneren Abgaben belastet werden [sollen], welche höher sind als diejenigen, die die gleichartigen Erzeugnisse einheimischen Ursprungs direkt oder indirekt belasten."

Obwohl im Prinzip für jeden der fraglichen EK eine detaillierte und produktspezifische Analyse erforderlich ist, um festzustellen, ob importierte EK "gleichartige" inländische EK sind oder nicht, ist es sehr wahrscheinlich, dass dies der Fall wäre. Die EHV-Regeln in Art. 8 EKRL führen jedoch nicht zu einer unterschiedlichen finanziellen Behandlung von importierten und inländischen Produkten. In Ermangelung einer solchen unterschiedlichen Behandlung scheint Art. III:2 GATT nicht verletzt zu sein, unabhängig von der genauen Definition von "internen Steuern" und "Abgaben". Artikel III:4 GATT enthält eine Nicht-Diskriminierungsklausel, die besagt, dass WTO-Mitglieder den aus einem anderen WTO-Mitglied eingeführten Produkten eine Behandlung gewähren müssen, "die nicht weniger günstig ist als diejenige, die gleichartigen Produkten nationalen Ursprungs gewährt wird, und zwar in Bezug auf alle Gesetze, Vorschriften und Erfordernisse, die ihren internen Verkauf, ihr Angebot zum Verkauf, ihren Kauf, ihre Beförderung, ihren Vertrieb oder ihre Verwendung betreffen".
„keiner ungünstigeren Behandlung unterworfen werden [sollen], als sie gleichartigen Erzeugnissen einheimischen Ursprungs in Bezug auf alle Gesetzesbestimmungen, Verwaltungsanordnungen oder Vorschriften bezüglich des Verkaufs, des Verkaufsangebotes, des Ankaufs, der Beförderung, Verteilung und Verwendung dieser Erzeugnisse auf dem inneren Markt gewährt wird." Artikel 8 EKRL ist in diesem Zusammenhang relevant, da er die Mitgliedstaaten verpflichtet, den Herstellern bestimmter EK bestimmte EHV-Verpflichtungen aufzuerlegen, was auch dazu führen kann, dass diese Produkte zu teurer werden. Artikel 8 (6) EKRL verpflichtet jeden Mitgliedstaat, den in einem anderen Mitgliedstaat niedergelassenen Herstellern, die Produkte auf seinem Markt in Verkehr bringen, zu gestatten, einen Bevollmächtigten zu benennen, um die Verpflichtungen der Hersteller in Bezug auf EHV-Regelungen auf seinem Hoheitsgebiet zu erfüllen. Dies erleichtert es dem Hersteller, seine Verpflichtungen zu erfüllen. Die EKRL enthält jedoch keine vergleichbare Klausel für Hersteller, die außerhalb der EU ansässig sind; dies scheint eine ungünstigere Behandlung von Nicht-EU-Herstellern der betreffenden EK, die Produkte auf dem EU-Markt in Verkehr bringen, im Vergleich zu EU-Herstellern darzustellen. Daher scheint Art. 8 (6) EKRL gegen Art. III:4 GATT zu verstoßen. Verstöße gegen Artikel III:4 GATT könnten durch Art. XX GATT gerechtfertigt sein, insbesondere durch Art. XX (b) GATT, der es WTO-Mitgliedern erlaubt, Maßnahmen zu ergreifen, die "zum Schutz des Lebens oder der Gesundheit von Menschen, Tieren oder Pflanzen notwendig sind". Es ist jedoch nicht unmittelbar ersichtlich, dass die Beschränkung auf Produzenten aus anderen EU-Staaten in Artikel 8 (6) EKRL einem Umwelt- oder Gesundheitszweck dient. Aus dem gleichen Grund dürfte auch Art. 8 Abs. 6 der Richtlinie nicht "erforderlich" im Sinne von Art. XX (b) GATT sein. Im Übrigen erscheint Artikel 8 der Richtlinie 2019/904 mit dem WTO-Recht vereinbar.

Analyse potenzieller EHV-Maßnahmen für verschiedene Einweg-Kunststoffprodukte

Die Analyse diente der Untersuchung von Maßnahmen im Rahmen der EHV, die sicherstellen könnten, dass die Hersteller der folgenden Einweg-Kunststoffprodukte die finanzielle Verantwortung für das Management der Abfallphase ihres Produkts tragen:

1. Lebensmittelbehälter;
2. Verpackungen und Umhüllungen;
3. Getränkebehälter mit einem Fassungsvermögen von bis zu drei Litern;
4. Becher für Getränke, einschließlich ihrer Deckel und Verschlüsse;
5. leichte Kunststofftragetaschen;
6. Feuchte Tücher;
7. Luftballons;
8. Tabakprodukte mit Filtern und Filter, die zur Verwendung in Kombination mit Tabakprodukten vermarktet werden.

Im Rahmen der Analyse haben wir relevante wissenschaftliche und graue Literatur ausgewertet, um (Argumente für) mögliche Maßnahmen im Rahmen der EHV für die oben genannten Produkte entlang der auf EK-Abfall-bezogenen Aktivitäten „Sammlung, Transport, Behandlung, Aufräumarbeiten und Bewusstseinsbildung“ zu identifizieren und zu analysieren. Um sicherzustellen, dass wir relevante Informationen über die verschiedenen EK-Produkte erhalten, führten wir ergänzende leitfadengestützte telefonische Experteninterviews mit NGOs, einer Organisation für Herstellerverantwortung und einer Kommune durch.
Durch die Literaturrecherche und ergänzende Interviews wollten wir die folgenden drei Fragen beantworten:

- Was könnten wirksame EHV-Maßnahmen für die verschiedenen Produkte und die verschiedenen abfallbezogenen Aktivitäten sein?
- Wer sollte für die Durchführung dieser Maßnahmen und für die Deckung der Kosten verantwortlich sein?
- Welche Kosten könnten potenziell mit den ermittelten Maßnahmen verbunden sein?

Kernergebnisse bezüglich der EHV-Maßnahmen für die Sammlung von EK-Abfällen

Die Verpflichtung der Hersteller, für die Sammlung von Abfällen, die über öffentliche Sammelsysteme entsorgt werden, zu zahlen, gilt für die folgenden sechs EK-Produkte: Getränkebehälter; Becher für Getränke; Lebensmittelbehälter; leichte Kunststofftragetaschen; Verpackungen und Umhüllungen; und Tabakwaren/Filter. Da viele dieser Produkte in die Umwelt gelangen, obwohl sie in öffentlichen Abfallbehältern entsorgt werden, scheinen die Verbesserung der Behälterinfrastruktur, die Verwendung eines angemessenen Behälterdesigns und die Gewährleistung einer häufigeren Abholung (abhängig von Besucherzahlen, Jahreszeit, öffentlichen Veranstaltungen und Wetterbedingungen) Schlüsselmaßnahmen zu sein, um die Umsetzung der EHV während der Abfallsammelphase zu unterstützen. Behälterdesign und Infrastruktur sollten sicherstellen, dass

- Behälter für wiederverwertbaren Abfall und Restmüll nebeneinander aufgestellt werden, um die Trennung von Kunststoffen und anderen Abfällen vor Ort zu erleichtern und zu ermöglichen;

- Abfallbehälter leicht zu unterscheiden sind, z.B. durch Farbcodierung, Symbole oder einfache Formulierungen (die Beschilderung der Behälter kann einige Beispiele - am besten in Wort und Bild - dafür enthalten, was in den Behälter gehört); und
- die Abfallbehälter so platziert sind, dass sie leicht und bequem zu erreichen sind (z.B. in der Nähe von potentiellen Hotspots für EK-Abfallanfall, z.B. Strände, Parkplätze).

Kostenschätzungen für die Sammlung und Behandlung der oben genannten sechs EK-Produkte sind aus der Folgenabschätzung der EKRL verfügbar. Danach werden die jährlichen Durchschnittskosten für die Sammlung und Behandlung geschätzt auf

- 0,67 Millionen EUR für Zigaretten
- 112 Millionen EUR für Getränkeflaschen
- 11 Millionen EUR für Feuchttücher
- 59 Millionen EUR für Getränkebecher und -deckel
- 73 Millionen EUR für Lebensmittelbehälter
- 48 Millionen EUR für Verpackungen und Umhüllungen

Kernergebnisse bezüglich EHV-Maßnahmen für den Transport von EK-Abfällen

Die Verpflichtung der Hersteller, für den Transport von Abfällen, die über öffentliche Sammelsysteme entsorgt werden, zu zahlen, gilt für die gleichen sechs EK-Produkte wie für die Abfallsammlung. Wenn öffentliche Abfallbehälter für die Getrennthaltung von Abfällen am Anfall-Ort aufgestellt sind, besteht eine Schlüsselmaßnahme zur Umsetzung der EHV während der Transportphase darin, dass Abfalltransportfahrzeuge die Abfalltrennung durch getrennte Fächer aufrechterhalten. Es gibt keine übergreifenden Kostenschätzungen für transportbezogene EHV-Maßnahmen für die EK-Produkte, die unter Art. 8 EKRL fallen.

Wichtigste Erkenntnisse zu EHV-Maßnahmen für die Behandlung von EK-Abfällen

Die Verpflichtung der Hersteller, für die Behandlung von Abfällen, die über öffentliche Sammelsysteme entsorgt werden, zu zahlen, gilt für die gleichen sechs EK-Produkte wie für die Sammlung und den Transport. Die Behandlung der unter Anhang E der EKRL fallenden EK-Produkte umfasst Recycling, Verbrennung und Deponierung als Optionen der Abfallwirtschaft. Je nach betreffendem EK-Produkt werden bzw. müssen die Behandlungsoptionen unterschiedlich sein. So sind leichte Kunststofftragetaschen zwar prinzipiell recycelbar, ein Recycling ist jedoch aufgrund der dünnen und leichten Beschaffenheit der Plastiktüten sowie aufgrund ihrer Zusammensetzung, die in der Regel aus einer Mischung von Polymeren besteht, mit hohem Aufwand und hohen Kosten verbunden. Darüber hinaus erfordert das Recycling von leichten Kunststofftragetaschen, dass eine ausreichende Menge von ihnen gesammelt wird. Ihr geringes Gewicht macht den Transport jedoch teuer und das Waschen der dünnen Säcke erfordert große Mengen Wasser. Daher ist die Verbrennung von leichten Kunststofftragetaschen (mit Energierückgewinnung) wirtschaftlich attraktiver. Bei Verpackungen und Umhüllungen, die Metalle enthalten, insbesondere metallisierte Kunststofffolien in Chips-Verpackungen, ist das Recycling entweder technisch nicht einfach oder mit hohen Kosten verbunden. Darüber hinaus verwirren metallisierte Verpackungen die Verbraucher, da sie nicht wissen, in welchen Abfallstrom die Verpackungen gelegt werden sollen: zu metallhaltigen Abfällen oder zu Kunststoffabfällen.

Tabakprodukte/Filter werden in der Regel verbrannt. In ähnlicher Weise ist die Verbrennung die Standardbehandlung für Feuchttücher, weil (a) gemischte Natur- und Synthetikfasern das Recycling erschweren; (b) Synthetikfasern sich nicht im Kompost zersetzen und die verwendeten Chemikalien die Bodenökologie des Komposts zerstören; und (c) Polyesterfasern in Feuchttüchern bis zu 100 Jahre benötigen, um sich auf Deponien biologisch abzubauen, und der in Feuchttüchern verwendete antibakterielle Alkohol Bakterien und Enzyme abtötet, die an der Zersetzung von festem Abfall auf Deponien arbeiten. Da die Folgenabschätzung der EKRL die jährlichen Durchschnittskosten für Sammlung und Behandlung zusammen schätzt, weisen wir auf die oben dargestellten Kostenschätzungen für die Abfallsammlung hin.

Kernergebnisse bezüglich der EHV-Maßnahmen für die Reinigung von EK-Abfall

Für alle acht EK-Produkte gilt die Verpflichtung der Hersteller, für die Reinigung bzw. Säuberung von Gebieten vom EK-Abfall zu zahlen: Luftballons; Getränkebehälter; Getränkebecher; Lebensmittelbehälter; leichte Plastiktragetaschen; Pakete und Hüllen; Tabakprodukte/-filter; und Feuchttücher. Reinigungsmaßnahmen umfassen oft eine Kombination aus einer maschinellen Grundreinigung, gefolgt von einer manuellen Reinigung per Hand, Zange oder Harke. In der Regel sind die Aufräumarbeiten nicht EK-produktspezifisch. Die Vielfalt der Technologien und Maschinen bringt unterschiedliche Vor- und Nachteile mit sich, z.B. in Bezug auf die Tiefe, mit der die Strände von Zigaretten und Filtern gereinigt werden, im Vergleich zu der Menge an Tier- und Pflanzenresten, die bei den Aufräumarbeiten entfernt wird, um eine Tiefenreinigung der Strände zu erreichen. Obwohl technisch gesehen machbar, stellen Reinigungsmaßnahmen eine wirtschaftliche Herausforderung dar, da die Kosten hoch sind und bisher meist von den Gemeinden getragen werden. Gemäß Art. 8 (3), (4) EKRL sollen die Kosten für die Reinigung von EK-Produkten von den entsprechenden Herstellern getragen werden, sind aber auf Aktivitäten beschränkt, die von Behörden oder in deren Auftrag durchgeführt werden. Zudem ist der Begriff der Reinigung bzw. Säuberung rechtlich nicht definiert. Daher gibt es keine Klarheit über den Umfang der Reinigungsmaßnahmen, d.h. welche Bereiche die Reinigungsmaßnahmen umfassen und damit auch, welche Teile bzw. welches Ausmaß an Reinigungsmaßnahmen der Kostendeckung unterliegt: Badestrände, andere Strände, Wasserstraßen, Straßen, Wege, öffentliche Plätze, Grünflächen und Parks. Feuchttücher, die oft die Toilette heruntergespült werden, zersetzen sich aufgrund des Kunststoffanteils nicht in der Kanalisation und führen so nicht nur zu Verstopfungen der Kanalisation und der Pumpen, sondern finden auch ihren Weg in Flüsse und Meere und auf Strände. Daher gibt es Diskussionen darüber, ob die Hersteller von Feuchttüchern auch für die Behebung bzw. Beseitigung von Verstopfungen der Abwasserkanäle zahlen sollten oder nicht.
Kostenschätzungen für die Reinigung von verschiedenen EK-Produkten sind aus der Folgenabschätzung der EKRL verfügbar. Demnach belaufen sich die jährlichen Durchschnittskosten für die Reinigung an Land, entlang von Flüssen und von Meeresmüll auf

- ~3 Milliarden EUR für Zigaretten
- 558 Millionen EUR für Getränkeflaschen
- 15 Millionen EUR für Feuchttücher
- 240 Millionen EUR für Getränkebecher und -deckel
- 167 Millionen EUR für Lebensmittelbehälter
- 58 Millionen EUR für Knusperpackungen und Bonbonverpackungen

Allerdings unterscheiden sich die Kosten für die Reinigungsmaßnahmen in Abhängigkeit von einer Reihe von Faktoren (z.B. Länge der Strände und Wasserwege, Reinigungsintervalle, touristische Relevanz, Bevölkerungsgröße) von Ort zu Ort und sind daher sehr kontextspezifisch.

Kernergebnisse bezüglich EHV-Maßnahmen zur Bewusstseinsbildung

Die Verpflichtung der Hersteller, für Sensibilisierungs- und Bewusstseinsbildungsmaßnahmen zu zahlen, die nachhaltige Entscheidungen und eine angemessene Abfallentsorgung unterstützen sollen, gilt für alle acht EK-Produkte: Luftballons; Getränkebehälter; Getränkebecher; Lebensmittelbehälter; leichte Plastiktragetaschen; Pakete und Hüllen; Tabakprodukte/Filter und Feuchttücher. Sensibilisierungsmaßnahmen sollen die Verbraucher informieren über (a) die Verfügbarkeit von wiederverwendbaren Alternativen, Wiederverwendungssystemen und Abfallentsorgungsoptionen für diese Produkte; (b) die Auswirkungen von Littering und anderer unsachgemäßer Abfallentsorgung dieser Produkte auf die (Meeres-)Umwelt; (c) die Auswirkungen einer unsachgemäßen Abfallentsorgung dieser Produkte auf das Kanalisationsnetz. Die Verwendung von Produktkennzeichnungen sollte Teil von Sensibilisierungsmaßnahmen sein. Art. 7 EKRL sieht die Produktkennzeichnung durch Etiketten für Feuchttücher und Damenbinden vor. Aufgrund hygienischer Bedenken hinsichtlich der Entsorgung gebrauchter Feuchttücher (insbesondere, wenn sie als Ergänzung zum Toilettenpapier verwendet werden), Bequemlichkeit oder mangelnder Kenntnisse, spülen Verbraucher*innen Feuchttücher oft die Toilette hinunter, vielleicht ohne sich der Auswirkungen der Spülung bewusst zu sein oder diese nicht zu kennen.
Kostenschätzungen für bewusstseinsbildende Maßnahmen in Bezug auf verschiedene EK-Produkte sind aus der Folgenabschätzung der EKRL verfügbar. Dementsprechend belaufen sich die jährlichen Durchschnittskosten für Sensibilisierungsmaßnahmen auf

- 76 Millionen EUR für Zigaretten
- 14 Millionen EUR für Getränkeflaschen
- 6 Millionen EUR für Getränkebecher und -deckel
- 4 Millionen EUR für Lebensmittelbehälter
- 1 Million EUR für Knusperpackungen und Bonbonverpackungen.

In Bezug auf Feuchttücher könnte eine Kostenschätzung aus New York City, USA, potenzielle Kosten für die Bewusstseinsbildung aufzeigen: Die Stadt startete 2018 eine 2-Millionen-Dollar-Kampagne, die darauf abzielt, die Einwohner auch über U-Bahn-Werbung dafür zu sensibilisieren, Feuchttücher nicht hinunterzuspülen.

Potenzieller Mechanismus zur Umsetzung der EHV für EK-Produkte: Vorschlag eines Fonds zur Förderung wiederverwendbarer Produkte und der Abfallvermeidung

Allgemeine Idee und Anwendungsbereich

Die Idee der Einführung und Einrichtung eines Fonds zur Förderung wiederverwendbarer Produkte (langfristig über Kunststoffprodukte hinausgedacht) und der Abfallvermeidung besteht darin, sowohl unterstützende Strukturen (z.B. Institutionen, neue Praktiken) als auch Anreize zu schaffen, um die Verwendung wiederverwendbarer Produkte gegenüber Einwegprodukten (z.B. Getränke in wiederverwendbaren Bechern) zu fördern und ihnen Vorrang vor Einwegprodukten einzuräumen. Wir schlagen vor, einen zweckgebundenen Fonds für Deutschland einzurichten, der alle acht Kunststoff-Einwegprodukte (EK) abdeckt, die in

Artikel 8 zur EHV und den dazugehörigen Annexen in der EKRL genannt werden. Unseres Erachtens sollte dieser Fonds ermöglichen finanzielle Beiträge an die Behörden für Aktivitäten zu leisten, die der Reduzierung bestimmter EK, der Förderung der Wiederverwendung und auch der Vermeidung von EK-Abfällen dienen. Daher schlagen wir vor, dass die allgemeine Idee des Fonds darin besteht

- EK-Produzenten zu veranlassen, Beiträge in den Fonds einzuzahlen. Diese Beiträge sollten so gestaltet sein, dass sie Anreize für die Hersteller schaffen, die Abfallvermeidung, besseres Ökodesign und wiederverwendbare Produkte zu fördern; und
- es den Behörden zu ermöglichen, Gelder aus dem Fonds zu erhalten, um Aktivitäten für Abfallvermeidung, Stärkung der Wiederverwendung sowie Abfallmanagement, Aufräumarbeiten und Infrastrukturen zu finanzieren.

Eine Fondslösung scheint ausreichend flexibel zu sein, um an neu aufkommendes Wissen angepasst zu werden und so Veränderungen zu berücksichtigen. So könnten zum Beispiel Art und Umfang der mit EK-Abfall zusammenhängenden Aktivitäten, die der Fonds abdeckt, entsprechend neuer Erkenntnisse erweitert oder modifiziert werden. Dies wirft die Frage auf, welcher Titel für einen Fonds, wie hier vorgeschlagen, angemessen ist. Der Titel "Littering-Fonds" ist kein geeigneter Titel, da die Grundidee des Fonds darin besteht, über die Entfernung von Plastikabfällen aus der Umwelt (durch Reinigungsmaßnahmen) hinauszugehen und ausdrücklich die Verhinderung oder Verringerung des Littering-Verhaltens zu umfassen (z.B. durch Anreize für die Gestaltung von Wiederverwendung und Abfallvermeidung oder durch Bewusstseinsbildung). Wir schlagen daher vor, einen umfassenderen Titel für den Fonds zu verwenden, der sich am Ziel der EKRL orientiert, wie z.B. "Fonds für eine abfallfreie Umwelt", "Fonds zur Förderung wiederverwendbarer Produkte und der Abfallvermeidung" oder "Fonds zur Wiederverwendung und Abfallvermeidung".

Überlegungen zu Institutionen, die mit dem Sammeln von Beiträgen und der Verwaltung des Fonds beauftragt werden könnten

Die Rolle nationaler Regierungen und Institutionen innerhalb des EHV-Systems muss definiert werden. Im Allgemeinen kann zwischen (a) staatlich geführten und (b) von Produzenten geführten EHV-Systemen unterschieden werden. In der Europäischen Union ist (b) die häufigste Art der Umsetzung von EHV-Systemen, nämlich über die Einrichtung eines oder mehrerer Herstellerverantwortungsorganisationen (producer responsibility organisation, PRO), die typischerweise zu einem produzentengeführten System führen (wie z.B. das duale System in Deutschland). Als kollektive Einheit, die im Namen der Produzenten handelt, übernimmt die PRO die Verantwortung für die Erfüllung der EHV-Verpflichtungen. In solchen Systemen beschränkt sich die Rolle der Behörden häufig auf die Festlegung und Überwachung (verbindlicher) Ziele und Bedingungen, während die Wirtschaftsakteure frei entscheiden können, wie sie die Ziele erreichen wollen. Alternativ zur Förderung oder Forderung einer PRO könnten Regierungen ein EHV-System einrichten, indem sie einen staatlichen Fonds (d.h. (a), staatlich geführt) einrichten und verwalten. Die zentrale Frage, die sich stellt, ist, wer den Fonds verwalten soll: Sollte die Regierung den Fonds verwalten, sollte er von einem Produzenten geleitet werden oder sollte eine unabhängige Stelle eingerichtet werden, die die Verantwortung dafür übernimmt? Da eine Aufgabe des Fonds darin bestehen wird, die öffentlichen Behörden für laufende und zusätzliche Aktivitäten mit Blick auf EK-Abfall aus den Beiträgen von Produzenten, die in diesen Fonds einzahlen, zu entschädigen, kann man argumentieren, dass eine unabhängige Stelle, wie z.B. eine Clearingstelle, am besten geeignet wäre, den Fonds zu verwalten. Dies könnte zum Beispiel eine kleine Unterabteilung sein, die dem

Bundesumweltministerium oder dem Umweltbundesamt angegliedert ist, oder die kürzlich eingeführte Zentrale Stelle Verpackungsregister (ZSVR). Eine solche zentrale Clearingstelle könnte eine ähnliche Funktion wie das ZSVR in Deutschland haben. Im Januar 2019 hat das ZSVR seine Arbeit aufgenommen, um eine ordnungsgemäße und gerechte Verteilung der Entsorgungs- und Verwertungskosten für Verpackungsabfälle sicherzustellen. Zuvor verfügten die im Wettbewerb geführten dualen Systeme über eine eigene Clearingstelle, die von den angeschlossenen Herstellern in Verkehr gebrachten Verpackungsmengen erfasste und die Entgelte festlegte. Aufgrund von Transparenzproblemen und Fehleranfälligkeit wurde die zentrale Clearingstelle in Form des ZSVR eingeführt. Der ZSVR ist als privatrechtliche Stiftung organisiert, mit hoheitlichen Rechten ausgestattet und untersteht dabei der Aufsicht des Umweltbundesamtes (UBA). Aufgrund der Meldepflicht von Herstellern und PRO über in Verkehr gebrachte Verpackungen und der Befugnis des ZSVR, die Daten zu prüfen und gegebenenfalls die Mengen abzuschätzen, ist der ZSVR in der Lage, die Marktanteile der PRO zu ermitteln und damit zu einer sachgerechten Zuordnung der Kosten beizutragen. Die Stifter des ZSVR und auch die Mitglieder des Beirats sind hauptsächlich Wirtschaftsteilnehmer. Im Hinblick auf die EKRL gibt es jedoch keinen Anreiz für die Wirtschaftsteilnehmer, die Umwelt in mehr als dem erforderlichen Maße von (Kunststoff-)Abfällen zu reinigen. Daher sollten im Falle des hier vorgeschlagenen Fonds dem Beirat nicht nur Wirtschaftsteilnehmer, sondern auch Vertreter von Umweltorganisationen und anderen Umweltschutzeinrichtungen angehören.

Wie berechnet man die finanziellen Beiträge der Produzenten?

Das allgemeine Konzept, die Produzenten über die EHV finanziell oder finanziell und organisatorisch für die Entsorgung ihrer Produkte am Ende der Lebensdauer verantwortlich zu machen, beruht auf dem sogenannten Vollkosten-Prinzip. Dieses Prinzip sieht vor, dass die tatsächlichen Kosten im Zusammenhang mit dem Management nach Ende des Produktlebens bei der Gestaltung der finanziellen Beiträge der Hersteller zu EHV-Systemen so vollständig wie möglich berücksichtigt werden. Die Gestaltung und Festlegung eines angemessenen Niveaus der Kostendeckung ist eine anspruchsvolle Aufgabe, und die Methode(n) zur Berechnung der Kostendeckungsniveaus müssen transparent sein. Es scheint zwei Hauptmechanismen zur Berechnung der finanziellen Beiträge der Hersteller zu - wie hier vorgeschlagen - einem Fonds zur Förderung wiederverwendbarer Produkte und der Abfallvermeidung zu geben:

a) Bestimmung eines prozentualen Anteils pro EK-Produkt auf der Grundlage der Produktmengen, die ein Hersteller in einem Land oder in der EU auf den Markt bringt;

b) Bestimmung eines prozentualen Anteils pro EK-Produkt auf der Grundlage von Daten zu EK-Abfall, der bei Reinigungsmaßnahmen an Stränden, Ufern, Flüssen, in Grünflächen und Parks gefunden wurde.

Die Option (a) scheint einfacher zu berechnen, zu begründen und umzusetzen, wenn die Daten für die in Verkehr gebrachten Mengen leicht verfügbar sind - was angesichts der Bedenken hinsichtlich der Vertraulichkeit von Unternehmensdaten im Wettbewerb unwahrscheinlich ist. Dieser Ansatz bedeutet jedoch, dass die Hersteller einen Prozentsatz pro in Verkehr gebrachtem Produkt zahlen müssten, auch wenn nur ein Teil ihrer Produkte am Ende zu Abfall in der Umwelt wird und ein anderer - hoffentlich größerer- Teil ordnungsgemäß entsorgt wird. Daher ist es zwar relativ einfach, die Marktanteile zu bestimmen – hingegen ist es nicht leicht, diese prozentual zu den voraussichtlichen Kosten für die Entsorgung am Ende der Lebensdauer in Beziehung zu setzen, da dies möglicherweise kontroverse Annahmen über die produktspezifischen Entsorgungskosten erfordert. Die zweite Berechnungsoption (b) scheint schwieriger anzuwenden zu sein. Erstens erfordert sie ein genaueres Verständnis des Begriffs "Reinigung", da Artikel 8 EKRL keine geographischen Grenzen innerhalb des EU-Gebiets

vorsieht. Zweitens sind für einige räumliche Gebiete Daten aus Reinigungsmaßnahmen, wie z.B. Strandsäuberungen, verfügbar, die verwendet werden könnten, um die finanziellen Beiträge der Hersteller zu einem solchen Fonds anteilig auf der Grundlage des Anteils der (zahlenmäßig) gefundenen EK-Abfälle, die das Produkt eines Herstellers darstellen, zu berechnen. Bei anderen räumlichen Gebieten (z.B. Autobahnen/Straßen, Grünflächen/Parks) könnten jedoch Daten für Littering-Mengen unzureichend sein oder fehlen. Je nach Umfang des Begriffs "Reinigung" und der Datenverfügbarkeit können die finanziellen Beiträge der Produzenten auf den tatsächlich verunreinigten Mengen basieren. Diese werden den Produzenten in Prozentsätzen entsprechend den Beobachtungsdaten für verschiedene Produkte, die als verunreinigt befunden wurden, zugewiesen (z.B. x Feuchttücher pro 100 m Strandsäuberungen als Prozentsatz der insgesamt gefundenen EK-Abfälle ergibt die Kostenzuweisung an die Feuchttuchproduzenten). Somit könnte der finanzielle Beitrag in direktem Zusammenhang mit nur einem engen Fokus des Fonds, d.h. der Vermeidung und Beseitigung von Littering, erscheinen und damit zu kurz greifen. In ihrer Folgenabschätzung von Maßnahmen zur Reduzierung von Meeresabfall aus Einwegkunststoffen verwenden ICF und Eunomia eine Kombination der beiden oben genannten Ansätze. Sie berechnen die Einhaltungskosten für die EHV-Kostendeckung für verschiedene EK-Produkte, indem sie die produktspezifischen Gesamtkosten für die Einhaltung der Vorschriften (einschließlich Sammlung, Behandlung, Abfallbeseitigung und Sensibilisierung/Information) durch die jeweilige Anzahl der in einem Basisjahr (2016) auf europäischen Märkten verkauften EK-Produkte teilen. Daraus ergeben sich relative Einhaltungskosten pro auf den Markt gebrachtem Artikel, die zwischen 0,2% für Lebensmittelbehälter und 2,6% für Feuchttücher liegen.

Für einen deutschen Fonds zur Förderung wiederverwendbarer Produkte und der Abfallvermeidung schlagen wir vor

a) entweder diese Zahlen als Grundlage für die finanziellen Beiträge der Hersteller zum vorgeschlagenen Fonds verwenden (z.B. 0,004 EUR pro Zigarette, die ein Hersteller auf den europäischen Markt bringt; usw.)
b) oder eine eingehende Studie in Auftrag zu geben, um Daten sowohl für die Befolgungskosten in Deutschland als auch für die in Deutschland verkauften EK-Artikel zu erheben.

Option a) stellt eine leicht verfügbare Zahl dar, die auf einer soliden Folgenabschätzung von ICF und Eunomia mit einer transparenten Dokumentation der verwendeten Annahmen und Datenquellen beruht. Für einen Fonds zur Förderung wiederverwendbarer Produkte und der Abfallvermeidung mit Schwerpunkt auf Deutschland könnte jedoch die Beauftragung einer eigenen Studie auf der Grundlage nationaler Daten eine besser zugeschnittene Lösung darstellen. Dies würde jedoch bedeuten, dass mehr finanzielle Mittel und Zeit investiert werden müssten, bis eine solche Studie Ergebnisse liefern könnte, die für die weitere Förderung einer solchen Fondsidee genutzt werden könnten. Darüber hinaus empfehlen wir die Einführung differenzierter Gebühren für die Hersteller, um Anreize für die Abfallvermeidung zu schaffen, z.B. durch Vorgaben zu Öko-Design für die Wiederverwendung. Beispielsweise können die Gebühren nach der Menge wiederverwendbarer Produkte eines Herstellers differenziert werden: je höher der Anteil wiederverwendbarer Produkte eines Herstellers, desto geringer sollte sein finanzieller Beitrag zum Fonds sein. Generell sollten die Beiträge so hoch sein, dass sie von den Herstellern "gefühlt" werden, und wenn sie über höhere Produktpreise an die Verbraucher*innen weitergegeben werden, könnten die Verbraucher zu anderen Herstellern wechseln. Wenn Produzenten auf wiederverwendbare Produkte umsteigen, zahlen sie daher geringere Beiträge zum Fonds, und daher sollte der Produktpreis niedriger sein als bei Produkten von Herstellern ohne/mit weniger wiederverwendbaren Produkten. Die Öko-

Modulation (Differenzierung der Gebühren anhand ökologischer Kriterien) oder die ökologische Gewichtung der Gebühren könnte dazu beitragen, die Bemühungen der Hersteller um Ökodesign zu stärken. Um die Berechnung der Herstellergebühren auf der Grundlage von Marktdaten zu erleichtern, schreibt das EHV-System vor, dass die Hersteller aller acht EK-Produkte jährlich über die Mengen (oder Gewichte) und die Qualität (in Form von wiederverwendbaren gegenüber Einwegprodukten usw., um die Umsetzung der Öko-Modulation der Gebühren zu erleichtern) der auf einem bestimmten Markt in Verkehr gebrachten Geräte berichten müssen. Die Verpflichtung der Hersteller, Mengen zu deklarieren, könnte auch die Berechnung der Beiträge der Hersteller erleichtern, ohne andere Marktdaten überwachen zu müssen. Mengen sind jedoch Teil des Geschäftsgeheimnisses und sollten vertraulich behandelt und daher von der Institution, die den Fonds verwaltet, weder veröffentlicht noch zugänglich gemacht werden. Darüber hinaus müssen diese Berichte/Erklärungen von dem Fonds (bzw. der diesen verwaltenden Organisation) akkreditiert oder überprüft werden, um gegen falsche Angaben und auch Trittbrettfahrer zu schützen.

Überlegungen zu den Prinzipien für die Zuteilung von Finanzmitteln aus dem Fonds

Die wichtigsten Herausforderungen für die Mitgliedstaaten sind: (a) einen klaren Mechanismus einzurichten, der eine angemessene Vergütung der Behörden für ihre Aktivitäten zur Förderung wiederverwendbarer Produkte und der Abfallvermeidung sicherstellt; (b) die lokalen Behörden zu ermutigen, zusätzlich zu den laufenden Aktivitäten weitere abfallbezogene EK-Aktivitäten zur Förderung wiederverwendbarer Produkte und der Abfallvermeidung durchzuführen.
Unter dem Gesichtspunkt der Fairness ist eine Schlüsselfrage, wie viel jede Kommune aus dem Fonds erhalten soll. In diesem Zusammenhang ist zu beachten, dass die Strukturen der Abfallwirtschaft in den deutschen Kommunen sehr unterschiedlich sind, ebenso wie ihre geographischen Bedingungen (z.B. einige umfassen Strände; die Größe der städtischen Gebiete ist unterschiedlich; die Bevölkerungsdichte ist unterschiedlich, usw.). So unterscheiden sich auch die Mittel, die die Kommunen für abfallwirtschaftliche Maßnahmen und Infrastrukturen bereitstellen. Solche "lokalen Besonderheiten" müssen berücksichtigt werden, da sie zu unterschiedlichen Finanzierungsbedarfen im Zusammenhang mit EK-Abfallbezogenen Aktivitäten führen könnten. Da kommunale Behörden die EK-Abfall-bezogenen Aktivitäten selbst organisieren und durchführen, steht es ihnen darüber hinaus frei, innerhalb der durch das Vergaberecht vorgegebenen Grenzen geeignete und angemessene Maßnahmen, z.B. zur Reinigung, Sammlung und Behandlung, zu wählen. Aus der Sicht der Produzenten, die zu finanziellen Beiträgen verpflichtet sind, kann dies ein kontroverses Thema sein. Produzenten können in Frage stellen, ob die von den lokalen Behörden gewählten Methoden kosteneffizient sind, da Artikel 8 (4) EKRL die von den Produzenten zu tragenden Kosten auf die Kosten begrenzt, die notwendig sind, um die entsprechenden Dienstleistungen kosteneffizient zu erbringen. Wenn Kommunen über Systeme verfügen oder Systeme einführen wollen, die von der Norm abweichen, könnte dies zu einer ungerechten finanziellen Belastung der Produzenten führen. Um den Kommunen die freie Wahl ihrer EK-Abfallbezogenen Aktivitäten zu ermöglichen und gleichzeitig eine faire Kostenteilung für die Produzenten zu gewährleisten, könnte die Anwendung einer Referenzformel oder von Referenzkosten helfen, die zu deckende finanzielle Summe zu bestimmen. Ein Referenzkostenansatz könnte eine Möglichkeit sein, Finanzmittel aus dem Fonds den Kommunen zuzuweisen, und er könnte die Bereitschaft der Produzenten zur Kostenbeteiligung erhöhen, da er ein gewisses Maß an Fairness gewährleistet. In einem solchen Szenario würde jede Kommune auf der Grundlage der Berechnungsrichtlinien der öffentlichen Einrichtung, die den Fonds verwaltet, die Referenzkosten berechnen und transparent machen. Ein Vorteil einer Fondslösung besteht darin, dass sie eine gezieltere Verteilung der Einnahmen ermöglicht. So kann z.B. nur ein bestimmter Anteil der im Fonds gesammelten Gelder zur Deckung der Kosten bestehender Aktivitäten zweckgebunden werden. Der verbleibende Anteil

sollte zur Deckung der Kosten für zusätzliche Aktivitäten (oder die zeitliche und räumliche Ausdehnung bestehender Maßnahmen usw.), wie z.B. eine Erweiterung der Lagerplatzinfrastruktur, die Einrichtung wiederverwendbarer Systeme usw., vorgesehen werden. Eine Besonderheit bei der Herstellerverantwortung für EK ist, dass nur die Hersteller von (bisher) acht Produkten verpflichtet sind, einen finanziellen Beitrag zu einem EHV-System zu leisten. Dennoch werden EK-Abfall bezogene Aktivitäten auf kommunaler Ebene für alle in öffentlichen Abfallbehältern gesammelten Abfälle durchgeführt. Die nach der EKRL verpflichteten Hersteller sind also nicht verpflichtet, die gesamte Summe der Referenzkosten zu decken, sondern nur einen bestimmten Anteil davon. Ein unabhängiges Gremium, das den Fonds verwaltet, könnte gleichzeitig für die Überwachung des EHV-Systems und die Beilegung von Streitigkeiten zwischen Kommunen und Herstellern zuständig sein.

Analyse potenzieller EHV-Maßnahmen für Fischereigeräte

Auch für Fanggeräte – Altgeräte und ALDFG, die in Häfen zurückgebracht werden – wurden Maßnahmen im Rahmen der EHV analysiert, die sicherstellen könnten, dass die Erzeuger die finanzielle Verantwortung für die Abfallphase im Rahmen des Produktzyklus tragen. Im Rahmen der Studie wurde wissenschaftliche und graue Literatur ausgewertet sowie Interviews mit relevanten Akteuren des Fischerei- und Aquakultursektors sowie der Abfallwirtschaft geführt. Darauf aufbauend, wurden mögliche Maßnahmen im Rahmen der EHV für Fanggeräte entlang der vier Aktivitäten „Sammlung, Transport, Behandlung und Bewusstseinsbildung“ zusammengestellt. Zusätzlich werden mögliche Maßnahmen für Aufräumarbeiten der Umwelt von Fanggeräten skizziert. Durch die Literaturrecherche und ergänzende Interviews wollten wir die folgenden drei Fragen beantworten:

- Was könnten wirksame EHV-Maßnahmen für die verschiedenen Arten von Fischereigeräten (wie alte Fanggeräte sowie verlorene und zurückgelassene Fanggeräte) und die verschiedenen abfallbezogenen Aktivitäten sein?
- Wer sollte für die Durchführung dieser Maßnahmen und für die Deckung der Kosten verantwortlich sein?
- Welche Kosten könnten potenziell mit den ermittelten Maßnahmen verbunden sein?

Kernergebnisse bezüglich der EHV-Maßnahmen für die Sammlung von Fischereigeräten

Die getrennte Sammlung ist die effizienteste und kostengünstigste Möglichkeit, um Abfälle aus Fischerei- und Aquakulturanlagen zu verringern und die Akzeptanz der Hersteller für die neue EHV-Regelung zu erreichen. Die beschriebenen Maßnahmen konzentrieren sich daher auf Varianten der getrennten Sammlung, ergänzt durch Informationen zu zwei weiteren Optionen, dem Pfand-/Rückgabesystem und der Organisation der Sammlung von ALDFG in den Häfen. Für Altgeräte, die nach dem Gebrauch gelagert und entsorgt werden sowie für ALDFG müssen getrennte Sammlungen erfolgen. Während Altgeräte häufig noch eine Chance haben, recycelt zu werden, ist dies bei ALDFG aufgrund Verschmutzung, Biofouling und Verknäulung verschiedener Netzmaterialien meist nicht der Fall. Daher muss sichergestellt werden, dass die alten Fanggeräte nicht mit ALDFG vermischt werden. Darüber hinaus müssen Abfallsammelsysteme und -dienste verbessert und eine Kennzeichnung eingeführt werden, um höhere Sammelquoten zu erreichen. Um relevante Sektoren zu motivieren, die Sammelbemühungen zu unterstützen, könnten wirtschaftliche Anreize geschaffen werden. Darüber hinaus kann die Zusammenarbeit bei der Sammlung von Abfall-Fanggeräten zwischen verschiedenen Häfen und Recyclingunternehmen wirtschaftlich von Vorteil sein. Häfen, in denen bereits permanente Sammelanlagen für alte Fanggeräte installiert sind, können diejenigen ohne

spezielle Sammelzonen unterstützen, um die Menge an recycelbaren Materialien zu erhöhen. Parallel dazu müssen Einrichtungen für ALDFG installiert werden, um Abfallbewirtschaftungsoptionen für diese Materialien zu erkunden und groß angelegte Verfahren zu entwickeln.

Kernergebnisse bezüglich EHV-Maßnahmen zum Transport von Fischereigeräten

Eine Möglichkeit, die Transportkosten zu senken, könnte darin bestehen, in lokale Recyclingunternehmen zu investieren oder geeignete Lagerbehälter für das Recycling bereitzustellen, die nur dann abgeholt werden, wenn sie voll sind. Am sinnvollsten erscheint die Mischung aus dezentraler und zentralisierter Logistik für eine optimale und kosteneffiziente Verarbeitung von Fanggeräten.[29] Dies würde das Volumen der gesammelten Netze erhöhen, das pro Hafen, vor allem in der Ostsee, aufgrund der relativ kleinen Zahl kommerzieller Fischereien in Deutschland gering ist. Insgesamt wird empfohlen, abzuwarten, ob die neuen Anforderungen der EKRL ausreichend End-of-Life Fanggeräte für die Gründung neuer Recyclingunternehmen ergeben. Um die Transportkosten zu minimieren, sollte sich die Vorverarbeitung, d. h. die Entfernung großer Metallgegenstände und Steine, in oder in der Nähe des Aufnahmehafens befinden. Falls die Weiternutzung von ALDFG – trotz aller Schwierigkeiten – geplant ist, müssen die sauberen, ein-polymerigen Materialien (End-of-Life Stellnetze) und völlig verschmutzen ALDFG bzw. Materialmixe frühzeitig getrennt werden, idealerweise am Fischereihafen. Dies kann durch die Installation verschiedener Behälter für eine klare Trennung von Anfang an erreicht werden. Dennoch sind die Vorbereitungsarbeiten von Fischern, Tauchern oder anderen Berufsgruppen sehr zeitaufwändig und müssen finanziell unterstützt werden. Es wird empfohlen, die Kosten für diese Tätigkeiten zwischen Produzenten, Kommunen oder nationalen Behörden zu teilen, unterstützt durch nationale Finanzierungsprogramme zur Schaffung einer Wertschöpfungskette. Laut EKRL sollen die Kosten für die Erzeuger bezüglich Abfallbewirtschaftung nicht teurer sein als für die kosteneffiziente Erbringung dieser Dienstleistungen erforderlich. Auch muss transparent erkennbar sein, wie die Kosten zwischen den betroffenen Akteuren festgelegt werden. Vor allem End-of-Life-Stellnetze werden von Fischern systematisch behandelt, um Schwimm- und Tauchleinen zur Wiederverwendung zu entfernen. Das Netzmaterial eignet sich gut für das Recycling, da Netze aus den hochwertigen Polymeren PA6 und PET bestehen. End-of-Life Netze werden bereits von Unternehmen, z. B. aus Spanien oder Slowenien, zu Garnen recycelt. Die Sammlung und Verteilung von Material an Verbrennungs- oder Recyclinganlagen könnte mit minimalem Aufwand für den Transport durch die gleichzeitige Sammlung von Altgeräten und ALDFG entlang der gesamten Küste eines Landes und auf wenigen Touren organisiert werden.

Kernergebnisse bezüglich EHV-Maßnahmen zur Behandlung von Fischereigeräten

Einige Häfen bieten bereits Sammelstellen für Altgeräte an. In Deutschland trifft dies lediglich für Abfälle aus der Fishing-for-Litter-Initiative zu. Andere Länder, wie die Niederlande, Portugal oder Schweden haben durch ihre Hafenbehörden bereits in einigen Häfen solche Sammelstellen eingeführt. Dringlich bleibt daher die systematische Organisation des gesamten Verwertungsprozesses, von der Anlandung, über die Sammlung, Säuberung und Vorbereitung für Recycling oder anderer Verwertung. Die Hafenverwaltungen und alle in den Prozess eingebundenen Akteure sollten hier unterstützt und informiert werden. Im Gegensatz dazu gibt es häufig keinen Weg für in Häfen gebrachte ALDFG, da die bestehenden Abfallwirtschaftsinfrastrukturen dafür nicht ausgelegt sind. Sie werden daher in unsortierten Siedlungs- oder Gewerbeabfällen (Haushalts-/Restabfälle) entsorgt, die in Verbrennungsanlagen

[29] Siehe Bertling, R. & J. Nühlen (2019), pp. 21

oder auf Deponien[30]landen. Hinzu kommt, dass die Fasern in Schleppnetzfragmenten und Kiemennetzen gefährlich für Schneidmaschinen in Verbrennungsanlagen sind, da sie sich um Rotoren winden und zwischen den Schaufeln eingeklemmt werden können. Derzeit steht nur das Szenario – zentralisiertes Vorzerkleinern mit Bleiextraktion und anschließender Verbrennung – für gemischte ALDFG-Materialien in den bestehenden Abfallwirtschaftssystemen zur Verfügung. Jeder andere Weg erfordert Investitionen in neue Einrichtungen und Infrastrukturen, um das Polymerrecycling zu ermöglichen. Obwohl noch nicht realistisch, sollte dennoch mittelfristig das Ziel verfolgt werden, z.B. auch ein-polymeriges-ALDFG zum Recycling zu verwenden[31] und niedrige Qualitäten von ALDFG zu verbrennen. Große Schleppnetzfragmente und Seile bieten die einfachsten Recyclingproben, da sie leichter von eingefangenem Meeresmüll wie große Metallgegenstände, Felsen und Kabel getrennt werden können. Sie bieten auch einheitlichere Materialien, die in kleinformatigen Produktionsserien verwendet werden könnten.[32] In jedem Fall muss bedacht werden, dass durch das Recycling von ALDFG und alten Fanggeräten nicht automatisch eine maritime Kreislaufwirtschaft etabliert wird. Dies kann nur durch das Design von Recycling-Produkten mit einem hohen Potential für die Wiederverwendung erreicht werden. Die Maßnahmen zeigen Wege auf, um dieses Ziel zu erreichen, und stärken gleichzeitig das Recycling von End-of-Life Geräten. Auch Ökomodulations-Gebühren und die Einrichtung eines Fonds zur Transformation von Prozessen werden diskutiert.

Kernergebnisse bezüglich EHV-Maßnahmen zur Reinigung von Fischereigeräte-Müll

Die Bereitschaft, Verluste ihrer Fanggeräte zu verhindern, ist bei den Fischern sowie Aquakulturfarmern in den einzelnen EU-Meeresregionen sehr unterschiedlich. Einige Gründe, warum Fischerei und Aquakulturgeräte verloren gehen, werden vorgestellt. Diskutiert werden Maßnahmen, um die Forschung für neue Technologien zur Reinigung von Stränden zu fördern. Auch ein Versicherungsfonds für Fischer, um neue, verlässliche Anreize für die Sammlung von ALDFG zu bieten, wird erläutert. Weitere Datenbewertungen sind ebenso notwendig wie Studien, die Mengen- und Gewichtsanteile von Fanggeräten aus dem Fischerei- und Aquakulturbereich analysieren und nach den verschiedenen Bestandteilen und Eigenschaften einer Ausrüstung (Altgeräte, ALDFG) differenzieren, um wichtige Basisdaten und erste Kostenbewertungen für Sanierungsmaßnahmen, z. B. in Gemeinden, zu generieren.

Möglicher Mechanismus, um die EHV für Fanggeräte umzusetzen: Vorschlag eines Versicherungsfonds zur Steigerung der Bereitschaft des Fischereisektors, ALDFG zurückzubringen

Die Überarbeitung der Richtlinie über Hafenauffangeinrichtungen ist ein erster Schritt gewesen, um die Fischer darin zu bestärken, verlorenes oder aufgegebenes Fischereigerät (ALDFG) an Land zurückzuführen. Zwei Fragen bleiben aber ungeklärt: Erstens konzentriert sich die Überarbeitung nicht speziell auf ALDFG, und zweitens gibt es keine direkten Anreize für Fischer, die sogenannten Geisternetze aus dem Meer zu ziehen und in die Häfen zu bringen. Darüber hinaus steht es den Mitgliedstaaten frei, ihre nationalen Kostendeckungssysteme zu konzipieren, und so bestehen weiterhin Diskrepanzen zwischen den nationalen Vorgaben und Unklarheiten für Fischer, die in EU-Gewässern tätig sind. Es muss eine einheitliche Lösung gefunden werden, die entweder für ein gesamtes Meeresbecken (z.B. die Nord- oder Ostsee) oder EU-weit umgesetzt wird. Ein institutionalisierter Fonds muss entwickelt werden, um die Fischer dabei zu unterstützen, Container mit alten Fanggeräten an Land zu bringen und die Kosten für ihre

[30] Diese Praxis trifft immer noch auf einige EU-Länder zu, in Deutschland ist das Verbringen von Kunststoffnetzen auf Deponien verboten.
[31] Dabei muss beachtet werden, dass auch Stellnetz-dominiertes ALDFG oft aus einem komplexen Materialmix von mindestens 4 Polymer-Typen besteht.
[32] Siehe Stolte, A. et al. (2019)., p. 5, p. 18. und Stolte, A. & F. Schneider (2018), pp. 97.

Behandlung (Recycling oder Verbrennung) zu übernehmen. Ein Versicherungsfonds für Fanggeräte müsste von einer unabhängigen Stelle koordiniert werden, die sicherstellt, dass die Maßnahmen zur Verwaltung von ALDFG effektiv und effizient umgesetzt werden, und um sicherzustellen, dass Fischer, die Geisternetzausrüstung zurückgeben, dabei ihre Versicherungsgebühren bezahlen und für die Rückgabe angemessen entschädigt werden.

1 Introduction

1.1 Background of the study

Over the past 50 years, global production and consumption of plastics saw a more than 20-fold increase, from 15 million tonnes in 1964 to 311 million tonnes in 2014. According to estimates, it will double again over the next 20 years.[33] This increase in production and use of plastic triggered wide-spread environmental plastic pollution with a major share of plastic (particles) ending-up in the world's oceans. Due to their persistent nature, many plastics remain in the oceans, and other natural systems, posing a threat both to marine life (e.g., animals getting entangled in plastics or swallowing plastics, which can both lead to death) and human health along the food chain as well as to tourism and other economically relevant sectors.[34] Economic costs of plastic pollution may be substantial: plastic pollution in the Asia-Pacific region alone is expected to generate costs and revenue foregone to tourism, fishing and shipping industries of around 1.3 billion US-Dollar.[35] To these costs, beach and coastal area clean-ups have to be added to prevent further damage to the tourism industry: for Europe, such costs amount to 630 million EUR per year.[36] In Europe, around 25.8 million tonnes of plastic waste are generated every year and less than 30 percent of such waste is collected for recycling.[37] The impacts of plastic litter, especially of single-use and disposable items (such as bags, straws, coffee cups, beverage bottles and to-go food packaging) are growing as each year more plastic waste accumulates in our environment and oceans. According to studies carried out by the EU, plastics account for 85 percent of marine litter.[38] To tackle those issues, the European Commission adopted a Plastic Strategy in January 2018.[39] In order to complement the measures already envisaged under this strategy, the European Commission presented in May 2018 a proposal for a directive on single-use plastics,[40] which led to Directive (EU) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment ("Single-Use Plastics Directive", SUPD).[41] The SUPD aims at preventing and reducing the impact on the environment of (i) the SUP items most frequently found on European beaches by count, as well as (ii) lost, abandoned and disposed of fishing gear containing plastic, and (iii) products made from oxo-degradable plastic.[42] According to the European Commission, the SUP products covered by the SUPD represent around 86 percent of the SUP products found on European beaches. Taken together with fishing gear, containing plastic, they represent around 70% of the marine litter items by count.[43] The SUPD addresses SUP products by different measures, depending on various factors (see Table 1 below).

- Cotton bud sticks, cutlery, plates, straws, beverage stirrers, balloon sticks, food containers, beverage containers and cups;

[33] EMF (Ellen MacArthur Foundation), WEF (World Economic Forum) and McKinsey Company (2016). .
[34] UNEP and GRID-Arendal (2016).
[35] UNEP (2014).
[36] ICF and Eunomia (2018).
[37] European Commission (2018a).
[38] European Commission (2018b).
[39] European Commission (2018a).
[40] European Commission (2018c)
[41] OJ EU L 155, 12.6.2019, p. 1.
[42] See Article 1, 2 (1) and recital 15 SUPD.
[43] See European Commission (2018c), p. 1.

- Packets and wrappers, lightweight plastic carriers bags, wet wipes, balloons, tobacco products with filters
- Sanitary towels, tampons and tampon applicators
- Products made from oxo-degradable plastic. This particular focus has been added during the negotiations with the European Parliament because oxo-degradable plastics[44] show several attributes which impact both the environment and the potential for circulating plastics: they do not biodegrade properly and hence cause plastic pollution in the environment; they are not compostable; and they impede the recycling of conventional plastics when not collected separately (see recital 15 SUPD).

Table 1: Overview of different measures foreseen under SUP-Directive for the product groups covered

SUP items	Measure foreseen under the SUP-Directive						
	Reduction of consump-tion	Market restric-tions	Product design require-ments	Marking require-ments	Extended producer responsi-bility	Separate collection objective	Aware-ness raising measures
Food containers	X	x – if made of expand-ed polysty-rene			X		X
Cups for beverages	X	x –if made of expand-ed polysty-rene		x	X		X
Cotton bud sticks		X					
Cutlery, plates, stirrers, straws		X					
Sticks for balloons		X					
Baloons					X		X
Packets & Wrappers					X		X
Beverage containers,		x –if made of expand-	X		X		X

[44] According to Art. 3 (3) of the SUPD "'oxo-degradable plastic' means plastic materials that include additives which, - through oxidation-, lead to the fragmentation of the plastic material into micro-fragments or to chemical decomposition".

SUP items	Measure foreseen under the SUP-Directive						
	Reduction of consump-tion	Market restric-tions	Product design require-ments	Marking require-ments	Extended producer responsi-bility	Separate collection objective	Aware-ness raising measures
their caps & lids		ed polysty-rene					
Beverage bottles			X		X	x	X
Tobacco product filters				x	X		X
Sanitary items: Wet wipes				X	X		X
Sanitary items: Sanitary towels, tampons				X			X
Lightweight plastic carrier bags					X		X
Products made from oxo-degradable plastic		X					
Fishing gear					X		X

Source: Ecologic Institute based on COM, Explanatory memorandum, p. 3

As the above table shows, the strongest measure, the prohibition to place products on the market (Article 5), applies to SUP products, which can be substituted by suitable, more sustainable alternatives, and for products made from oxo-degradable plastic for the above reasons. For SUP products that cannot yet be readily substituted, the SUPD establishes a range of measures which cover their whole life cycle as well as information provision: consumption reduction (Article 4), product and marking requirements (Article 6 and 7), extended producer responsibility (Article 8), separate collection (Article 9), and awareness raising measures (Article 10). Each of these measures applies to a certain range of SUP items listed in Annex A to G, thus creating overlapping requirements for certain products. Reusable products are the best replacement for single-use plastic products. Many reusable alternatives are already available. The present study focuses on the extended producer responsibility (EPR) provision of the SUPD.

1.2 Objectives of the study

The first objective of the present study was to undertake a legal analysis of the EPR provisions of the SUPD with a view to its implementation in the Member States.[45] In particular, the study aims to identify the Member States´ margin of discretion to transpose the directive. To this end, Chapter 2 first compares the EPR concept of the SUPD with the EPR concept in other pieces of EU waste law. Second, Chapter 2 analyses the conformity of the SUPD´s EPR provisions with higher-ranking EU law, especially with regards to the EU Charter of Fundamental Rights and particularly the principle of proportionality. The focus of this analysis lays on those aspects that represent novelties as compared to other EU legislation on EPR, and thus raise legal questions that have not been addressed before, especially regarding the cleaning up of litter from relevant SUP products. The conformity assessment also includes the SUPD´s conformity with the law of the World Trade Organisation (WTO). A second objective of the study was to analyse potentially relevant EPR measures for the eight different SUP products and fishing gear, containing plastic, covered by Art. 8 of the SUP-Directive (EPR provisions) regarding their collection, transport, treatment, clean-ups and awareness raising. Here, we reviewed relevant literature and conducted complementary guideline-based expert interviews by telephone. These data formed the basis of analysing (1) which EPR measures could be effective; (2) what costs could potentially be associated with these measures; and (3) who should be responsible for (i) implementing and (ii) covering the costs for these measures. A third and final objective of this study is to elaborate two proposals for a specific mechanism to implement the EPR provisions of the SUPD: a littering fund for SUP products and an insurance fund for fishing gear.

[45] The implementation of the SUPD specifically in Germany is outside the scope of this study.

2 Analysing legal feasibility of implementing Article 8 on Extended Producer Responsibility

2.1 Objective

This legal analysis compares the EPR concepts as used in different EU legislation. Furthermore, it assesses whether EPR provisions of the SUPD that represent novelties as compared to the other EU legislation, conform to higher-ranking European Law. Finally, it analyses whether EPR provisions of the SUPD comply with international law, namely the law of the World Trade Organization.

2.2 Method and procedure

The legal analysis is based on the standard legal methodology, based on literature analysis.

2.3 Analysis and findings

2.3.1 The concept of EPR

2.3.1.1 Introduction

Recommendation According to a definition in academic literature, Extended Producer Responsibility (EPR) is "an environmental protection strategy to reach an environmental objective of a decreased total environmental impact from a product, by making the manufacturer of the product responsible for the entire life-cycle of the product and especially for the take-back, recycling and final disposal of the product."[46] A shorter definition is provided by the OECD: "an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle".[47] In practice, producers assume the responsibility for collecting or taking back used products and for sorting and treating them for their eventual recycling. This responsibility can be a financial and/or an organisational one.[48]

EPR aims to:

- incentivise producers to consider environmental impacts all along the product's value chain. This aims to support the waste hierarchy of prevention, reduction and recycling[49]
- shift responsibility and cost of negative environmental effects from products from taxpayers to producers[50]
- provide incentives for producers to design resource efficient and low impact products[51]
- ensure effective end-of-life collection, environmentally sound treatment of collected products and improved reuse and recycling.[52]

[46] Lindhqvist (2000), p. 37 with further references.
[47] OECD (2016), p. 21.
[48] V. Monier, M. Hestin, J. Cavé et al. (2014, p. 10.
[49] V. Monier, M. Hestin, J. Cavé et al. (2014), p. 10.
[50] E. Watkins, S. Gionfra, J-P. Schweitzer, M. Pantzar, C. Janssens and P. ten Brink (2017), p. 4.
[51] E. Watkins, S. Gionfra, J-P. Schweitzer, M. Pantzar, C. Janssens and P. ten Brink (2017), p. 4.
[52] E. Watkins, S. Gionfra, J-P. Schweitzer, M. Pantzar, C. Janssens and P. ten Brink (2017), p. 4.

2.3.1.2 Relationship of EPR to the polluter-pays principle

The polluter-pays principle (PPP) is the conceptual foundation of the EPR: The EPR concretizes the polluter-pays principle in the context of waste law. [53] The polluter-pays principle concerns two subject matters: Firstly, it states that the **costs for cleaning up pollution should be borne by the entity that caused it**.[54] According to Art. 191 para. 2 of the Treaty on European Union and the Treaty on the Functioning of the European Union (TFEU) it is a basis for the EU's environmental policy. It shifts the cost burden from society to producers[55], regardless of whether their polluting activities are legal or illegal.[56] Thus, the polluter-pays principle contributes to "true-cost pricing".[57] Secondly, the polluter-pays principle incentivizes producers to **avoid pollution** in the first place.[58] **Polluter** is *someone who directly or indirectly damages the environment or who creates conditions leading to such damage*, according to a Communication by the Commission to the Council from 1975.[59] Any contribution in the sense of a *conditio sine qua non* is sufficient.[60] In cases where pollution arises from several (consecutive) causes because several polluters are involved, the cost of combating pollution should *be borne at the point in the pollution chain and by the means which offer the best solution from the administrative and economic points of view and which make the most effective contribution towards improving the environment*. [61] The available literature on the polluter-pays principle does not further concretize which polluter is primarily liable in cases where there are several.
The polluter-pays principle legitimizes measures that impose costs on the polluter. This can be direct costs (such as clean-up costs, liability provisions, charges[62]) or indirect costs (such as environmental levies).[63] Furthermore, it legitimizes measures that prevent pollution (such as standards, bans, permit requirements).[64] When there is not one single event that causes damage (such as an industrial accident), but an interaction of several pollutant contributions from (distant) sources, the polluter-pays principle allows to charge polluter groups because of their group responsibility (such as in funds solutions).[65] The PPP is strongly interconnected with the **Precautionary Principle** that is also based in Art. 191 para. 2 TFEU. The latter legitimizes action under uncertainty:[66] In case of possible serious or irreversible damage, measures to prevent environmental degradation shall be taken even if there is no full scientific certainty about their effectiveness.[67] Accordingly, it legitimizes burdening polluters with the cost for preventive measures.[68] It even legitimizes burdening potential polluters if their contribution

[53] Cf. Epiney (2019), p. 614.
[54] Krämer (2015), p. 27; Hannequart (1998), p. 53; see also principle 16 of the "Rio Declaration on Environment and Development", Rio de Janeiro, 13 June 1992, UN Doc. A/CONF. 151/26.Rev.1.
[55] Calliess, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 191 AEUV rec. 38.
[56] Epiney (2019), p. 166; Calliess, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 191 AEUV rec. 39.
[57] Epiney (2019), p. 166; van Calster/Reins (2017), p. 37; Calliess, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 191 AEUV rec. 39.
[58] Epiney (2019), p. 166; van Calster (2015), p. 226 f; Meßerschmidt (2011), § 3 rec. 142.
[59], Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters, Annex para. 3, OJ EC L 194, 25.7.1975, p. 2
[60] Kahl, in: Streinz, Rudolf, EUV/AEUV(2018), § 191 rec. 95-102.
[61] Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters, Annex para. 3, OJ EC L 194, 25.7.1975, p. 2.
[62] Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters, Annex para. 4 (b), OJ EC L 194, 25.7.1975, p. 2
[63] Calliess, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 191 AEUV rec. 39.
[64] Kahl, in: Streinz, Rudolf, EUV/AEUV (2018), § 191 rec. 95-102.
[65] Calliess, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 191 AEUV rec.39.
[66] Calliess, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 191 AEUV rec. 33.
[67] Van Calster/Reins (2017), p. 28 with reference to principle 15 of the"Rio Declaration on Environment and Development", Rio de Janeiro, 13 June 1992, UN Doc. A/CONF. 151/26.Rev.1.
[68] Epiney (2019), p. 166.

cannot be causally proven – only clear non-polluters may not be charged.[69] The polluter-pays principle finds its **limits** in the proportionality principle as well as the equality principle: Polluters should not pay for a pollution to which they did not contribute at all, as the CJEU held in its Standley judgment. [70] The principle of equal treatment requires all polluters to be burdened equally.[71] The polluter-pays principle is not operational and does not provide practical guidance on how to calculate and distribute the costs in detail. This has to be determined by the legislator.[72] EPR is a way of implementing this cost distribution in practice.

2.3.1.3 EPR in the SUPD – single-use plastics and fishing gear

2.3.1.3.1 Single-use plastics

According to its title, EPR is the subject matter of Article 8 of Directive (EU) 2019/904 on the reduction of the impact of **certain plastic products** on the environment (SUP Directive, SUPD). Paragraph 1 of Article 8 SUPD obliges Member States to ensure that EPR schemes are established for all SUP products listed in Part E of the Annex that are placed on the market of the Member State. This shall happen in accordance with the provisions on EPR in Articles 8 and 8a of the Waste Framework Directive (WFD)[73]. According to Article 3 point 10 SUPD, "EPR scheme" means EPR scheme as defined in Article 3 point 21 WFD. "Single-use plastic product" is defined in Article 3 point 2 SUPD.[74] "Placing on the market" is defined in Article 3 point 6 SUPD as "the first making available of a product on the market of a Member State". This criteria is central to the definition of "producer" in Article 3 point 11 SUPD as "(a) any natural or legal person established in a Member State that professionally manufactures, fills, sells or imports […] and places on the market of that Member State single-use plastic products, filled single-use plastic products […], or (b) any natural or legal person established in one Member State or in a third country that professionally sells in another Member State directly to private households or to users other than private households, by means of distance contracts […], single-use plastic products, filled single-use plastic products […]". This definition comprises all manufacturers and dealers that first make a single-use plastic product, filled or not, available on the market of a Member State, including importers and online retailers that sell their products to users in that Member State.[75] Paragraphs 2 to 4 of Article 8 SUPD contain regulations on the costs of EPR. While paragraph 4 lays down general cost requirements, paragraphs 2 and 3 provide for a different cost coverage by producers, depending on the items in question: For SUP listed in Section I of Part E of the Annex to the SUPD (food and beverage containers, packets and wrappers, cups, lightweight plastic bag carriers, all as defined under Section I), Member States shall ensure that the producers of these items shall cover the costs pursuant to the EPR provisions in the WFD and the Packaging Directive (PD). In addition, if not already included by these provisions, producers **shall cover the costs**

- of the *awareness-raising measures* regarding those products referred to in Article 10

[69] Meßerschmidt (2011), § 3 rec. 146 f; see also CJEU, C-293/97 (Standley), para. 51.
[70] CJEU, C-293/97 (Standley), para. 52.
[71] Kahl, in: Streinz, EUV/AEUV (2018), § 191 rec. 95-102.
[72] Epiney (2019), p. 167.

[73] Directive 2008/98/EC, as amended by Directive (EU) 2018/851.

[74] A product that is made wholly or partly from plastic and that is not conceived, designed or placed on the market to accomplish, within its life span, multiple trips or rotations by being returned to a producer for refill or re-used for the same purpose for which it was conceived. However, according to Article 12, the decisive criterion for food containers shall be its tendency to become litter. Critical Wendenburg (2019), p. 171-172.
[75] Cf. Wüstenberg (2019), p. 637.

- for the *collection* of waste consisting of those SUP products discarded in public collection systems, including infrastructure and its operation, and its subsequent transport and treatment
- of *cleaning up* litter resulting from those products and the subsequent transport and treatment of that litter.

For SUP listed in Sections II and III of Part E of the Annex (Section II: wet wipes and balloons; Section III: tobacco products with filters), Member States shall ensure that producers of these products shall at least cover the costs of

- the awareness-raising measures regarding those products referred to in Article 10[76]
- cleaning up litter resulting from those products and the subsequent transport and treatment of that litter
- data gathering and reporting according to Article 8a (1)(c) WFD.

With regard to SUP listed in Section III only, the producer shall also cover the costs of collection of waste of those SUP products discarded in public collection systems, including infrastructure and its operation, and its subsequent transport and treatment of that waste. This may include the setting up of specific infrastructure for the waste collection for those products, such as appropriate waste receptacles in common litter hotspots. As mentioned above, paragraph 4 contains some general requirements regarding the EPR costs of paragraph 2 und 3. These costs shall not exceed the costs that are necessary to provide the relevant services in a cost-efficient way, and be established transparently between the actors concerned. In particular, the costs of cleaning up litter shall be limited to activities undertaken by public authorities or on their behalf. This means that, for example, cleaning activities undertaken by NGOs on their own are excluded. Moreover, the calculation methodology for the costs to clean up litter shall be set up in a way that allows for a proportionate cost establishment. In order to minimize administrative costs, Member States may set appropriate multiannual fixed amounts to determine financial contributions of cleaning up litter. Finally, in consultation with Member States, the European Commission shall publish guidelines for criteria on the cost of cleaning up litter according to paragraphs 2 and 3. According to paragraph 5, Member States shall clearly define the roles and responsibilities of the relevant actors involved, with regard to packaging in line with the PD. In order to fulfil the EPR obligations, Member States shall allow producers established in other Member States to appoint authorised representative, and ensure that producers established on their territory appoint authorised representative in other Member States (paragraphs 6 and 7). The requirements of the SUPD have to be transposed into the Member State´s legal systems by 3 July 2021. However, the necessary measures to comply with Article 8 are only applicable by 31 December 2024. In relation to existing EPR systems established before 4 July 2018 and to SUP listed in Section III of Part E (tobacco products), Member States shall apply the necessary measures already by 5 January 2023 (Article 17 paragraph 1).

[76] These measures by Member States include incentives for responsible consumer behavior and information to consumers related to the SUP listed in Part G of the Annex and fishing gear containing plastic, on a) the availability of re-useable alternatives, reuse systems and waste management options, as well as best practices in sound waste management; b) the impact of littering and other inappropriate waste disposal, in particular on the marine environment; and c) the impact of inappropriate waste disposal on the sewer network.

According to Article 17 paragraph 3, Member States may transpose Article 8(1) by means of agreements between the competent authorities and the economic sectors concerned, if certain requirements are met. However, this is not allowed for the tobacco products listed in Annex Part E Section III. Article 8 is complemented by Article 9 SUPD. This provision requires the separate collection for recycling of certain amounts of SUP listed in Part F of the Annex (PET bottles) by 2025 and 2029. These collection targets aim at attaining the production requirements of Article 6 (5) SUPD: at least 25% recycled plastic by 2025 and at least 30% by 2030.[77] In order to achieve the collection targets, Member States may establish deposit-refund schemes or establish separate collection targets for relevant EPR schemes. The European Commission shall facilitate the exchange of information and sharing of best practice among Member States on the appropriate measures to meet the collection targets, and adopt an implementing act on the methodology for the calculation and verification of the collection targets (paragraphs 2 and 3).

2.3.1.3.2 Fishing gear

The SUPD also applies to fishing gear, containing plastics[78], according Art. 8. The **main objective** is to prevent abandoned, lost or otherwise discarded fishing gear (ALDFG) by incentivising the correct disposal and collection of end-of-life gear in ports/harbours and improving its handling there.[79] EPR schemes – apart from deposit schemes – are already considered as crucial to take action against harm caused by marine litter in the form of fishing gear in the European Strategy for Plastics in a Circular Economy.[80] Paragraph 8 obliges Member States to ensure that extended producer responsibility schemes are established for fishing gear placed on the market of the Member State, in accordance with Articles 8 and 8a of the WFD.
Fishing gear 'means any item or piece of equipment that is used in fishing or aquaculture to target, capture or rear marine biological resources or that is floating on the sea surface, and is deployed with the objective of attracting and capturing or of rearing such marine biological resources' (Art. 3 point 4). This includes all kind of passive (e.g. gillnets, traps, pots) and active gear (e.g. trawl nets), as well as all kinds of gear used for aquaculture, e.g. cages, knots, lines, bags, pilings, baskets for sinking, floating and suspended gear.
'*Waste fishing gear*' is hereby fishing gear defined as waste in point 1 of Article 3 of the WFD, 'including all separate components, substances or materials that were part of or attached to such fishing gear when it was discarded, *including when* it was abandoned or lost (ALDFG)' (Art. 3 point 5). According to the Impact Assessment of the SUPD, ALDFG includes:

- Larger parts of fishing gear (such as pots and traps, nets, or lines) that are voluntarily abandoned on fishing grounds or accidentally lost due to adverse weather conditions, interactions and conflicts between gear users.[81]
- Fragments of gear (ropes, nets, etc.) or personal equipment, packaging, monofilament fishing lines, resulting from fragmenting or from normal fishing activities and maintenance of fishing gear and other equipment that are washed or thrown overboard.

[77] Wendenburg (2019), p. 175.
[78] In the following, fishing gear stands always for the term „fishing gear containing plastic".
[79] See Impact Assessment of the SUPD, SWD(2018) 254 final; https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018SC0254
[80] COM/2018/028 final
[81] These may entangle marine life ("ghost fishing") (such as pots and traps, nets, or lines) with worn out gear material (netting, lines) voluntarily dumped overboard rather than properly disposed of in port to avoid nuisance or cost related to handling this waste.

- Fish Aggregating Devices (FADs), which are a special category of fishing device, extensively used for tropical tuna fishing, including by EU fleets.[82]

Member States **have also to ensure** that the producers of fishing gear cover the costs:

- Of the *separate collection of waste fishing gear* containing plastic that has been delivered to adequate port reception facilities in accordance with the PRF Directive (EU) 2019/883 or to other equivalent collection systems that fall outside the scope of that Directive and the costs of its subsequent transport and treatment (Art. 8, para 9).
- Of the *awareness raising measures* referred to in Article 10 regarding fishing gear containing plastic to reduce their amount in the sea.

Producers[83] are natural or legal persons established in one Member State or in a third country that professionally sell in another Member State directly to private households or to users other than private households, by means of distance contracts[84], fishing gear, other than persons carrying out fishing activities[85]. This includes purchasers and distributors along the production chain. Proportionality considerations exclude fishermen themselves and also artisanal makers of fishing gear should not be considered as producers and should not be held responsible for fulfilling the obligations of the producer related to the extended producer responsibility, according to Art. 25. However, so far there is no requirement for producers of fishing gear to bear the costs for clean-ups of beaches. Member States with access to marine waters[86] will have to ensure that fishing gear are collected separately for recycling with a national minimum annual collection rate of waste fishing gear. The SUPD, however, does not provide a specific collection rate, different to the proposal of the EU Parliament where a minimum collection rate of 50 % and a recycling target of 15 %, both to be met by 2025, and requesting the development of a standard on the circular design of fishing gear was demanded. A general target rate is set in the Commissions' Circular Economy Strategy[87] to reduce by 30% until the year 2020 the amount of lost fishing gear found at sea. The SUPD and also the later discussed Port Reception Facility Directive (PRDF) can directly contribute to these provisions. There exist no marking requirements as for single use plastic products and also marking to identify gear like in the PRFD or the Common Fisheries Policy Control Regulation[88]is not mentioned. According to Art. 8 paragraph 7, the roles and responsibilities of relevant actors are clearly defined, in order to fulfil the EPR obligations. Member States have to ensure that a producer established on its territory, selling fishing gear in another Member State in which it is not established, appoints an authorised representative there. The authorised representative is responsible for fulfilling the obligations of that producer on the territory of the other Member State.

The EPR requirements (of Article 8) for fishing gear have to be transposed into the Member State´s legal systems by 31 December 2024. For collection there exists no EU target but

[82] It is considered that 65% of all the purse seine sets made globally are on FADs (both by distant fishing nations and coastal states). Setting on FADs accounts for nearly 40% of global tuna catches and 50% of global skipjack catches.
[83] According Art. 3 (11b) of the SUPD
[84] As defined in point (7) of Article 2 of Directive 2011/83/EU
[85] As defined in point (28) of Article 4 of Regulation (EU) No 1380/2013
[86] As defined in point 1 of Article 3 of Directive 2008/56/EC
[87] COM/2015/614 final, 'Closing the loop — an EU action plan for the Circular Economy'.
[88] Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy.

obligations are upcoming. Awareness raising should be implemented by mid of 2021. On the Extended Producer Responsibility schemes (EPR) the SUP Directive leaves margin to Member States, who are the ones responsible for setting up EPR. Although all EU countries have to set up EPR schemes, the SUP Directive allows them to implement certain EPR measures through agreements between industry and authorities. EU standardisation organisations are requested to develop harmonised standards related to the circular design of fishing gear to encourage preparing for re-use and facilitate recyclability. This may be fostered by EPR schemes like eco-modulation fees to take a life-cycle approach also for fishing gear, considering re-design in terms of durability, reparability and re-usability including material considerations to allow for a better recycling. The other way round, also the envisioned creation of a new CEN/TC 466 ‚Sustainable fisheries, aquaculture and fishing gear' could support the implementation of EPR schemes in the Member States, using synergies. Some members of the European Committee for Standardization (CEN) already signalled interest in supporting this initiative, for example Norway, The Netherlands and Belgium. The aim of the possible new CEN standard is to develop standards for sustainability and circularity regarding sustainable fishing, aquaculture and fish products. This includes fishing gear and its components. In specific, the scope includes technical requirements for circular gear, material use and design – both for circularity and environmentally conscious design – and also processes and systems in terms of management and implementation – collecting, monitoring, traceability, repairing and recycling environmental monitoring and data reporting. Member States are required to report to the Commissions about data on fishing gear placed on the market and on waste fishing gear collected in the countries every year, according to Art. 13d. If clear guidelines for harbours are provided, e.g. related to the separate collection and treatment of different types of gear like end-of-life gear and ALDFG, the reporting may help to tackle the existing data gap, especially related to lost or abandoned fishing gear on local and national level. Member States also have to monitor and assess the amount of fishing gear ending up in the sea.[89] Producers should cover costs of the awareness-raising measures as part of their EPR obligations, according to Art. 28. These measures, also for fishing gear, foresee that Member States inform users of fishing gear containing plastic about:

- the availability of reusable alternatives, re-use systems, and waste management options for those products
- best practices in sound waste management
- the impact of littering and inappropriate waste disposal of those products on the environment, and in particular on the marine environment
- the impact on the sewer network of inappropriate waste disposal of those products.

For fishing gear placed on the EU market, EPR schemes have to be in accordance with the WFD as well.[90] Therefore, the specific measures set under the SUP Directive prevail over the measures established under the EU Packaging and Packaging Waste Directive or the EU Waste Framework Directive in case of divergence between them[91].

The establishment of an EPR scheme for fishing gear has also to be considered in its interaction with the overall legislative framework. In particular, EPR schemes take over costs for the separate collection and treatment of waste which otherwise fall on the port facility. These costs

[89] Art. 24 SUPD
[90] Articles 8 and 8a of Directive 2008/98/EC
[91] see Art. 36 of the SUPD

are normally passed through to ship operators including fishers as part of the indirect fee. The establishment of EPR schemes for fishing gear would therefore reduce ports costs, and correspondingly port fees, related to the treatment of fishing gear. The costs impact would be most notably relevant in small fishing ports which currently have either no, or very small PRFs.[92]

2.3.1.4 Comparison with EPR in other EU legislation

2.3.1.4.1 Waste Framework Directive

Overview

As a general directive on waste defining key concepts, establishing major principles, and allocating responsibilities, the WFD "has always been [… a]t the core of EU waste law".[93] Very recently, the WFD of 2008 (2008/98/EC) has been amended by Directive (EU) 2018/851. Article 3 (21) WFD, to which Article 3 (10) SUPD refers, defines EPR scheme as "a set of measures taken by Member States to ensure that producers of products bear financial responsibility or financial and organisational responsibility for the management of the waste stage of a product´s life cycle". This newly introduced provision provides for the first time a general legal definition of EPR schemes. EPR is addressed by Article 8 and 8a WFD.
According to Article 8 (1) WFD, "In order to strengthen the re-use and the prevention, recycling and other recovery of waste, Member States may take legislative or non-legislative measures to ensure that any natural or legal person who professionally develops, manufactures, processes, treats, sells or imports products (producer of the product) has extended producer responsibility." Such measures may include, inter alia, an acceptance of returned products and of the waste that remains after those products have been used, the subsequent management of the waste, as well as financial responsibility for such activities. Member States may also encourage the design of products and their components in order to reduce their environmental impact and the generation of waste in the course of the production and subsequent use of products, and in order to ensure that the recovery and disposal of products that have become waste take place in accordance with other requirements of the WFD (Article 8 (2)). When applying EPR, Member States shall take into account the technical feasibility and economic viability, as well as the overall environmental, human health and social impacts, and the proper functioning of the internal market (paragraph 3). While EPR is not mandatory under the WFD, Member States are obliged to adhere to certain minimum requirements if they decide to introduce EPR schemes (Article 8 (1) subparagraph 3), and ensure that EPR schemes established before 4 July 2018 comply with these requirements by 5 January 2023 (Article 8a (7). These general minimum requirements for EPR schemes were recently inserted in a new Article 8a. In addition, Member States may decide that producers, which introduce EPR schemes on their own should apply some or all of these minimum requirements (Article 8(1) subparagraph 4).
The general minimum requirements for EPR schemes require the Member States to

- define in a clear way the roles and responsibilities of the actors involved, including producers, organisations implementing EPR obligations on their behalf (Producer Responsibility Organisations, PROs), private and public waste operators, and local authorities
- in line with the waste hierarchy, set waste management or other relevant targets
- ensure that a reporting system is in place

[92] see Impact Assessment of the SUPD, SWD (2018) 254 final
[93] Langlet/Mahmoudi (2016), p. 285.

- ensure equal treatments of producers, thereby taking SMSE into account (Article 8a (1)).

According to paragraph 3, the Member States shall take the necessary measures to ensure that any producer or PRO

- has a clearly defined geographical, product and material coverage
- provides an appropriate availability of waste collection systems within its area
- has the necessary financial/organisational means to meet its EPR obligations
- puts in place an adequate self-control mechanism, supported, where relevant, by regular independent audits
- makes publicly available information about the attainment of the waste management targets referred to in paragraph 1, and additional information for PROs.

Article 8a (4)(a) requires the Member States to take the necessary measures to ensure that the financial contributions paid by the producers to comply with their EPR obligations cover the following costs for the products put on the market in the Member States concerned:

- separate collection of waste and its subsequent transport and treatment
- providing adequate information to waste holders as required by paragraph 2
- data gathering and reporting in accordance with paragraph 1 (c)

This shall not apply to EPR schemes established pursuant to Directive 200/53/EC (ELV), 2006/66/EC (batteries) or 2012/19/EU (WEEE). In the case of collective fulfilment of EPR obligations, obligations are where possible modulated for individual products or groups of products, notably by taking into account their durability, reparability, re-usability and recyclability and the presence of hazardous substances, thereby taking a life-cycle approach and aligned with relevant EU law requirements, and where available base on harmonised criteria in order to ensure a smooth functioning of the internal market (Article 8a (4)(b)). In addition, the costs to be covered by the producers shall not exceed the costs necessary to provide waste management services in a cost-efficient way. Such costs shall be established in a transparent way between the actors concerned (Article 8a (4)(c)). Where justified by the need to ensure proper waste management and economic viability of the EPR scheme, MS may depart from the division of financial responsibility as laid down in Article 8a (4)(a) provided that the producer bear at least the following percentage of the necessary costs and the remaining costs are borne by the original waste producers or distributors:

- 80% in the case of EPR schemes established to attain waste management targets and objectives established under EU legislation
- 80% in the case of EPR schemes established on or after 4 July 2018 to attain waste management targets and objectives solely established in MS legislation
- 50% in the case of EPR schemes established before 4 July 2018 to attain waste management targets and objectives solely established in MS legislation.

According to Article 8a (5), Member States shall establish an adequate monitoring and enforcement framework. Where multiple PROs are acting on the territory of a Member States, the latter shall appoint at least one body independent of private interests or entrust a public authority to oversee the implementation of EPR obligations. Member States shall also allow producers placing products on their territory to appoint an authorised representative to fulfil their EPR obligations, and may lay down requirements such as registration or reporting to be met by such representatives. Moreover, Member States shall ensure a regular dialogue between stakeholders involved in the implementation of EPR schemes (Article 8a (6)), and take measures to ensure that EPR schemes established before 4 July 2018 comply with Article 8a by 5 January 2023 (Article 8a (7)). Finally, Member States shall ensure that the waste holders targeted by the EPR schemes are informed about waste prevention measures, centres for re-use and preparing for re-use, take-back and collection systems, and the prevention of littering. They shall also create incentives, notably through economic incentives or regulations, for the waste holders to assume their responsibility to deliver their waste into the separate collection systems in place (Article 8a (2)). According to Article 8 (5), the European Commission shall organise an exchange of information between Member States and the actors involved in EPR schemes on the practical implementation of the minimum requirements, including information on best practices, the modulation of financial contributions, and the prevention of littering. It shall publish the results and may provide relevant guidelines. Moreover, the Commission shall publish guidelines on cross-border cooperation concerning EPR schemes and on the modulation of financial contributions relating to collective fulfilment of EPR obligations. Concerning the latter point, the Commission may, where necessary to avoid distortion of the internal market, adopt implementing acts to ensure a uniform application. In addition to the provisions on EPR in Article 8, 8a WFD, Article 9 on prevention of waste is noteworthy. According to paragraph 1 lit. k), preventive measures to be taken by Member States include the identification of products that are the main sources of littering, notably in natural and marine environments, and appropriate measures to prevent and reduce litter from such products. According to recital 33, Member States "should also take measures to clean up litter present in the environment, irrespective of its source or size and regardless of whether waste has been discarded wilfully or by negligence." If such measures include market restrictions, they shall be proportionate and non-discriminatory. Moreover, information campaigns to raise awareness about waste prevention and littering are mentioned. In this context, recital 34 states that "[t]he fight against litter should be a shared effort between competent authorities, producers and consumers. Consumers should be incentivised to change their behaviour including through education and awareness raising, while producers should promote the sustainable use of and contribute to appropriate end-of-life management of their products." Finally, recital 35 mentions that "[s]ince marine litter, in particular for plastic waste, stems to a large extent from land-based activities caused mainly by poor solid waste management practices and infrastructure, littering by citizens and lack of public awareness, specific measures should be laid down in waste prevention programmes and waste management plans." Finally, Article 10 (2) and 11 (1) are relevant in the EPR context. They oblige Member States to ensure the setting up of separate waste collections where necessary to promote recovery and recycling. According to Article 10 (3), Member State may allow derogations under certain conditions. Subject to these conditions, separate collection to promote high-quality recycling shall be set up at least for paper, metal, plastic and glass, and by 2025 for textiles (Article 11 (1)). In addition, Article 11 (2) sets recovery targets to be attained by 2020, one of them for the preparation for reuse and the recycling of at least paper, metal, plastic and glass from households and similar waste streams. The relevance of quantitative waste management targets for EPR schemes is highlighted by Article 8a (1) (b) WFD, which includes waste management targets in the minimum requirements for EPR schemes.

Comparison and relationship with SUPD

The legal relationship between the SUPD and the WFD is addressed by Article 2 (2) SUPD. According to it, the rules in the SUPD prevail in case of conflict. In this respect, the SUPD is a *lex specialis* to the WFD (recital 10 of the SUPD). However, in respect to EPR, the same recital emphasises that the SUPD supplements the WFD. Both the SUPD and the WFD provide for the establishment of EPR schemes, which are defined in the SUPD by reference to the recent definition in the WFD. While the establishment of such a scheme is mandatory under the SUPD, this is not the case under the WFD. However, if EPR schemes are established by a Member State, they have to comply with the minimum requirements of Article 8a WFD. Hence, the EPR schemes to be established under the SUPD would need to respect those minimum requirements. Accordingly, Article 8 (1) SUPD states that EPR schemes shall be established "in accordance with Articles 8 and 8a" WFD. As to the costs to be covered by the producers, however, Article 8 (2) SUPD only refers to the EPR provisions of the WFD regarding the items listed in Section I of Part E (food containers, packets and wrappers, beverage containers, cups, and lightweight plastic carrier bags), thereby listing additional cost to be covered under the SUPD "insofar as not already included" under the WFD. In this regard, it seems unclear whether the EPR cost provisions of the WFD are directly applicable to producers as defined by the SUPD, or only to the extent that these producers also fall under the producer definition of the WFD. Both definitions differ to the extent that the SUPD producer definition expressly requires a placing on the market of the relevant Member State. However, this requirement is presupposed by Article 8a (1) (a) WFD, which obliges Member States to define the roles and responsibilities of all relevant actors "including producers of products placing products on the market of the Member State".[94] Otherwise, both definitions correspond in including manufacturing, selling[95], and importing, while developing, processing, and treating is included in the WFD but not the SUPD producer definition, with the exception of filling that may be considered a processing or treating operation. Thus, producers as defined by the SUPD also qualify as producers under the WFD, but not always the other way around. Concerning the items listed in Sections II (wet wipes, balloons) and III (tobacco products) of Part E of the Annex, Article 8 (3) SUPD lists the costs to be covered "at least", without any reference to the WFD except for data gathering and reporting. The reason for this differentiation is mentioned in recital 22, according to which the relevance of some minimum requirements of the WFD depends on the characteristics of the product. Thus, separate collection is not required for the proper treatment of tobacco products, wet wipes and balloons. This means that for these items, the collection as municipal waste is sufficient. The costs of this collection and the subsequent transport and treatment have to be covered by the producers only regarding tobacco products. In this case, the costs may include the costs for setting up specific infrastructure for the collection, e.g., appropriate receptacles in common litter hotspots. For the items listed in Section I of Part E of the Annex, on the other hand, according to Article 8a (3)(b) and (4)(a) WFD as well as recital 22 SUPD, the establishment of EPR schemes includes both the organisation and the financing of separate waste collection, transport and treatment. According to the definition in Article 3 point 11 WFD, to which Article 3 point 13 SUPD refers, "separate collection" means the collection where a waste stream is kept separately by type and nature so as to facilitate a specific treatment.

In the context of the SUPD, this seem to imply that waste from food containers, packets and wrappers, beverage containers, cups, and lightweight plastic carrier bags need to be collected,

[94] See also Article 8a (4) (a) WFD relating to costs for the products "that the producer puts on the market in the Member State concerned".

[95] Whereby the SUPD definition expressly includes selling by distance contract within a Member State and from another state, while the WFD includes "selling" with no details as to its scope.

transported and treated separately. As recital 27 mentions, however, separate collection under the WFD is subject to certain conditions and exemptions according to Article 10 (2) and (3) WFD. In addition, waste from these items constitutes packaging waste in the sense of Article 3 point 2 PD.[96] EPR schemes for packaging waste exist in almost all Member States,[97] therefore separate management according to the minimum requirements of the WFD already apply to this waste stream by 2023 (for more information see the following chapter). It does not appear to make sense to split this waste stream further into SUP packaging and non-SUP packaging. Actually, except for the above-mentioned recital 22 and Article 8 (9) on waste fishing gear containing plastic, the SUPD uses the term "separate collection" only in Article 9 (1) in relation to certain beverage bottles listed in Part F of the Annex. For these PET bottles, Article 9 (1) establishes separate collection targets, which Member States may pursue by establishing separate collection targets for relevant EPR schemes, and recycling targets in Article 6 (5) SUPD. Since PET bottles are also included in the items listed in Section I of Part E of the Annex, it would make even less sense to require a separate management of all SUP packaging waste.
A completely new requirement for the producers of the packaging items listed in Section I of Part E of the Annex is, however, the obligation to cover the costs of waste collection, transport and treatment for those products that are discarded in public collection systems. This means that producers also have to pay for the management of SUP waste that is not collected separately as packaging waste at the consumer´s homes, but discarded "en route", e.g., as mixed municipal waste.[98] Note that the expression "discarded in public collection systems" is also used for the SUP items listed in Sections III (tobacco products) of Part E of the Annex, where a separate collection is not required anyway. Recital 22 of the SUPD also makes clear that the costs of cleaning-up litter (resulting from all the products listed in Part E of the Annex), and the subsequent transport and treatment of that litter is an additional EPR requirement of the SUPD compared to the WFD. Finally, the costs of awareness-raising measures under the SUPD may be slightly higher than the costs for providing adequate information to waste holders under Article 8 (2) WFD, since the former measures require information on the impact of littering and other inappropriate waste disposal on the environment, in particular the marine environment, and on the sewer network (Article 10 SUPD). More provisions on costs of EPR are provided by both the SUPD (Article 8 (4)) and the WFD (Article 8a (4). Notably, the SUPD lays down further requirements regarding the costs of cleaning up litter, particularly the limitation to activities undertaken by public authorities or on their behalf. Otherwise, both articles state that the costs to be covered shall not exceed the costs that are necessary to provide the relevant services in a cost-efficient way, and shall be established in a transparent way between the actors concerned (see Article 8a (4)(c) for the WFD). This seeming repetition could indicate that Article 8 (4) SUPD is an exhaustive provision, leaving no room for the remaining provisions in Article 8a (4) WFD. However, a closer look reveals that the provision in Article 8a (4)(c) WFD speaks of "waste management services", which according to the definition of waste management in Article 3 (9) WFD does not include the cleaning up of litter. By contrast, Article 8 (4) first sentence SUPD refers to "those services" as referred to in Article 8 (2) and (3) SUPD, thus including the cleaning up of litter. On the other hand, while all the other provisions in Article 8 (4) SUPD solely apply to the cleaning up of litter, the first sentence also applies to the collection etc. of the relevant items. However, recital 22 SUPD makes it clear that the minimum requirements of Article 8a WFD apply to the EPR schemes of the SUPD, and recital 10 emphasizes that with regards to EPR, the SUPD supplements the WFD. Thus, it can be assumed that the remaining EPR costs provisions in

[96] Wendenburg (2019), p. 171; Wüstenberg (2019), p. 638.
[97] According to E. Watkins, S. Gionfra, J-P. Schweitzer, M. Pantzar, C. Janssens and P. ten Brink (2017), p. 9, 26 of the 28 Member States have "some form of EPR in place for packaging waste".
[98] Cf. Wendenburg (2019), p. 176.

Article 8a (4) WFD are generally applicable to the EPR in the SUPD. One of these remaining provisions covers the modulation of financial contributions of producers in the case of collective fulfilment of EPR obligations (Article 8 (4)(b) WFD). The other provisions allow Member States, under certain conditions, to depart from the division of financial responsibility in Article 8 (4)(a) WFD, provided that the producers bear at least 80% of the necessary costs and the original waste producers[99] or distributors[100] the remaining costs (Article 8 (4)(c)). In the context of the SUPD, the case of EPR schemes established to attain waste management targets and objectives established under EU legislation (Article 8 (4)(c)(i) WFD) could be relevant. Indeed, Article 17 (3) SUPD mentions "the management targets and objectives set out in Articles 4 and 8". However, this exceptional sharing of financial responsibility relates to the activities mentioned in Article 8 (4)(a) WFD (separate collection, transport and treatment, information to waste holders, as well as data gathering and reporting), and does thus not apply to the (non-separate) collection, transport and treatment of waste discarded in systems of public collection, as well as the cleaning up of litter. Moreover, this derogation may not be used to lower the proportion of costs borne by producers of products under EPR schemes established before 4 July 2018. In sum, to the extent that EPR schemes are established, both the SUPD and the WFD oblige the producers to

- organise the separate collection, transport and treatment of waste, and cover the corresponding costs
- cover the costs for awareness raising measures, which are however slightly more specific under the SUPD
- cover the costs for data gathering and reporting.

In addition, according to both directives the costs to be covered shall not exceed the costs that are necessary to provide the relevant services in a cost-efficient way, and shall be established in a transparent way between the actors concerned. In contrast, regarding EPR, the SUPD and the WFD differ insofar as

- The SUPD covers only SUP (and fishing gear containing plastic), while the WFD covers all kind of waste.
- The establishment of an EPR scheme is mandatory under the SUPD but not under the WFD.
- Under the SUPD, a separate collection is only required for PET bottles (while other SUP packaging waste is, in almost all Member States, already collected separately or to be collected separately as packaging waste according to the PD and WFD). Under the WFD, separate collection shall be set up under certain conditions at least for paper, metal, plastic and glass, and is generally required for any EPR scheme. In addition, only the WFD includes reuse and recycling targets.

[99] Defined by Article 3 (5) WFD.

[100] Distributors are not defined by the WFD. However, Article 8a (4) (c) WFD shows that they are not considered to also be producers, as it may be the case e.g. according to Article 3.1 (g) WEEED. See also Article 3 (7) SUPD. According to it, "making available on the market" (as part of the definition of "placing on the market", which in turn is part of the producer definition in Article 3 (11) SUPD) means "any supply of a product *for distribution*, consumption or use on a market of a Member State in the course of a commercial activity […]" (highlighted by the author). "For distribution" seems to indicate that distribution still has to take place, which would exclude distributors from the producer definition of the SUPD.

- Under the SUPD, producers have to cover the costs of the (non-separate) collection, transport and treatment of waste discarded "en route" in systems of public collection (SUP packaging waste, tobacco products)
- Finally, only the SUPD requires producers to cover the costs of cleaning up litter (for all the SUP covered).

2.3.1.4.2 Packaging Directive

Overview

In Europe, the packaging sector is the main user of plastics, responsible for about 40% of plastics demand.[101] The Packaging Directive (PD) is the EU´s main piece of legislation on the managing of packaging and packaging waste. It is based on the EU´s competence to harmonize the internal market, currently Article 114 TFEU. The PD of 1994 (94/62/EC) has been recently amended twice: First by Directive (EU) 2015/720 regarding the reduction of the consumption of lightweight plastic carrier bags, then on a general scale by Directive (EU) 2018/852. "Packaging waste" is defined in Article 3.2 as any packaging or packaging material covered by the definition of "waste" in the WFD, excluding production residues. Up to the latest amendment by Directive 2018/852, the PD did not set out mandatory EPR schemes, although recital 13 declared it to be "essential that all those involved in the production, use, import and distribution of packaging and packaged products [...] accept responsibility for such waste in accordance with the polluter-pays principle". Member States were only required to ensure that "other preventive measures" are implemented, which could consist of "projects to introduce producer responsibility". Moreover, Member States have to ensure that return/collection and reuse/recovery systems are set up, which shall be open to the participation of economic operators[102] of the sectors concerned. However, most Member States introduced some kind of PR scheme.[103] Article 4 PD as amended by Directive 2018/852 replaced the above-mentioned formulation by "incentives through extended producer responsibility schemes", thus streamlining the EPR terminology. Most importantly, Article 7 (2) PD now obliges Member States to ensure that EPR schemes are established by 31 December 2024 "for all packaging in accordance with Articles 8 and 8a" WFD. Thus, the PD has switched from a voluntary to a mandatory establishment of (E)PR schemes, which have, in addition, to comply with the minimum requirements for EPR schemes set out in Article 8a WFD. In line with the WFD, producers will have to cover the costs of separate collection of the waste and its subsequent transport and treatment, of informing waste holders, and of data gathering and reporting (see the previous section for WFD requirements). Noteworthy in this context is also Article 6 (1) PD, which sets up minimum recovery and recycling targets. In particular, Article 6 (1) (g) sets up minimum recycling targets for specific materials contained in packaging waste, including plastic. Finally, Article 22 (3)(a) PD allows that Article 7 PD is transposed via agreements between the competent authorities and the economic sectors concerned, provided that the objectives of Articles 4 and 6 are thereby achieved.

Comparison and relationship with SUPD

Article 3 (15) SUP defines "packaging" by referring to Article 3 (1) PD. The legal relationship between the SUPD and the PD is addressed by Article 2 (2) SUPD, according to what the rules in the SUPD prevail in case of conflict. In this respect, the SUPD is a *lex specialis* to the PD (recital 10 of the SUPD). However, in respect to EPR, the same recital emphasises that the SUPD

[101] E. Watkins, S. Gionfra, J-P. Schweitzer, M. Pantzar, C. Janssens and P. ten Brink (2017), p. 5.
[102] As defined by Article 3 (11) PD.
[103] See Watkins et al. (2017), p. 9 et seq.

supplements the PD. Both the SUPD and the revised PD provide for the mandatory establishment of EPR schemes in accordance with Articles 8 and 8a WFD, and both refer to the WFD definition of "EPR schemes".[104] While the PD sets up minimum recovery and recycling targets, including recycling targets for specific materials contained in packaging waste such as plastic, the SUPD contains only separate collection targets for PET bottles in order to achieve the product requirements regarding certain minimum percentages of recycled plastics.
Regarding the costs to be covered by the producers, Article 8 (2) SUPD refers to the EPR provisions of the WFD and the PD regarding the items listed in Section I of Part E of the Annex (food containers, packets and wrappers, beverage containers, cups, and lightweight plastic carrier bags), thereby listing additional cost to be covered under the SUPD "insofar as not already included" under both directives. Regarding the PD, this has almost no meaning of its own, since the PD does not set out any requirements of the EPR schemes to be established by 2025, but refers to the WFD in this regard. However, as has been elaborated previously regarding the relationship between the SUPD and the WFD, the importance of this reference lays in the fact that for packaging waste, EPR schemes already exist and shall be further improved according to the revised PD and the WFD. This means that, except for PET bottles, the SUP packaging waste listed in Section I of part E of the Annex will continue to be separately collected, transported and treated as packaging waste under the EPR schemes of the PD. Accordingly, the producers of packaging will continue to organise and finance this EPR scheme for packaging waste. In addition, they will have to contribute financially to the systems of public collection regarding the packaging waste discarded in these systems, and pay for cleaning up litter from packaging. Thus, the SUPD presupposes that the items listed in Section I of Part E of the Annex are packaging according to the definition in Article 3.2 PD, to which Article 3.15 SUP refers. This understanding is shared by academic literature.[105] However, the European Commission´s Impact Assessment notes that some SUP (of this product) may not fulfil the criteria of packaging, e.g. a pack of empty cups that can be filled by the consumers.[106] Leaving aside the question whether the consumer makes any difference when discarding such waste, this would mean that such exceptions would not fall under the EPR schemes established under the PD. It cannot be assumed that the SUPD requires the establishment of a separate waste management system according to Articles 8, 8a WFD for those exceptions, either. To the extent that Member States have established separate collection systems for plastics according to Article 11 (1) WFD, they would cover those exceptions, otherwise the municipal collection. As to the new cost requirements of the SUPD, the contribution to systems of public collection and payments for cleaning up litter, it does not make any difference whether the waste in question is packaging waste or not: it is always the producer that has to cover these costs. Another link to the PD is provided in Article 8 (5) SUPD. This provision clarifies that, regarding packaging, the roles and responsibilities of all relevant actors involved shall be defined in line with the PD. According to recital 13 of the PD, the development and implementation of the measures provided for in the PD should involve the close cooperation of all partners, where appropriate, within a spirit of shared responsibility.

In sum, regarding EPR, both the SUPD and the revised PD oblige the producers to operate or finance EPR schemes in accordance with Articles 8 and 8a WFD, including financing the costs of awareness raising measures and data gathering and reporting. In contrast, regarding EPR, the SUPD and the PD differ insofar as

[104] See Article 3 (2c) PD for the PD.
[105] Wendenburg (2019), p. 171; Wüstenberg (2019), p. 638.
[106] European Commission (2018b), p., 10.

- The PD only covers packaging and packaging waste, while the SUPD covers both packaging and non-packaging products and waste, provided they constitute SUP and SUP waste (and (waste) fishing gear containing plastic). However, the largest SUP group is packaging.
- The revised PD requires the separate management of packaging waste, while the SUPD only requires the separate collection of PET bottles in order to achieve the product requirements regarding certain minimum percentages of recycled plastics. However, the SUPD presupposes the separate management of SUP packaging waste as packaging waste. Only the PD includes minimum recycling targets for specific materials contained in packaging waste, including plastic.
- Under the SUPD, producers have to cover the costs of the (non-separate) collection, transport and treatment of waste discarded "en route" in systems of public collection (SUP packaging waste, tobacco products).
- Finally, only the SUPD includes the costs of cleaning up litter (for all the SUP covered).

2.3.1.5 Comparison with Producer Responsibility (PR) in other EU legislation

2.3.1.5.1 Batteries Directive

Overview

Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators ("Batteries Directive", BD) aims at improving the environmental performance of batteries and accumulators and of the economic operators involved in the life cycle of these products.[107] Recital 28 states that "[a]s regards producer responsibility, producers of batteries and accumulators and producers of other products incorporating a battery and accumulator are responsible for the waste management of batteries and accumulators that they place on the market." Concerning the operational aspects of producer responsibility, Article 8 (1) obliges the Member States to ensure that collection schemes for waste portable batteries and accumulators are set up, which enable end-users to discard such waste at an accessible collection point in their vicinity, and require distributors[108] to take back such waste at no charge when supplying portable batteries and accumulators. Member States may require producers[109] to set up such schemes, and other economic operators[110] to participate in such schemes (Article 8 (2)). Moreover, Member States shall ensure that producers of industrial batteries and accumulators take back the waste resulting from these products from end-users. Where collection is not already carried out under Directive 2000/53/EC on end-of life vehicles ("ELV Directive"), Member States are responsible that producers set up schemes for the collection of waste automotive batteries and accumulators from end-users or from an accessible collection point in their vicinity (Article 8 (4)). Article 10 sets general minimum collection targets to be attained by Member States. Moreover, producers or third parties have to establish systems for the sound treatment and recycling of batteries and accumulators, thereby observing minimum

[107] Langlet/Mahmoudi (2016), p. 302.
[108] Article 3.13 defines "distributor" as any person that provides batteries and accumulators on a professional basis to an end-user.
[109] Article 3.12 defines "producer" as any person established in a Member State that places batteries or accumulators on the market for the first time within the territory of that Member State on a professional basis.
[110] Article 3.15 defines "economic operator" as any producer, distributor, collector, recycler or other treatment operator.

requirements for treatment and recycling efficiencies (Article 12 (1)(a), (2) and (4) with Annex III). According to Article 20, Member States have to ensure that certain information is provided to end-users, and may require economic operators to provide this information. Otherwise, the operational requirements of Article 8a WFD apply. Regarding the financial side of producer responsibility, Article 16 (1) BD sets out that Member States ensure that producers, or third parties acting on their behalf, cover any net costs arising from the collection, treatment and recycling of all waste resulting from portable, industrial and automotive batteries and accumulators. Under certain circumstances, small producers may be exempted from this provision (de minimis rule, Article 18). Moreover, double charging of producers shall be avoided where batteries and accumulators are collected under schemes set up under the ELV Directive[111] or the WEEE Directive. Member States also have to provide that producer pay for public information campaigns on the collection, treatment and recycling of all waste portable batteries and accumulators (Article 16 (3)). An important exception to these financial obligations applies to producers of industrial and automotive batteries and accumulators: they may conclude agreements with users that stipulate different financial arrangements (Article 8 (5)). Even more noteworthy is that, according to Article 8a (4)(a) WFD, the provisions of the WFD on the financial obligations of producers do not apply to the BD. Finally, Article 27 allows that Article 8 BD is transposed via agreements between the competent authorities and economic operators concerned, provided that the objectives of the Directive are thereby achieved. The recent amendment of the BD by Directive (EU) 2019/849 does not affect producer responsibility.

Comparison with SUP Directive

Contrary to the WFD and the PD, the BD has no links with the SUPD, since the respective products (SUP respective batteries and accumulators) do not overlap. Thus, only the concepts of (extended) producer responsibility of the two directives can be compared. While the SUPD requires operational responsibility of producers beyond existing schemes only for PET bottles, the BD obliges distributors of portable batteries and accumulators and producers of industrial batteries and accumulators to take back the waste from their products, and producers of automotive batteries and accumulators to set up collection schemes where needed. Otherwise, the setting up of collection schemes by producers is not mandatory. In addition, the BD obliges producers or third parties to set up treatment and recycling systems. Moreover, while the SUPD only requires minimum collection rates for PET bottles, the BD sets general minimum collection targets and recycling efficiencies. Regarding financial responsibility, the BD obliges producers, as a rule, to cover all the costs arising from the collection, treatment and recycling of all kinds of batteries and accumulators, as well as information campaigns related to portable batteries and accumulators. In contrast, the SUPD has a very sophisticated system of financial responsibility, which generally includes the costs of awareness raising measures but not generally the collection costs. Especially regarding the collection of SUP packaging waste “at home”, the SUPD refers to the EPR financing provisions of WFD and PD. In addition, producers of SUP packaging waste and tobacco products have to cover the costs of the (non-separate) collection, transport and treatment of waste discarded “en route” in systems of public collection. Under the BD, producers do not have to cover costs beyond those for waste management and information campaign (and possibly own information obligations), since the EPR costs provisions of the WFD do not apply to the BD. Finally, only the SUPD includes the costs of cleaning up litter for all the SUP covered. Both the BD and the SUPD allow to transpose the provisions regarding the

[111] The ELV collection scheme applies only to batteries and accumulators that are collected when the vehicle is scrapped, see Frequently Asked Questions on Directive 2006/66/EC on Batteries and Accumulators and Waste Batteries and Accumulators (Updated version, May 2014), https://www.rechargebatteries.org/wp-content/uploads/2014/05/Attach-A1-FAQ-May-2014.pdf, p. 24.

establishment of collection schemes (BD) respectively EPR schemes (SUPD) by (voluntary) agreements to the competent authorities and the economic operators (BD) respectively sectors (SUPD), provided that they meet certain requirements.

2.3.1.5.2 WEEE Directive

Directive 2012/19/EC on waste electric and electronic equipment ("WEEE Directive", WEEED) aims at protecting the environment and human health by preventing or reducing the adverse impacts of the generation and management of WEEE and by reducing overall impacts of resource use and improving the efficiency of such use (Art. 1). The WEEED includes a number of provisions explicitly or implicitly linked to producer responsibility. Some of them apply to WEEE from private households, some to other WEEE, and some to both. Concerning the operational aspects of producer responsibility of WEEE from private households, Member States are responsible for the setting up of return systems (Article 5 (2)(a)). According to Article 5(2)(d), producers[112] may set up and operate take-back systems. Without prejudice to that provision, distributors[113] are under two obligations: First, when supplying a new product, they have to ensure that waste from the previous product can be returned to distributors on a one-to-one basis at least free from charge (Article 5(2)(b). Second, at large retail shops or in their immediate proximity, distributors have to provide for the collection of very small WEEE free of charge to end-users and without any obligation to buy EEE (Article 5 (2)(c)). For both cases, alternative systems are allowed under certain conditions. Regarding WEEE not from private households, Member States have to ensure that producers or third parties acting on their behalf provide for the collection of such waste (Article 5 (5)). According to Article 7 (1), each Member State shall ensure the implementation of the producer responsibility principle and, on that basis, of a minimum collection rate. Member States also have to ensure that producers set up recovery systems using best available techniques, in order to ensure that all separately collected WEEE undergoes proper treatment[114] (Article 8 (3) and (1)). Finally, Member States shall ensure that producers meet the minimum recovery targets of Annex V for the collected and treated WEEE. Member States shall also ensure that private households receive certain information, e.g., about the requirement not to dispose of WEEE as unsorted municipal waste and to collect such WEEE separately, and may require that this information is provided by producers and/or distributors (Article 14). In particular, Member States shall ensure that producers appropriately mark EEE placed on the market with the symbol shown in Annex IX (Article 14 (4)). Article 15 contains further information obligations regarding treatment facilities.
Otherwise, the operational requirements of Article 8a WFD apply.
Regarding the financial aspects of producer responsibility of WEEE from private households, Member States have to make sure that producers provide at least for the financing of the collection, treatment, recovery and environmentally sound disposal of WEEE that has been deposited at collection facilities (Article 12 (1)). For products placed on the market later than 13 August 2005, each producer shall be responsible for financing the relevant operations relating to waste from his own products (individually or by joining a collective scheme). When placed on the market, each product shall be accompanied by a guarantee showing that the management of

[112] According to Article 3.1 (f), "producer" is any natural or legal person who is established in a Member State and manufactures or designs EEE, resells it, places it on the market on a professional basis, or who sells EEE by means of distance communication directly to private households or to other users in a Member States, and is established in another Member State or in a third country.
[113] Article 3.1 (g) defines "distributor" as any natural or legal person in the supply chain, who makes an EEE available on the market. The next sentence of the definition clarifies that a distributor can be, at the same time, a producer as defined in the WEEED.
[114] According to Article 8 (2), proper treatment shall at least include the removal of all fluids and a selective treatment in accordance with Annex VII.

all WEEE will be financed (Article 12 (3)). For historical waste, the responsibility for the financing of the costs of the management of WEEE shall be borne by one or more systems to which all producers contribute proportionately, e.g., in proportion to their respective share of the market by type of equipment (Article 12 (4)). According to Article 12 (2), Member States may also encourage producers where appropriate to also finance the costs occurring for collection of WEEE from private households to collection facilities.
Regarding WEEE not from private households, Member States are responsible that producers pay for the collection, treatment, recovery and environmentally sound disposal of waste resulting from products placed on the market later than 13 August 2005. For historical waste, the producers of new equivalent products or products fulfilling the same function shall pay. Otherwise, users other than private households shall be, or can be made partly or totally, responsible for the financing (Article 13 (1)). However, producers and users other than private households may conclude agreements with users that stipulate different financial arrangements (Article 13 (2)). According to Article 8a (4)(a) WFD, the provisions of the WFD on the financial obligations of producers do not apply to the WEEED. Finally, Article 24 (3) allows that some provisions, e.g., the end-user information obligations towards end-users, are transposed via agreements between the competent authorities and the economic sectors concerned, provided that the objectives of the Directive are thereby achieved. The recent amendment of the WEEED by Directive (EU) 2019/849 does not affect producer responsibility.

Comparison with SUP Directive

Contrary to the WFD and the PD, the WEEED has no links with the SUPD, since the respective products (SUP respectively electrical and electronic equipment) do not overlap. Thus, only the concepts of (extended) producer responsibility of the two directives can be compared.
While the SUPD requires operational responsibility of producers beyond existing schemes only for PET bottles, the WEEED obliges distributors of WEEE from private households to accept the waste from the former product when supplying a new product, and to collect very small WEEE at retail shops of a certain dimension. In addition, producers of WEEE not from private households are obliged to establish collection systems. Finally, producers of both kind of WEEE have to establish recovery systems. Moreover, while the SUPD only requires minimum collection targets for PET bottles, the WEEED sets general minimum collection rates for WEEE and specific recovery targets for different WEEE categories. It is noteworthy that the WEEED considers the collection rates explicitly as an implementation of the producer responsibility principle, while the SUPD provision on collection targets is not part of the SUPD provision on EPR but refers to EPR schemes. Regarding financial responsibility, the WEEED obliges producers to cover the costs arising from the collection, treatment, recovery and environmentally sound disposal of WEEE. For WEEE from private households, this is restricted to WEEE deposited at collection points. The costs of information that are not provided by producers or distributors themselves are not included. In contrast, the SUPD has a very sophisticated system of financial responsibility, which generally includes the costs of awareness raising measures but not generally the collection costs. Especially regarding the collection of SUP packaging waste “at home”, the SUPD refers to the EPR financing provisions of WFD and PD. In addition, producers of SUP packaging waste and tobacco products have to cover the costs of the (non-separate) collection, transport and treatment of waste discarded “en route” in systems of public collection. Under the WEEED, producers do not have to cover costs beyond those for waste management and their own information obligations, since the EPR costs provisions of the WFD do not apply to the WEEED. Only the SUPD includes the costs of cleaning up litter for all SUP covered. Both the WEEED and the SUPD address the distribution of costs between producers, the WEEED in relation to historical and non-historical waste, the SUPD regarding cleaning up of litter. The requirement of a guarantee in order to ensure the financing of the management of WEEE from

private households is peculiar to the WEEED. Finally, only the WEEED allows deviations of the financial responsibility of producers via agreements with users other than private households. Provided that they meet certain requirements, both the WEEED and the SUPD allow to transpose certain provisions related to (E)PR by (voluntary) agreements between the competent authorities and the economic sectors concerned: the establishment of EPR schemes under the SUPD and certain information obligations under the WEEED.

2.3.1.5.3 ELV Directive

Directive 2000/53/EC on end-of-life vehicles (ELVD) was the first EU legislation prescribing producer responsibility.[115] According to Article 1, it aims at the prevention of waste from vehicles and at the reuse, recycling, and other forms of recovery of end-of-life vehicles and their components so as to reduce the disposal of waste, as well as the improvement in the environmental performance of all of the economic operators involved in the life-cycle of vehicles. Concerning the operational aspects of producer responsibility, Member States have to ensure that economic operators[116] set up systems for the collection of all end-of-life vehicles and, as far as technically feasible, of waste used parts removed when passenger cars are repaired (Article 5 (1)). The Member States have to ensure that all end-of-life vehicles are transferred to authorised treatment facilities, and set up a system according to which the presentation of a certificate of destruction is a condition for the deregistration of an end-of-life vehicle (Article 5 (2) and (3)). Economic operators also have to attain specific reuse and recovery targets (Article 7 (2)). Article 8 obliges Member States to ensure that producer respectively manufacturers use coding standards and provide dismantling information for treatment facilities. According to Article 9 (2), economic operators have to provide certain information for customers that producer have to make accessible to prospective buyers of vehicles. Otherwise, the operational requirements of Article 8a WFD apply. Regarding the financial aspects of producer responsibility, producers[117] meet all, or a significant part of, the costs of the delivery of a vehicle having no or a negative market value to an authorised treatment facility, and/or take back end-of life vehicles under the same conditions (Article 5 (4)). According to Article 8a (4)(a) WFD, the provisions of the WFD on the financial obligations of producers do not apply to the ELVD. Finally, Article 10 (3) allows that some provisions, e.g. collection and information obligations, are transposed via agreements between the competent authorities and the economic sectors concerned, provided that the objectives of the Directive are thereby achieved. The recent amendment of the ELVD by Directive (EU) 2019/849 does not affect producer responsibility.

Comparison with SUP Directive

Contrary to the WFD and the PD, the ELVD has no links with the SUPD, since the respective products (SUP respectively vehicles) do not overlap Thus, only the concepts of (extended) producer responsibility of the two directives can be compared. While the SUPD requires operational responsibility of producers beyond existing schemes only for PET bottles, the ELVD obliges economic operators to establish collection systems for all ELV (and waste used parts under certain conditions), and to transfer ELV to authorised treatment facilities. Moreover, they meet certain information obligations. Moreover, while the SUPD requires minimum collection targets for PET bottles, the ELVD obliges economic operators to attain general minimum reuse and recovery targets for ELV. Regarding financial responsibility, the ELVD presupposes that ELV

[115] Langlet/Mahmoudi (2016), p. 300.
[116] According to Article 2.10, economic operators include producers, distributors, collectors, motor vehicle insurance companies, dismantlers, shredders, recoverers, recyclers, and other treatment operators of end-of-life vehicles, including their components and materials.
[117] Article 2.3 defines "producer" as the vehicle manufacturer or the professional importer of the vehicle into a Member State.

have a certain economic value, and thus only provides for at least significant financial responsibility of producers for the costs of the delivery of a vehicle having no or a negative market value to an authorised treatment facility. In contrast, the SUPD has a very sophisticated system of financial responsibility, which generally includes the costs of awareness raising measures but not generally the collection costs. Especially regarding the collection of SUP packaging waste "at home", the SUPD refers to the EPR financing provisions of WFD and PD. In addition, producers of SUP packaging waste and tobacco products have to cover the costs of the (non-separate) collection, transport and treatment of waste discarded "en route" in systems of public collection. Under the ELVD, producers do not have to cover costs beyond those for waste management and their own information obligations, since the EPR costs provisions of the WFD do not apply to the ELVD. Only the SUPD includes the costs of cleaning up litter for all SUP covered. Provided that they meet certain requirements, both the ELVD and the SUPD allow to transpose certain provisions related to (E)PR by (voluntary) agreements between the competent authorities and the economic sectors concerned: the establishment of EPR schemes under the SUPD, and the setting up of collection systems and the transfer of ELV to authorised treatment facilities and/or taking back free of charge under the ELVD.

2.3.1.6 Overview on (E)PR in EU legislation

The following table provides an overview over the main features of the analysed EU legislation on (E)PR and their relationship to the SUPD.

Table 2: Overview on (E)PR in EU legislation

Measures	SUPD	WFD	PD	BD	WEEED	ELVDs
Establishment of (E)PR schemes	Mandatory by 2021 and applicable by 2023 for tobacco products and existing schemes, otherwise by 2025	Optional, but minimum requirements for new EPR schemes and by 2023 for existing schemes	Optional until 2024, by 2025 mandatory	Mandatory and optional	Mandatory and optional	Mandatory
Waste management targets	Minimum collection rates for PET bottles	Minimum collection and recovery targets, including preparation for reuse and recycling of plastic	Minimum recovery and recycling targets, including recycling targets for specific materials contained in packaging waste such as plastic	Minimum collection targets and recycling efficiencies	Minimum collection recovery targets	Minimum reuse and recovery targets
Addressees of EPR obligations	Producers: manufacturing, filling, selling, importing and placing on market; selling from another state by distance contracts	Producers: developing, manufacturing, processing, treating, selling or importing	Formerly economic operators, now producers as defined in WFD	Distributors, producers (placing on the market), and third parties	Distributors, producers (manufacturing, designing, reselling, placing on the market EEE from other states, selling by distance communication from another state), possibly economic operators;	Economic operators, producers (manufacturers, importers)

Measures	SUPD	WFD	PD	BD	WEEED	ELVDs
					distributors may also be producers	
Operational responsibility	Separate collection of PET bottles, otherwise reliance on existing schemes (PD)	Minimum requirements (e.g. separate collection, information)	Return/ collection, reuse/ recovery, by 2025 minimum requirements of WFD	Mandatory: portable and industrial batteries and accumulators: take back (distributor resp. producers) automotive batteries and accumulators: collection where needed (producers) All batteries and accumulators: treatment and recycling (producers or third parties) Optional: collection of portable batteries and accumulators by producers, information to end-users (producers)	Mandatory: WEEE from private households: return of waste against supply of new products, collection of very small WEEE (distributors)WEEE not from private households: collection systems (producers). Both kinds of WEEE: recovery, information (producers) Optional: take-back of WEEE from private households by producers	Collection, transfer to authorised treatment facilities, reuse and recovery, information (economic operators)
Financial responsibility for:						
- Waste management (collection, transport, recovery, disposal)	/ - SUP packaging: reference to WFD and PD, in addition costs					At least significant part of the costs of the delivery of ELV

Measures	SUPD	WFD	PD	BD	WEEED	ELVDs
	of waste management by public systems Tobacco products: costs of waste management by public systems Other SUP: -					with no or negative market value to authorised treatment facility
- Awareness raising measures	Measures by Member States on waste management options, impact of littering, and impact of inappropriate waste disposal on sewer network)	Costs of adequate information to waste holders	By 2025, according to WFD	Also, for public information campaigns on collection, treatment and recycling	Only for own information obligations	Only for own information obligations
- Data gathering and reporting	Regarding SUP packaging within existing (packaging) schemes		By 2025, according to WFD	-	-	-
- Cleaning up litter		-	-	-	-	-
Other financial provisions	Costs to be covered shall not exceed those necessary to provide services in cost-efficient way For cleaning up of litter:	Collective fulfilment of EPR obligations: modulation for individual products or groups of products, taking into account certain criteria		Avoid double charging in relation to schemes under ELV and WEEE;	WEEE from private households: as a rule, financing relating to waste from own products; for historical waste, proportional contribution of all	-

Measures	SUPD	WFD	PD	BD	WEEED	ELVDs
	Calculation methodology to provide for proportionality; Appropriate multiannual fixed contribution possible; COM to provide guidelines	Financial contributions shall not exceed costs necessary to provide waste management in cost-efficient way Transparency between actors concerned COM to provide guidelines on modulation of financial contributions			producers (in proportion to their share of the market by type of equipment) guarantees required to ensure financing of waste management costs	
Deviation from financial obligations		Under certain conditions, costs may be shared with original waste producers or distributors (at least 80% costs by producers) Not for EPR schemes established before 4 July 2018			Exemption regarding waste management for very small producers Other financial arrangements by agreements between producers and users of industrial and automotive batteries and accumulators	For certain historical WEEE not from private households: users other than private households may be made fully or partially responsible, other financial methods by agreements between producers and users not from private households
Relationship of SUPD to other directives		SUP waste is waste SUPD is *lex specialis* to WFD in case of conflict, otherwise (including for EPR) complementary	SUP packaging waste is packaging waste SUPD is *lex specialis* to PD in case of conflict, otherwise (including for EPR) complementary	No overlap Minimum requirements of WFD apply, except financial obligations	No overlap Minimum requirements of WFD apply, except financial obligations	No overlap Minimum requirements of WFD apply, except financial obligations

Measures	SUPD	WFD	PD	BD	WEEED	ELVDs
		EPR schemes in SUPD as defined in WFD (including minimum requirements)	Minimum requirements of WFD apply			
Optional transposition of EPR-related provisions by voluntary agreements between competent authorities and economic sectors		-				

Most (E)PR schemes are mandatory, partially with optional elements. The PD has switched from a voluntary to a mandatory establishment of (E)PR schemes. According to the WFD, if EPR schemes are established, they have to conform to minimum requirements. All directives contain minimum waste management targets, which are relevant for EPR schemes. However, for the SUPD this is only the case for PET bottles. Both the WFD and the PD include recovery targets for plastic. In all directives, addressees of EPR obligations include producers as defined in the respective directive except for the PD, which refers to the producer definition in the WFD. In the BD, the WEEED and the ELVD, also distributors and/or economic operators are or may be addressees of EPR obligations. Producers are defined differently in most of the relevant directives, and partly exclude distributors (e.g., in the WFD), partly include them (explicitly in the WEEED). Regarding operational responsibility, all directives require some kind of separate collection/take-back, transport, and recovery/disposal of the relevant waste streams. For the SUPD, however, this is only the case for PET bottles, while other SUP packaging waste is already managed as packaging waste according to the PD and the WFD. In all (E)PR schemes, producers/economic operators are financially responsible for their operative obligations. In addition, they have to cover certain costs of services provided by the respective Member State. First, they have to cover the costs of certain awareness-raising measures, as well as the costs of data gathering and reporting. However, this is not the case for the BD (with the exception of information campaigns), the WEEED and the ELVD to which the financial minimum requirements of the WFD do not apply. Second, only producers of certain SUP packaging and of tobacco products have to contribute to the cost of the waste management of public systems regarding SUP waste discarded "en route" in systems of public collection. Finally, only producers of certain SUP have to cover the costs of the cleaning up of litter from those products by public authorities or on their behalf. Except for the ELVD, all directives include further financial provisions. Moreover, in most (E)PR schemes certain deviations from financial obligations are possible. In this regard, the WFD contains a remarkable provision; it stipulates that Member States may decide under certain conditions (inter alia compliance with EU waste management targets) that producers will have to cover (only) at least 80% of the costs and original waste producers or distributors the remaining costs. However, this deviation applies only to the costs for measures listed in the WFD, not for the additional ones provided for in the SUPD. Moreover, this deviation does not allow producers to lower their costs under EPR schemes established before 4 July 2018. All directives, except the WFD, allow at least certain (E)PR-related provisions to be transposed via agreements between the competent authorities and the economic sectors concerned. Regarding the relationship of the SUPD with the other directives, there is no overlap with the BD, the WEEED and the ELVD. In contrast, SUP waste is also waste in the sense of the WFD, and SUP packaging waste is packaging waste in the sense of the PD. In case of conflict, the SUPD prevails over the WFD and the PD as lex specialis. Regarding EPR, however, the SUPD is intended to supplement the WFD and PD.

The two fishing-gear-related provisions, the impact-related Marine Strategy Framework Directive (MSFD) and the source-related Directive on Port Reception Facilities (PRFD), both do not explicitly mention an EPR. The MSFD requires Member States to ensure that the quantities and composition of marine litter (descriptor 10) do not cause harm to the marine or coastal environment, as part of the overall objective to reach 'good environmental status' of marine waters by 2020. The last report published by the JRC[118] on the top 10 litter items most frequently found on European beaches reflects the monitoring results from the EU Member

[118] JRC Technical Reports: Top Marine Beach Litter Items in Europe; https://ec.europa.eu/jrc/en/publication/top-marine-beach-litter-items-europe

States and the Regional Seas Conventions and the analysis which was the basis for the Commission's SUPD. Although the MSFD is not directly mentioning the instrument of EPR, it refers indirectly to it as it mentions the polluter-pays principle it its preamble 27: After having established environmental targets and monitoring programmes to achieve good environmental status, Member States should then establish and implement programmes of measures. Those measures should be based on well-introduced, internationally accepted principles such as the precautionary principle and the principles that preventive action should be taken, and that the polluter should pay.

The new PRFD provides no direct EPR provisions but refers to the provisions of the WFD, the BD and the WEEED. The main aim of the directive is to require the delivery of ship-generated wastes. In detail, the directive includes measures to ensure that waste generated on ships[119] or gathered at sea (passively fished waste; according to Art. 2 para. 4 of the PRFD) has to be returned to land and adequately managed. ‚Passively fished waste' is waste collected in nets during fishing operations. It is not clearly defined if this includes gear, however, it refers explicitly to the Commission's consideration for further action on fishing gear. In addition, the PRFD continues the implementation of a cost recovery system (CRS), the level of the fees and the development of waste reception and handling plans for ports. Member states have to ensure that the CRS ensures indirect fees and levels of transparency; however, they are free to design the systems of charges, except for garbage as the most important component of marine litter. Here, the costs should be recovered fully through the indirect fee to ensure that garbage is delivered at every port call. Therefore, the Circular Economy Strategy recognises that the revised PRFD can directly contribute to reduce marine litter generated by ships.[120]

2.3.2 Conformity of EPR-provisions in the SUPD with EU Law

In the following assessment, the conformity of EPR-related provisions of the SUPD with (higher-ranking) EU law will be analysed. This analysis is intended to facilitate the implementation of those provisions in Member States´ legal systems, e.g., by showing to what extent certain conformity issues have to be addressed in the transposing acts (instead of being addressed in the SUPD itself). The analysis is limited to the EPR provisions of the SUPD that represent novelties as compared to the other EU legislation on EPR analysed in Chapter 2.3.1.4**Fehler! Verweisquelle konnte nicht gefunden werden.**, and thus raise legal questions that have not been addressed before in EU legislation121: the financial responsibility of producers for the collection, transport and treatment of certain SUP waste discarded "en route" in systems of public collection, as well as the cleaning up of litter from certain SUP. In order to conform to (higher-ranking) EU law, a legal act issued by the EU has to be based on a norm of competence in the treaties and comply with procedural and substantive requirements.

2.3.2.1 Subsidiarity Principle (Art. 5 para. 3 TEU)

The EU and its institutions may only exercise their competences in accordance with the subsidiarity principle (Art. 5 para. 3 TEU). It determines if the EU may take action. This is only the case if (1) the goals of the envisaged measure cannot sufficiently be realized on Member State level and if (2) the action at EU level creates an added value.122

[119] Including cargo residues, which is generated during the service of a ship or during loading, unloading and cleaning operations and which falls within the scope of Annexes I, II, IV, V and VI to MARPOL Convention

[120] See European Commission (2018c), p. 4.

[121] Conformity issues related to the minimum requirements of the updated WFD cannot be addressed within the scope of this study, which is focused on the SUPD.

[122] See also Streinz, in: Streinz, EUV/AEUV, (2018), Art. 5 EUV rec. 26.

In practice, there is no precise standard of review. The measure's aims as well as Member States' and the EU's interests are usually weighed against each other.123 It is a case-by-case decision and usually comes down to a political decision.124 Lately, critics raised concerns that the subsidiarity principle is not taken seriously, its purpose thus defeated. For instance, the EU can always invoke the aim of a harmonized legal framework – which is something Member States naturally cannot achieve on their own.125 However, this is a general political concern that does not raise specific issues for this particular case. In the explanatory memorandum of the SUPD proposal, the Commission argues that the subsidiarity principle's requirements are fulfilled. It argues that the problem of plastic pollution and marine litter is trans-boundary in nature and therefore cannot be tackled in isolation by Member States sharing the same seas and waterways. It raises the concern of market fragmentation if Member States take uncoordinated measures that differ in scope and ambition level. It emphasizes the need for a level playing field for businesses where product requirements and changes in product design are regulated.126 In the context of environmental protection, there is a general assumption that action at EU level is always more efficient and therefore creates an added value.127 This is because it provides a coordinated and homogenous approach on an issue that is currently fragmented in terms of scope, focus and ambition.128 Efforts of one Member State can too easily be frustrated by the passivity of another Member State. Furthermore, the Commission's arguments are plausible. Litter in water bodies is easily spread across regions and borders. It is logical that a joint effort at EU level has much greater potential of preventing and reducing litter impacts than measures by single Member States. The free movement of goods is best secured if all producers face the same restrictions and do not have to customize their products to each Member State's requirements. Producers are equally burdened if product design requirements are uniform across Europe – the requirement for EPR in every Member State prevents a race to the bottom. Therefore, the SUPD fulfils the subsidiarity principle's requirements.

2.3.2.2 Principle of Proportionality (Art. 5 para. 4 TEU)

The EU and its institutions may only exercise their competences in accordance with the proportionality principle (Art. 5 para. 4 TEU). It determines how the EU may take action. It requires that content and form of Union action do not exceed what is necessary to achieve the objectives of the Treaties. This usage of the principle of proportionality has to be distinguished from the proportionality of restriction of rights, which is also labelled principle of proportionality (see below 2.3.2.3.4). According to Art. 5 para. 4, measures are proportionate if they constitute the alternative that least interferes with Member States' competence while being equally effective. Measures that are less intrusive on Member State competences are sub-statutory means such as recommendations or programmes. Concerning the reduction and prevention of waste impacts, however, these non-binding instruments are not as effective as legislative measures with obligatory aims and measures. Of the available legislative measures, the less intrusive one was chosen, since directives produce less constraint for Member States than regulations. Therefore, the SUPD meets the proportionality principle's requirements.

123 Streinz, in: Streinz, EUV/AEUV (2018), Art. 5 EUV rec. 29-31.
124 Krämer (2015), p. 19.
125 Oppermann et al. (2011), § 11 rec. 29, 32.
126 European Commission (2018c), p. 6, 7.
127 Krämer (2015) p, 19, 20.
128 European Commission (2018b), p. 32; see also p. 35.

2.3.2.3 Conformity with Fundamental Rights

The SUPD must also comply with fundamental rights. The EU Charter of Fundamental Rights codifies basic and human rights in the European Union in order to strengthen the Union's legitimacy as a community of values. It contains human and citizen rights as well as economic and social rights. It was drafted in 2000 and proclaimed as a legally non-binding document. With the treaty of Lisbon it became binding: According to Art. 6 TEU, the Charter has the same legal value as the European Treaties.129 The Charter addresses the EU Organs as well as Member States authorities when they implement EU law (Art. 51 para. 1). This means that all legal acts by the EU must comply with the Charter (for the detailed standard of judicial review, see below 2.3.2.3.1). Furthermore, all implementing acts of Member States must comply with the Charter.130 The assessment whether a legal act complies with fundamental rights is threefold: Firstly, it has to be assessed if the scope of application of a right is given (see 2.3.2.3.2). Secondly, there has to be a limitation of the right by a legal act, whereby any adverse effect suffices (see 2.3.2.3.3). Thirdly, it has to be assessed if the limitation is justified. This is the case if it fulfils the requirements set out by Art. 52 para. 1 of the Charter, most notably the proportionality principle (see 2.3.2.3.4). For the equality right, the justification is assessed separately (see 2.3.2.3.5). Beforehand, it has to be determined which kind of judicial review the Court of Justice of the European Union (CJEU) applies to such an assessment because this determines the requirements that the relevant legal act has to fulfil (see 2.3.2.3.1).

2.3.2.3.1 Scope of judicial review

When assessing a legal act's compatibility with fundamental rights, different standards apply depending on the nature of the legal act: The SUPD is a directive. Directives address Member States; only the national implementing acts directly affect citizens' fundamental rights. Thus, the scope of the judicial review of a directive differs from that of a regulation which directly applies in the MS´s legal systems. The CJEU issued two important judgments determining the scope of review for directives and regulations. In its Wachauf judgment from 1989, the CJEU held that EU regulations do not conflict with fundamental rights if they "leave the competent national authorities a sufficiently wide margin of appreciation to enable them to apply those rules in a manner consistent with the requirements of the protection of fundamental rights".131 Thus, to the extent that a directive grants no margin of discretion for transposing its provisions, it is the directive itself which has to be assessed on its conformity with EU fundamental rights. To the extent that a directive grants such a margin of discretion, the national implementing act has to be assessed.132 However, in its Digital Rights Ireland judgment from 2014, the CJEU applied a stricter approach. It noted that where interferences with fundamental rights are at issue, the EU legislator's discretion may be limited. In the case at stake, the interference with fundamental rights was considered particularly extensive and serious, and therefore review of the discretion had to be strict. According to the CJEU, "the EU legislation in question must lay down clear and precise rules governing the scope and application of the measure in question" in order to specify the extent of the interference with fundamental rights and to ensure that it is limited to what is strictly necessary.133 Thus, contrary to Wachauf, safeguarding fundamental rights could not be left to the Member States within their margin of discretion for transposing the directive, but has to be secured by the directive itself.134 According to this approach, the conformity of a directive

129 Streinz/Michl, in: Streinz, EUV/AEUV, (2018), GrCh prev. rec. 1, 2, 7.
130 Streinz/Michl, in: Streinz, EUV/AEUV, (2018), Art. 51 GrCh rec. 12.
131 CJEU, 5/88 (Wachauf), (1989), p. 2633, rec. 22-23.
132 Teetzmann (2016), p. 98-99.
133 CJEU, C-293/12 and C-594/12 (Digital Rights Ireland), ECLI:EU:C:2014:238, rec. 54.
134 Kühling (2014), p. 684; Teetzmann (2016), p. 91.

with fundamental rights has to be assessed even if it grants Member States a margin of discretion for transposing the directive. This has been criticised by some academics, while it was generally welcomed that the CJEU took a firmer approach in securing the fundamental rights of the Charter.135 However, the approach taken in Digital Rights cannot be transferred to other constellations without further consideration. Digital Rights involved a particularly extensive and serious infringement of the right to privacy, which led the CJEU to adopt a strict judicial review. If fundamental rights of an economic nature are involved, however, the CJEU usually grants the EU institutions broad discretionary powers and adopts merely a limited judicial review.136 It may well be that the standard of review adopted in Digital Rights will remain confined to exceptional cases of particularly extensive infringements of fundamental rights.137 The EPR provisions of the SUPD concern economic activities, which means that the strict standard of review in Digital Rights would presumably not be applicable. Instead, the standard of review in Wachauf seems more appropriate. This is in line with the requirements of Art. 52 para. 1 of the Charter. This provision requires a certain regulatory density of the legal act depending on how seriously it interferes with fundamental rights: The requirements on the regulatory density increase proportionally to the seriousness of its interference with fundamental rights.138 The more serious the interference, the clearer it has to lay out the conditions under which the interference may take place. In the present case, the extent of interference with fundamental rights is limited to additional costs for the production of certain products that make the production financially less attractive to the extent that these additional costs cannot be passed on to the consumer. This limited infringement of protected economic interests suggests that the SUPD does not need to provide a high regulatory density in this regard. Accordingly, the provisions of the SUPD, which grant Member States a margin of discretion for transposing the directive have to be assessed as to their conformity with the Charter of fundamental rights. This is the case concerning the following obligations in Art. 8:

- to establish **EPR schemes** for SUP listed in Part E of the Annex (para. 1) and
- to ensure that these schemes **cover the costs** of the required measures, in particular of waste management and cleaning-up activities by public systems or on their behalf (para. 2, 3, 4, 9).

Where the SUP Directive grants a margin of discretion for transposing the directive, however, it only needs to be assessed whether the directive can be implemented in a manner consistent with the fundamental rights. Concerning the following aspects, Art. 8 SUPD does not provide exhaustive stipulations for transposition:

- the concrete **design** of the EPR-scheme (e.g. individual or collective)
- **to provide EPR-related services in a cost-efficient way and distribute costs** in a transparent way between the actors concerned, and establish a proportionate calculation methodology for the costs to clean up litter (para. 4)
- **to define roles** and responsibilities of all relevant actors (para. 5), since they are not exhaustingly predefined by the SUPD and the PD.

135 See especially Teetzmann (2016), p. 91, 104; Kühling (2014) p. 684.
136 Streinz (2014), p. 26.
137 Cf. Kühling (2014), p. 684.
138 Kingreen, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 52 GrCh rec. 57.

Side note: EU fundamental rights and Member States fundamental rights

When implementing a directive of the EU, the national authorities must respect the fundamental rights of their national systems within their margin of discretion (Art. 51 para. 1). According to Art. 53 of the Charter, fundamental rights of national constitutions shall not be restricted by the fundamental rights of the Charter. However, the exact meaning of this provision is debated. According to one position in the literature, the fundamental rights which grant the broader level of protection shall prevail.[139] Following this view, in Germany, for example, the act implementing the SUPD would need to be assessed as to its conformity with Art. 12 of the *Grundgesetz and* Art. 16 of the Charter, both of which guarantee the freedom to conduct a business. The most favourable result for the carrier of the fundamental rights would be decisive. The conformity of the implementation of the SUP Directive with national laws is outside the scope of this study.

2.3.2.3.2 Relevant fundamental rights and their scope of application

Relevant fundamental rights are

- the freedom to conduct a business (Art. 16 of the Charter) and
- the principle of equality before the law (Art. 20 of the Charter).

The freedom to choose an occupation (Art. 15 of the Charter) is not relevant: The free economic activity of legal persons falls under the entrepreneurial freedom in Art. 16. 140 It can be assumed that the producers concerned are exclusively companies and no natural persons. The scope of application of the freedom to conduct a business (Art. 16) is given: This right protects all activities that are carried out by independent entrepreneurs, including legal persons established under private law.141 The scope thus protects the production of Annex-E-products by private companies. The scope of application of the principle of equality (Art. 20) is also given: This fundamental right is also applicable to legal persons established under private law.142 It states that comparable situations should not be treated differently unless differentiation is objectively justified.143 Reversely, it also requires that different situations should be treated differently unless equal treatment is imperative. The CJEU determined in its Glatzel judgment: "According to settled case-law, that principle requires the EU legislature to ensure, in accordance with Article 52(1) of the Charter, that comparable situations must not be treated differently and that different situations must not be treated in the same way unless such treatment is objectively justified […]."144

2.3.2.3.3 Limitation of fundamental rights

A fundamental right is limited if a legal act adversely affects the right. There are good reasons to assume that the EPR-related provisions of the SUPD have a significant adverse effect on the rights in Art. 16 and Art. 20 of the Charter: EPR obligations do not directly affect the possibility to produce products listed in Annex E. However, in imposing operational and financial obligation, they clearly limit the producer´s freedom to conduct a business according to their own ideas. Moreover, even if producers may take into account the additional expenses when

139 Streinz/Michl, in: Streinz, EUV/AEUV (2018), Art. 53 GrCh rec. 3.
140 Ruffert, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 15 GrCh rec. 8; to be understood as such Streinz, in: Streinz, EUV/AEUV (2018), Art. 16 GrCh rec. 7.
141 Ruffert, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 16 GrCh rec. 8.
142 Rossi, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 20 GrCh rec. 5.
143 CJEU, C-147/79 (Hochstrass), para. 7.
144 CJEU, C-356/12(Glatzel), ECLI:EU:C:2014:350, rec. 43.

calculating a product's price and thus pass them on to the consumer, there is the risk that consumer may not buy the more expensive products as readily as before.

Large amounts of private companies qualify as producers. According to the legal definition in Art. 3 point 11 of the SUPD, a producer is any natural or legal person that professionally manufactures, sells or imports and places on the market SUP products. The definition thus includes producers regardless of whether they are based in landlocked country or coastal states, whether they are already part of a different EPR-scheme (for instance the 'Duales System' for packaging in Germany) and regardless of the amount of SUP products they produce. These circumstances might determine to what extent these producers contribute to the SUP pollution problem. When all these different producers have to contribute equally to the EPR-scheme regardless of the differences listed before, there is an equal treatment of different situations. Even though the SUPD only concerns the most important SUP items, there is a significant adverse effect on the principle of equal treatment (Art. 20).

2.3.2.3.4 Art. 52 para. 1: The proportionality principle

Art. 52 para. 1 of the Charter determines that any limitation of fundamental rights must be provided for by law, must respect the essence of the right and must respect the proportionality principle. The aspect whether a limitation is provided for by law means that infringements must have a legal basis. As stated under 2.3.2.3.1, in certain circumstances this may also require a certain regulatory density of the legal basis that must contain the essential elements for the conditions under which the infringement may take place. However, these circumstances do not seem to be relevant for the SUPD. The aspect whether a limitation respects the essence of the right does not play an independent role and will therefore not be considered in this assessment.145 The proportionality principle is the central aspect in this assessment. The CJEU gave a clear definition of this principle in its Fedesa judgment: "It is settled case law that by virtue of that principle, the lawfulness of the prohibition of an economic activity is subject to the condition that the prohibitory measures are appropriate and necessary in order to achieve the objectives legitimately pursued by the legislation in question; when there is a choice between several appropriate measures recourse must be had to the least onerous, and the disadvantages caused must not be disproportionate to the aims pursued."146 Accordingly, the assessment is fourfold and includes that a measure has a legitimate objective, is appropriate, necessary and not disproportionate. However, this scheme is not applied consequently by the CJEU: Not all of these steps are applied in all cases. In particular, the necessity and the disproportionality are often assessed alternatively rather than complementarily. According to some academics, EU legislation has generally to comply with the less strict disproportionate test, while the implementing acts are generally subject to the necessity test.147 As noted before, this may be varied according to the nature of the interests involved and the severity of the potential breach. Furthermore, this scheme is tailored to liberty rights. For the equality principle, the assessment differs slightly. In the present case, an equal treatment of different situations is at stake. However, equal treatment is only unlawful if a differentiation is imperative, which is rarely the case. Accordingly, the CJEU grants a wide margin of appreciation to the lawmaker and does not demand a justification for every-single impairment that is caused by an equal treatment. The requirements for justification are therefore quite low.148 In the following, the analysis will

145 Kingreen, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 52 GrCh rec. 64.
146 CJEU, C-331/88 The Queen v Minister of Agriculture, Fisheries and Food and Secretary of State for Health ex parte Fedesa et al, [1990] ECR I-4023, rec. 13.
147 See for example Sauter (2018), p. 465.
148 Rossi, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 21 GrCh rec.9.

abide by the fourfold assessment that applies to liberty rights as outlined above; the justification of equal treatment will be considered thereafter under 2.3.2.3.5.

2.3.2.3.4.1 Legitimate objectives: prevention and reduction of plastic marine litter

Legitimate objectives are any aims that are expressed in the EU primary law.149 The EU's general environmental policy objectives are to preserve, protect and improve environmental quality, to protect human health, and to utilize natural resources prudently, Art. 191 para. 1 TFEU. The SUPD´s objectives are to prevent and reduce the impact of certain plastic products on the environment, in particular the aquatic environment, and on human health, as well as to promote the transition to a circular economy.150 Thus, the SUPD´s objectives overlap with the EU's general environmental policy objectives in respect to the impact of SUP and therefore represent legitimate objectives.

2.3.2.3.4.2 Appropriate

A measure is appropriate if it contributes in any way to achieving the objective.151 Introducing cost-covering EPR-schemes for the most commonly found items in marine litter, including financial obligations regarding SUP discarded "en route" in systems of public collection and cleaning up SUP litter, contributes to the achievement of the SUPD's objective of reducing marine litter: in the context of a transition to a circular economy, operating and/or financing of waste management and cleaning up measures regarding SUP are appropriate means to prevent SUP waste from ending up as marine litter. However, in the process of developing the Directive, critics said that in order to avoid littering, the focus should lie on awareness-raising measures to support responsible consumption.152 They argued that burdening solely producers with EPR costs did not consider that the root causes of litter were poor solid waste management practices and infrastructure, littering by citizens and lack of public awareness.153 Therefore one might argue that EPR-schemes were ultimately not appropriate to reduce marine litter because they do not tackle the root causes of litter. However, it is the EU legislator choice within his margin of appreciation to decide what measure he considers fit for purpose. In its Impact Assessment, the Commission concluded that a range of measures was needed and that there was limited evidence on the effectiveness of awareness raising campaigns, so that they were not sufficient as a standalone measure.154 Furthermore, the EPR schemes serve to finance the tackling of the other root causes of plastic marine litter, especially the awareness raising measures explained in Art. 10 SUPD. Finally, arguing that littering is caused by a lacking infrastructure would be a circular argument, since the EPR schemes also serve to finance such infrastructure.

2.3.2.3.4.3 Necessary – least onerous measure

A measure is necessary if adverse effects to the right only go so far as is strictly necessary.155 When there is a choice between several appropriate measures, recourse must be to the least

149 Streinz/Michl, in: Streinz, EUV/AEUV (2018), Art. 52 GrCh rec. 17.
150 See Article 1 SUPD and European Commission (2018c), p. 2.
151 Streinz/Michl, in: Streinz, EUV/AEUV (2018), Art. 52 GrCh rec. 18; see for instance CJEU, C-601/15, para. 55.
152 See for instance the written reactions to the proposal of PlasticsEurope and the BDI. PlasticsEurope (2018): Press Release 28 May 2018 – Industry urges Commission to avoid shortcuts and to focus on improving waste management; BDI (2018): BDI-Kurzposition zur Regulierung sogenannter Einwegkunststoffe, p. 2.
153 Joint Statement from 68 Packaging Value Chain associations on the Proposal for a Directive on the Reduction of the impact of certain plastic products on the environment (2018), p.2-3.
154 European Commission (2018c), p. 44.
155 Streinz/Michl, in: Streinz, EUV/AEUV (2018), Art. 52 GrCh rec. 19, see for instance CJEU, C-203/15 and C-698/15 (Tele2 Sverige), para. 96.

onerous. Usually, an explicit assessment of the necessity of measures taken at EU level is rare.[156] Nonetheless, this analysis will raise the most important considerations. The decisive question is whether less restrictive means that are equally effective could have been used. The following alternatives to financing waste management of SUP waste collected by public systems and cleaning up of SUP waste as part of EPR-schemes can be considered:

- Abstain from EPR-schemes and instead fine littering with a financial penalty: This would tackle littering at its source and take away the financial burden from producers. However, it will certainly not achieve the same level of protection. It is highly unrealistic that police or similar regulatory agencies will be able to comprehensively ensure the discovery and fining of all littering behaviour. Furthermore, such measures already exist and will exist in the future[157], but are apparently insufficient to tackle the problem. The Commission clearly communicated that the polluter-pays principle demands that the cost of combating pollution is to be borne at that point in the pollution chain and by the means which offer the best solution from the administrative and economic points of view, and which make the most effective contribution towards improving the environment. [158] The fining of people who litter does not qualify as such.

- Abstain from EPR schemes and finance the envisaged measures publicly (e.g., via taxes), or establish a cost-mix between partly cost-covering EPR-schemes and public funds: At first sight, these alternatives would contribute to the objectives of the Directive as effectively as EPR schemes since the same measures on transport, treatment, cleaning up and awareness raising would be taken, only financed differently. In particular, public financing of these measures corresponds to a large extent to the current state of play.[159] However, these alternatives do not equally fulfil the polluter-pays principle. The polluter-pays principle regulates not only cost distribution, but also aims to set financial incentives for avoiding pollution in the first place (see above 2.3.1.1). Accordingly, the SUPD aims at a reduction of waste generated (Recital 2), of SUP product consumption (Recital 14) and at improving product design (Recital 17). This direct incentive for producers is lost or minimised if the general public is at least partially burdened with the cost for the envisaged measures. In addition, stable financing by producers of waste management by public systems regarding SUP waste and cleaning up litter from SUP by municipalities or on their behalf, is likely to improve those activities.

- Finance EPR schemes by sharing financial responsibility between producers and other actors. : "Producer" is defined in Article 3.11 of the SUPD as manufacturers, fillers, sellers and importers that place SUP on the market of the relevant Member State, or professional sellers that sell SUP directly to private households or other users in a (other) Member State. "Placing on the market" is defined in Article 3.6 as the first making available of a product on the market

[156] Sauter (2013), p. 449.
[157] Cf. For instance the German provision on administrative fines §§ 69 para. 1 No.2 28 KrWG. Accordingly, waste products may only be disposed of in waste disposal systems – littering of even small products can be fined with an administrative fine.
[158] Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters, Annex para. 3, OJ EC L 194, 25.7.1975, p. 2.
[159] However, cleaning up litter at beaches is currently often done by NGOs.

of a Member State, and "making available on the market" means any supply of a product for distribution, consumption or use on the market of a Member State in the course of a commercial activity (Article 3.7). The EPR schemes of the SUPD could be extended to include additional actors in its financing. Actually, as elaborated at 2.3.1.4.1, Article 8a (4)(c)(i) WFD allows the Member States to deviate under strict conditions from the full cost coverage by producers regarding EPR schemes established to attain waste management targets and objectives established under EU legislation: at least 80% of the necessary costs must be borne by the producers and the remaining costs by the original waste producers, as defined in Article 3.5 WFD, or by distributors. Interestingly, the European Commission´s Impact Assessment suggests that Member States will use this option when implementing the SUPD.[160] However, this exception does not apply to waste discarded "en route" in systems of public collection and cleaning-up activities which are not included by the WFD (see above at 2.3.1.3). Enlarging division of financial responsibility beyond these limits does not seem to be equally effective at least with regard to waste producers that do not have sufficient influence on the product chain. As to distributors, their influence via their conditions of purchase on the product chain is inferior to the influence of producers that decide whether the product is placed on the market. Thus, limiting the financial responsibility to producers as defined in the SUPD appears to be justified, taking into account that the polluter-pays principle requires that the cost of combating pollution should be borne at the point in the value chain and by the means which offer the best solution.[161]

2.3.2.3.4.4 Disadvantages not disproportionate to the aim

As mentioned before, the review of EU measures generally consists in assessing whether they are not manifestly disproportionate. The disadvantages caused by the legislation in question must not be disproportionate to the aims pursued.162 This requires a balancing of the benefits and the disadvantages involved, although the CJEU rarely does an explicit balancing and rather grants the authorities whose measures are reviewed a relatively wide margin of discretion.163 Accordingly, there are only few examples where the CJEU declared an EU measure to be manifestly disproportionate.164 As mentioned before, the SUPD´s objectives are to prevent and reduce the impact of SUP on the environment, in particular the aquatic environment, and on human health, as well as to promote the transition to a circular economy. Thereby, the SUPD aims at tackling the "urgent environmental problem" of marine plastic litter, and the "particularly serious problem" of SUP, which pose "a severe risk" to marine ecosystems, biodiversity and to human health.165 Both the environment and human health are protected by Article 37 respectively Article 3 of the Charta. Thus, the benefits of burdening the producers with the costs of waste management activities of public systems regarding SUP waste, and of the cleaning up of such litter, is to contribute to these objectives and thereby address an urgent and particularly serious problem concerning the environment, the protection of which is itself a principle of the Charter of fundamental rights. In particular, the benefit of pursuing these objectives via EPR schemes is to allocate financial responsibility for necessary measures

[160] See European Commission (2018b), p. 25-26.
[161] Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters, Annex para. 3, OJ EC L 194, 25.7.1975, p. 2.
[162] Sauter (2013), p. 448; Streinz/Michl, in: Streinz, EUV/AEUV (2018), Art. 52 GrCh rec. 20.
[163] Sauter (2013), p. 448.
[164] Sauter (2013), p. 450.
[165] European Commission (2018c), p. 7; Recital 5 SUPD.

according to the polluter-pays principle, and thereby incentivize producers to reduce the impact of their products on the environment.

The disadvantage for producers to cover the costs of waste management of SUP waste by public systems and of cleaning up SUP litter is a certain restriction to their freedom to conduct a business according to Article 16 of the Charter (see above 2.3.2.3.2). While there is consensus on certain EPR obligations, such as financing the collection, transport and treatment of waste that has been separately collected, financial responsibility for the above-mentioned measures, as introduced by the SUPD, has been discussed controversially. According to a study by Monier et al. (2014), stakeholders could not reach consensus whether producers should pay for waste management of waste non-separately collected if consumers could have put the waste into a separate collection system.166 In the same study, stakeholders argued that the costs of litter management should only be covered by producers for behaviour leading to littering, e.g., marketing products, which are expensive to treat as waste. Otherwise, littering is seen as the responsibility of the littering person and not of the producer.167 While the analysis of the necessity of the measures (above at 2.3.2.3.4.3) has shown that incentives to change consumer behaviour are not sufficient to attain the aims pursued by the SUPD, the alleged lacking responsibility of producers may be relevant for the present weighting of their legal interests. However, producers arguably still retain a certain responsibility for both the discarding of SUP waste in non-separate public collection "en route" and the littering of SUP waste. First, SUP are peculiar products that are, at least partially, intended for the use "en route", e.g., beverage plastic containers for "coffee to go". Thus, their function implies that they are not regularly discarded at home in separate collection systems. Second, recital 5 of the SUPD emphasizes that SUP is "prone to becoming litter", e.g. cigarettes that are often thrown away instead of being discarded in any collection system. Third, there is consensus that the concept of EPR is an expression of the polluter-pays principle, according to which the setting of any condition (conditio sine qua non) for pollution is sufficient to bear responsibility.168 Such a condition is the production of products resulting in waste and possibly pollution, although the exact limits of the responsibility of producers under this principle are not entirely clear.169 Thus, burdening producers with the costs of SUP waste discarded "en route" in systems of public collection or littered does not appear to be not per se disproportionate to the aims pursued by the SUPD even when they are not immediately responsible for the discarding or littering. However, the proportionality of such a financial burden also depends on whether the costs involved are not disproportionate to the potential contribution of the relevant EPR-measures to attain the objectives pursued.
In this respect, the explanatory memorandum emphasizes that the SUPD does not regulate all SUP, but focuses on the most found macro plastic items on European beaches by count.170 In the context of the EPR provisions, this means that only the costs for financing measures to tackle the most important pollution by SUP are imposed on producers. However, one problem specifically related to the costs of cleaning up litter may consist in the lack of definition of "cleaning up litter" in the SUPD. The contextual documents do not provide further information –

166 Recital 5 SUPD.
167 See https://www.euwid-recycling.de/news/politik/einzelansicht/Artikel/cdu-wirtschaftsrat-bruessel-soll-symbolpolitik-bei-plastik-lassen.html, and the brief discussion related by Bio Intelligence Service (2014), at 95.
168 Kahl, in: Streinz EUV/AEUV (2018), § 191 rec. 95-102.
169 See e.g. CJEU, C-188/07 (Commune de Mesquer), rec. 71-72. In this case regarding the responsibility for waste disposal following an oil tanker's accident, the Court stated that the costs could be imposed on any holder of waste, including producers, but added that "a producer cannot be liable to bear that cost unless he has contributed by his conduct to the risk that the pollution caused by the shipwreck will occur." (recital 82).
170 European Commission (2018c), p. 7.

neither the explanatory memorandum, nor the Impact Assessment, nor the WFD define it. In the waste context, the term clean-up refers to campaigns or initiatives during which improperly disposed waste is collected from natural spaces and public areas.171 However, this general understanding does not clarify the scope of cleaning up litter. It thus remains unclear where and to what extent they need to take place: are they locally restricted to beaches or water areas or can they take place in any public area?172 Should they provide a certain level of cleanliness173 or does it suffice to invest a certain amount of time? Obviously, these questions are highly relevant for the amount of costs to be covered by producers. However, the SUPD provides some limitations of the producer costs related to clean ups. First, they shall be limited to activities undertaken by public authorities or on their behalf (Art. 8 para. 4 second sentence), thus excluding private activities, e.g. by NGOs, without public assignment. Second, the costs of all EPR-activities to be covered according to Article 8 (2) and (3) shall not exceed the costs that are necessary to provide those services in a cost-efficient way and shall be established in a transparent way between the actors concerned (Art. 8 para. 4 first sentence). In addition, the calculation methodology shall be developed in a way that allows for the cost of cleaning up litter to be established in a proportionate way (Art. 8 para. 4 third sentence, Recital 27). Finally, the Commission shall, in consultation with Member States, publish guidelines for criteria on the costs of cleaning up litter (Art. 8 para. 4 subpara. 2), which would however not be binding on Member States. Concerning the proportionality of cost-coverage by producers, the most important restriction is that the relevant services, including cleaning up litter by municipalities or on their behalf, have to be provided in a cost-efficient way. This requires a reasonable balance between the amount of costs involved and the output achieved by a certain measure, and thus excludes expensive cleaning up measures with little effect. Apart from these restrictions by the SUPD, it is up to the Member States to design their EPR schemes, including the details of covering the costs for waste management of SUP waste discarded “en route” in systems of public collection and for cleaning up SUP litter, within their (see below at 2.3.2.3.7). In sum, weighing the benefits and disadvantages of the obligations of producers in Article 8 (2-4) SUPD to cover the costs for waste management of SUP waste discarded “en route” in systems of public collection and for cleaning up SUP litter, does not result in these provisions being manifestly disproportionate to the aims pursued by the SUPD.

2.3.2.3.5 Justification of equal treatment

The equal treatment of different producers is justified if a differentiation is not imperative. As specified above (2.3.2.3.4), the CJEU grants a wide margin of appreciation to the lawmaker and does not demand a justification for every-single impairment that is caused by an equal treatment. The requirements for justification are therefore relatively low. Producers based in different spatial areas might contribute to marine litter to very different extents. Therefore, a differentiation might make sense. Producers based in landlocked countries for instance might contribute to the problem of marine litter to a smaller extent than producers based in coastal states or in areas close to rivers. However, a cost distribution according to producers’ actual contribution to marine litter is not practicable. There is no manageable way of establishing whose products end up where – the causal chain is much too complicated. In a globalized world and especially in a European Single Market, products can be consumed in distant places from the

171 See for example World Cleanup Day (2020), p. 10.
172 The cost for clean-ups indicated in the Impact Assessment are based on the costs of beach cleaning and the costs of terrestrial litter clean-up, see ICF and Eunomia (2018), Annex 7 pages 135-136.
173 According to ICF and Eunomia (2018), Annex 7 pages 134-135, a standard of cleanliness would be important for the effectiveness of clean-ups, the consistent application of the Directive and a level playing field within the EU.

location of production. If a producer based in a landlocked country sells its products to consumers based in coastal areas, these products may end up as marine litter as well.

In a similar case concerning the implementation of the WFD, the CJEU decided the following: It is true that in a strict application of the polluter-pays principle, a correct differentiation would need to be the basis of the cost distribution. However, this is not practicable. Therefore, when calculating the cost distribution, Member States may use criteria that consider the producer's capacity and the type of waste produced. It was legitimate to base a levy on the amount of estimated waste and not on the amount of actually produced waste.174 Since a differentiation between different producers does not appear to be imperative, their equal treatment is justified.

2.3.2.3.6 Conformity of the SUPD with fundamental rights regarding EPR-provisions that grant Member States a margin of discretion for transposing the directive

So far, the present assessment focused on the question whether the general requirement in Article 8 (2-4) SUPD to impose the costs for waste management of the relevant SUP waste by public systems and for the cleaning up of the relevant SUP litter conformed to fundamental rights of the producers concerned. As has been mentioned at the beginning of the assessment (2.3.2.3.1), this is a requirement of the SUPD which does not leave any that for Member States and thus has to be assessed fully. Regarding other EPR-related provisions, however, Member States have to transpose the SUPD within their margin of discretion. As mentioned before, this regards the concrete design of the EPR-schemes to be established by Member States in accordance with the minimum requirements of Article 8a WFD, including

- details of the **services to be provided** in a cost-efficient way (para. 4)
- **the distribution of costs** in a transparent way between the actors concerned, and the establishment of a proportionate **calculation methodology** for the costs to clean up litter (para. 4)
- **the definition of roles** and responsibilities of all relevant actors (para. 5).

As elaborated previously, these provisions of the SUPD conform to fundamental rights if they can be transposed into the Member States´ legal systems in a manner consistent with the fundamental rights. Regarding the focus of this assessment on the cost-coverage by producers of waste management services provided by public systems relating to SUP waste, and of cleaning up SUP litter, there is no indication that a transposition in conformity with fundamental rights, in particular the principle of proportionality, was not possible. However, as indicated at 2.3.2.3.4.4, the concrete establishment of the EPR schemes regarding cleaning up litter is challenging due to the lack of definition of this term in the SUPD. But difficulties in determining the content of provisions in EU directives are not uncommon, especially since the interpretation of EU legislation does often not lead to unequivocal results.175 Thus, the SUPD does also conform with fundamental rights in respect to the provisions related to cost-coverage of SUP waste management and cleaning up SUP litter by public systems, which grant the Member Stat, as they do not impede transposition in conformity with the fundamental rights of the Charter.

2.3.2.3.7 Conformity of national transposition with fundamental rights

As elaborated in the previous chapter, regarding EPR-related provisions of the SUPD which grant Member States a margin of discretion for transposing the directive, Member States have to

174 CJEU, C-254/08 (Futura Immobiliare), Rn. 49, 51, 52.
175 Hansmann (1995), p. 323-324.

transpose these provisions in a manner consistent with the Charter of fundamental rights.[176] In this regard, it has to be noted that the CJEU´s standard of review for assessing the conformity of national implementing acts with EU law usually differs from its standard for the review of EU legal acts. In most cases, the CJEU focuses on the necessity of the limitations of fundamental rights and applies the test whether the measure taken was the least onerous measure available.[177] A balancing of interests in a strict proportionality assessment is rare, although the CJEU´s standard is not applied consistently.[178] Of course, transposition also has to comply with the mandatory requirements of the SUPD which do not grant Member States any margin of discretion. As mentioned before, implementation of the provisions on cleaning up litter is challenging due to the lack of definition of this term. One way to cope with these difficulties might be to define "cleaning up litter" in the transposing legal act. However, such a definition may restrict the requirements of the SUPD and thus lead to a transposition deficit. For example, any geographical definition would have to take into account that the potential geographical scope of the cleaning up of litter in Article 8 SUPD is only restricted to the territory of the relevant Member State. This includes not only all kinds of terrestrial activities in urban and rural areas, at beaches and the shores of rivers, lakes and the sea,[179] but also the interior waters and the territorial sea themselves. Accordingly, the more restrictive a Member State defines cleaning up litter, the higher is the risk that the European Commission contends the conformity of such a national definition with the general term in Article 8 SUPD, and ultimately initiates infringement proceedings against the relevant Member State. Thus, it would be preferable for Member States to simply adopt the term "cleaning up litter" in their implementing acts and leave it to the administration and the national courts to enforce and interpret this term in a manner that conforms to fundamental rights, especially the principle of proportionality. However, when designing the EPR schemes to be established according to Article 8 SUPD, Member States may need to make some assumptions regarding the amount of costs to be covered by cleaning up litter, and thus indirectly on the extent of such measures (see Chapter 4 on the "Waste-free Environment Fund" – a littering fund). A way to provide at least some certainty for Member States could consist in the European Commission using its obligation to publish guidelines for criteria on the cost of cleaning up litter in Art. 8 (4) subparagraph 2, in consultation with Member States, to thereby give at least some (non-binding) indication on the scope of cleaning up litter according to the SUPD.

2.3.2.4 Other requirements

2.3.2.4.1 Principle of Legal Certainty

This point assesses whether the formulation of Art. 8 SUPD fulfils the requirements of the principle of legal certainty. This principle is based on the rule of law (Art. 2 TEU)[180] and requires that "EU rules enable those concerned to know precisely the extent of the obligations which are imposed on them and that those persons must be able to ascertain unequivocally what their rights and obligations are and take steps accordingly".[181] Accordingly, when reviewing a regulation, the CJEU assesses if the rules imposed on an individual are clear and unequivocal and whether its rights and obligations are unambiguous.[182] Concerning the review

[176] Regarding the relationship to fundamental national rights, see side note in Chapter 2.3.2.3.1.
[177] Sauter (2013), p. 453, 458.
[178] Sauter (2013), p. 461.
[179] See e.g. the enumeration by Wendenburg (2019), p. 176.
[180] Pechstein, in: Streinz, EUV/AEUV (2018), Art. 2 EUV rec. 6.
[181] CJEU, C-239/17, Teglgaard, ECLI:EU:C:2018:597, rec. 52.
[182] CJEU, 169/80 (Gondrand Frères), ECLI:EU:C:1981:171, Slg. 1981, 1932, Rn. 17; CJEU, Rs. C-170/08 (Nijemeisland), ECLI:EU:C:2009:369, rec. 44.

of directives, the CJEU's handling of the principle of legal certainty is not entirely clear.183 Since directives are addressed at Member States, they do not impose rules on individuals. Consequently, they do not have to be as precise and clear as regulations. According to a view expressed in the literature, the European legislative body is relatively free in determining the level of detail of a directive.184 Given that the scope of legal rules is often somewhat imprecise, the CJEU does not apply a high requirement on clarity. The principle of legal certainty was rarely an obstacle to the application of EU environmental legal acts.185 Furthermore, the CJEU has established conditions under which a directive may be applicable directly without a national implementing act. This requires amongst others that the wording of the directive is sufficiently precise and clear.186 Upon reversion, this means that a directive is not void if its wording is somewhat indeterminate. However, when implementing the SUPD, the Member States themselves are bound by the principle of legal certainty.187 This suggests that it must be possible for the Member States to implement the EPR-related provisions of the SUPD in a way that meets the principle of legal certainty's requirements. As mentioned above at 2.3.2.3.4.4, this is challenging in regards to the term "cleaning up litter", but can be achieved within the Member States´ margin of discretion to transpose the directive. In German national law for instance, room for interpretation ("Auslegungsspielraum") and indeterminate legal terms ("unbestimmte Rechtsbegriffe") are possible as long as their content can be determined by the conventional interpretation methods.188

2.3.2.4.2 Equality of Member States (Art. 4 para. 2 TEU)

The principle of equality of the Member States (Art. 4 para. 2 TFEU) implies a duty of the Union's institutions to treat all Member States equally, regardless of their size or influence. The clause expresses the principle of sovereign equality of States under international law. It is not relevant here because it very generally concerns the role of Member States for instance in voting processes. The SUPD's content does not touch upon it.

2.3.2.4.3 Horizontal Clauses (Art. 7-17 TFEU)

The clauses concern issues such as social protection, elimination of discrimination, consumer and animal protection, data protection or access to documents. The clauses require the Union to take into account these issues when drafting their policies and measures. In this case, they do not come with any additional requirements on the SUPD because the issues are not relevant for the topic of plastic waste. The same is true for Art. 11 TFEU. It demands that environmental protection requirements must be integrated into the definition and implementation of the Union's policies and activities. Environmental concerns clearly have become an integral part of the measure and have influenced its content, therefore satisfying the clauses requirements.189

2.3.3 Considerations on fishing gear

The aim of the SUPD is to shift the cost of proper treatment of the littered gear from the public sector and other private sector bodies such as fisheries (which are strongly affected by marine

183 Teetzmann (2016), p. 95.
184 Nettesheim in Grabitz/Hilf/Nettesheim, Feb. (2019), Art. 288 AEUV rec. 113.
185 Langlet/Mahmoudi (2016), p. 64.
186 CJEU, C-148/78, Ratti, ECLI:EU:C:1979:110, rec. 23.
187 Langlet/Mahmoudi (2016), p. 64.
188 Sachs, in: Sachs, GG (2007), Art. 20 rec. 127.
189 Calliess, in: Calliess/Ruffert, EUV/AEUV (2016), Art. 11 AEUV rec. 9.

litter190), port authorities and volunteers, to the producers of these items themselves. Some issues remain nevertheless. For example, instead of including retrieval of ALDFG into the directive, this type of gear is only considered when brought back to a port. Also, the question, whether fishing gear should be included in the requirement for producers to also pay for clean-ups remains open. A general question is how to deal with producers outside the EU and whether they could be included into the EPR schemes.

2.3.3.1 Can the retrieval of ALDFG be integrated?

According to Art. 3 point 5 of the SUPD, ALDFG is explicitly mentioned as waste, which should be considered when brought back to a port. Abandoned, lost and otherwise discarded fishing gear represents a significant danger to marine ecosystems. Their often long-drift in the sea can cause considerable damage to marine life. According to WWF Poland, it is estimated that for example in 2011 alone between 5.500 and 10.000 abandoned gillnets has been lost in the Baltic Sea due to being turned loose by boats, ships or storms. The EPR schemes are foreseen only for those ALDFG returned to ports according to Art. 8 of the SUPD. A reason is that the SUPD further elaborates requirements of the PRFD. Therefore, the focus is on gear, which has been brought to ports. However, to foster the effectiveness of the directive, it may be worth to extend EPR to detections, verification and removal of ghost gear in the sea. This would support the necessity to avoid their entry from the outset. The scope of EPR could therefore also cover ALDFG out at sea. Preamble 23 of the PRFD states that the CFP approaches are insufficient and the PRF has to be expanded. Also, the new PRDF provisions do not tackle the retrieval of ALDFG in a systematic manner. Until now, this aspect is more or less left to voluntary actions, e.g., dedicated diving campaigns or Fishing for Litter. The Assessment of the SUPD is highlighting the costs of EPR for coordinating retrieval (option 3c), which can be covered by the EMFF committed resources for the collection of lost fishing gear and marine litter in their respective Operational Programmes (OPs) for the European Maritime and Fisheries Fund (EMFF). The target number of operations in the OPs is with planned public and EU contributions of EUR 31 million and EUR 22 million respectively. Such support is expected to continue. The Commission's new EMFF proposal includes the possibility of financial support for compensation to fishers for the collection of lost fishing gears and marine litter from the sea, and investments in ports to provide adequate reception facilities for such recovered material. However, according to the feedback of fishermen (during interviews) the application forms to receive money back are very complicated and therefore seldom used. Also, comparing the assessed costs for option 3c (with retrieval) and the preferred option 3a (EPR for handling waste streams without retrieval) show that the costs for retrieval actions are around 3 million Euro to set up and 500.000 per year for operations which is a relatively small amount of costs. These costs could be added to the costs assessed for option 3a. Also, the positive impact on generating job opportunities for the handling, cleaning etc. should be taken into account.

2.3.3.2 Clean-up costs

It is vital for Member States to ensure that producers pay for 100% of the clean-up costs in the EPR schemes for the listed SUP products. However, for fishing gear exist no clean-up requirements. Comparing the pathways of single use plastics and fishing gear it is obvious that the SUP pathways start on land (toilets, streets, rural environment, bins, beaches), whereas fishing gear is dropped from boats in the marine environment directly. In both cases, the producer cannot influence the behaviour of the littering person, be it accidental or with intention. It can be argued that it is not proportional to make producers responsible for issues

190 Marine litter costs the EU as a whole of around 30 million Euro each year, see European Commission (2018b), p. 16

outside their scope. To solve this question, decisions about broad and narrow interpretations of the polluters pays principle, as fundamental part of the operational instrument, the EPR, have to be considered. The preamble of the SUPD refers to the Treaty when referencing the polluter pays principle. Therefore, one may refer to the Council Recommendation regarding cost allocation and action on environmental matters that did provide a definition of polluter: being 'someone who directly or indirectly damages the environment or who creates conditions leading to such damage'.191 In that (broad) sense, the party causing resource damages due to – for instance – littering the beaches with their products would be a 'polluter'. Direct emission of pollutants is not necessary. This broad interpretation of the polluter pays principle is confirmed because the Council Recommendation acknowledges that the polluter should pay all costs necessary to achieve an environmental quality objective. This leaves room for the view that even the costs for clean-ups of fishing gear have to be up-taken by the producer and cannot be left to the communities' responsibilities. As in practice the municipalities will continue to clean their beaches, regardless which items are found, it is appropriate to make the producer as polluter responsible to bear the costs for removal campaigns of ALDFG as well. Another argument comes from the revised PRFD192, which aims to reduce discharges of ship-generated waste and cargo residues into the sea. The original directive 2000/59/EC as well as the revised one align with MARPOL,193 which focuses mostly on operations at sea and does not provide for an effective enforcement mechanism. Therefore, the PRFD is a way to enforce concepts and obligations of MARPOL into EU law. To avoid different policies in ports, further harmonisation at EU level was seen as necessary. Member States can decide on their own how to structure the operational measures applicable at port level, based on local considerations and administrative set-up and ownership. For the SUPD, this approach can be transferred. Here, the Member States can decide about the scope of the collection target and in a next step, clean-up provisions for fishing gear to close the cycle. If Member States will not take care for the clean-up costs, it can be argued that the cleaning is covered by the activities for the single use plastic items and fishing gear will be collected anyway when cleaning the beaches. However, this approach would dismiss the fact, that most ALDFG never make it to shore, but is continuing to fish ownerless out at sea without the opportunity to close the life-cycle of fishing gear with recycling and other treatment approaches. Nets and other types of fishing gear provide valuable resources for recycling. Furthermore, specific action has been taken to implement the 2030 Sustainable Development Goals according to the Circular Economy Action Plan194: The EU and the Member States should therefore follow this approach consequently, using all opportunities to close the cycle of plastic, also for fishing gear. Making producers responsible for the full costs of the end-of-life of their active and passive fishing gear is not only fair, but also crucial to incentivise them to re-design their products with circularity in mind, and to prompt them to think out of the box to develop more sustainable business models, including the set-up of reuse and application of incentive systems, where possible. In addition, ensuring that producers bear 100% of the clean-up costs will encourage them to work with municipalities to ensure high collection rates of their products end-of-life. Therefore, proportionality and conformity aspects would not be breached by the extension of the existing SUPD for clean-ups of fishing gear. However, to be realistic, the

191 Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters, OJ L 194, 25.7.1975, p 1.
192 Directive (EU) 2019/883 of the European Parliament and of the Council of 17 April 2019 on port reception facilities for the delivery of waste from ships, amending Directive 2010/65/EU and repealing Directive 2000/59/EC (OJ L 151, 7.6.2019, p. 116).
193 IMO Convention MARPOL 73/78 (International Convention for the Protection of Pollution from Ships, 1973, as modified by the Protocol 1978)
194 See Commission Staff Working Document on the Implementation of the Circular Economy Action Plan, SWD/2019/90 final.

directive will not be opened too soon to alter specific aspects. Therefore, it is up to the Member States to include this aspect into national legislation and implementation requirements of the SUPD. Basis for national expansion of the SUPD could be the so-called „safeguard clauses" for Member States laid down in the Treaty on the Functioning of the European Union (TFEU)195. To assure coherent and equitable implementation of this aspect among as many countries as possible, it is key to address and regionally coordinate this issue via the Regional Seas Conventions and their marine litter task groups and Action Plans to foster and advertise for an extended EPR understanding related to the clean-up of fishing gear.

2.3.3.3 Producers outside the EU

In Germany, for commercially used items, the producer liability law (Produzentenhaftung) applies, based on §§ 823 BGB. If a defective product damages, the producer is liable. Prerequisite is the proof that the reasons lie with him and he has violated public safety. This is the case when the producer sees or maintains a source of danger but at the same time makes not provision for preventing harm to others. In case, the manufacturer disregards these duties and the customer incurs any damage, the customer may claim damages. In case of an import of products coming from EU countries outside the EU, these kinds of liability claims are difficult to enforce. However, in a mid-term view, fishing gear, which is not compatible with circular economy targets as outlined by EU and Member State legislation, could be classified as defect. Therefore, these kinds of fishing gear which are still using unsustainable materials difficult to recycle and harmful to the environment when lost, could be claimed as defect at the broker who is buying and importing such harmful gear from outside the EU. These claims should include all types of producers: apart from the manufacturer, also those purchasing and distributing fishing gear. Indirectly, this could influence the practice of importing cheap, but highly harmful gear and foster the increased research in alternative materials. A way to control the import of harmful, defect gear is the introduction of an indicator for the import-export index. The indicator would show imported harmful fishing gear, which could be taxed higher or sent back (similar to harmful children's toy). The numbers could also highlight the amount of gear imported from outside Europe. Also, optional measures, to proof (at least) the origin of a lost or abandoned fishing gear in EU territory, which originally comes from outside the EU, can be extended tracing requirements such gear. The introduction of the CEN standard ‚Sustainable fisheries, aquaculture and fishing gear' (see 2.3.1.3.2) could influence the preference of buying those high-quality products instead of cheap gear: Member States can allow only those imports with this specific CEN standard. Those importers who cannot show this standard will be weakened and may re-think of importing more environmental-friendly products or leave the EU market.
In addition, the scope of the so-called CE-stamps (European Conformity sign) can be extended from the meaning to be without a defect to the proof to be sustainable. Then, in case, an imported product is defect, also the importer can be liable. This could be enforced by national legislation.

2.3.4 Conformity with International Law

2.3.4.1 Introduction

At the international level, there is no convention that addresses plastic waste in a comprehensive way, although recent initiatives aim at such a convention.196 In particular, no convention addresses EPR. Only a Guidance Manual for Governments exists, which has been

195 See, e.g. Art. 114
196 For an overview over developments at UNEA see Carlini/Kleine (2018); see also the discussion paper by Bodle/Sina (2019), which includes EPR.

published by the OECD in 2001 and updated in 2016.197 Thus, there is no indication that the EPR provisions of the SUPD might not conform to international environmental agreements. However, they may be relevant to the law of the World Trade Organisation (WTO).

2.3.4.2 Conformity with the law of the World Trade Organisation

The present section contains a brief discussion of the WTO compatibility of Art. 8 of Directive 2019/904, which stipulates details of the EPR for certain SUPs in the form of several distinct obligations for producers that Member States need to provide for in their national laws. The EU and its Member States are bound by WTO law, since they are Members of the WTO.
WTO law consists of several agreements, among which the General Agreement on Tariffs and Trade (GATT), covering trade in goods, and the Agreement on Technical Barriers to Trade (TBT) are the most relevant in the present context. In the GATT, Art. III:4 is the most important clause for cases, in which national measures other than tariffs, anti-dumping measures or subsidies are at stake. It contains a non-discrimination clause, stating that WTO Members must accord the products imported from another WTO Member treatment "no less favourable than that accorded to like products of national origin in respect of all laws, regulations and requirements affecting their internal sale, offering for sale, purchase, transportation, distribution or use". Art. 8 of Directive 2019/904 clearly is a provision affecting the internal sale, offering for sale, purchase, distribution and/or use of certain SUPs, since Member States are obliged to impose certain additional conditions on producers of these SUPs, which also has the potential to make these products more expensive. WTO case law recognizes that less favourable treatment may consist not only in a de jure different treatment, i.e. a formal distinction in the law between how domestic and foreign products are treated, but also a de facto different treatment, i.e. measures having in practice different effects on domestic and foreign products.198 One issue in this regard, is posed by Art. 8 (6) of the Directive: It stipulates that "each Member State shall allow the producers established in another Member State and placing products on its market to appoint a legal or natural person established on its territory as an authorised representative for the purposes of fulfilling the obligations of a producer related to extended producer responsibility schemes on its territory". This is aimed at making it easier for producers to discharge their legal obligations in another Member State, thus enabling them to sell the SUPs concerned there, while making them responsible for certain costs. However, the Directive does not contain a similar clause for producers established outside the EU;199 this would seem to constitute a less favourable treatment of producers of the SUPs concerned, who place product on the EU market, as compared to EU producers. Thus, Art. 8 seems to be in violation of Art. III:4 GATT in this respect. Conversely, the other obligations in Art. 8 do not appear to be de jure or de facto discriminatory. A violation of Art. III:4 GATT can be justifiable under Art. XX GATT. Art. XX GATT provides that measures taken for certain public policy goals are WTO compatible under certain conditions, even if they violate another WTO clause. The most relevant sub-paragraphs

197 OECD (2016).
198 See for example Diebold (2011), p. 832.
199 199 During the negotiations for the revised WEEE Directive (2012/19/EU), the mandatory appointment of an authoritative representative of producers in the Member State to which they sell EEE was proposed, but finally limited to producers established in a Member State (see Article 17 (2) of the final Directive). It seems that this happened in order to protect e-commerce from unnecessary obstacles (see European Parliament, Recommendation for Second Reading from 6 October 2011, Amendment 67, PE 469.957v02-00 A7-0334/2011). In addition, Article 17 (1) WEEED includes a provision similar to Article 8 (6) SUPD, i.e. limited to producers from other Member States. However, the situation is different compared to the SUPD, since the WEEED requires all producers, including such from third countries, to register in the Member State that they sell to (Article 16). According to the WFD, which supplements the SUPD, Member States only "may" require registration of producers for the purpose of monitoring and verifying compliance with EPR schemes (Article 8a (5)).

in cases, in which environment or health-related measures are in dispute, are Art. XX (b) and Art. XX (g) GATT. Art. XX (b) GATT allows WTO Members to take measures that are "necessary to protect human, animal or plant life or health". It is clear from the Commission Staff Working Document accompanying the legislative proposal for Directive 2019/904 that the Directive overall and Art. 8 more specifically are aimed at reducing the amount of plastic waste in the environment and the sea, in particular. [200] They thus clearly serve the objectives mentioned in Art. XX (b) GATT, notably by seeking to avoid negative impacts of plastic waste on animals living in the sea, even though this does not appear to be the only objective of the Directive. However, it is less clear what role the clause in Art. 8 (6) plays in this regard; it is not immediately evident that the mentioned limitation to producers from other EU states serves an environmental or health purpose. The next criterion in Art. XX (b) GATT is whether the individual measures that Art. 8 provides for are also "necessary" in the sense of Art. XX (b) GATT. According to WTO case law, the test whether a measure is "necessary" looks as follows: "In order to determine whether a measure is …necessary, a panel must assess all the relevant factors, particularly the extent of the contribution to the achievement of a measure's objective and its trade restrictiveness, in the light of the importance of the interests or values at stake. If this analysis yields a preliminary conclusion that the measure is necessary, this result must be confirmed by comparing the measure with its possible alternatives, which may be less trade restrictive while providing an equivalent contribution to the achievement of the objective pursued."[201] This text would need to be applied to each of the separate measures provided for in Art. 8 of Directive 2019/904; in WTO dispute settlement, this would also involve the WTO judicial decision-makers taking a position on a number of factual matters, such as whether possible alternatives are available. While these factual issues cannot be fully assessed in the present context, it can be noted that the measures set out in Art. 8 of Directive 2019/904 generally are likely to contribute to the envisioned objective (even though in a somewhat indirect manner): the measures are not overly trade-restrictive (producing and marketing the SUPs in question is not prohibited), and the environmental interests and objectives at stake are rather important. It is also not clear whether alternative less-trade restrictive measures that are equally effective would be available. Notably, Art. 8 (4) specifically aims at limiting the costs for producers to what is necessary for specific measures set out in Art. 8. However, Art 8 (6) of the Directive again seems to be an exception, since it is not evident that extending the possibility of appointing an authorized representative to non-EU producers would undermine the environmental and health-related objectives of the scheme. Thus, it seems that Art 8 (6) of the Directive is unlikely to be "necessary" in the sense of Art. XX (b) GATT. Art. XX (g) GATT can be used to justify measures "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption". Again, since the EPR is aimed at protecting animals living in the sea, it is a measured aimed at, amongst others, protecting "exhaustible natural resources". Animals living in the sea have been considered to be such resources in past WTO case law.[202] The "relating to" standard in Art. XX (g) GATT is somewhat less demanding than the "necessary" standard in Art. XX (b) GATT. While the WTO dispute settlement bodies have yet to come up with one single interpretation of the term, some of the formulations used in WTO case law are that the "relating to" standard requires that "means are, in principle, reasonably related to the ends"[203] or that there is "a close and genuine relationship of ends and means between that measure and the conservation objective of the Member

[200] See European Commission (2018c), section 2.1.4.2 for the impacts of plastic waste on the environment and human health.
[201] See Appellate Body, Brazil - Retreaded Tyres, WT/DS332/AB/R, para. 156.
[202] See Appellate Body, Shrimp – Turtles, WT/DS58/AB/R, para. 131; Panel, US – Tuna II (Mexico), Article 21.5 proccedings, WT/DS381/RW, para. 7.521.
[203] Appellate Body, Shrimp – Turtles, WT/DS58/AB/R, para. 141.

maintaining the measure"[204]. Most of the measures in Art. 8 of Directive 2019/904 would seem to meet this standard. However, Art. 8 (6) is again an exception, since it is not clear how the limitation to EU producers in this clause contributes to conserving exhaustible natural resources. As to the last criterion in Art. XX (g), since the EU measures clearly also apply to companies within the EU, they are also "made effective in conjunction with restrictions on domestic production or consumption". Therefore, the EU's EPR appears to be compatible with Art. XX (g), with the exception of Art. 8 (6) of the Directive. In addition to fulfilling the requirements of the sub-paragraphs of Art. XX GATT, measures must also be compatible with the introductory clause of Art. XX GATT, it`s so-called chapeau, to be justifiable. The chapeau requires that "measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade". There are a number of WTO cases, in which the judicial decision-makers held that a national measure failed to meet this standard; yet it is somewhat difficult to identify from the case law a consistent interpretation of the clause.[205] National measures have, for example, been held to violate the standard, because they were considered too rigid, not allowing for the conditions in another WTO Member to be taken into account[206] or because the reason given for discrimination "bears no rational connection to the objective falling within the purview of a paragraph of Article XX"[207]. Given there is not a very clear line of interpretation by the WTO Appellate Body in this regard, it is difficult to predict how the EU measure would be assessed under the chapeau. However, given that Art. 8 (6) clearly distinguishes between domestic and foreign producers and there is no apparent environmental or health-related reason for that distinction, it could be difficult to justify it under the chapeau clause. There is no similar issue with the remainder of Art. 8, making it more likely that is could be justified under the chapeau clause. The core norms of the other potentially relevant WTO agreement, the TBT Agreement, are contained in Art. 2 TBT and apply to technical regulations. A technical regulation is, according to Annex 1.1 TBT, a document "which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory. It may also include or deal exclusively with terminology, symbols, packaging, marking or labelling requirements as they apply to a product, process or production method." The question is whether the EPR rules contained in Art. 8 of Directive 2019/904 are technical regulations in this sense. They are mandatory, since Member States are under an obligation to implement them; yet do they also lay down product characteristics or their related processes and production methods in the sense of Annex 1.1. TBT? When interpreting Annex 1.1. TBT the Appellate Body observed that the reference to related processes and production methods meant that "that the subject matter of a technical regulation may consist of a process or production method that is related to product characteristics. In order to determine whether a measure lays down such methods it was thus necessary to examine "whether the processes and production methods prescribed by the measure have a sufficient nexus to the characteristics of a product in order to be considered related to those characteristics".[208] By this standard, the measures provided for in Art. 8 cannot be considered to be technical regulations: none of them relates directly to characteristics of SUPs or their production processes; they stipulate financial responsibilities for certain actions relating to SUPs. Since Art. 8 of Directive 2019/904 hence does not contain a technical regulation, the obligations in Art. 2 TBT do not apply to them. As a final point in this discussion, it is worth

[204] Appellate Body, China – Rare Earths, WT/DS431, 432, 433/AB/R,para. 5.90.
[205] For an overview of some of the case law, see for example Venzke (2011), p. 1125 ff.
[206] Appellate Body, Shrimp – Turtles, WT/DS58/AB/R, para 161 ff.
[207] Appellate Body, Brazil – Retreaded Tyres, WT/DS332/AB/R, para. 227.
[208] Appellate Body, EC – Seal Products, WT/DS400, 401 /AB/R, para. 5.12.

recalling that Art. 8 of Directive 2019/904 is an expression of the polluter-pays principle which is enshrined in EU primary law (see section xxx above). Art. 8 specifies what the polluter-pays principle means for the SUPs in question. This could be relevant for the discussion of the WTO compatibility of Art. 8 of Directive 2019/904, if there was any case law on the compatibility of the polluter-pays principle with WTO. However, this is not a question the WTO dispute settlement bodies have had to address. In a case involving the precautionary principle – like the polluter-pays principle a (disputed) principle of international environmental law –the WTO dispute settlement bodies have avoided a statement on the status of the precautionary principle under international law and also concluded that the question was irrelevant for the case at hand.[209] If the WTO dispute-settlement bodies took a similar stance on the polluter-pays principle in a potential future dispute over Art. 8 of Directive 2019/904, the EU would not be able to rely on the polluter-pays principle as a justification for its measure, even if an initial violation of WTO law was found. In sum, Art. 8 of Directive 2019/904 appears to be compatible with WTO law, with the exception of Art. 8 (6). However, the above analysis is relatively short and less in-depth than the ones normally done by the WTO dispute settlement bodies; therefore, it should not be read as a definite prediction of the outcome of an eventual WTO dispute.

[209] Appellate Body, EC – Hormones, WT/DS 26, 48/AB/R, para. 123.

3 Analysing potential measures under Extended Producer responsibility for different single-use plastic products and fishing gear containing plastic

3.1 Objective

This analysis served to investigate measures under Extended Producer Responsibility210 (EPR), that according to Art. 8 of the Single-use Plastics Directive 2019/904 could ensure that producers of the following single-use plastic (SUP) products (see Annex E to Directive 2019/904) bear financial responsibility for the management of the waste stage of their product's life cycle:

1. Food containers, i.e., receptacles such as boxes, with or without a cover, used to contain food which:
    a. is intended for immediate consumption, either on-the-spot or take-away,
    b. is typically consumed from the receptacle, and
    c. is ready to be consumed without any further preparation, such as cooking, boiling or heating, including food containers used for fast food or other meal ready for immediate consumption, except beverage containers, plates and packets and wrappers containing food;

2. Packets and wrappers made from flexible material containing food that is intended for immediate consumption from the packet or wrapper without any further preparation;
3. Beverage containers with a capacity of up to three litres, i.e., receptacles used to contain liquid such as beverage bottles including their caps and lids and composite beverage packaging including their caps and lids, but not glass or metal beverage containers that have caps and lids made from plastic;
4. Cups for beverages, including their covers and lids;
5. Lightweight plastic carrier bags as defined in point 1c of Article 3 of Directive 94/62/EC.
6. Wet wipes, i.e. pre-wetted personal care and domestic wipes;
7. Balloons, except balloons for industrial or other professional uses and applications that are not distributed to consumers;
8. Tobacco products with filters and filters marketed for use in combination with tobacco products.

The scope of producers' financial responsibilities under Art. 8 of the Directive partially differs depending on whether or not their products are (prone to be) disposed of in public waste collection systems. While food containers, packets and wrappers, beverage containers, cups for beverages, lightweight plastic carrier bags and tobacco products are frequently used in public spaces, wet wipes and balloons are much less so. Therefore, the latter two SUP products are more likely to end up in household waste and maybe commercial waste (e.g., from restaurant toilets). Hence, Art. 8 of Directive 2019/904 distinguishes between producers of different products as regards waste stages and activities whose costs they should bear.
According to Art. 8 producers of the above products 1. to 5. and 8. bear the costs of

[210] Art. 3, Point 21 of the revised Waste Framework Directive 2018/851 reads: ""extended producer responsibility scheme" means a set of measures taken by Member States to ensure that producers of products bear financial responsibility or financial and organisational responsibility for the management of the waste stage of a product's life cycle.'

- waste **collection**, including the infrastructure and its operation, and the subsequent **transport** and **treatment**;
- **cleaning up** litter and the subsequent transport and treatment of that litter; and
- **awareness raising** measures (regarding the availability of re-usable alternatives as well as the impact of littering and other inappropriate waste disposal on the environment and on the sewer network)

resulting from and regarding those products. Producers of tobacco products, in addition, also face responsibility to bear the costs of data gathering and reporting.
Producers of wet wipes and balloons are obliged to bear costs of

- **cleaning up** litter and the subsequent transport and treatment of that litter;
- **awareness raising** measures (as above); and
- **data gathering and reporting**

resulting from and regarding those products.

According to Art. 8 and 10, producers of **fishing gear** have to cover the costs for

- **collection** of waste fishing gear that has been delivered to port reception facilities or equivalent collection systems**,** including the subsequent **transport** and **treatment**;
- **awareness raising** measures (regarding the availability of re-usable alternatives, re-use systems and waste management options and best practices in sound waste management as well as the impact of littering) to reduce their amount in the sea.

Therefore, analysing EPR measures also serves to differentiate, where possible, measures between products and waste management aspects or phases (collection, transport, treatment, clean-ups, awareness raising).

3.2 Method and procedure

We reviewed relevant literature, both scientific and grey literature as well as news articles, in order to identify and analyse (arguments for) potential measures under EPR for the above products and the different waste management aspects:

a) Collection – relevant aspects to consider encompassed (i) collection of SUP product waste in public waste bins on beaches, along promenades and close to consumption hot spots (kiosks, take-aways, etc.); (ii) source separation in public waste bins;

b) Transport – relevant aspects to consider encompassed (i) how and how often to transport SUP product waste collected; (ii) responsible actors, such as municipal waste management infrastructure or additional systems, e.g., collaboration between producers and municipal waste management;

c) Treatment – relevant aspects to consider encompassed (i) treatment options for SUP product waste littered or found on beaches (ii) potential additional effort for treatment arising from pollution of waste littered or found with sand, algae, etc.;

d) Clean-ups – relevant aspects to consider encompassed (i) feasibility of comprehensive clean-ups including from small SUP product waste (in particular cigarette filters); (ii) area, sections and frequency for clean ups; (iii) determining financial contributions of producers to clean-up costs;

e) Awareness raising – relevant aspects to consider encompassed information on products or general information (signs on beaches)

In reviewing relevant literature, we aimed to answer the following three questions:

1. Which EPR measures for the different products and the different waste management aspects could be effective and implemented efficiently?
2. Who should be responsible for (i) implementing and carrying out these measures, and (ii) for covering the costs for these measures?
3. What costs could potentially be associated with the measures identified?

Question 2 focuses on whether producers of SUP products shall pay for EPR measures which actors, such as municipalities, already implement and carry out regarding SUP products discarded in public waste collection systems, or whether they should also pay for additional measures implemented under SUP-Directive. In order to ensure that we obtain and analyse relevant information on the different SUP and fishing gear products, we conducted complementary guideline-based expert interviews by telephone. Relevant stakeholder groups interviewed are shown in Table 3.

Table 3: Overview of stakeholder groups interviewed

Stakeholder group	Expertise
Environmental NGOs (2)	Waste management and circular economy Collection and treatment of plastic waste and fishing gear Clean-ups and awareness raising measures Cost considerations
Producer responsibility organisation for plastic packaging (1)	Collection and treatment of plastic waste and fishing gear Clean-ups and awareness raising measures Cost considerations
Municipality (1)	Waste management and circular economy Collection, transport and treatment of plastic waste and fishing gear Clean-ups and awareness raising measures Cost considerations Responsible actors for waste management

The interviews helped us to validate, expand and enrich existing information collected via literature review, to identify and alleviate blind spots and to check for information on costs associated with EPR measures identified where available. The European Commission will publish guidelines on EPR costs; however, these guidelines were not available at the time of writing this report and hence could not be integrated.

3.3 Analysis and findings

3.3.1 Single-use plastic products

In the following five sections, we present the main findings from analysing potential EPR measures and arguments as well as considerations on costs and responsibility for cost coverage for the five phases collection, transport, treatment, clean-ups and awareness raising.

3.3.1.1 Waste collection: Potential EPR measures and cost consideration across Annex E single-use plastic products

The obligation for producers to pay for collecting waste discarded via public collection systems applies to the following six SUP products: Beverage containers; Cups for beverages; Food container; Lightweight plastic carrier bags; Packets and wrappers; and Tobacco products/filters.

Potential EPR measures and arguments

Many of the products to which financial responsibility for collection applies might end up in the environment although being disposed of in public waste receptacles – and hence need to be cleaned-up from the environment. On the one hand, SUP products such as beverage or food containers have a large volume and thus quickly fill up public waste bins. This can leave to overfilled bins where discarded waste falls out and thus enters the environment. On the other hand, single-use products such as packets and wrappers or lightweight plastic carrier bags are prone to being blown out of (in particular overfilled) bins. Therefore, good bin infrastructure, frequent collection (depending on visitor numbers, season, public events and weather conditions)211 and adequate bin design are essential. Bins should be weather-proved and protected against waste picking by animals and wind; e.g., closed, semi-closed or subsurface bins. Furthermore, bin location is relevant. They should be within easy reach, easily spotted, located at public hot spots (e.g., beach entries, promenades with kiosks and take-aways, parking lots) and also provide separate ashtrays for cigarette buds to prevent other waste fractions from catching fire (such as the striking orange-coloured bins in Berlin do).212 In addition, public waste bins could be designed for source separation of plastics and other wastes. This might ease the sorting and treatment of plastic waste from public waste bins and also not overburden consumers willing to bin their used SUP products. In Germany, while at the household level separate collection in general is the standard (5 categories: paper, glass, lightweight packaging, organic and residual waste), in many public places there is no infrastructure for separate disposal – i.e. all waste goes in one bin. However, experience of the German state-owned rail company Deutsche Bahn (DB) with waste bin infrastructure at its stations throughout Germany shows that consumers tend to confuse the four separation options offered: glass, packaging, paper and residual waste.213 Thus, customers do not dispose their waste in the correct way. This limits the usability of waste fractions from DB's bins. Currently, the company explores the option to collect all customer wastes in one bin at railway stations and sort and separate the waste streams afterwards. Some experts argue that modern sorting technologies enable to retrieve plastic materials from mixed waste. Only paper needs to be collected separately in order to prevent it from rotting. Plastic materials, however, stay intact even in mixed wastes. They get dirty, but can be cleaned and treated.214 Hence, mixed waste from bins in public places could, in theory, be sorted after collection and the recyclable plastic waste be retrieved. One type of bin would suffice. Advantages of such an easily manageable and understandable approach: simple

211 FoEE et al. (2019).
212 Nehls (2018).
213 Lahmann-Lammert (2018).
214 Augustin (2019).

bin infrastructure, disposal of waste in public places would be easy for citizens, vehicles for waste collection would not need to be equipped with special devices to keep waste sections separate. Furthermore, this would reduce the need for correctly placing waste in the different waste bins – up to 40 to 60% of waste collected from yellow tonnes (lightweight packaging) are false throws.215 However, existing sorting plants may not have the appropriate modern technologies. This limits options for efficiently sorting waste from unsorted public waste collection systems or leads to farther transport distances to transport waste to appropriate sorting plants – with associated and higher costs and greenhouse gas emissions. Therefore, designing bins for source separation between plastics and other wastes seems a more cost-efficient way to increasing the amounts of sorted waste available for treatment. Furthermore, it would also help maintaining the perception that waste separation is a widespread practice and relevant environmental action among European citizens.216 When designing bins for recyclable waste and residual waste the bins should be

- placed next to each other;
- easy to differentiate, e.g. through colour coding, icons or simple wording (signage of bins can include a few examples – best in both, words and images – of what should go into the bin); and
- placed so that they can be easily and conveniently reached.[217]

Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage

The impact assessment218 of the SUP-Directive estimates annual average costs for collection and treatment (the assessment only considers disposal costs and does not separate between collection and treatment, i.e., recycling) to be at

- 0.67 million EUR for cigarettes
- 112 million EUR for drinks bottles
- 11 million EUR for wet wipes
- 59 million EUR for drinks cups and lids
- 73 million EUR for food containers
- 48 million EUR for crisp packets and sweet wrappers

Total costs are ~304 million EUR.

As one example for collection costs (including, but not limited to, SUP products) the city of Stuttgart initiated the programme “Clean Stuttgart” in 2019 and plans to invest 10 million EUR per year until 2022 to keep the city clean. As part of the programme, the city will install 1,000 additional bins. Furthermore, in the inner-city existing bins with 50 litres loading capacity will

[215] Zeit online (2018).
[216] European Commission (2014).
[217] Karidis (2018).
[218] ICF and Eunomia (2018).

be replaced by bins that can hold 90 litres.219 Besides, Stuttgart hired 123 new employees to handle the increasing waste volumes.369

3.3.1.2 Waste transport: Potential EPR measures and cost consideration across Annex E single-use plastic products

The obligation for producers to pay for transporting waste discarded via public collection systems applies to the following six SUP products: Beverage containers; Cups for beverages; Food container; Lightweight plastic carrier bags; Packets and wrappers; and Tobacco products/filters.

Potential EPR measures and arguments

If public waste bins are designed for source separation (see collection phase above), then during transport phase waste vehicles need to maintain waste separation through separate compartments. Beyond this, there is no indication that specific transport-related measures are needed for SUP products discarded via public waste bins.

Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage

There are no overarching cost estimates for transport-related EPR measures concerning the SUP products covered by Art. 8 of the SUP-Directive.

3.3.1.3 Waste treatment: Potential EPR measures and cost consideration across Annex E single-use plastic products

The obligation for producers to pay for treating waste discarded via public collection systems applies to the following six SUP products: Beverage containers; Cups for beverages; Food container; Lightweight plastic carrier bags; Packets and wrappers; and Tobacco products/filters.

Potential EPR measures and arguments

Treatment of the SUP products covered under Annex E of the SUP-Directive encompasses recycling, incineration and landfilling as waste management options. Depending on the SUP product in question, treatment options will (have to) differ and each require that SUP products reach treatment plants (for instance by installing public waste bins, which allow for and encourage separate collection; see above under collection phase): While lightweight plastic carrier bags are recyclable in principle, their recycling involves high efforts and costs due to the plastic bags' thin and lightweight nature, as well as due to their composition, which usually is a mix of polymers. In Germany, currently only few recycling plants exist, having the technological capacities to recycle thin plastic films.220 Moreover, recycling of lightweight plastic carrier bags requires that a sufficient amount of them is collected. Yet, their lightweight nature makes transporting them expensive and washing the thin bags requires high amounts of water.221,222 Therefore, incinerating lightweight plastic carrier bags (with energy recovery) is economically much more attractive, as they have high caloric values of around 43MJ/kg.221
For packets and wrappers containing metals, in particular metallised plastic films in crisp packets (which makes the packets gas-proof and grease proof), recycling is either not easy technically or only at rather high costs. Furthermore, recycling crisps packets means down-cycling by shredding them "into plastic pellets to be used in items such as outdoor furniture and

219 Stadt Stuttgart (2019).
220 sve and dpa (2018).
221 Bio Intelligence Service (2011).
222 The Newsroom (2019).

trays."223 In addition, metallised packaging confuses consumers as to which waste stream to put the packets into: metal recycling or with plastic recycling.224,225

Tobacco products/filters are typically incinerated.

For **wet wipes**, incineration is standard treatment because

a) blended natural and synthetic fibres complicate recycling;

b) synthetic fibres do not break down in compost and the chemicals used destroy the compost's soil ecology;[226, 227] and

c) polyester fibres in wet wipes take up to 100 years to biodegrade in landfill sites and the antibacterial alcohol used in wet wipes kills bacteria and enzymes working on breaking down solid waste in landfill sites.

Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage

As the impact assessment218 of the SUP-Directive estimates annual average costs for collection and treatment together does not separate between collection and treatment costs, please refer to section 3.3.1.1 above for cost estimates.

3.3.1.4 Clean-ups: Potential EPR measures and cost consideration across Annex E single-use plastic products

Obligation for producers to pay for clean-up of waste applies to all eight SUP products: Balloons; Beverage containers; Cups for beverages; Food container; Lightweight plastic carrier bags; Packets and wrappers; Tobacco products/filters; and Wet wipes.

Potential EPR measures and arguments

Clean-up measures, regardless of where they are conducted (e.g. along beaches, waterways, roads and in green spaces), often encompass a combination of a machine-based mechanical basic cleaning followed by manual cleaning by hand, pincer or rake. Typically, clean-ups are not SUP product specific. A variety of technologies and machinery for beach cleaning exists and is used around the globe. Machinery, such as BeachTech cleaning machines (see picture below)228, collect (plastic) waste and sea-grass with harrow-like devices and also currycomb the beach leaving a nice visual impression, but usually do not pick up small waste particles and only reach a certain sand depth.

223 Weaver (2018).
224 Eunomia (2018).
225 recyclenow (no date). 2019
226 Poppy (2020).
227 Naish (2015).
228 BeachTech (no date).

Figure 1: The BeachTech 2000

Source: BeachTech (no date)

Wheel-type loader, which are also used for beach cleaning in coastal communities around the world, can collect larger quantities and also reach deeper sand layers, but they also collect large amounts of water, sand and biota, which need to be manually cleaned from waste and returned to the beach (Deutscher Bundestag 2008; Holzhauer 2016). Currently, projects are underway which develop machinery that rather sift through than collect the sand for clean-up (Deutscher Bundestag 2008). While technically not a challenge, beach cleaning poses an economical challenge because costs are high and so far mostly borne by municipalities (see column on the right on cost estimates). According to Art. 8 (3), (4) SUP-Directive, clean-up costs for SUP products should be borne by the corresponding producers, but shall be limited to activities undertaken by public authorities or on their behalf. So far, the term clean-up is not legally defined. Therefore, there is no clarity on the scope of clean-ups, i.e., which areas clean-ups, and hence cost coverage for clean-ups, encompass: bathing beaches, other beaches, waterways, streets, roads, public places, green areas and parks. Wet wipes, which are often flushed down the toilet, do not decompose in the sewer system due to the plastic content and thus not only lead to sewer blocking and pump clogging, but also find their way into rivers and seas and onto beaches.224, 229 Hence, there are discussions whether or not wet wipe producers should also pay for sewer unblocking. Wet wipe producers could cover costs in relation to their wet wipes' contribution to sewer blocking. This could be operationalised by charging those producers, which do not label their products as "do not flush" or which do not conform to flushability standards, relative to their contribution to the problem.224 This could be calculated according to the market share of any producer producing wet wipes, which do not completely decompose in sewer systems.

Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage

The impact assessment218 of the SUP-Directive estimates annual average costs for terrestrial, riverine and marine litter clean-ups to be at

- ~3 billion EUR for cigarettes
- 558 million EUR for drinks bottles

[229] WaterUK (2017).

- 15 million EUR for wet wipes
- 240 million EUR for drinks cups and lids
- 167 million EUR for food containers
- 58 million EUR for crisp packets and sweet wrappers

Total costs are ~4.04 billion EUR.

Costs for clean-ups differ depending on a number of factors (e.g., beach and waterway lengths, cleaning intervals, tourism relevance, population size) from one locality to the next. For the West Coast communities in California, Oregon and Washington, USA, average annual clean-up costs for cities are estimated at 57,000 US-$.230 A survey among 49 coastal municipalities along Germany's North Sea and Baltic Sea shores found estimates for average clean-up costs of around 55,000 EUR.231 Sewer unblocking costs can be very high: Costs for unblocking and maintenance of sewer system pumps, which got blocked with wet wipes in Berlin in 2016 amounted to 800,000 EUR.232 The UK representation of main water and sewerage companies, Water UK, reported costs of £100 million to clear the approx. 300,000 sewer blockages occurring annually in the UK.229 Cost estimates for New York City amount to 18 million US-$ for "wipe-related equipment problems" between 2010 and 2015.233

3.3.1.5 Awareness raising: Potential EPR measures and cost consideration across Annex E single-use plastic products

Obligation for producers to pay for awareness raising measures for sustainable choices and appropriate waste disposal applies to all eight SUP products: Balloons; Beverage containers; Cups for beverages; Food container; Lightweight plastic carrier bags; Packets and wrappers; Tobacco products/filters; and Wet wipes.

Potential EPR measures and arguments

Art. 8 SUP-Directive holds producers of all eight SUP items targeted in Art. 8 accountable for covering costs for awareness raising measures. Awareness raising measures shall inform consumers about the

a) availability of reusable alternatives, re-use systems and waste management options for those products;

b) impact of littering and other inappropriate waste disposal of those products on the (marine) environment

c) impact on the sewer network of inappropriate waste disposal of those products.

Using labels should be part of awareness raising measures. Art. 7 SUP-Directive foresees product marking via labels for wet wipes and sanitary towels. Because of hygienic concerns of how to dispose of used wet wipes (in particular if used as a supplement to toilet paper), convenience or lacking knowledge, consumers often flush wipes down the toilet, maybe unaware or ignorant of the impacts of flushing.234

[230] Stickel et al. (2012).
[231] Holzhauer (2016).
[232] Schäfer (2018).
[233] Mathiesen (2015).
[234] See Quinn (2019), Bineau and Loebel (2018), Ryan (2018).

Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage

The impact assessment of the SUP-Directive estimates annual average costs for awareness raising measures to be at

- 76 million EUR for cigarettes
- 14 million EUR for drinks bottles
- 6 million EUR for drinks cups and lids
- 4 million EUR for food containers
- 1 million EUR for crisp packets and sweet wrappers.

Total costs are 101 million EUR.

New York City, US, launched a US-$2 million campaign in 2018 aiming to sensitise residents also via subway ads to "respect the flush".235

3.3.2 Fishing gear

In the following four sections, the main findings from analysing potential EPR measures and arguments as well as considerations on costs and responsibility for cost coverage for the four phases collection, transport, treatment, clean-ups and awareness-raising will be outlined. Clean-up measures for fishing gear are not part of the EPR regime under the SUP-Directive, however, some initial thoughts are added under 3.3.2.4. Furthermore, it has to be highlighted that the percentage weight distribution between aquaculture and fishing for EU-28 is approximately 60% plastic waste from aquaculture and 40% plastic waste from fishing.[236] Therefore, some good practices have been added, especially referring to the aquaculture sector. The EPR scheme effectively makes the manufacturer responsible for the recycling/reuse treatment of their fishing gear products. In effect, this removes the inconvenience and cost factors associated with waste management from the fishermen. By linking the manufacturer to the products end-of-life stage, the scheme can also indirectly encourage more life-cycle focused product design[237], including the set-up of deposit/return and reuse systems, where possible.[238] In addition, it is suggested to extend the scope of the SUP-Directive Art. 8 related to fishing gear and ensure that producers bear 100% of the clean-up costs to further incentivise the prevention of ALDFG. This approach will encourage them to work with municipalities to ensure high collection rates of their end-of-life gear. When establishing an EPR scheme on national or regional basis, it is crucial to define the group of producers: many small-scale fishermen and those using mainly passive fishing gear (e.g., shrimp gear) are often buying the yarn and other material to produce nets by themselves – they are therefore producers and users of the gear in one person. This might tempt larger fishing companies, mainly trawling fleets to use this fact and withdraw any responsibilities. However, small-scale fishermen are not part of the reporting duties for fishing gear placed on markets and collected in harbours (according to the Fisheries Control System of the CFP). They can therefore not be considered as large-scale consumers and producers of fishing gear and are not in the scope of the new EPR scheme.

235 Kary (2019).

236 https://eur-lex.europa.eu/legal-content/CS/TXT/?uri=CELEX:52018SC0254

237 Sherrington et al. (2016), p. 191, p. 197.

238 Newman et al. (2015), pp. 388.

To support a coherent implementation of the EPR scheme, the exchange of information between countries in and outside the EU about national approaches is crucial. The Ministry of Climate and Environment of Norway, for instance, has announced their goal to introduce a producer responsibility scheme for fishing and discarded marine equipment from the aquaculture industry. In Germany, a first government commission will be formed in Lower Saxony to develop precise definitions and guidelines for a tailor-made implementation of the provisions of the SUP-Directive related to fishing gear.

3.3.2.3 Waste collection: Potential EPR measures and cost consideration

Producers are obliged to pay for the separate collection of waste fishing gear that has been delivered to adequate port reception facilities or other public collection systems. It applies to old fishing gear brought back by the owners (fishermen or aquaculture farmers) as well as to ALDFG, collected accidently during fishing or aquaculture activities on the water surface, in the sea column or at the sea bed. Both types of fishing gear can be found on beaches, which may put additional responsibility on producers to pay (fully or partly) for their collection as well. However, to support the provisions of the MSFD it would be far more efficient to extend the scope of the EPR scheme to those nets not brought back to the ports. Some measures focusing on ALDFG are therefore proposed below. Apart from the separate collection of the material in the ports/harbours, an EPR scheme could also include two other options:

- deposit/return schemes: The producers are responsible for administering and financing schemes whereby fishermen are paid for the return of end-of-life, damaged gear or fragments of gear. In order to reduce administrative costs, the amount returned would not distinguish between different gears or plastics but rather be determined by the weight of litter returned with the sole proviso that it be fishing gear. The deposit would be included in the price of gear. A scheme in Korea whereby fishers are paid for gear returned to port is reported to be "highly effective in terms of recovery and disposal of gear [239]

- the organisation of retrieval operations: This would include maintenance of a database for lost gear and retrieval operations including their cost, duration and success rate which would guide subsequent retrieval operations.

The impact assessment of the SUP-Directive (ICF and Eunomia 2018), however, acknowledges the separate collection as the most efficient and cost -effective way to reduce marine litter derived from fishing and aquaculture gear and to achieve the acceptance of the producers for the new EPR scheme. The following measures are therefore focusing on this option with some information on the other two options.

Potential EPR measures and arguments

To create a sustainable value chain and waste disposal process, EPR measures should include the following:

- **Provision of separate containers for end-of-life and derelict fishing and aquaculture gear at ports**

- Install collection points for disposal of fishing and aquaculture gear, e.g. in form of open accessible containers at ports. A frequent collection (depending on numbers of fisheries, season, and weather conditions) and adequate container design are essential. Containers

[239] Macfadyen et al. (2009)

should be weather-proof and protected against waste picking by animals and wind; e.g., closed or semi-closed. Separate container need to be provided for end-of-life gear directly disposed after use and derelict fishing gear retrieved from the marine environment. Whereas the former has a good chance to be recycled this is not the case for the latter due to organic contamination. Therefore, it needs to be ensured that end-of-life gear is not mixed with retrieved gear.

- According a Baltic Sea-wide survey on existing harbour infrastructure with practical tests of ALDFG processing at the quaside[240], it became obvious that 70% of harbours can organise collection services for end-of-life fishing nets sorted out by fishers each year; among these, 28% of all harbours have permanent collection facilities for end-of-life fishing gears; in contrary, no harbours have facilities to collect ALDFG.
- Provide waste reception and handling plans for efficient PRF services, including a description of proper collection (and recycling) procedures for ALDFG
- With a view on the aquaculture sector, it is essential to establish specific and easily accessible aquaculture gear collection points as close as possible to the aquaculture installations, or gear producers could set a door-to-door pick up scheme. In the case of offshore farms, those collection points could be located in the port reception facilities. It is recommended to provide disposal points targeting specific material and/or gear, such as mussel nets, anti-predator nets, etc. In this way, concentrating bigger amount of waste in one point and hiring a company for the disposal operations can become economically feasible. Any of these options are much more suitable and accessible for the farmers than transporting the gear to the specific waste management facilities. In addition, some cameras around the collection points should be installed to avoid bad practices or vandalism.

- **Improvement of waste collection systems and services**

- Cleaning vessels could be a joint venture of several parties, including gear producers, based on shared ownership, shared returns and risks, and shared governance. Such a joint venture would enable parties to gain scale efficiencies by combining assets and operations; sharing risk for major investments and to access skills and capabilities.
- Specialised motor vehicles and boats could be provided for a tailor-made collection of waste at sea from aquaculture equipment and installation.
- Cleaning vessels near installations should operate in areas with high concentrations of floating litter. Cleaning activities should be planned especially after storms and strong rains. The development of modelling of wave currents may support this purpose. Currently, fishermen check places for litter after every storm, but they often collect valuable garbage only.
- Innovative passive catchers could be placed outside aquaculture farms (depending on currents).

[240] Press, M. (2017), pp. 9.

- The collection of litter in the marine environment could be accompanied by weighing the amounts in the harbours and issue receipts depending on the collected weight (in kg). This would help to monitor how much is being collected and would facilitate the recovery, as it could be brought to/picked up by the waste manager directly.
- Cost-risk assessments related to easy-to-lose material containing plastics should be part of the normal, internal assessments of fisheries and aquaculture companies, similar to, e.g., EMAS criteria. EPR measures could support the capacity building in these companies with workshops and trainings.

To facilitate ALDFG retrieval and landing additional support is required (Stolte, A. et al. 2019):

- Special areas where fishermen can process ALDFG (cutting, extraction of metals or leads, cleaning, sorting, bundling up plastic fibres for recycling where possible)
- Financial support for manual labour during sorting (and later processing), in addition to existing EMFF support schemes
- Regular collection of non-recyclable ALDFG material with other waste by the local waste management company
- Education of harbour managers and fishermen regarding sorting protocols. This is necessary to facilitate waste management and recycling for recycling companies.
- Install further infrastructure that might be required to avoid losses during harbour processing, e.g., fenced in areas, sheds.
- Online information on the harbour webpage regarding available facilities and contact information. It enables the harbour user to inform port authorities and facility providers about ALDFG landings and ensures the necessary infrastructure is available.

- **Labelling to improve collection rates**

A better labelling of fisheries and aquaculture gear and items, including quality standards, is needed. Material design must be different for e.g., high-performance items (longer use and re-use) or for high-risk items (short use and high risk of loss). Labelling could also support the reduction of additives and mixed materials, both barriers for sorted recycling. Currently, some of the collected material at harbours, especially trawl nets and ropes retrieved from the sea, are composed of uniform polymers with a high recycling value. Yet, the waste management stream of these materials is small. Companies like Plastix and Aquafil can only deal with (cleaned) net segments of a single-polymer pre-sorted material type. The more material is available, the more incentives to reduce additives and mixed materials might be provided by those companies to get higher amounts of usable gear. The companies may prefer those products clearly labelled and start cooperation with producers willing to change production lines. Labels could raise interest in these high-quality products and increase the recycling rate due to an easier recognition and waste management procedure; in parallel those ‚green' labels could promote public interest and generate new resources for companies offering such products. Gear of lower quality could become less attractive and loose market shares. Labelling could also facilitate the processes after landing end-of life gear or ALDFG in harbours. Those preparing the material for recycling (pre-processing and sorting) could easily recognize whether it contains additives or mixed materials.

Labelling would speed-up the decision process a) whether the material is of high quality and should be recycled or b) whether a recycling would be too inefficient and the gear should be incinerated. With labelling, also CEN standards for high quality products can be introduced by national legislation. Currently, members of the international standardization organisation like AFNOR (NO), DIN (DE) or NEN (NL) are considering such an option which would foster better circularity of fishing gear. In consequence, low-quality products, e.g., coming from non-EU countries/regions like Asia can be enclosed in the EPR schemes and made liable– in a mid to long-term perspective, this may force non-EU countries to produce better quality as well. There should be more clarity about the label of "*alternative*": material characteristics need to ensure full *biodegradability* in marine environments, which requires criteria on material degradation and related timeframe relative to the specific environmental conditions. There is currently no accepted scientific standard on marine biodegradability, which highlights the urgency for developing a separate standard for marine biodegradability.

- **Motivation of the relevant sectors to support collection efforts**

Economic incentives could be introduced for offshore workers (fishermen, wind and aquaculture farmers, etc.) to collect and sort waste (on board and offshore). According to feedback during interviews, it is essential to avoid uncertainty about the further treatment of sorted waste after it has been brought onto land. Offshore workers need to know if their effort in sorting was needed or useful. Therefore, also communication is essential and could be supported by awareness-raising measures within EPR schemes. Regarding ALDFG, EMFF application procedures to utilise the currently unexploited funds by fishermen for ALDFG cleaning actions at sea and processing at shore should be facilitated.241

- **Establishment of cooperation between large and small companies and different sectors when collecting waste gear: achieving a target for recycling of fishing gear**

The SUPD foresees no collection rate for ensuring a sufficient amount of recycling material. In regions with harbours like in the Baltic Sea a relatively small amount of active fishing gear waste is produced on a regularly basis: This statement is based on (limited) numbers regarding the amount of nets and other fishing gear found in German waters and of their spatial distribution as well as on available data derived from the Fishing for Litter reports or data from Swedish and Danish coastal municipalities. Accordingly, a range from 0,5 to 30 tonnes of nets and other fishing gear per port reception facility occurs, assuming that already 10 tonnes can be profitable for establishing return schemes and even recycling.242 However, improved detection technologies (e.g. sonar technique) show that there are far more nets on the seabed than expected.243 In addition, when considering some types of passive gear like gillnets the amount of gear is increased due to their frequent replacement and inappropriateness for re-use caused by destruction. In the North and Baltic Seas different types of fishing gears are used and while active fishing gear are mainly used in the North Sea – as in contrary to passive gears such as fish traps, fishing rods, and gillnets, in the Baltic Sea both passive and active end-of-life gears can be used for recycling. However, a survey of the MARELITT Baltic project (2017), assumes that less than half of the harbours are collecting nets separately and few investments exist in containers necessary for permanent facilities. In general, often fishing gear is seen as not recyclable due to the necessary high quality of materials to assure recyclability and that it is beneficial. Cross-border cooperation to establish non-biological waste disposal and material recycling systems would be fostered by higher amounts of end-of-life gear, ALDFG and other types of equipment

241 Stolte, A. et al. (2019), p. 6,, pp. 8.
242 Altvater, S. & F. Michl (2018), see summary
243 Lindahl, D. & L. Boyd (2018), pp. 6 .

comprising plastic. EPR measures could therefore foster the establishment of those regional cooperation of recycling systems (i.e., standards, solutions and procedures), based on coupling different small-scale industries which use the same type of materials, e.g. aquaculture combined with fishing or agriculture, aiming to collect larger amounts of waste of the same material (mainly derived of end-of-life gear but also of ALDFG). This way a critical mass of such material to be collected can be achieved and processed by recycling companies, thereby gaining an incentive to develop procedures. This would create a win-win situation as very small amounts occurring in irregular intervals require costly logistics and individual fishermen, aquaculture farmers and farmers may – despite tight regulations – be unable to afford the costly disposal and seek quietly illegal routes of disposal. Standards for material and equipment (including for some the lifetime limit or no-use conditions) in other industries do exist already.
In addition, cooperation in collecting waste between different harbours and recycling companies may be economically beneficial. Those harbours having already permanent collection facilities for end-of-life fishing gear installed can support those without dedicated collection areas to raise the amount of recyclable materials. In parallel, facilities for ALDFG need to be installed to explore waste management options for these materials and to develop large-scale practices. Recycling companies could pay fees to harbours to foster these processes.
Good practice (GP) 1: An example is the Seafood Business for Ocean Stewardship (SeaBOS) with 10 of the top world's largest seafood companies. One of its policies is to ensure that their members remove plastics from the ocean and follow a **collection strategy** based on scientific knowledge and good practices. [244] Further good practice examples of voluntary agreements for collection systems, which could be used as models to move from voluntary to binding systems are:

GP 2: Voluntary agreement on collection of fishing gear made of synthetics between the Federation of Icelandic Fishing Vessel Owners (LIU) and The Icelandic Recycling Fund (since 2005 based on Art.8 Processing Charge Act No. 162/2002). LIU (now Fisheries Iceland) operates and finances a collection system. Under this agreement, fishing nets made of synthetic materials are exempted from recycling fees. The collected nets are mostly exported and recycled abroad. The estimated recovery of fishing nets today: 80%, thanks to continuously increasing recycling targets.

GP 3: The Norwegian private nationwide company Nofir **collects discarded equipment** from fishing and fish farming around Europe. Supported since 2012 by the EU Eco Innovation Scheme, it was created in 2008 by a fish net producer and a waste management company. Between 2012 and 2014 the Norwegian system had collected 4886 tonnes of material, mainly in Norway.

- **Support the creation of deposit schemes**

A loophole of the PRFD is the lack of market incentives to ensure effective participation in separate collection (such as 'pay as you throw' schemes) or for the return of waste in the form of deposit return schemes. These schemes lead to less marine litter by encouraging better waste management, are currently limited to a minority of EU countries. It also relates to complex products not designed for recyclability. Despite the removal of financial penalties for fishermen to bring gear ashore under the revised PRFD, the effects of paying even indirect fees may not be a sufficient incentive to completely exclude disposing of damaged gear at sea if storage space on board is short. 245There is also the risk that the obligation to set-up additional port reception facilities, in smaller or fisheries dependent fishing ports in particular, will lead to an increase of

[244] Seafood Business for Ocean Stewardship (2020); members are inter alia Thai Union, MOWI, Kyokuyo, Dongwon Industries
[245] See European Commission (2018f):

overall port fees. Deposit schemes, for example for cages and other passive gear, could increase the return rate of those products (including non-valuable items and/or single-use-items), with the aim to promote the reutilization and the recycling of the aquaculture elements once they reached the end of their life cycle. These deposit schemes could be shared with fishermen. There are two options, but both of them need an EPR system in place and, therefore, an official decree that supports it:

a) Grant a discount on following purchases: the farmer brings back the used items to the seller/manufacturer and gets a discount on the price of the following purchase depending on the weight/volume/quantity returned.

b) Return a deposit: to purchase an order, the farmer pays not only for the bought items but he also leaves a deposit, which will be returned by the seller/manufacturer once the farmer returns the used items.

- **Tracking devices, which could extend the scope of Art. 8 of the SUP-Directive towards actively collecting ALDFG**

There exist no marking requirements as for single use plastic products and also marking to identify gear like in the PRFD or the Common Fisheries Policy Control Regulation246is not mentioned. Marking and tracking measures could support the improved detection and removal of the so-called ghost nets and could extend the scope of the foreseen waste collection at ports/harbours towards an active search for ALDFG by fishers. Furthermore, marking could help to identify specific producers to held responsible for detected ghost nets instead of applying EPR measures via PROs only. This approach could put more pressure to produce products less harmful for the environment as it underlines the individual responsibility of each producer. Gear marking helps in identifying the ownership of lost or deliberately abandoned/discarded gear. Authorities can better enforce penalties for intentionally dumped fishing gear and nets into the sea; it even helps authorities to distribute costs of clean-ups. It also creates an opportunity to return gear that was accidentally lost to the owner for reuse. Marking increases the visibility of gear. For example, floating gear markings attached to stationary nets under the surface can help notify vessels about the risk of entanglement in the area (see FAO guidelines adopted in February 2018).247

GP 4: In Eastern Canada in spring 2020 specially **coloured, braided rope** have become mandatory in every lobster and crab fishery to help trace gear that when lost has a great potential to entangle whales.[248]

The marking of rope/gear enables to identify the region, species being fished and individual fishing area. Technically, the colour schemes are braided into the ropes/fixed-gear. One colour signifies the region, another the species and, for lobster and crab fisheries, a third colour identifies individual fishing areas within each region. The scheme has been designed to distinguish between Canadian and U.S. fishing gear. Gear marking is mandatory for ropes attaching gear to the primary buoy. Alternatively, a tracer line – a silver transparent tape inside the full length of rope – is permitted. Also, the tracer line must identify the country, region, species and fishing area. The requirement is also intended to maintain access to the U.S. seafood market by demonstrating Canada has rules comparable to those in place for fishermen south of the border. The details were spelled out in a notice to fish harvesters that were issued by the Department of Fisheries and Oceans (DFO), and make good on a promise made by the federal

[246] Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a community control system for ensuring compliance with the rules of the common fisheries policy.
[247] European Commission (2018b)
[248] Withers, P. (2020)

government. Fourteen fisheries will operate with new colour schemes. The interlaced coloured strands must be a minimum of 15 centimetres in length and, at minimum, will be required at the top, middle and bottom of the vertical line, or every 27 metres. Tracking can foster the retrieval of high-valued equipment like floating buoys using a GPS with satellite (alarm). Mostly this is the initiative of the fishers and farmers, with no support of the government. Since such tracking buoys are expensive (more than 1000 Euro), support of the stakeholders could be provided by EPR funds. Electronic monitoring, on the other hand, is not new, but can be difficult at sea due to weather conditions and salty water. Related to aquaculture, a GPS-system can be used to follow the infrastructure's active location with satellite. This can be useful in case the whole construction breaks loose after a storm. Cameras are still not adapted to the harsh weather conditions. Marking lost items can help to track them. This is usually done with buoys and with essential structures (e.g., long floating pipes). Perhaps it is necessary to improve the tracking system in order to trace it back to its owner. This approach should be open for cross-border collaboration to enable an easy exchange of gear waste between countries (also in relation to joint recycling plants). The use of transponders in coastal fisheries or by small-scale fleets is limited due to cost and technology constraints. For coastal fisheries it is often assumed that the combination of an inshore location where landmarks can be used for bearings and more affordable GPS means that the use of transponders is unnecessary for gear location purposes. But in many fisheries their wider adoption would provide an additional method of location to reduce gear loss through misplacement at minimal additional cost. [249]

Costs considerations, examples for cost estimates (where available) & responsible actors for cost coverage

According to the impact assessment of the SUP-Directive (ICF and Eunomia 2018), setting up an extended producer responsibility scheme for fishing gear, containing plastic implies a cost which, if it were passed on to the fishing sector, would be marginal with regard to its overall turnover (≈0.16%). Experience shows that in competitive markets (for fishing gear materials, 60% of the material is imported) producers tend to absorb all or part of the EPR scheme's costs. It is therefore unlikely that the full cost of the EPR scheme would be passed on to fishing operators. In addition, current provisions under EU funding instruments, notably the EMFF, also allow Member States to finance actions leading to the reduction of the accumulation of lost fishing gear in the marine environment. This type of financial support, if taken in addition to the EPR would allow to offset initial costs of the above EPR scheme, both for producers, for local administrations, and for fishers.250

In the following, based on the impact assessment of the SUP-Directive, the total costs for the three different assessed EPR schemes are outlined, without differentiating between the different steps of collection, transport and recycling.

The basic EPR scheme sees the producers of plastic material incorporated in fishing and aquaculture gear responsible for setting up an organisation to ensure that waste is collected at ports, sent to appropriate recycling facilities, incineration plants or landfill sites and reporting.

The impact assessment of the SUP-Directive (ICF and Eunomia 2018) estimates additional maximal ~ 4% to the cost of gear, assuming that producers would unlikely pass on all costs to users. The extra cost is 0.16% of annual revenue of the EU fishing fleet. The benefit would be reduced 2,000 tonnes per year which equals with a 2 – 7 million Euro economic benefit for fishing, port and tourism industries.

[249] Macfadyen, G et. al. (2009), pp. 57.
[250] European Commission (2018b), p. 72

Compared to this basic scheme with a medium level impact the option to link EPR with a deposit return scheme would add over 5% to the cost of gear (or 0.2% of revenue). The reduced environmental impact of 2,500 tonnes per year provides between €3 million and €10 million in economic benefit for fishing, port and tourism industries. A successful scheme in Europe could be rolled out elsewhere, thus providing jobs for the service companies running the scheme. The amount of reduced gear waste would be 2,500 tonnes per year, which is a 3 – 10 million Euro economic benefit for fishing, port and tourism industries.

The assessed EPR scheme with included retrieval operations assumes that EPR covers the administrative costs of monitoring and the actual recovery by the European Maritime and Fisheries Fund or its successor. It may more effectively recover lost gear and reduce the amount of plastic in the sea. However, the basic EPR scheme has been assessed as far more effective, inter alia, as it does not mix up specific tasks of different directives like the PRFD.

The following table 4 provides an overview of the costs which have to be invested related to the three different types of EPR schemes. The second option is the most expensive one.

Table 4 Comparison of investment costs for EPR measures related to fishing gear (according to the impact assessment of the SUP-Directive

Measure	Investment cost (million euro)	Annual running cost (million euro)	Annual reduction input to sea from fishing gear (tonnes)		Annual extraction of fishing gear and other plastic from previous years (tonnes)	
	Private	Public	Private	Public		
EMFF				7,8		9000
Basic EPR	10		1,3		2600	
EPR with deposit	12		2,6		2600	
EPR with retrieval	3		0,5			

Source: ICF and Eunomia 2018

In summary, the **costs of the basic EPR scheme** are:

- 9,7 million EUR annual cost for sorting, transport and processing
- 6,3 million EUR set-up costs
- 1,3 million EUR annual administrative costs

Additional costs of an EPR scheme with deposit scheme:

- +12 million EUR set-up costs
- +2,6 million EUR administrative costs

Costs of an EPR scheme with included retrieval operations:

- 3 million EUR set-up costs
- 500,000 EUR per year for operations

Costs of the collection of lost fishing gear/ 'fishing for litter'

- 3,500,000 EUR (annual cost of public budget)

Litter collectors/bags on board and in port (renting and transport, purchase)

- 2,000,000 EUR

Based on interviews conducted during this study, the following numbers show **cost estimations of specific measures** or good practices:

- 200.000 EUR administrative costs (first year) for an average gear producer to install the EPR scheme
- 100.000 EUR for running the collection service in 1-5 harbours per year (for gear producer)
- 10.000 EUR for establishment of containers in 5 European ports (for gear producer)

GP 5: initiating phase of **mandatory coloured tracking gear** to help trace gear that has a great potential to entangle whales in Eastern Canada

6 million EUR for buying the coloured nets for 14 full-time fishing companies with approximately 60 boats longer than 12 metres (North Sea: 3 companies of small-scale deep-sea fisheries, 11 inshore fishing; Baltic Sea: 3 inshore fishing), located in 7 harbours at the German North Sea coast and 8 harbours at the German Baltic Sea coast.[251]

GP 6: Tracking equipment

The "Lost Gear Finder" from Furuno Norge is a solution to retrieve lost gear from fishers or the aquaculture sector. A **transponder** is attached to the gear and a transducer is installed on board, as well as a processor connected to a monitor. In case of gear loss, the user can search for lost gear's position underwater. The effective range for the transducer is as much as 5000 meters,

[251] These are exemplary numbers. There are more companies, mainly in part-time, using boats longer than 12 metres and around 60 inshore fisheries with boats smaller than 12 metres (in the North and Baltic Sea), according to statistics (Federal Agency for Nature Conservation). The calculation did not take these types of companies into account; the sum for buying coloured nets is exemplary and could be higher if all full-time fishing companies would buy new nets. In Canada, to safe costs, silver tracer lines have been used.

which makes the search very efficient. When the on-board unit receives response from the transponder, the position is calculated quickly and lost gear is easily found.

- 3000 EUR for a set of transponders necessary for one aquaculture plant.

3.3.2.2 Waste transport: Potential EPR measures and cost consideration

Potential EPR measures and arguments

Producers have to pay for transporting gear waste from the port facilities to an incineration or recycling plant. Many actors are involved to appropriately recycle fishing nets. These include transport companies, dismantling companies, recycling plants for nylon, PE and PP, lead, steel and nets reuse services. Every step of the process involves transportation costs and each business partner gets a margin of the final profit. Most likely, all recycling partners do not lie within close proximity to one another. In the Norwegian and Icelandic cases (see 3.3.2.3), this is not necessarily a problem because they are active in areas with high levels of fishing activity. The transportation costs in these areas are lower per unit because of the high density of waste collection. However, this may not be possible in other areas of the EU where fishing activities are less concentrated. For example, there are currently very few plastic reprocessing companies in Europe. Many companies are just brokers who ultimately send derelict nets to Asia252. One way to decrease the cost of transportation would be to invest in local recycling options or to provide appropriate storage containers for recycling that are only picked up when full. A study253 suggests a mix of decentralised and centralised logistics for optimal and cost-efficient processing of fishing gears. To minimise transport costs, pre-processing, i.e., the removal of large metal items and rocks, should be in or near the reception harbour. The separation between clean, single-polymer materials and low-quality mixed ALDFG need to take place early in the process, ideally at the fishing harbour. Material collection and distribution to disposal or recycling facilities could be organised with minimal transport ways through collecting end-of-life gears and ALDFG at the same time during a few tours along the entire coast of a country.
Also cooperation between countries like Germany, Poland, The Netherlands or Belgium, Germany, France to install a recycling plant especially for end-of-life gear is an option. It is also possible to incorporate plastics from other industries into the same recycling system. For example, fish farms often use nylon nets to secure fish pens and PE polymer-based boxes to ship fish to processing facilities.254 Recycling facilities could therefore be designed to accept a variety of plastic products from the marine sector to increase input volumes and overall cost-effectiveness.

Costs considerations, examples for cost estimates (where available) & responsible actors for cost coverage

Approximate costs of waste gear transport (depending of the weight, how many borders have to be crossed, the transport company etc.)

- For a distance of 200 km: 1000,00 EUR
- For a distance of 1000 km: 3000,00 – 5000,00 EUR

252 Interview with GI Waste Solutions, Nov. 2019. https://uk.globaldatabase.com/company/gi-waste-solutions-ltd
253 Bertling, R. & J. Nühlen (2019), pp. 21
254 Bertling, R. & J. Nühlen (2019), p. 65

The distance between collected fishing gear and recycling companies like Aquafil and Plastix are often longer than 1000 km with a high ecological footprint. Therefore, cooperation between two or three countries to install joint recycling plants should be considered in more detail, instead of carrying gear through Europe. Also decentralised and centralised logistics should be combined.

3.3.2.3 Waste treatment: Potential EPR measures and cost consideration

The disposal and end-of-life treatment of fishing gear is low in Europe. The level of recycling in the EU is 1 to 5%, low when compared to rates in countries such as Iceland and Norway.255 The few existing recycling facilities in, for example, Denmark, Lithuania and Slovenia, are running below capacity. The Icelandic and Norwegian experience with EPR-type and take-back schemes show that dedicated schemes can lead to fairly high recycling rates to the benefit of the economy in general and the fishing industry in particular.256 However, a range of barriers exists to recycle fishing and aquaculture gear and other marine equipment and many actors need to be involved. For example, the energy and resources necessary may cost more than the financial benefit of recycling. Positively, many harbours already offer collection points for end-of-life gears. To increase their recycling rate, the process of landing and waste management needs to be improved. After landing in harbours with appropriate information where to collect, the preparation for recycling with a) pre-processing and sorting for recycling has to be organised by the port authority. In a next step, the waste management with a) logistics for collection from harbours and b) recycling or thermal processing facilities need to be clearly communicated to fishermen. In contrary, no pathway for retrieved fishing gear in the existing waste management infrastructures exists: There are no facilities to collect such kind of gear. It is therefore discarded in unsorted municipal or commercial waste (household/residual waste) ending up in incineration facilities or landfills.257 But even the fibres in trawl fragments and gillnets are hazardous to cutting machinery, as they can wind around rotors and get trapped between blades.258 Especially trawl nets and ropes retrieved from the sea are composed of uniform polymers with a high value for recycling which should be used for waste management streams. In the Baltic Sea gillnets are one of the largest fractions of ALDFG. They contain nylon in their net body, which is a valuable material for plastics recycling. In addition, there is a swim line composed of polyethylene and polypropylene mixed materials (PE/PP) and a sink line where lead fragments are embedded in a PET mantle. Unfortunately, studies show259 that it needs extensive manual labour and time effort to extract the mixed material fractions for recycling. Also, with up to 30% of lead by weight, the lead content in gillnets can be higher than the European threshold for mixed household or industrial wastes and therefore have to be considered hazardous waste that cannot be incinerated or processed in standard waste facilities. In consequence, in Germany, ALDFG is stored in open-air hazardous waste landfills without a) using the polymers and organic matter to generate energy, b) extracting some of the polymers for recycling and c) recycling the metal and lead content. At present, only the scenario – centralised pre-shredding with lead extraction followed by incineration – is available for mixed ALDFG materials in the existing waste management systems. Every other way requires investments into new facilities and infrastructure to enable polymer recycling.

Potential EPR measures and arguments

- **Support local/regional recycling options**

255 Sherrington et al. (2016), p. 192.
256 Fisheries Iceland (2017), p. 21.
257 Stolte, A. et al. (2019), p. 5.
258 Stolte, A. et al. (2019), p. 4.
259 Stolte, A. et al. (2019), p. 4.

EPR measures could support the development of local or regional recycling/reuse schemes to require better data collection on fishing net waste handling and to implement national marine recycling targets. End-of-life gear: step-upon existing infrastructures at harbours to collect, clean and prepare for recycling and support recycling companies to install de-centralised facilities, also using similar material from other sectors like agriculture. Motivate established companies like Aquafil or start-ups to open sister companies or new businesses, linking e.g., recycling with up-cycling. Start-ups could receive funding derived of EPR measures.

GP 7: In Western Sweden, the Smögen fisheries association FF Norden collects, cuts and sorts gears from several harbours.[260] Afterwards, they are sorted to support as much recycling as possible[261] 1500 tonnes of end-of-life fishing gear are processed each year. This implies that ALDFG makes up 1% of the total amount of collected gear and can be neglected compared to the economic return derived of the end-of-life gear. **This allows processing of ALDFG where possible together with end-of-life gear:** the un-mixed material volume is much higher than the mixed one and thus 80-90% are either reused by fisheries or shipped for recycling to Plastix or other companies.

ALDFG: Install a speedy retrieval through a functioning collection and waste management system. The sooner lost gears are recovered from the sea, the less contaminated they are with sediments, mud, organic substances and the less entangled they become.

GP 8: In Norway an efficient **system to report loss positions** enables quick retrievals and facilitates the recovery of the materials involved.

- **Establish recycling targets**

Recycling targets have been discussed as beneficial to divert end-of-life gear from landfill or incineration to recycling facilities. However, stakeholders described that better market uptake for recycled materials from fishing and aquaculture gear is required. Realistically, this will only happen if requirements for design are provided and implemented. In addition, stakeholders underlined the necessity to allocate parts of an EPR funding or government subsidies to create a competitive position for recycled materials from the packaging industry. 262

- **Improve waste recycling**

Incentives to use recycled plastics as much as possible and of a sufficient quality could be offered. A side effect could be improved technologies to recycle mixed materials. However, the best way forward is to avoid the production of mixed gear material and to foster circularity by innovative re-designing. Measures to achieve a better waste recycling should focus on waste management and awareness in the fishing sector:

- Promote responsible recycling, e.g., by promoting responsible recycling initiatives for end-of-life fishing gear
- Provide economic incentives with reasonable cost recovery schemes
- Offer educational initiatives to assure responsible collection and recycling of fishing gear
- Establish lost gear reporting with guidance on ALDFG recovery possibilities

[260] Görling, T. (2019)
[261] Stolte, A. & F. Schneider (2018), pp. 95
[262] European Commission (2018b)

- ► Establish a code of practice for fisheries organisations on the regional level for targeting, reporting and monitoring gear losses and recycling procedures for end-of-life gear.

Also, a recycling rebate for farmers and fishers could be paid with a levy when purchasing new nets and get money back when recycling. The Global Certification System–criteria on plastic use and recycling could be included in the aquaculture production standards. The White paper (2020) of the ASC (Aquaculture Stewardship Council) is introducing some standards to the aquaculture certification. The Belgian company Mowi collaborates with the ASC on a certification programme to include plastic-specific indicators in their next standards update across Mowi farms on an international level. 263

- **Support and promote the up-cycling processes**

End-of life: These processes should be supported to ensure the economic viability of recycling schemes regarding fisheries and aquaculture gear. The end-of-life nets, that usually have a mix of different type of materials, are degraded and covered with organic material. Therefore, recycling processes applied to obtain specific qualities of plastic are expensive as previous cleaning and other treatment has to be performed. As a result, the production of recycled nets is more expensive than the production of new nets. This extra cost could be partly paid by the farmers/fishermen or the final consumer. However, this can be a limiting factor to develop schemes for higher recycling rates of fishing gear. In this scenario, up-cycling processes could be an alternative. For example, using nets to produce more expensive items (e.g., nylon for textiles) can help to cover the costs associated to the EPR systems, avoiding extra economical efforts for farmers and consumers.

ALDFG: Recycling is often not realistic for these types of gear; conventional treatments are mostly not applicable. Therefore, more expensive and complicated chemical treatments have to be developed which needs stronger research activities in this field. Waste management companies need to accept alternative waste processing technologies like for electronic, medical and other hazardous wastes. Then, small batches of specialised materials, such as ALDFG could be used for these technologies. In addition, if decentralised collection points for speedy retrieved ALDFG composed of uniform polymer are installed, the inclusion of these kinds of gears into an upcycling process seems feasible. Pre-conditions are i.a. a good preparation for recycling like sorting out of comparably clean net and rope fragments, cleaning of retrieved gear, separation of polymer types (polyamide, polypropylene, polyethylene, PET), removal of lead lines to avoid toxic contamination, and cutting into 50 cm fragments or shredding.264

- **Pay eco-modulation fees**

It is key for Member States to establish EPR schemes as soon as possible (much before 2024), and ensure they are set in a proper way, including with eco-modulation of EPR fees265, taking into account the durability, reparability, re-usability and recyclability, hereby taking a life-cycle approach. Eco-modulation of fees in EPR systems have been identified and promoted as a key lever for eco-design and a circular economy, especially for (plastics) packaging266; also fishing gear could be included into such a scheme. Eco-modulation of an eco-fee pricing scale is an incentive for fishing gear traders, designed to promote products which are easier to recycle and thus helping to minimise waste, while taking care not to create a situation where pollution is

263 Updated information, April 2020.
264 Stolte, A. & F. Schneider (2018), p. 45 and p. 63.
265 This approach was first set out in the WFD, Art. 8 (4)(b): durability, reparability, reusability, recyclability and the presence of hazardous substances.
266 EURACTIV network office – expert talk (2018)

simply shifted to another stage in the product life cycle. Its implementation falls within the framework of a regulatory obligation, while its application by companies remains on a voluntary basis: It represents an extra charge on top of the eco-fee. In practice, the traders concerned must be able:

- to identify the products which meet the criteria set out by the Commission in the frame of the Circular Economy agenda and objectives.
- to declare them according to the appropriate codification
- to keep the related supporting documentation for at least three years in case of an audit.

Modulation of fees is also essential to reduce and eliminate hazardous substances in plastics. This approach shares the burden with especially small ports and fishing operators who might be disproportionally affected by the development of new PRFs and could benefit from less material and/or better re-usable material. There could be even cooperation between ports / fishermen and recycling companies who take back the material and pay small incentives. The new EPR scheme could participate in paying for these eco-modulation fees.

- **Establishing a fund to transform processes**

When producing fishing gear and thinking of the end-of-life treatment, a fund - according to the recently launched EU Green Deal Initiative – could be established to support innovative transformation processes like the recycling of fishing gear. Linked to the insurance fund for fishermen (see 4.2), or the EMFF actions against marine litter, such a fund would support the built-up of a proper waste management system for both, end-of-life and retrieved fishing gears. Financial support has to be provided to the interfaces of transformation, i.e.

- Designers to push unmixed material design for gear
- Sellers to establish deposit schemes for passive, short-life fishing gear like gillnets and assure quantity measurements
- Processing companies to establish decentralised locations in a few harbours in each coastal EU country with dedicated ALDFG collection points
- Incineration companies to establish small-batch thermal processing options for mixed ALDFG not treatable for material recycling
- Fishers and waste managers to enable material recycling of high-quality ALDFG and metals through awareness raising of material quality
- Researchers to prepare waste managers to deal with small-scale batches with the aim to find ecologically viable solutions to normal incineration and energy recovery plants
- Researchers and waste treatment companies to research in alternative thermal waste processing facilities, e.g., for medical or electronic wastes which could be used for the small amounts of ALDFG being retrieved each year (Stolte, A. 2019)
- Funding scheme developers to install open funding schemes for investments in alternative pilot thermal processing facilities.

The fund could be established and administered by the EMFF or national waste management / environmental protection authorities. Possibly, in the frame of the Green Deal Initiative, a new authority will be established to assure the smooth implementation and evaluation of all kind of transformation processes, envisioned under this initiative. Another option is to install a new transformation unit at one of the Commission's DGs.

Costs considerations, examples for cost estimates (where available) & responsible actors for cost coverage

Recycling is currently more expensive than incineration or thermal destruction without oxygen (pyrolysis) due to the small amount of collected nets (for Germany) and different types of polymers. In order to assess a market's potential and attract investment, it is necessary to know exactly the amount of end-of-life fishing gear available for recycling. So far, this data is mostly not always available. In a case study in Scotland, it was found that most ports/harbours lack precise data on the net and fishing gear waste accumulation (GI Waste Solutions, 2014). This could be due to the fact that many ports do not play a central role in the waste handling activities as described in the previous chapter. Also, no research projects have been focusing on this topic. Without this data, it is difficult to make informed business decisions. For example, this data is necessary for justifying the introduction of a segregation and washing plant outside of a port (GI Waste Solutions, 2014). It is recommended that reporting waste delivery receipts should be made mandatory and that waste notification and delivery information at ports should be centralized. For the German ports in the North and Baltic Sea some numbers exist, see 3.3.2.1. The numbers show the quite small amount of fishing gear – derived as end-of-life gear directly from the fishing vessels and being in good conditions or derived as ALDFG with a low recyclability.

Costs of treatment/processing:

- For Germany: 350,00 EUR/t (compared to incineration as special waste with 260,00 EUR/t)
- For Iceland: 40,00 EUR/t (compared to incineration costs with 28,00 EUR); the low costs can be explained as all necessary steps are implemented in one place.
- Example for eco-modulation fees in Sweden: range between 200,00 EUR – 15,000,00 EUR per product development

3.3.2.4 Clean-ups: Potential EPR measures and cost consideration

Today, the Baltic Sea fisheries are undergoing a major restructuring[267]. A declining trend in gillnet fishing effort can be summarized with regionally differentiation. In some fisheries there is over 85% less gear in use compared to the 1990s. In other areas, the decrease is lower, but experts expect the downward trend to continue. Just like the substantial variation in fishing effort, gear loss also showed regional variation. Similar to Estonia and Sweden, the gear loss rate in Germany has also dropped. Reasons for remaining gear loss are either accidental (due to ice or incidental conflicts with recreational vessels) or deliberately caused by wreck fishing. In Poland, unpredictable snagging of nets on seabed objects was considered a major cause of gear loss. Therefore, highly varying preconditions and general poor economic conditions with no sign of improvement show substantial differences in the willingness of fishermen to discuss prevention[268]. According to interviews, similar regional variations exist in the North Sea. There, fishers often stress that they are losing gear accidental only as many (especially active) gear

[267] Tscherni, V. (2019), p. 14.
[268] Tscherni, V., (2019), p. 21.

systems are very expensive and every loss causes economic problems. The costs for passive fishing gear, on the other hand, are far lower and losses have not such economic impacts. Nevertheless, also in this sea basin willingness to prevent losses are very different among fishermen. Practice of aquaculture farms shows two main reasons for losses: due to the harsh weather conditions, items like small net fixing tapes in aquaculture are easily lost or it is too cost-intensive to collect them after having used them for a specific time. Poor waste management systems, economic pressure and un-awareness of the problem are also reasons for (un)-intentional losses. In addition, the implementation of the international MARPOL agreement to prevent marine pollution from ships is missing. The agreement prohibits the introduction of pollutants into the sea. The EU's common fisheries policy relates directly to fishing equipment: if a gear is lost, the fisherman must first try to recover it. If this does not succeed, it must be reported to the respective national authorities. The state is then responsible for the salvage - this is how the fisheries control regulation foresees it, which also applies to the Member State Germany. Compared to other countries such as Norway, this is hardly implemented due to missing reports. A pragmatic implementation of the reporting obligation of the EU fisheries control regulation is therefore necessary and could be successfully supported by the extension of the EPR scheme to clean-ups for fishing gear. So far, the term 'clean-up' is not legally defined. Therefore, there is no clarity on the scope of clean-ups, i.e., which areas clean-ups, and hence cost coverage for clean-ups, encompass, see 3.3.1.4. Clean-up costs may be reduced by innovative technologies (e.g., using underwater, floating or flying drones; sonar systems) to combat and remove existing marine litter. The SUP-Directive does not foresee clean-ups as part of the new EPR scheme, instead, producers have to bear the costs for the separate collection of fishing gear. This is controversial as nets and other types of fishing gear provide valuable resources for recycling, apart from collected gear in ports.

Potential EPR measures and arguments

- **Support innovative clean-up technologies to find ALDFG**

So far, no daily-used, easy-to-handle technologies exist to detect and retrieve ALDFG at sea. The test phase of the Marelitt project showed a range of difficulties to successfully retrieve ghost nets. Recently, a new approach is a sonar system: the WWF pilot project uses data from 5 m distances (instead the usual 20-30m) and the width of the sonar approach is 70 m. This enables to manage 1 meter2 within one hour. Also new approaches to use drones for retrieving marine litter, including old nets or other parts of fishing gear are under development and could be incentivised by EPR measures. On land, first approaches exist like a beach-clean-up device, the so-called ‚Beach Tech 2000'. It cleans dry and wet sand from different litter like cigarettes, shards or caps through an innovative procedure. As a result, 22.000 square metres can be cleaned per hour. 269 So far, larger waste, including gear, cannot be cleaned by the current version of ‚Beach Tech 2000'. Therefore, it could be envisioned that technologies like drones or robots will be developed to acknowledge fishing and aquaculture gear and collect it. Used at beaches, these technologies would raise the amount gear, which could be used for recycling.

- **Establish an insurance fund for fishermen to increase the collection rate of ALDFG**, see 4.2

Costs considerations, examples for cost estimates (where available) & responsible actors for cost coverage

There exist no precise numbers of beach clean-up costs for communities related to fishing and aquaculture gear. Cost calculation for clean-up costs of fishing and aquaculture gear can be

[269] Hansestadt Rostock: online presentation beach management

based on existing monitoring approaches and litter inventories. However, these numbers do not provide information about the weight of this kind in litter (in %) or the volume (in %). Therefore, no real cost considerations can be performed – only assumptions. The following gives an overview of data which could be used for further cost calculations: The pan European Marine Litter Database (MLDB) developed by EMODnet Chemistry is using aggregated codes for beach litter data analysis, derived from combination of different litter category lists.270 Fisheries related litter types are merged in the litter category FISH which includes, e.g. boxes for fish in polystyrene, nets or bags for mussels, buoys and floats for fishing nets, ropes, strings and cords or nets and pieces of nets (JRC Report 2019). According to this assessment, in 2015-2016 two items/100 m survey were found in the German Baltic Sea (based on 160 surveys) and 23 items/100 m survey in the German North Sea (based on 31 surveys)271. During last years, the quantity of items in the German Baltic Sea is more or less constant, the one in the North Sea increased and is still increasing. In other countries around the North East Atlantic Ocean the numbers are far higher like, e.g., in France (118 items) or Denmark (89 items). With a focus on aquaculture gear, a litter inventory272 has been generated by a genuine screening of the available literature and litter databases (e.g., OSPAR Beach Litter Database, HELCOM Beach Litter Database, Marine Litter Watch) (for the years 2011-2018). Currently, this list consists of 64 different items of litter, of which 19 items are unique to the aquaculture industry. The collected results from these three different databases were recalculated per category to average number of collected items per 100 meters beach, inter alia for the North Sea and the Baltic Sea basins. According the HELCOM and OSPAR Beach Litter Databases numbers are reported as number of items per 100 m beach with standard deviation. In order to interpret data correctly, it should be noted that data for Germany were collected using a different coding method than, e.g., in Estonia or Finland. As a consequence, for aquaculture only the category ‚plastic sheeting from mussel culture' (G47) was included (Source: HELCOM Beach Litter Database) which does not reflect the real numbers of litter coming from this sector at German beaches. However, according to this inventory, the total percentage of this category in 28 German Baltic Sea harbours is between 0,1 -0,5 %, in 4 German North Sea harbours between 0,3-0,6 %.273 A general problem of the mentioned monitoring programmes is that they are not harmonised between the regions and between the countries (e.g., HELCOM, OSPAR). Currently, different codes are used for the objects, and the units used in the reporting are also different. As a consequence, it is difficult to compare the results between countries and sea basins. Nevertheless, a first cost calculation for clean-up costs of fishing and aquaculture gear in German coastal communities could be based on average costs for SUP clean-ups in small cities (< 20.000 inhabitants), which is 5,3 Euro/inhabitant and year (which is equal to 27% of all costs) according to a VKU study (VKU 2019).274 These numbers are derived of 4,5 weight (in %) and

270 The possibility to analyse single and aggregated data depends again on the availability of data and on their potential grouping in different litter category lists.

271 The temporal coverage of baseline scenario calculations is limited by the data availability and temporal data resolution. Within the scenario analysis the minimum resolution has been defined as 1 year. More detailed analyses, down to seasonal scale would be possible. Initially, data from 2012-2016 have been collected, but coverage in early years was low, except for the OSPAR area (Schulz et al. 2017). Given that the monitoring coverage was increasing from 2012 to 2015, data from 2015 and 2016 was considered specifically for further baseline scenario analysis.

272 by the Aqua-LIT project, see https://aqua-lit.eu/marine-litter-inventory/menu

273 See Sandra, M. et al. (2019), pp. 25.

274 Average costs (in small, mid-sized towns and large cities) for cleaning up are approx. 15,5 Euro/inhabitant and year with 3, 21 kg/inhabitant and year according the VKU study. Other studies come to similar results although the definition of littering is not always comparable, e.g., ‚Littering in the MWE member states – An inventory of costs, amounts and assessments', June 2020 or ‚Assessment of measures to reduce marine litter from single use plastics and Annex', May 2018.

volume fraction of 18,5 % (both numbers are clearly lower than in mid-sized towns and large cities). In addition, numbers of beach-clean ups generated by the touristic centre of Warnemünde can provide guidance: the beach clean-up (daily during the main season) covers 7,5 km. The quantity of all kind of waste differs between 1 and 3 tonnes per day, depending on the season and weather conditions.275 Taking into consideration the above outlined numbers for fishing gear and aquaculture gear in the Baltic Sea, an average of 11 % volume fraction of fishing and aquaculture gear at beaches can be assumed. This results in approx. costs of 3 Euro/inhabitant and year for smaller communities when cleaning their beaches from fishing and aquaculture gear. Warnemünde, for example, with 6000 inhabitants would need to calculate

- Approximately > 8,000 Euro for these kinds of services.

In the German North Sea, communities (with e.g., 10.000 inhabitants) may need to use higher averages of volume fractions with costs of 5 and more Euro/inhabitant and year. This could mount in costs of

- Approximately > 50,000,00 EUR per year.
- Mid-sized towns and cities will need to calculate even more.

More data assessments are necessary as well as studies, analysing the quantity share and differentiating along the fractions of gear (end-of-life gear, ALDFG, sectors) to generate important basic data and first cost assessments. Important is a cost allocation formula with criteria to remunerate measures against littering by the fishing and aquaculture sector. The allocation of beach litter to these two sectors can solve questions related to its state (clean-dirty, mixed – un-mixed material etc.) and recycling capability. The quantity of items related to fishing and aquaculture differs significantly between the Baltic Sea and the North Sea. It therefore could be taken into account to different EPR costs among producers for the clean-ups of beaches in these sea basins.

[275] Hansestadt Rostock: online presentation beach management

4 Suggesting mechanisms to implement Extender Producer Responsibility for Single-use Products and Fishing Gear

4.1 Fund to foster re-usable products and waste prevention

4.1.1 General idea and scope

The German Environmental Agency proposed a concept for reducing the consumption of disposable beverage cups for out-of-home consumption of hot beverages (e.g., "coffee to go"). The proposed measures include the introduction of a littering fund. The fund is intended to collect revenue generated by consumer fees on beverages in single-use cups and lids at the point of sale. The fees on single-use cups and lids should be an incentive to preferably buy beverages in reusable cups. The suggestion is based on a study by Kauertz et al. (2019), according to which the purpose of the littering fund would be to finance the costly collection of disposable cups and lids littered in the environment. The authors also noted that such a littering fund could also be a way to implement the SUPD requirements for extended producer responsibility. Moreover, they argue that the fund can be extended to other products that often end up as litter in the environment.[276] Leaning on this study, the idea of introducing and setting up a fund to foster re-usable products (maybe starting with, but in the long run extending beyond, plastics) and waste prevention is to create both enabling structures (e.g. institutions, new practices) and incentives to foster and prioritise the use of reusable products over single-use products (e.g. beverages in reusable cups). We suggest setting up an earmarked fund for Germany that covers all eight single-use plastic (SUP) products as addressed in Article 8 on EPR in the SUPD:

1) Food containers
2) Packets and wrappers
3) Beverage containers with a capacity of up to three litres
4) Cups for beverages
5) Lightweight plastic carrier bags
6) Wet wipes
7) Balloons
8) Tobacco products with filters and filters marketed for use in combination with tobacco products

We suggest that the fund addresses cost coverage as laid out in Article 8 of the SUPD, but also goes beyond it by providing funds for further SUP waste related activities than laid out in Article 8 – aiming to foster re-use and waste prevention. According to Article 8 SUPD cost coverage in relation to EPR, specific to the different SUP products, encompasses:

- cleaning up litter, including transport and treatment of the collected litter (all products);
- awareness raising measures (all products);
- waste collection for those products that are discarded in public collection systems (food containers, packets and wrappers, beverage containers, cups for beverages, lightweight plastic carrier bags, tobacco product filters);

[276] Kauertz et al. (2019), p. 181

- data gathering and reporting (wet wipes, balloons, tobacco product filters).

Hence, by contributing to the fund producers would have to cover the costs for the above SUP waste related activities. In our view, the fund should go beyond that and encourage and enable the use of funds to provide financial contributions to public authorities (mostly municipalities, but also actors on state and federal state level, for instance those responsible for waste collection and clean-ups along federal highways and motorways) earmarked for reducing certain SUP, fostering re-use and also for preventing SUP waste. Hence, we suggest that the fund's general idea is to

- make SUP producers pay contributions into the fund. These contributions should be designed so as to incentivise producers to foster waste and litter prevention, better eco-design and re-usable products (see section 4.1.5 below), and
- allow public authorities to receive compensations from the fund-to-fund waste prevention activities and SUP re-use as well as the above SUP waste management activities, clean-ups and infrastructures. Relevant public authority activities eligible for funding could entail encouraging reusable product availability around outdoor hot spots such as beaches, more frequent beach clean-ups when necessary; installing and maintaining additional waste bins.

Therefore, the fund should cover costs for additional measures, compared to Article 8 SUPD, that are promising and necessary to foster re-usable products and waste prevention. A fund solution seems sufficiently flexible to be adapted to emerging new knowledge and thus to accommodate changes. For instance, the type and scope of SUP waste related activities that the fund covers could be expanded or modified according to new insights. Such flexibility and adaptable scope appear relevant not least in the context of the eight products mentioned on the page above. Here, a distinction must be made between the ones listed under Section I of Part E in the annex, and the products under Sections II and III. For the products listed under Sections II and III of Part E of the SUPD, no EPR scheme exists yet. Here, producers' contributions to the fund should allow public authorities to receive financial support for setting up of specific infrastructure for the collection of waste of those products, such as appropriate waste receptacles in common litter hotspots. This makes it possible, for example, to place more or other ashtrays for cigarette filters in public spaces or/and pocket ashtrays could be used on litter hotspots. Furthermore, for some of these products, there are challenges that do not exist for packaging. Wet wipes are often disposed of via the toilet and cause problems in the sewage system. In addition, they are mainly found on river edges and beaches. Cigarette filters are difficult to remove from the environment because of their small size. A fund solution could address these issues in a targeted manner and cover the costs of special cleanings or/and infrastructure. This raises the question which title is appropriate for the fund as suggested here. Kauertz et al. suggest the title "littering fund". However, for the idea laid out here, this is not a suitable title, as the fund's basic idea is to go beyond removing littered plastic items from the environment (through clean-ups) and explicitly encompass preventing or reducing littering behaviour (e.g., through incentivising design for re-use and waste prevention or through awareness raising). In addition, the title should be positive and not be misleading, i.e., sound as if littering is promoted. We therefore suggest to use a more encompassing title for the fund, oriented towards the goal of the SUPD, such as "Waste-free Environment Fund", "Fund to foster re-usable products and waste prevention" or "Re-Use and Waste Prevention Fund". Using such a wider title could also allow for a future inclusion of non-plastic products into the fund. As the fund should also be able to fund measures that not specifically address the littering problem but, for example, promote reusable packaging in order to contribute to waste prevention, the title "Waste Prevention Fund" (Abfallvermeidungsfonds)

seems to fit best. This title makes the ultimate goal explicit, which involves both the reduction of waste in the environment, as well as the general reduction of the waste volume of packaging and single use products of all materials. For the products listed under Section I of Part E in the annex, an EPR scheme already exists in Germany, i.e., particularly a part of it the dual systems for Packaging Waste at private household level and comparable sources of waste generation (as defined for the German level in Section 3 para. 11 of the German Packaging Act).

4.1.2 Interaction with existing German packaging waste EPR scheme

This EPR scheme is based on the German Packaging Ordinance, which transposed the 1994 EU Packaging Directive into German law and was recently replaced by the German Packaging Act, which entered into force on 1 January 2019. Here it is important to consider potential overlaps between the SUPD and the Packaging Directive in order to avoid double counting and disproportionate burdening of respective producers. Thus, for products that are already part of this EPR scheme, under an EPR scheme for SUP products under the SUPD producers should only pay into the fund for additional requirements beyond those activities, which the German packaging waste EPR scheme already funds (see the bullet list above). Where producers already cover costs for some of the above activities under the German Packaging Act (for awareness raising and use of public collection systems), contributions to the fund should only be paid for the activities not covered by the German Packaging Act. The distinction is in fact quite clear: While the German Packaging Act focuses on household waste and ensures the separate collection at private households, the SUPD targets packaging that becomes waste when used and discarded away from home - and enters public collection systems or becomes litter.
The German Packaging Act already provides structures for fulfilling the EPR and the producers are paying participation fees for their packaging to producer responsibility organisations (PRO's). For reasons of processing, it would therefore make sense to include the packaging addressed by the SUPD in this structure. For this the PRO's would collect additional amounts for the single-use plastic packaging discarded away from home and entering public collection systems or becoming litter. The PRO's would then pay the amounts collected from its members into the fund where they are available for various measures conducted by public authorities to foster re-usable products and waste prevention.

4.1.3 What kind of institution to task with collecting contributions to and administering the fund?

The SUPD states that "Member States shall define in a clear way the roles and responsibilities of all relevant actors involved" (Art. 8 (5)). Central actors in this regard are

- **producers** – responsible for covering the costs pursuant to the EPR provisions in Art. 8 of the SUPD;
- **local authorities (communities)** – responsible for carrying out (or organising) cost-efficient waste management, including cleaning up of littered plastic waste; and
- **Member States** – responsible for establishing EPR schemes for all products addressed under Article 8 of the SUPD; in certain areas also responsible for carrying out (or organising) cost-efficient waste management, including cleaning up of littered plastic waste.

First, Member States need to clarify how local authorities and producers share roles and responsibilities. In this respect, the SUPD at first sight requires that producers take over financial responsibility. Operational responsibility – i.e., organising or carrying out clean-ups,

waste collection and treatment, awareness raising measures, etc. – may be left to public authorities.[277] For those SUP that become packaging waste, the applicable general minimum requirements of the Waste Framework Directive (WFD) include no operational responsibility of producers, but financial responsibility in order to make available the necessary financial means for operating. However, in the German EPR schemes for packaging waste producers also have operational responsibility, which they transferred to producer responsibility organisations (PROs). PROs, in turn, charge producers' fees, which they use to organise and manage the collection, transport and treatment of packaging wastes at household level and are responsible for achieving the recycling targets.[278] The PROs are private companies that operate in parallel to (and to a certain degree independently of) municipal waste management of other waste fractions. Regarding EPR for non-packaging SUP products, producers assume financial responsibility for awareness-raising measures, waste management related to public collection systems, and cleaning up litter. Up to date, public authorities, mostly on the municipal level, carry out and pay for these activities. Member States need to establish a financial mechanism, such as a centralised fund. That would help operationalizing EPR according to Art. 8 of the SUPD by making producers financially contributing to already on-going, as well as additional, public waste management activities related to the eight SUP products listed above. Second, the role of the national government within the EPR scheme needs to be defined. Generally, the literature distinguishes between *(a)* government-run and *(b)* producer-run EPR systems.[278,279,280] In the European Union, the most common way to implement EPR schemes is *(b)*, through the establishment of one or several PROs, which typically lead to a producer-run scheme (such as the dual system in Germany). As a collective entity acting on behalf of the producers, the PRO takes over the responsibility for meeting the EPR obligations. In such systems, the role of public authorities is often limited to setting and monitoring (mandatory) targets and conditions, while economic operators are free to decide how to achieve the targets.[281] Looking at the SUPD, it can be noted that the legal text does not include quantitative targets for the products relevant for extending producer responsibility, except for separate collection targets for beverage bottles[282]. Rather, the overall goal of the SUPD is to reduce the impact of certain plastic products on the environment. For a well-functioning PRO to implement EPR for SUP products, Member States would need to define concrete and measurable targets. Alternative to encouraging or requiring a PRO, governments could establish an EPR scheme by setting up and administering a governmental fund (that is *(a)*, government-run). In this case, public authorities can take on a stronger role by

- being responsible for collecting fees from producers,
- redistributing the collected money to the actors responsible for waste management,
- gathering data
- designing and executing awareness raising measures and

[277] Watkins et al. (2017).
[278] Monier et al. (2014).
[279] Watkins Et al. (2017).
[280] Manomaivibool (2009).
[281] Monier et al. (2014), Manomaivibool (2009).
[282] According to SUPD Article 9, 77% of single-use plastic beverage bottles have to be collected separately by 2025 and 90% by 2019. In addition, Article 6 sets targets for a minimum content of recycled materials for PET bottles.

- supervising activities.

The central question that arises now is who should administer the fund: Should the government manage the fund, should it be producer-led or should an independent body be established to be in charge? As one task of the fund will be to reimburse public authorities for on-going and additional waste management activities covering SUP waste from producers that pay into this fund, it can be argued that an independent body, such as a clearing house, would be most suitable to manage the fund (compare Monier et al. 2014; costs for managing the fund should also be covered from the producers' contributions). For example, this could be small subdivision affiliated to the Federal Ministry for the Environment or German Environment Agency or the recently introduced Central Agency Packaging Register (Zentrale Stelle Verpackungsregister – ZSVR). Such a central clearing house could have a similar function to the recently introduced Central Agency Packaging Register (Zentrale Stelle Verpackungsregister – ZSVR) in Germany. Since January 2019, the ZSVR has taken up its work to ensure a proper and fair distribution of disposal and recycling costs of packaging waste. Before that, the competitively run dual systems used to have an own clearing unit that registered the amounts of packaging put on the market by associated producers, and defined the fees. Due to transparency issues and susceptibility to errors, the centralized clearing-house in form of the ZSVR was introduced. The ZSVR is organized as a foundation of private law, empowered with sovereign rights and for this under the supervision of the German Environment Agency (UBA). Because of the obligation of producers and PROs to report data about packaging put on the market and the ZSVR's power to examine the data and to estimate the amount if necessary, the ZSVR is able to determine the market shares of PROs and therefor helps to allocate the costs properly. The founders of the ZSVR and also the members of the advisory council are mainly economic operators.
However, with regard to the SUPD there is no incentive for economic operators to clean the environment from (plastic) waste to a high degree. Therefore, in the case of the Waste Prevention Fund, the advisory council should not only include economic operators, but also of representatives of environmental organisations and other environmental protection institutions. Furthermore, looking at existing EPR fund solutions in the waste sector in other countries could offer some orientation on how to structure such a fund. One interesting European example can be found in the Netherlands. In 2007, the Dutch established the National Packaging Waste Fund (Afvalfonds Verpakkingen) in order to comply with the EU Packaging Waste Directive. As part of a binding framework agreement, the government, the packaging industry and the Association of Dutch Municipalities decided to create the fund as a financing mechanism. The National Packaging Waste Fund covers all activities related to implementing the framework agreement. Producers and importers who place packaging on the Dutch market pay an annual contribution into the fund, earmarked for packaging waste management. Municipalities receive compensation from the fund for collecting and recycling packaging waste from households.[283, 284] In addition, a certain fraction of the fund is available for cleaning up littered plastic waste: "Annually, 20 million euros is allocated to tackling litter. Municipalities decide how to spend that sum, and report on this annually to the packaging industry on a retrospective basis".[285] Today, the Packaging Waste Fund is a not-for-profit organisation. A board of directors, who are appointed by producers and importers, governs the fund.[286]
A second example could be found in Slovakia. Here, a Recycling Fund was created in 2001. Producers and importers of a variety of goods (including packaging) had to pay into the Recycling Fund. The collected money was used to establish and improve waste management

[283] Netherlands Institute for Sustainable Packaging (2016).
[284] Netherlands Institute for Sustainable Packaging (2015).
[285] Ibid., p. 2.
[286] Afvalfonds Verpakkingen (no date).

facilities, e.g., for recovery and recycling. The fund only covered financial responsibility of producers. In parallel, PROs were established to cover the operational responsibility for packaging waste. In 2013, the government closed the Recycling Fund as it caused double payments for various producers, who had to contribute to the fund and to a PRO. In addition, with an advanced EPR system with PROs in place, the Recycling Fund was seen as rather ineffective.[287] Nevertheless, the fund was a useful instrument for the early stages of introducing EPR in Slovakia.

4.1.4 Addressing issues of free-riding

Producers that do not pay fees to an EPR scheme and thus benefit from EPR scheme functioning without financially contributing or that do not comply with all obligations or provide erroneous data about quantities put on the market. – so-called free riders – pose a serious issue in EPR scheme management and implementation. While free riders avoid costs of waste management of their products, they both undermine trust in the scheme and damage honest companies' competitiveness.[288] Therefore, it is in the interest of PROs and public authorities to take measures against free riding. While PROs and public authorities can share responsibility and both take action, only public authorities have the legal basis to ultimately enforce sanctions (in many cases financial penalties – e.g., related to packaging EPR schemes –, in some cases also criminal sanctions and prosecution)[289]. But for doing so, they need financial and personal capacities as well as functioning routines.[290] According to Monier et al. (2014) a centralized institution, such as the ZSVR, eases enforcement of measures against and surveillance of free riders. A study related to the German Packaging Ordinance from 2007 arrived at estimates of free-rider issues in the range of 20% of packaging volume, with free riding including use of Green Dot symbol without having paid licence fees and wrong reporting of sales volumes to DSD (which DSD uses to estimate the volume of packaging put on the market and determine the associated licensing fees),[291] As measures to address free riding, licensed use of a trademark (the green dot on the package label) has been established, which shows that producers have paid fees for managing this package waste. Fraudulent use of the green dot, which is protected by copyright laws, therefore evokes penalties or criminal liabilities, hence contributing to deterring free riding. Furthermore, companies failing to meet DSD requirement or reporting incorrect information can be subject to fines.[292] Another measure to address free riding is the agreement between DSD and retailers that retailers can deduct green dot fees from payments they make to suppliers, when suppliers did not submit audited green dot accounts. Hence, peer pressure along the value chain supports compliance with the EPR scheme.[293] Peer pressure is additionally used through changing the incentive structure for correctly placing packaging carrying the green dot symbol in designated receptacles: with packaging waste collectors now paid according to the portion of materials carrying the green dot symbol, collectors now have an incentive to pass pressure on to consumers by rejecting to collect any materials inside the green dot symbol packaging waste stream, which do not carry the green dot symbol.[294] As free riding might occur also for reasons of lacking awareness, too high fees for small producers or imprecise definitions of the scope of products falling under an EPR scheme, acting against free riding should include

[287] Natur-Pack (n.d.).
[288] Monier et al. (2014).
[289] Ibid.
[290] Ibid.
[291] Marbek Resource Consultants (2007).
[292] Marbek Resource Consultants (2007).
[293] Ibid.
[294] Ibid.

measures beyond financial penalties and criminal liabilities.[295] This seems particularly relevant in the context of online sales, with goods online from companies without a legal entity in the country of purchase often shipped directly to the customer. Not only does this complicate identifying and sanctioning free riders, but also may e-commerce produce free riders because sellers from abroad may simply be unaware of their obligations to register with an EPR scheme in a third-party jurisdiction.[296] Therefore, determining appropriate EPR fees, clearly scoping products falling under an EPR scheme and providing easily available and understandable information on EPR obligations seems important to help prevent, instead of penalising free riding. Hence, any institution set-up to or tasked with administering a fund to manage single-use products and foster waste prevention needs to design and implement measures taking free riding seriously – both before and after free riding has happened.

4.1.5 How to calculate the financial contributions of responsible producers?

The general concept of making producers financially or financially and organisationally responsible for end-of-life management of their products via EPR hinges on the true cost principle. This principle foresees that the actual costs related to end-of-life management of a product should be considered as completely as possible when designing producers' financial contributions to EPR schemes. Under this principle, full cost coverage by producers – in theory – should encompass the costs for[297],[298],[299],[300],[301]

1. collecting, transporting and treating waste that has been separately collected (minus any revenues generated from selling recovered materials)
2. collecting, transporting and treating waste non-separately collected (e.g. as part of mixed municipal waste);
3. administrative costs of collective schemes, covering communication with producers and other stakeholders, data collection and reporting;
4. organising and running public information and awareness raising measures to ensure that consumers participate in the scheme (i.e., through separate collection);
5. organising and running waste prevention actions;
6. organising and undertaking litter prevention and management; and
7. enforcing and surveilling the EPR system, which includes, inter alia, auditing and measures against free riders.

However, stakeholder feedback as part of the study done by Monier et al. (2014)[298] shows consensus regarding cost coverage only for cost items 1., 3., 4. (for 4. only insofar as these measures are perceived as targeted, useful and coordinated) and 7. of the above list. Diverging views emerged regarding whether producer fees should also cover costs for managing residual, non-separately collected wastes (cost item 2. of the above list) as well as for preventing and managing litter (cost item 6. of the above list).[302]. All SUP product disposed of in public collection systems, i.e., waste collection operated by public authorities on its own responsibility (which excludes the PRO's), would be non-separately collected wastes. Regarding non-separately collected waste, stakeholders agreed that producer fees should only pay for managing those items, which are targeted by the EPR scheme, but for which no separate collection is provided

[295] Monier et al. (2014).
[296] McCarthy and Börkey (2018).
[297] Dubois (2012).
[298] Monier et al. (2014).
[299] OECD (2016).
[300] OECD (2005).
[301] OECD (2014).
[302] Monier et al. (2014), pp. 94.

and which, hence, are collected as part of the residual waste. Because in this case, consumers could not have put the items into any separate collection system, producers were seen as responsible for covering costs.[302] However, where an EPR scheme provides for separate collection, but consumers do not use this and instead discard the items targeted by the EPR scheme via mixed municipal waste, stakeholders reached no consensus on whether or not producer fees should cover this. Regarding litter management costs, stakeholders argued that cost coverage should only be considered for behaviour by producers leading to littering (e.g. marketing products which are expensive to treat as waste), but not for consumer behaviour leading to littering (e.g. not using existing waste collection infrastructure). Regarding the last two points, the SUPD took a decision at the expense of producers. Nevertheless, this feedback shows that designing an appropriate level of cost coverage is a challenging task and that the method(s) for calculating cost coverage levels need to be transparent. There seem to exist two main mechanisms to calculate producers' financial contributions to an EPR scheme or – as suggested here – to a fund to foster re-usable products and waste prevention:

a) Determining a percentage share per product based on the quantities of products that a producer places on the market in a country or in the EU;

b) Determining a percentage share per product based on clean-up monitoring data of littered items found on beaches, along shores, along rivers, in green spaces and parks / fishing-for-litter data.

The first calculation option (a) seems easier to calculate, justify and implement if the data for quantities placed on the market are readily available for use – which seems unlikely given concerns around confidentiality of company data in competition. However, this approach means that producers would have to pay a percentage per product placed on the market, even if only parts of their products end up littered and another (hopefully larger) part is properly disposed of. However, when calculating cost distribution according to the polluter-pays principle, Member States may use criteria that consider the producer's capacity or the type of waste produced. For example, according to the European Court of Justice it is legitimate to base a levy on the amount of estimated waste and not on the amount of actually produced waste – if no other adequate methods is available or could be used only with disproportionate effort.[303] Furthermore, the percentage share would still need to be set so that it covers full or a rather large part of the end-of-life management costs related to the products in questions. Therefore, while determining market shares might be relatively easy, relating them by percentages to end-of-life management costs likely will not because this necessitates making potentially controversial assumptions about item-specific waste management costs.

The second calculation option (b) seems more challenging to apply. First, it requires a closer understanding of the term clean-up since Article 8 SUPD does not provide any geographical limits within EU territory. We suggest that the term encompasses

- Beach clean-ups to clean-up marine litter washed onshore, regardless of whether beaches are for bathing or not;
- Clean-ups of banks to clean up litter along waterways, rivers, creeks, ditches, canals, lakes and ponds;
- Terrestrial clean-ups to clean up litter along roads, streets, motorways and their shoulders, in green strips/spaces, rest areas, public parking areas, public places, green areas and parks.

[303] CJEU, C-254/08 (Futura Immobiliare), rec. 49, 51, 52.

For some spatial foci for clean-ups, such as beach and marine-litter clean-ups, data[304] are available that could be used to pro-rate producers' financial contributions to such a fund based on the share of littered items found (in terms of numbers found) that represent a producer's product. However, for other spatial foci (e.g., highways/roads, green areas/parks), data for littered quantities might be scarce or lacking. Depending on the scope of the term clean-up and the data availability, the financial contributions of producers can be based on actually littered quantities. These are allocated to producers in percentages according to observation data for different products found littered (e.g., x wet wipes per 100 m of beach clean-ups as a percentage of overall litter items found gives the cost allocation to wet wipe producers). Thus, the financial contribution could appear directly related to only a narrow focus of the fund, i.e., preventing and cleaning-up littering. In their impact assessment of measures to reduce marine litter from single use plastics, ICF and Eunomia (2018)[305] use a combination of the two afore-mentioned approaches. They calculate compliance costs for EPR cost coverage for different SUP-products by dividing the SUP-product specific overall costs for compliance (including collection, treatment, litter clean-ups and awareness raising/information) by the respective number of SUP-products sold on European markets in a base year (2016). Thus, they arrive at the following cost calculation:

Table 5: Average compliance costs for different SUP-products

Item	Total litter clean-up costs, € million	Information costs, € million	Total disposal costs, € million	Total Compliance Costs, € million	Total Number of Items Sold, millions	Compliance Cost per Item, €	Unit Cost of Product, €	Relative Compliance Cost, %
Cigarette filters	3,012	76	0.67	3,088	709,994	0.004	0.20	2.2%
Drinks bottles	558	14	112	684	71,651	0.010	0.73	1.3%
Wet wipes	15	0	11	26	40,374	0.001	0.02	2.6%
Sanitary towels	10	0	29	40	18,791	0.002	0.32	0.7%
Drinks cups and lids	240	6	59	305	20,711	0.015	2.00	0.7%
Food containers	167	4	73	244	26,299	0.009	5.00	0.2%
Crisp packets and sweet wrappers	58	1	48	107	44,681	0.002	0.30	0.8%

Source: ICF and Eunomia (2018), p. 137 of the Annex

Comparing the item-specific compliance costs with the unit costs per item, ICF and Eunomia calculate the relative compliance costs per item put on the market. These range from 0.2% for food containers to 2.6% for wet wipes. Despite encompassing more than clean-up costs and expecting increasing future costs for waste management, these compliance costs would not include full environmental impact costs of the products, e.g. from damage to animals and ecosystems from all litter not (retrieved/found to be) cleaned-up.[306] Nonetheless, these figures

[304] Monitoring data covers beach litter surveys following OSPAR methodology and guidance on the monitoring of marine litter in European Seas from the MSFD Technical Group on Marine Litter (see Arcadia and EUCC 2014, pp. 32 and ICF and Eunomia 2018, p. 135 of the Annex).
[305] ICF and Eunomia (2018).
[306] OECD (2005).

stem from a robust analysis with all underlying assumptions transparently documented.[307] According to the true cost principle of EPR we suggest that the financial contributions should be determined based on all end-of-life management costs. These should also include costs that municipalities bear to manage those SUP products discarded in public collection system or littered (i.e., their collection, subsequent transport and treatment) as well as for awareness raising measures to target waste and/or littering prevention. Hence, for a German fund to foster re-usable products and waste prevention we suggest

a) either using these figures as the basis for the financial contributions of producers to the fund (e.g., 0.004 EUR per any cigarette placed on the European market by a producer; etc. – see Table 6)

b) or using the calculation method to commission an in-depth study to collect data for both compliance costs in Germany and SUP-items sold in Germany.

Option a) is a readily available figure, which is based on a robust impact assessment by ICF and Eunomia (2018) with transparent documentation of assumptions and data sources used. However, for a fund to foster re-usable products and waste prevention focusing on Germany, commissioning an own in-depth study based on national data could provide a more tailor-made solution. But this would require investing more financial resources and time until such a study could be delivering results to use for advancing such a fund idea further.
In addition, we recommend introducing differentiated fees for producers, in order to incentivise waste prevention, e.g., through designing for re-use. For example, fees can be differentiated according to the amount of reusable products of a producer: the higher the share of reusable products of a producer, the lower its financial contribution to the fund should be. Generally, contributions should be so high as to "be felt" by producers, and if passed on to the consumers through increased product prices, consumers might shift to other producers. Hence, if producers shift to reusable products, they pay lower contributions to the fund and therefore the product price should be lower than compared to products from manufacturers without/with less reusable products. The existing German EPR schemes on plastic packaging do require eco-modulation of producer fees, i.e., rewarding producers for eco-designing their plastic packaging. From 1 January 2019, the systems are obliged to use the system participation fees as a way of creating incentives for promoting recyclable packaging materials and the use of recycled materials as well as renewable raw materials. Which **minimum requirements the systems** must take as a basis **when assessing recyclability** is determined by the Central Agency Packaging Register in agreement with the Federal Environment Agency. This standard will be evaluated annually on the basis of technological development and the monitoring reports of the dual systems and then advanced. For instance, the German packaging waste PRO "Duales System Deutschland" (DSD) sets incentives for eco-design and optimising packaging for the scheme "Der Grüne Punkt" ("The Green Dot") by determining producer fees via weight and material composition of a packaging.[308] The actual producer fees are not published for reasons of competitiveness (some schemes do provide fee calculation tools via their websites[309]), but the Packaging Recovery Organisation Europe (PRO Europe) publishes material specific participation

[307] See: ICF and Eunomia (2018), Annex 2 and 3.
[308] DSD (Duales System Deutschland) (2017).
[309] E.g., the licence calculator of the German packaging scheme DSD, available under: https://portal.gruener-punkt.de/onlinedsd/f?p=200:81::::81:IH81_P1:EB6D8AE6F20283755B339C0DC273988B, URL accessed 4 May 2021.

costs for using 'The Green Dot' as a trademark.[310] In 2018, the following participation costs for using 'The Green Dot' as a trademark applied:

Table 6: Fees for isolated trademark use of 'The Green Dot'

Material	EUR/ton
Glass	1.00
Paper/cardboard	3.00
Tinplate	5.00
Aluminium	13.00
Plastics	17.00
Composite carton	13.00
Miscellaneous composites	13.00
Organic materials	2.00

Source: PRO Europe (2018), p. 23

These figures do only cover the use of the trademark, but any other costs required to meet obligations under German Packaging Law – hence actual costs will be higher. Reducing the amount of or changing the kind of packaging thus has direct implications for the fees producers have to pay.

Because the entry into force being so recent, we could not find any figures on eco-modulated producer fees for packaging in Germany. The French Packaging scheme Citeo may serve as an example, of how recyclability improvements could be incentivised. Citeo provides for a bonus of 8% on the total consumer sales units launched into the French market for recyclability improvements, such as switching from multi-material plastic packaging to PET mono-materials or removing the plastic package's black carbon dye in the outer layer.[311] Although from the textile sector, the French clothing, linen and footwear EPR scheme Eco TLC[312] may be another potentially relevant example. Eco TLC provides the following figures for producers' contributions, differentiated by very small (TPP), small (PP), average (MP) and large (GP) items, each of which also allows for cheaper environmentally weighted tariffs:

[310] PRO Europe (2018).
[311] Citeo (2019).
[312] Eco TLC is the sole French EPR organization (PRO; a not-for-profit private company formed in 2006), which French public authorities accredited to cover the clothing, linen and footwear sector.

Table 7: Overview of tariffs and environmentally weighted tariffs (eco-modulation) for Eco TLC

					Environmentally weighted tariffs 2019		
Material	**Item**	**2018 tariffs**	**2019 tariffs**	**Evolution**	**EM1**	**EM2**	**EM2**
Clothing	TP	0.00132	0.00156	18.55%	0.00039	0.00078	0.00117
Clothing	PP	0.00528	0.00626	18.55%	0.00156	0.00313	0.00469
Clothing	MP	0.00791	0.00938	18.55%	0.00234	0.00469	0.00703
Clothing	GP	0.05280	0.06259	18.55%	0.01565	0.03130	0.04695
Linen	TP	0.00132	0.00178	35%	0.00045	0.00089	0.00134
Linen	PP	0.00528	0.00713	35%	0.00178	0.00356	0.00535
Linen	MP	0.00791	0.01068	35%	0.00267	0.00534	0.00801
Linen	GP	0.05280	0.07128	35%	0.01782	0.03564	0.05346
Footwear	PP	0.00528	0.00739	40%	0.00185	0.00370	0.00554
Footwear	MP	0.00791	0.01107	40%	0.00277	0.00554	0.00831

Source: Eco TLC[313]

Eco TLC's Board of Directors sets these tariffs and revises them for each contribution year. Changes to tariffs can be based, for instance, on eco-design criteria, sustainability and integration of recycled fibres for the Products.[314] Eco-modulation or environmental weighting of fees could help motivate producers' efforts for eco-design and design-for-environment.[315] [316] [317] In order to ease the calculation of producer fees based on market data, the EPR scheme should (in accordance with Art. 8 (1) and (3) in combination with Art. 8a (1c) of the Waste Framework Directive) require producers of all eight SUP items to annually report on and declare quantities (or weights) and quality (in terms of reusable vs. single-use products, etc., to ease implementing eco-modulation of fees) of equipment placed on a given market – as, for instance, is the case in the French clothing, linen and footwear EPR scheme Eco TLC. Requiring producers to declare quantities could also ease the calculation of producers' contributions without having to monitor other market data. However, quantities are part of business secrets and should be treated confidentially, hence not be made public or accessible by the institution managing the fund. Furthermore, these reports/declarations must be accredited or reviewed by the fund (organisation) to cover against false claims and also free-riding.[318] When requiring producers to declare quantities, data should be given in unit of weight because charging fees per unit of weight instead of per units consumed is more likely to motivate reductions in the amounts of material used.[319]

[313] Eco TLC (no date).
[314] Eco TLC (2019), section 5.2 Revision of Contribution tariffs, p. 6.
[315] See Monier et al. (2014).
[316] OECD (2014).
[317] OECD (2016).
[318] Ibid.
[319] See OECD (2014), (2016).

MS may also set appropriate multiannual fixed amounts to determine financial contributions to such a fund.

4.1.6 Which principles to use to allocate financial means from the fund to states, regions and municipalities?

As mentioned above, the SUPD requires that producers take over financial responsibility for SUP products or packaging they put on the market, and public authorities take on operational responsibility for waste management of these products (including clean-up of littering), except for the "traditional" operative activities regarding SUP packaging waste (separate collection as packaging waste, transport and treatment at consumer´s homes, etc.). Hence, the key challenges for Member States are

- to establish a clear mechanism that ensures an adequate reimbursement of public authorities for their activities related to foster re-usable products and waste prevention. Such a mechanism needs to be transparent, cost-effective and fair concerning the financing agreements.[320]
- to encourage local authorities to undertake additional waste management activities relating to SUP products, on top of the on-going activities, in order to advance waste management.

The aspect of fairness does not only encompass how much each producer should contribute (see chapter 4.1.3), also in relation to other producers (proportional cost establishment according to Article 8 (4) SUPD), but also how much each municipality should receive from the fund.
Here it needs to be noted that waste management structures greatly differ between German municipalities, as do their geographic conditions (e.g., some encompass beaches; size of urban areas differs; population density differs, etc.). Thus, funds that local authorities allocate to waste management operations and infrastructures differ. Such "local particularities" need to be accounted for, as they could result in different claims for compensation related to SUP waste management.[321] Next, as local authorities organise SUP waste related activities, they are free, within the limits given by public procurement law, to choose suitable and appropriate clean-up, collection and treatment systems for their area. From the perspective of producers who are obligated to contribute financially, this can be a controversial issue. Producers may challenge whether the methods chosen by local authorities are cost-efficient, since Article 8 (4) SUPD limits the costs to be covered by producers to the costs necessary to provide the relevant services in a cost-efficient way. To illustrate this, in particular when municipalities have systems in place or want to introduce systems that deviate from the standard, this could lead to an unfair financial burden on producers.[322] In order to allow municipalities free choice of their SUP waste related activities and at the same time ensure fair cost sharing of producers, Monier et al. (2014) recommend to apply a reference formula or reference cost to determine the financial sum that needs to be covered. The authors mention two different principles. to a *minimum level of services*. This is applied for example in Belgium: "local authorities are reimbursed for packaging collection based on a certain level of collection services with defined frequency of collection and density of the collection network"[323]. Second, *optimised net costs* can be used as reference. The French use this principle for their EPR scheme on packaging waste. They assess the costs for "an optimal functioning of the collection and sorting operations"[323], and use this amount to define

[320] Cahill et al. (2011).
[321] EXPRA (2014).
[322] Monier et al. (2014).
[323] Ibid, p. 92.

the compensation a municipality is entitled to receive. In practice, for both principles this means that in case certain municipalities choose non-standard waste management procedures that might be more costly, producers only pay according to the agreed reference costs.
A reference cost approach could be a way to allocate financial means from the fund to local authorities, and it might increase producers' willingness to participate as it ensures a certain level of fairness. In such a scenario, based on calculation guidance provided by the public institution managing the fund, each municipality would calculate the reference cost and make it transparent. Here, it could be the role of the fund to specify the calculation method and to check whether the calculations are correct. Furthermore, similar to the Dutch EPR scheme mentioned above – the National Packaging Waste Fund – municipalities should report their activities in order to receive money from the fund. A further challenge for Member States is to design the EPR scheme in a way that encourages public authorities to adopt measures to foster re-usable products and waste prevention, additional to already on-going SUP waste management and clean-up activities. Here, one advantage of a fund solution is that it enables to distribute revenues more specifically. For example, only a certain share of the money collected in the fund may be earmarked for covering the costs of existing activities. The remaining share should be earmarked to cover costs for additional activities (or extension of existing measures in time, space, etc.), such as an expansion of the bin infrastructure, establishment of re-usable systems, etc. One particularity in the case of producer responsibility for SUP is of course that only producers of eight products (so far) are obligated to contribute financially to an EPR scheme. Yet, SUP waste related activities at municipal level are carried out for all waste collected in public waste bins. Producers obligated under the SUPD are thus not responsible to cover the complete sum of the reference costs, but only a certain share of it. Control mechanisms should be in place to monitor the effectiveness of the EPR system and to make deposits and expenditures transparent. Best, an independent body should assume this role (cf. chapter 4.1.3).[324] [325] In line with this, in case of the SUP products EPR scheme, an independent body that administers the fund could at the same time be in charge of monitoring the EPR system and settling disputes between local authorities and producers.

4.2 Insurance fund for fishing gear

4.2.1 Background

Council Regulation (EC) No 1224/2009 obligates all fishermen in Europe to retrieve or report lost fishing gear and to ensure that they have the appropriate equipment on board their vessels to do so. If they lose (part of) their gear, they are required to inform the Competent Authority of the flag Member State, who then informs the Competent Authority of the coastal Member State of the name and number of the vessel, the type of lost gear, the time and position where it was lost as well as the measures undertaken to retrieve the gear. In addition to this being a **bureaucratic disincentive** for the fishermen, it also provides no incentive for the fishermen to bring back to shore abandoned, lost or discarded fishing gear (ALDFG) that has been passively fished[326].

[324] Monier et al. (2014).
[325] OECD (2016).
[326] Egekvist, J. et. al. (2017).

The Port Reception Facilities Directive stipulates that all EU Member States must provide adequate port reception facilities to treat any ALDFG[327] [328]. In addition, EU Member States are required to install cost recovery systems. Fishing vessels coming to port must pay an indirect fee to the port when they land, regardless of whether they de facto have any waste or ghost gear to hand over (either their own or passively fished). Fishermen bringing their own or ALDFG to shore, more often than not run into several problems, most notably the fact that they are charged with costs for their collection and subsequent discarding or recycling, as part of the general landing fee. The European Commission's Strategy on Plastic in a Circular Economy proposes measures for reducing abandoned, lost or discarded fishing gear (ALDFG), including extended producer responsibility (EPR) and deposit-refund schemes[329]. EU Member States national and regional authorities are so encouraged to not only introduce EPR measures but also to **provide clear incentives for fishermen** to collect ALDFG. In addition to measures to improve the obligation to report lost fishing gear, a suitable and durable solution must be found to ensure that fishermen remain motivated and are incentivised to bring found fishing gear to shore and to hand it over to appropriate collection facilities. Several examples of such initiatives can be found across Europe and beyond, but these have mainly been organised by (pilot) projects financed by project funding, private initiatives or donors. A sustainable solution must be founded in legal grounds, moving beyond project funding.

4.2.2 General idea for an Insurance Fund for Fishing Gear

Fishermen are not penalised if they lose their fishing gear, but there are little ways for fishermen to compensate the financial loss, as there are no companies offering insurance for lost fishing gear or at least not those who provide specific insurance for lost gear[330] [331]. The revision of the Port Reception Facilities Directive is a step in the right direction in terms of lessening the disincentive for fishers to return ALDFG to shore, but there are two issues remaining. First, the revision does not focus specifically on ALDFG, and second, there are no direct incentives for fishermen to return ghost gear. In addition, Member States are free to design their national cost-recovery systems, and so their discrepancy and confusion remains for fishermen operating in EU waters. Therefore, also the SUP Directive in its preamble 23 states that 'the existing legal requirements laid down in Regulation (EC) No 1224/2009, Directive 2000/59/EC and Directive 2008/98/EC do not provide sufficient incentives to return such fishing gear to shore for collection and treatment'. A homogenous solution must be found that covers either full sea basins or rather, implemented EU-wide. An **institutionalised fund** needs to be designed to support fishermen with bringing ashore containers of old fishing gear, as well as to support the costs of their treatment (recycling) or discarding. Developing such an insurance fund for fishing gear will reduce cost shares to increase the incentive for fishermen to bring back ghost gear and bring a sense of liability for both the fishermen as well as EU Member States concerned with ghost gear. Similar to designing buy-back programmes where fishermen receive a financial reward for returning ghost gear, a suitable solution may also be the instalment of an insurance fund for fishing gear. Fishermen would be encouraged to take out insurances on their fishing gear at low fees. The fees would need to be relatively low, considering that fishermen and operators already have to pay a landing fee to port and since it can be assumed that most

[327] Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a community control system for ensuring compliance with the rules of the common fisheries policy.
[328] Proposal for a Directive of the European Parliament and the Council on port reception facilities for the delivery of waste from ships, repealing Directive 2009/59/EC and amending Directive 2009/16/EC.
[329] European Commission (2018a).
[330] Porthcawl Insurance Consultants Limited
[331] Result of our interviews with fishermen.

fishermen already pay regular insurance fees. As fishermen lose their gear, they would be entitled to request financial support with obtaining new gear, under the condition that they have returned ALDFG in the previous months. The volume of returned ghost gear would be directly linked to the amount of financial support the fishermen would receive. In this way, fishermen are incentivized to return higher quantities of returned ALDFG to ports. Following the proposed revision of the Port Reception Facilities Directive, a reduced landing fee could be designed for vessels that are able to demonstrate that they have appropriate procedures and materials on board to collect ALDFG (in line with the 'Green Ship' concept)[332].

4.2.3 Measures to be funded by an insurance fund for fishing gear

Following the Port Reception Facilities Directive (COM(2018)33 final), EU Member States are obligated to **design cost-recovery systems** (not limited to extended producer responsibility (EPR) schemes) to find ways to ensure appropriate waste management of ALDFG. In addition to the necessity of having suitable and convenient disposal facilities for ALDFG in ports, education campaigns for fishermen should be designed.

Figure 2 Possible activities to be covered by an insurance fund for fishing gear

Source: own illustration, s.Pro

An insurance fund for fishing gear would need to be coordinated by an independent body that ensures that the measures to manage ALDFG are implemented effectively and efficiently, and to ensure that fishermen returning ghost gear both pay their insurance fees to satisfaction and are subsequently rewarded appropriately (i.e., administration and coordination). An insurance fund for fishing gear must also appropriately track which vessels brings in what type of gear and the quantities. Furthermore, fishermen and ports must be made aware of and encouraged to join the insurance fund. This should be done through a well-coordinated awareness and promotion campaign – in line with a 'green port' or 'green ship' certification or labelling scheme. The MARELITT Baltic project showed that participating fishermen continued to land ALDFG even after project-end, implying that awareness raising would be an important activity to be undertaken by an insurance fund as fishermen are not always aware of their obligations to retrieve it; are dis-incentivised due to bureaucracy; and have to pay a landing fee regardless of whether they bring ALDFG to ports[333]. Previous initiatives have shown that peer pressure can be a strong tool to encourage fishermen to retrieve and bring ALDFG to port[334]. Fishermen should be encouraged to report the retrieval of ALDFG in their logbooks to show during inspection and should be made aware that the benefit of retrieving ghost gear is that it will not damage their own fishing gear during future fishing trips. The fund should also provide fishermen with the **appropriate tools and training for ALDFG retrieval**, following the manual developed by the

[332] Proposal for a Directive of the European Parliament and the Council on port reception facilities for the delivery of waste from ships, repealing Directive 2009/59/EC and amending Directive 2009/16/EC.
[333] Press, M. (2017), pp. 11.
[334] Global Ghost Gear Initiative (2018a).

Fundy North Fishermen's Association[335]. Additional activities could include support with data gathering, meaning that the coordinating body responsible for the insurance fund communicates the available information provided by the fishermen about the location and state of the found ghost gear to the appropriate authorities responsible for monitoring. The insurance fund should also invest in better navigation techniques that help to more precisely locate ALDFG and its retrieval.

4.2.4 Methods for calculating insurance fees

First, a comprehensive economic assessment must be made of the concrete financial costs of measures to rescue ALDFG. Specific figures must be retrieved for how much it costs to ensure that vessels have bags or containers on board to collect ALDFG (and their maintenance), how much it costs to retrieve it from the sea, as well as the concrete financial costs of collecting and storing the ghost gear in the port facilities, as well as the costs of treatment and transport. In order to design appropriate insurance fees that are agreeable for fishermen, interviews should be organised with fishermen, to research the insurance fees they currently pay and to explore agreeable fees for an insurance fund for fishing gear. Examples from across the globe can already provide some input regarding existing buy-back programmes and the financial rewards that fishermen are given for returning ALDFG. The fees should also reflect the fact that **pre-treatment of ALDFG** (sorting before transport to a recycling or incineration plant) costs around €60 Euro, and for hazardous waste this could even be €260 for incineration or €650 for recycling[336].

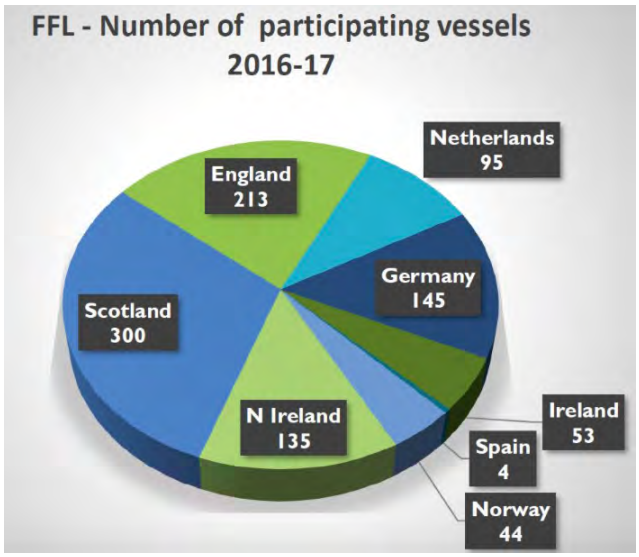
4.2.5 Existing examples of ALDFG retrieval during routine fishing operations

To date, in Europe mainly (pilot) projects have been targeting ALDFG, but they have mainly focused on research and not so much on actual retrieval. The EU-funded MARELITT project assessed marine litter removal projects and disseminated good practices for the removal of derelict fishing gear from the sea with the 'Toolkit Derelict Fishing Gear Retrieval'[337]. In addition to the Toolkit, the project also set up 'MARELITT Baltic', which was a joint initiative by three NGOs and KIMO Baltic that focused mainly on purposed retrieval, but also discussed routine retrieval of ALDFG by fishermen. From 2011 to 2015, KIMO Baltic and the Swedish municipality of Simrishamn ran a national 'Fishing for Litter' project where in each participating harbour, commercial fishermen voluntarily participated in collecting ALDFG and were provided with canvas bags by the project[338]. Fisheries Local Action Groups (FLAG) were included in the project as partners, as well as municipalities. From 2017 to 2021, a 'Fishing for Litter' project is taking place in the North Sea on the coast of Germany's Lower Saxony. The partnership includes small-scale fishermen, the Lower Saxony North Sea Coast FLAG, as well as NABU, an environmental NGO[339]. The grant from the FLAG was €223,561, with an EMFF contribution of €190,027 and a regional public contribution of €33,534. A similar project exists in Schleswig-Holstein, where both the state and the Ministry of Environment are financially supporting further expansion of the initiative, the latter in the form of € 26,000 to integrate more ports in the project[340]. In Estonia, the Environmental Investment Centre has financed ALDFG retrieval activities as part of routine fishing trips[341]. In Denmark, the pilot project 'Ghost Nets' was funded by the Ministry of

[335] Huntington, T. (2019).
[336] Interview with Marelitt project partners
[337] Stolte, A. et al. (2019),
[338] Camper, A.-M. (2018)
[339] FARNET (2018)
[340] Fishing for Litter (2019)
[341] Stolte, A. et al (2019), p. 3, p. 5 and p. 27.

Environment and Food and the Danish Environmental Protection Agency. In the UK, the 'Fishing for Litter Scotland' initiative focuses on bringing litter and ALDFG to shore as part of routine fishing activities. It is now included in Regional Action Plans and the Scottish Marine Litter Strategy. The project is active across the UK, Scandinavia and Western Europe and the partnership includes fishermen, harbour masters, KIMO, national and local governments, as well as the industry and fishing organisations. The project costs €108,000 for two years, covering 31 ports and 380 participating vessels. The 'Fishing for Litter' projects originally started as a project by the North Sea Directorate of the Dutch Government in cooperation with the Dutch Fisheries Association and subsequently rolled out to other North Sea countries[342]. Today, it is run by KIMO International (Local Authorities International Environmental Organisation - an association of coastal local authorities) and fishermen are encouraged to sign up to the project online, to be provided with bags to collect ALDFG, which are then regularly collected in port to be recycled or disposed. The figure below shows how many vessels participate in the 'Fishing for Litter' projects:

Figure 3 Number of participating vessels in 'Fishing for Litter' projects



Source: https://fishingforlitter.org/fishing-for-litter/

The Dutch 'Green Deal Fisheries for a Clean Seas' (signed in 2014) aims to extend the existing 'Fishing for Litter' programme and includes partners from the fisheries sector, ports, waste management facilities, NGOs and government authorities[343]. Outside of Europe, examples exist from Norway, the United States as well as Korea, and on a global level the Global Ghost Gear Initiative brings together governments, private sector corporations, the fishing industry, NGOs and academia to tackle ALDFG. It provides a list of resources useful for the design of ALDFG projects and implements and endorses many projects worldwide[344]. In Norway, the national Environment Agency funds the collection of lobster cages in fjords and assists environmental monitoring. This scheme is coordinated by local environment agencies and realized through national funds. Norway is also exploring also a national 'Fishing for Litter' system following a successful project in nine harbours, where collected ALDFG can be returned to ports free of charge, implying that these costs are not included in a general landing fee. When collected in the

[342] Global Ghost Gear Initiative (2018b)
[343] KIMO (2019)
[344] Global Ghost Gear Initiative (2019)

port, the gear goes back to the producer. In Korea, the budget for the 'Waste Fishing Gear Buy-back' project is shared between central and local governments and is implemented by the Ministry of Land, Transport and Maritime Affairs[345]. The partnership consists of local municipalities, the fisheries cooperative union, the Korea Marine Environment Management Corporation, the Korea Fisheries Infrastructure Promotion Association and the fishermen themselves. The payments to the fishermen under the project are structured as follows:

Figure 4 Payments to fishermen by the 'Waste Fishing Gear Buy-back' project in Korea

Sacks	**Payment**
40 litres	€3.60
100 litres	€9
200 litres	€18
Larger debris	**Payment**
1 kg	€0.23
Shell, crab and eel traps	**Payment**
Per item	€0.14 – € 0.23

Source: Macfadyen, G. et al: FAO Technical Paper (2009)

In the United States, 'Fishing for Energy' is a public-private partnership that includes partners from agencies, NGOs (National Oceanic and Atmospheric Administration; National Fish and Wildlife Foundation), governmental authorities as well as the industry (Covanta Energy Corporation; Schnitzer Steel Industries), that aims to remove barriers to proper ghost gear disposal. It focuses on providing adequate disposal mechanisms in ports, as well as incentives for fishermen to bring ALDFG to shore. Covanta Energy has expanded the project for five years and the project's business model aims to bring the developed services to individual ports. The costs of the measures developed under the project included gear processing and bin rental costs[346]. In Australia, the Northern Prawn Fishery Industry Operator is working together with World Animal Protection to reduce ghost gear and to support fishermen with voluntarily retrieving the ALDFG. The project is self-funded by the industry and appreciated by the fishermen and local community[347].

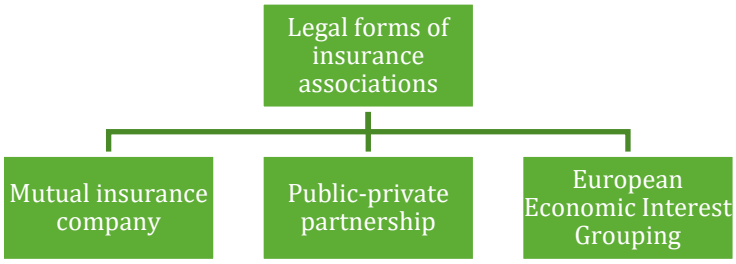
4.2.6 Institutional set-up

Lost gear means lost income, and ghost gear begets more ghost gear as it can damage fishermen's own gear. The plans for introducing EPR fees to improve the management of ALDFG are a good initiative, but this does not increase the incentive for fishermen to bring back ghost gear to shore, or to increase the quantity of returned gear. As fishermen and operators are already required to pay a landing fee, which in practice may act as a disincentive, any further measures must be designed in such a way that fishermen and operators are provided with a positive incentive to return (higher quantities of) ALDFG. Initiatives such as 'Fishing for Litter', the Global Ghost Gear initiative as well as local projects are excellent measures to increase the incentive for fishermen to bring ALDFG to shore, but these are not permanent structures. European posts are able to charge fishermen an additional fee for landing ALDFG, in addition to the normal landing fee, which is something that the proposed revision of the Port Reception Facilities Directive aims to prohibit, in part through EPR schemes. This is still not a fool proof

[345] Morishige, C. (ed.) (2010)
[346] Morishige, C. (ed.) (2010)
[347] Global Ghost Gear Initiative (2018c)

assurance to fishermen that they will not run into costs for retrieving ALDFG and this is where an insurance fund for fishing gear comes in. Several set-ups are possible, as presented in the figure below.

Figure 5 Proposed set-ups for a fishermen's insurance



Source: own illustration, s.Pro

A **mutual insurance company** would provide collective self-insurance to its members, who in this case would be the fishermen. By pooling their risks together in the fund, fishermen could obtain insurance at a fee and ensure that they could replace their fishing gear when lost[348]. The drawbacks of installing the fund for fisheries insurance through a mutual insurance company would be that the success depends on the number of fishermen joining, and there is no possibility to make use of available public funding, or to engage private actors. If the fund were to be installed as a mutual insurance company, it can be assumed that the management would be outsourced to a dedicated management company, which would then reinvest the fees to develop a profit, which is then distributed among the members at a certain point in time[349]. This does not provide a direct incentive for fishermen to bring back (high quantities of) ALDFG.
The Global Ghost Gear Initiative developed a 'Best Practice Framework for the Management of Fishing Gear' and in 2017 organised a consultation with fishermen to get their feedback[350]. The figure below shows that 80% of the respondents agreed that a regulatory approach would be most suitable to manage ghost gear.

Figure 6 Approaches for managing ghost gear

Table 9. Which of the following approaches are best suited for managing ghost gear and its impacts?

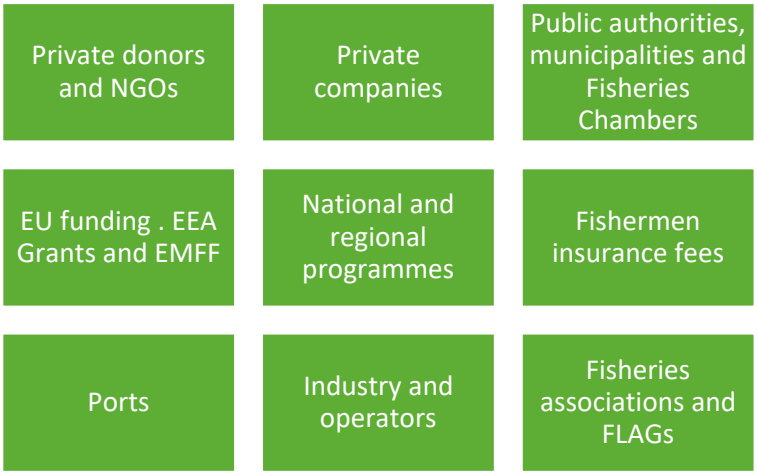
ANSWER CHOICES	RESPONSES (%)	RESPONSES (#)
Supply chain approaches	50	12
Regulatory approaches	80	19
Government approaches	30	7
Certification approaches	50	12
	Total respondents	24

Source: Macfadyen, G. et al: FAO Technical Paper (2009)

[348] Rosen, R. (2019)
[349] Bar Mutual (2019)
[350] Huntington, T. (2017).

A second option would thus be to develop the fund for fisheries gear as a **public-private partnership**. In this way, the income streams from fishermen and ports could be supplemented by EU, national or private funding. This would allow for the introduction of buy-back schemes, where the fishermen receive direct rewards for bringing in ALDFG. The examples as presented above have shown that economies of scale are needed to increase the effect of projects. The same is valid for setting up an insurance fund, which should be organised on a large scale so that knowledge and expertise from various EU Member States can be combined, as well as so benefiting from reduced costs and increased efficiency (i.e., the more fishermen, ports and other partners involved, the more the fund will benefit from economies of scale). Considering the examples as presented above, an insurance fund for fishing gear would need to be funded from external sources in addition to the insurance fees paid by fishermen, to ensure that all measures can be financed in a durable and financially sustainable way. Designing an appropriate set-up for an insurance fund for fishing gear would need to consider many possible funding sources and ensure that the legal set-up is eligible for these. The figure below presents possible income streams:

Figure 7 Overview of funding sources for the fishermen's fund



Source: own illustration, s.Pro

For the period 2014-2020, €53 million is available in the European Maritime and Fisheries Fund for projects focusing on rewarding fishermen for retrieving ALDFG. This could provide funding for 2-3 years, although the EMFF will be restructured in 2026. Private donors could include NGOs and charities such as Blue Marine or the Leonardo DiCaprio Foundation. Private companies could include suppliers providing in-kind contributions, such as gear manufacturers, waste management companies, large fishing companies and ports following the polluter-pays principle and capitalising on companies willing to invest in corporate social responsibility schemes. Gear manufacturing companies and energy companies may be interested to join the fund since some ALDFG could be recycled. Waste operators may be interested in sponsoring the project in-kind if a financial contribution is relatively minor in comparison to their general revenue as this provides public recognition of their efforts to implement sustainable activities. In addition, tourist operators such as diving clubs or beach facilities may contribute to the fund as ALDFG negatively impacts the activities on which they rely. Encouraging fishermen to join the fund should be structured around several reasons, most notably that ALDFG is a risk to their own gear. Previous projects have shown that fishermen in addition to financial incentives or buy-back programmes, may be motivated by public recognition of their involvement. Including FLAGs in project partnerships has guaranteed a direct link to the fishermen and they should also

be included in the insurance fund. To ensure a long-term solution, EU Member State authorities such as Fisheries, Agriculture or Environment Ministries, or Fisheries Chambers may take the lead to coordinate national insurance funds for fishing gear, although ideally this would be arranged on a sea basin or even EU-wide level, considering that the problem of ALDFG is a regional one as the ghost gear drifts across boundaries and since fishermen tend to be active across sea basins. Central coordination at supra-national level is also crucial to ensure a consistent approach that fishermen can adhere to. Regional cooperation also opens up opportunities to fund the insurance fund with regional funding such as INTERREG, but also national funding such as the EMFF. Lastly, a third possible legal structure for a fund for fisheries insurance could be found in establishing a **European Economic Interest Grouping** (EEIG), which makes it easier for European companies to form consortia to partake in EU programmes or to generally do business together[351]. The activities of an EEIG must be ancillary to those of its members, meaning that it is crucial to involve partners that are both fishermen as well as ports and recycling companies. It could also be argued that a fund for fisheries insurance be established as an NGO or a private foundation, but this would not be encouraged as there are already many NGOs in Europe; NGOs are not always eligible for EU or national funding; and the relationship between NGOs and fishermen is not always ideal.

4.2.7 Remaining issues

Hygienic and sanitary topics are aspects which have to be solved, considering that DFG is considered to be hazardous waste. Also, smaller fishing vessels do not have enough space to put a retrieved net on board. Fishing vessels are likely to experience increased labour costs from ALDFG retrieval. The proportion of towing time to the time taken to pull up the device is often unfavourable. To prevent the nets escaping from the 'searching hooks', the device must be pulled up very carefully, which often takes two to three hours and requires constant attention. Any haste leads to the loss of the nets caught[352]. Some of these aspects have been considered in chapter 3.3.2

[351] GlobalNegotiator (2019).
[352] Tschernij, V. (2019), p. 13.

5 Conclusion and recommendations

5.1 Single-use plastic products

Based on the findings on SUP products gathered in this report, in Table 8 below we present key issues, which in our view should be considered when implementing Art. 8 of the SUP-Directive.

Table 8: Overview of key issues for consideration when implementing Art. 8 SUP-Directive

Aspect	Issues for consideration
Definition of the term "cleaning up litter"	There is no legal definition of the term cleaning up litter in the SUPD. Defining the term in a transposing legal act might be seen by the European Commission as an unjustified narrowing-down of the scope and, in the worst case, could lead to infringement procedures. Therefore, it would be preferable for Member States to simply adopt the term "cleaning up litter" in their implementing acts and leave it to the administration and the national courts to enforce and interpret this term in a manner that conforms to fundamental rights, especially the principle of proportionality. However, when calculating producer contributions to a fund ("Waste-free environment fund"), a wide scope of potentially relevant systems where SUP product waste could accumulate, is needed in order to clarify the system boundaries for financial producer responsibility. When answering the question what focal areas shall be included in clean-up cost coverage, we suggest including costs for clean-up activities that include: Beach clean-ups to clean-up marine litter washed onshore, regardless of whether beaches are for bathing or not; Clean-ups of banks to clean up litter along waterways, rivers, creeks, ditches, canals, lakes and ponds; Terrestrial clean-ups to clean up litter along roads, streets, motorways and their shoulders, in green strips/spaces, rest areas, public parking areas, public places, green areas and parks. This is not meant as a(ny) legal definition. Member States should consider approaching the European Commission in order to reach at least some certainty regarding the scope of "cleaning up litter". In their upcoming guidelines for criteria on the cost of cleaning up litter, the Commission could give, in consultation with Member States, at least some (non-binding) indication on the scope of cleaning up litter according to the SUPD.
Scope of producers' financial responsibility	Across all phases (from awareness raising to waste collection and cleaning up litter) we suggest that producers of SUP products shall pay for SUP waste-related measures already implemented by

Aspect	Issues for consideration
for existing "vs." additional measures	municipalities as well as for additional measures to be implemented in the future according to the SUP Directive. Additional measures could include the setting-up of appropriate options for separate waste collection in public spaces; e.g. (i) installing waste bins with waste separation for separate collection of plastic and other waste(s); (ii) organising transport in a way that maintains waste separation; and (iii) awareness raising measures to sensitise for waste separation (information on or nearby public waste bins). Cleaning up litter in focal areas not yet (considered as part of being) included in public authorities´ cleaning activities concerning SUP litter (*see the aspect "definition of the term cleaning up litter" above*) Financial contributions of producers should be used to encourage public authorities to undertake additional measures in order to advance (SUP) re-usable products and waste prevention and related activities. Introducing a fund ("waste-free environment fund") administered by a public body would allow distributing revenues more specifically. For example, only a certain share of the money collected in the fund could be earmarked for covering the costs of existing activities, while the remaining share is earmarked for additional activities, such as an expansion of the bin infrastructure, establishment of re-usable systems, etc.
Calculation methods and appropriateness of producers' financial contributions to a fund	In order to assess the appropriateness of producers' financial responsibility under Art. 8 of the SUP Directive, a plausible and transparent methodology for calculating costs and financial contributions will be needed. It was beyond this project to analyse and compare different methods for cost calculations or to derive recommendations in this regard. However, we suggest looking at least at the following two options for calculating costs and financial contributions of producers: Determining a percentage share per product based on the quantities of products that a producer places on the market in a country or in the EU; Determining a percentage share per product based on clean-up monitoring data of littered items found on beaches, along shores, along rivers, in green spaces and parks / fishing-for-litter data. This data should be used to pro-rate the different SUP products' relative contribution to the clean-up costs (based on beach and other clean-up monitoring data in terms of number of product items found or weight of product items found). For instance, ICF and Eunomia report that municipal authorities in the US-city of San Francisco "*have implemented a scheme whereby the manufacturers of cigarettes pay the municipal authorities the relative cost of clean-up of dropped filters. In this case the proportion is 50% by count,*

Aspect	Issues for consideration
	and so the companies pay this share of the total cost" (ICF and Eunomia 2018, p. 49, footnote 96).
Transparent and fair distribution of producer payments to municipalities	Member States should establish a transparent, cost-effective and fair mechanism to distribute the collected producer payments under the EPR scheme to public authorities, and, thus, ensure adequate compensation for their SUP related activities. Public authorities (at municipal level) should be free to choose suitable and appropriate clean-up, collection and treatment systems for their area. To avoid conflicts with producers regarding the cost-efficiency of chosen measures, Member States should consider introducing a reference formula/reference cost approach. This might increase producers' willingness to participate, as it ensures a certain level of fairness regarding the costs of measures. In addition, municipalities should be obligated to report their activities in order to receive money from the fund. More generally, control mechanisms should be in place to monitor the effectiveness of the EPR system and to make deposits and expenditures transparent. An independent body that administers the fund could at the same time be in charge of monitoring the EPR system and settling disputes between local authorities and producers.
Scope of lightweight plastic carrier bags covered	The consumption of very lightweight plastic carrier bags (named 'Hemdchenbeutel' in German) remains very high, as this type of bag is excluded from all recent actions, such as voluntary agreements among retailers not to give out plastic carrier bags for free. These very lightweight 'Hemdchenbeutel' are frequently used on farmers' / weekly markets as well as in grocery stores, e.g. at fruit and vegetable displays/shelves. These bags are very thin and difficult to recycle. Consumers might be tempted to use very lightweight plastic carrier bags instead of paying for other lightweight plastic carrier bags at checkout. Therefore, we suggest that when implementing the SUPD EPR schemes in regard to lightweight plastic carrier bags, to explicitly cover very lightweight plastic carrier bags so that producers have to (partly) cover the costs of the necessary operational measures regarding these products. This might lead to retailers also not giving out 'Hemdchenbeutel' any longer for free – and/or introduce reusable alternatives – and hence might reduce their consumption and littering.
Conformity with WTO law	In order to conform to Article III:4 GATT, Member States should, when transposing Article 8 (6) SUPD into national systems, also allow producers established outside the EU to appoint an

Aspect	Issues for consideration
	authorised representative for the purpose of fulfilling producer´s obligations regarding EPR schemes on their territories.

5.2 Fishing gear

Based on the findings on fishing gear products gathered in this report, in Table 7 below we present key issues, which in our view should be considered when implementing Art. 8 of the SUP-Directive.

Table 9 Overview of key issues for consideration when implementing Art. 8 SUP-Directive

Aspect	Issues for consideration
The aim to achieve an end-of-life cycle with regard to EPR can be better achieved with trans-boundary measures	Cross-border activities could result in joint efforts to install further recycling plants for fishing gear between two or three neighbouring countries or to avoid patchwork approaches of different Member States
Scope of producers' financial responsibility	Some fisheries are both, producers of gear and fishermen, e.g., shrimp fishermen often produce their nets themselves and can be considered as producers as well. Across all phases (from awareness raising to waste collection and cleaning up litter) Develop national / Federal State recommendations with clear definitions of Develop national / Federal State recommendations with clear definitions of a producer; when developing a national / Federal State law to implement the SUPD provisions clearly define who is addressed by the law and differentiate between small and large-scale fisheries. a producer; when developing a national / Federal State law to implement the SUPD provisions clearly define who is addressed by the law and differentiate between small Develop national / Federal State recommendations with clear definitions what a 'producer' is. When developing a national / Federal State law to implement the SUPD provisions, clearly define who is addressed by the law and differentiate between small and large-scale fisheries.
The revised Port Reception Facilities Directive and the new EPR schemes foreseen by Member States to implement the SUPD may increase port fees if more waste is brought ashore and waste handling facilities are not upgraded.	EPR measures should foresee the upgrading of waste handling facilities, especially in the small fishing ports that many vessels use.
Use synergies between sectors	The different sectors of fisheries and aquaculture should be treated as one provider of old gear to achieve a relevant number of recycling material to be economical beneficial.

Aspect	Issues for consideration
Define collection rates	Member States should ensure that waste fishing gear and retrieved gear from the marine environment (ALDFG) are collected separately with a national minimum annual collection rate of waste fishing gear (end-of-life gear that has been delivered to adequate port reception facilities or other public collection systems by the owners (fishermen or aquaculture farmers)). to allow for recycling of waste fishing gear.
Monitoring the final location of fishing gear should be an integral part of the EPR collection measures	If monitoring is an integral part of the EPR measures, the marginal cost is almost zero. This may support the idea of high recycling rates due to the EPR measures although it does not in itself reduce littering or increase the percentage of waste returned to ports.
Poor transport opportunities of gear between harbours and recycling facilities	EPR measures should enclose the improvement of transport logistics of gear from fishing harbours to recycling facilities.
Currently, the SUPD is not foreseeing the responsibility of producers for clean-up measures related to fishing / aquaculture gear	This gap can be closed by national legislation by extending the legislative frame and including clean-up responsibilities for ALDFG for producers. EPR schemes for fishing gear should therefore involve obligations to cover clean-up costs for ALDFG, which is in line with the principle of producer responsibility for post consumption, but contributions would be spread across the sectors concerned and under established rules of financial and operational transparency.
Support the creation of a new CEN/TC 466 to develop standards for sustainability and circularity regarding sustainable fisheries and aquaculture products.	The envisioned new CEN/TC includes fishing gear and its components. The scope includes technical requirements for circular gear, material use and design – both for circularity and environmentally conscious design – and also processes and systems in terms of management and implementation – collecting, monitoring, traceability, repairing and recycling, environmental monitoring and data reporting. The new CEN/TC would directly support the aims of the EPR provisions of the SUP-D.

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Wüstenberg, Dirk (2019): Neue Unternehmerpflichten nach der Einwegplastik-Richtlinie, Europäische Zeitschrift für Wirtschaftsrecht (EuZW) Heft 15/2019, p. 633-638.

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A Appendix – SUP product-specific and fishing gear-specific factsheets for EPR measures

A.1 Factsheet: Wet wipes

Fact sheet regarding EPR measures for wet wipes, i.e., pre-wetted personal care and domestic wipes

General notes: Pre-wetted wipes for personal care and domestic use are not made for re-use. According to stakeholder feedback that the EC obtained during workshops and a public consultation on SUP, consumer level approaches, awareness-raising and positive incentives seem best placed to encourage using reusable alternatives (i.e., different materials.) (European Commission 2018d).

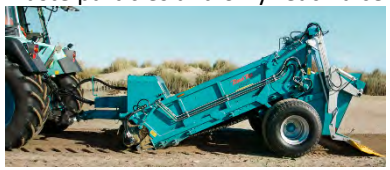
Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
Collection phase measures The SUP-Directive states that "[t]he relevance of some requirements depends on the characteristics of the product. Separate collection is not required to ensure proper treatment in line with the waste hierarchy for tobacco products, wet wipes and balloons. Therefore, setting up separate collection for those products is not mandatory." (European Union 2019, Recital 22) Accordingly, Art. 8 No. 2 of the SUP-Directive requires producers of wet wipes to cover costs only for a) awareness raising; b) clean-up and subsequent transport and treatment; c) data gathering and reporting. Currently, research does not see possibilities of developing pathways for the collection or recycling of wet wipes (ICF and Eunomia 2018). Therefore, we do not suggest any specific measures for separate collection. Clean-ups, in contrast, function as collection activities of wet wipes that already found their way into the environment, predominantly via flushing down toilets and not properly retained in sewer systems (*see below in the row "Clean-up phase measures"*). In addition, measures suggested under awareness-raising shall help sensitising people (i) to use plastic-free or reusable (for SUP prevention) (or truly flushable) alternatives; and (ii) not to flush, but rather to bin used wet wipes.	Art. 8 No. 2 does not hold wet wipe producers financially accountable for covering the costs of collection, transport and treatment of waste collected in public collection systems.
Pro and contra arguments: Therefore, if people are to bin wet wipes much more, then bins need to be available in / in close proximity to public restrooms as well as in restaurants and other places in public locations, where restrooms are available. In combination with labels and product information giving guidance on proper disposal of used wet wipes, this will help preventing their flushing, hence reduce the need for clean-up and also the risk of marine litter generation from wet wipe residues.	
Transport phase measures: No specific transport-related measures are needed for transporting wet wipes from clean-ups or public waste bins to treatment facilities.	*The SUP-Directive only obliges producers of wet wipes to cover costs for transport from clean-ups (Art. 8 No. 2), but not for transport of items collected in public collection systems (i.e. public bins).*

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
Treatment phase measures Currently, research does not see possibilities of developing pathways for the collection, recycling or composting (e.g. because synthetic fibres do not break down and the chemicals used in the wet wipes destroy the soil's ecology) of wet wipes (ICF and Eunomia 2018).[353,354] Therefore, the treatment phase seems limited to incineration and landfilling. **Pro and contra arguments:** In landfills, wet wipes might not degrade for a very long time because a) it takes up to 100 years for the polyester fibres in wet wipes to biodegrade, and b) the antibacterial alcohol used in wet wipes kills bacteria and enzymes working on breaking down solid waste in landfill sites (European Commission 2018f). Therefore, efforts should focus on reducing the use of single-use wet wipes by substituting them for reusable alternatives as much as possible. Second, wet wipes should be incinerated instead of landfilled (ICF and Eunomia 2018). **Clean-up phase measures** Wet wipes find their way into the environment mainly through the sewer system, when flushed down the toilet. Plastic-containing wet wipes (there also wet wipes made purely of cotton on the market) pose a challenge to sewer systems, because their plastic containing fibres do not decompose and thus not only lead to sewer blocking and pump clogging, but the wipes also find their way into rivers and seas and onto beaches (Eunomia 2018; ICF and Eunomia 2018, WaterUK 2017). On British beaches, clean-up volunteers found approx. 27 wet wipes per 100 metres of beach cleaned in 2017, compared to 14 wet wipes per 100 metres in 2016 – this is an increase of 93% (Marine Conservation Society 2017). Along the river Thames, UK, British volunteers picked up around 120,000 wet wipes in the first half of 2018 from one stretch of the riverbank near Hammersmith Bridge alone.[355] A survey among 49 coastal municipalities along Germany's North Sea and Baltic Sea shores found that municipalities clean their bathing beach stretches mostly in combination of a machine-based mechanical basic cleaning followed by manual cleaning by hand, pincer or rake (Holzhauer 2016). Altogether, these	*The SUP-Directive only obliges producers of wet wipes to cover costs for transport from clean-ups (Art. 8 No. 2), but not for transport for items collected in public collection systems (i.e. public bins).* According to the impact assessment of the SUP-Directive, the estimated annual costs for • producers of wet wipes for compliance with EPR requirements according to the SUP-Directive 2019/904 are 26 million EUR, of which 15 million EUR are for clean-up costs and 11 million EUR for disposal costs (ICF and Eunomia 2018, p. 137 in the annex) • public administration for waste management is 25 million EUR (European Commission 2018f, p. 74) As clean-ups are necessary for a number of littered items, including wet wipes, costs for clean-ups cannot be (easily) related to single categories of single-use plastic products. However, assigning costs by percentage to the frequency of litter findings of different products may be a way forward – this is how ICF and Eunomia (2018) arrived at cost calculations of compliance with EPR requirements under the SUP-Directive. The SUP-Directive only requires that the costs to be covered under Art. 8 "shall not exceed the costs that are necessary to provide the services referred to therein in a cost-efficient way and shall be established in a transparent way between the actors concerned […] *[and that]* the costs of cleaning up litter shall be limited to activities undertaken by public authorities or on their behalf" (Art. 8 SUP-Directive). Furthermore, the Directive specifies that a "calculation methodology shall be

[353] https://www.greenpeople.co.uk/beauty-hub/blog/washed-wet-wipes-clogging-british-beaches, URL accessed 4 April 2019.

[354] https://www.dailymail.co.uk/news/article-3003415/How-wet-wipes-destroying-planet-clogging-sewers-creating-floods-noxious-waste-triggering-outbreaks-allergies.html, URL accessed 4 April 2019.

[355] https://www.bbc.com/news/uk-46188354, URL accessed 4 April 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
municipalities collect more than 190 tonnes of waste annually during beach cleaning, more than 80% of which are plastics (Holzhauer 2016). **Pro and contra arguments:** A variety of technologies and machinery for beach cleaning exists and is used around the globe. Machinery, such as BeachTech cleaning machines (see picture below)[356], collect (plastic) waste and seagrass with harrow-like devices and also currycomb the beach leaving a nice visual impression, but usually do not pick up small waste particles and only reach a certain sand depth.  Wheel-type loader, which are also used for beach cleaning in coastal communities around the world, can collect larger quantities and also reach deeper sand layers, but they also collect large amounts of water, sand and biota, which need to be manually cleaned from waste and returned to the beach (Deutscher Bundestag 2008; Holzhauer 2016). Currently, projects are underway which develop machinery that rather sift through than collect the sand for clean-up (Deutscher Bundestag 2008). While technically not a challenge, beach cleaning poses an economical challenge because costs are high and so far mostly borne by municipalities (see column on the right on cost estimates). According to Art. 8 2. SUP-Directive, clean-up costs for wet wipes should be borne by wet wipe producers, but shall be limited to activities undertaken by public authorities or on their behalf. Clean-ups for wet wipes should encompass both beach and waterway cleaning as well as sewer unblocking, as wet wipes are often flushed and often cause sewer blockings, which are costly for utilities to remove. Hence, wet wipe produces should cover costs for the above clean-up activities sewers in relation to their wet wipes' contribution to beach and waterway littering and sewer blocking, relative to their contribution to the problem. This could be operationalised by charging those producers who do not label their products as "do not flush" or whose products do not conform to flushability standard according to their market share of wet wipes (Eunomia 2018). [357,]	developed in a way that allows for the costs of cleaning up litter to be established in a proportionate way" (Art. 8 SUP-Directive). According to the impact assessment of the SUP-Directive estimated annual costs for producers of wet wipes for clean-up costs amount to 15 million EUR (ICF and Eunomia 2018, p. 137 in the annex). Costs for clean-ups are mostly covered by public administrations, as usually, municipal waste management is responsible for beach litter clean-ups. An exception are voluntary cleanup activities. Cost estimates for cleaning beaches across the entire EU range from several hundred million EUR to up to 2 billion EUR per annum (ICF and Eunomia 2018, p. 135 in the annex). This range is due to lower costs for beaches vs. bathing beaches as well as to assumptions that beach clean-ups would need to increase in frequency to handle increasing beach litter masses in the coming years. Hence, costs for cleaning up beaches and waterways differ depending on a number of factors (e.g. beach and waterway lengths, cleaning intervals, tourism, population size) from one locality to the next. For instance, for the Hudson-Raritan Estuary in the Northeast of the USA (includes New York City, parts of New York, and parts of New Jersey) beach and waterway clean-up costs amount to approximately 2.7 million US-$ annually on average (Columbia Marine Debris Research Team 2015). For the West Coast communities in California, Oregon and Washington, USA, annual spending on beach and waterway cleaning to combat beach litter and marine debris

[356] https://www.beach-tech.com/usa/en/models/large-beaches/beachtech-2000.html, URL accessed 5 April 2019.

[357] European Commission (2018). IMPACT ASSESSMENT. Reducing Marine Litter: action on single use plastics and fishing gear. SWD(2018) 254 final, PART 3/3.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
	are estimated around 520 million US-$, with average cost for individual cities of approx. 57,000 US-$ (Stickel et al. 2012). A survey among 49 coastal municipalities along Germany's North Sea and Baltic Sea shores found estimates for clean-up costs (which encompass personnel and machinery for collection, transport and disposal of litter collected during clean-ups) for on average 2.6 km long beach stretches of around 55,000 EUR (Holzhauer 2016). Producers of wet wipes should also be responsible for covering costs for sewer unblocking and cleaning from wet wipes. Sewer cleaning costs can be very high: the UK representation of main water and sewerage companies, Water UK, reported that wet wipes are mainly causing the approx. 300,000 sewer blockages occurring annually in the UK, leading to cost of £100 million to clear (Eunomia 2018). For US municipalities, costs of dealing with wet wipe-related sewer blockages (e.g. through grinder pumps, which break up the wipes) are estimated to be around 1 billion US$ annually.[358] It should be noted that some unblocking methods, such as grinding, shifts the problem further downstream as wipes break down to smaller pieces that may find their way into marine ecosystems. In New York City alone, cost estimates amount to 18 million US-$ on "wipe-related equipment problems" between 2010 and 2015.[359]
Awareness raising measures	According to Art. 8 2. SUP-Directive, costs for awareness raising measures in relation to wet wipes should be borne by

[358] https://www.bloomberg.com/news/features/2019-03-15/what-s-a-fatberg-nyc-goes-to-war-against-flushable-toilet-wipes, URL accessed 27 June 2019.

[359] https://www.theguardian.com/environment/2015/mar/19/dont-flush-wet-wipes-toilet-conservationists, URL accessed 3 April 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
Wet wipes are often flushed down the toilet. Often, convenience as well as hygienic concerns regarding how best to "store" used wet wipes (in particular when used as a supplement to toilet paper), but also poor product labelling by manufacturers seem to be reasons for flushing used wet wipes (ICF and Eunomia 2018). Hence, consumers might be unaware of the impacts of flushing and of appropriate disposal options.[360] If wet wipes are flushed down the toilet, their plastic containing fibres may lead to sewer blocking and pump clogging and also might find their way into the seas (Eunomia 2018). Reusable product alternatives for wet wipes do exist. As wet wipes are frequently used for baby hygiene, cleaning and as make-up pads, product alternatives encompass reusable options such as (wash) cloths. Specifically: • For toilet use: a) moisturising sprays, which can make normal toilet paper feel and act like wet wipes b) bidet shower/bum gun/bidet spray, e.g. used in Asian countries, could be an integral part in newly installed toilet rooms • For baby and facial wipes: washable wipes made of cotton which can be used with natural moisturising alternatives.' Furthermore, plastic-free alternatives, mostly cotton-based, exist. These can be single- or multi-use – as their decomposition is not guaranteed in sewer systems, they should not be flushed either, but binned. Low recyclability for such alternatives makes them significantly less sustainable than reusable alternatives (Eunomia 2018; ICF and Eunomia 2018). Stakeholder feedback that the EC obtained during workshops and public consultation linked to SUP points to a greater need for awareness-raising and positive incentives to foster replacing those items for which more sustainable alternatives exist (European Commission 2018d). As a consequence of sewer ruptures in Ibiza in 2017, polluting several hundred metres of coastline with a tangle of used wipes and detritus, the regional government of the Balearic Islands has enacted regulations, which require, that by 2020, wet wipes placed on Balearic markets are clearly labelled in order to stop people flushing them down the toilet (European Commission 2018b; e).[361]	wet wipe producers, but shall be limited to activities undertaken by public authorities or on their behalf. Awareness raising and information campaigns could be rolled out with a clear and also limited public budget. In addition, industry or PROs could be made to pay for rolling out such campaigns. According to the impact assessment of the SUP-Directive estimated annual costs for producers of wet wipes for information provision amount to 58 million EUR (European Commission 2018f, p. 74). New York City, US, launched a US-$2 million campaign in 2018 aiming to sensitise residents also via subway ads to "respect the flush".[358] For the West Coast communities in California, Oregon and Washington, USA, annual spending on public education on marine litter and waste disposal (including internet and television activities, public transit posters and school programs) for cities amount to on average roughly 81,000 US-$ (Stickel et al. 2012). For the Hudson-Raritan Estuary in the Northeast of the USA public education activities, which include internet and television activities, public transit posters and school programs, amount to average annual costs of around 530,000 US-$ (including personnel, materials, holding events, advertising space, and potentially contractors to develop

[360] https://friendsoftheearth.uk/plastics/wet-wipes-keeping-them-out-our-seas-and-sewers, URL accessed 2 April 2019. See also https://www.euractiv.com/section/energy-environment/opinion/time-to-banish-wet-wipes-from-our-sewers/, URL accessed 2 April 2019. See also https://www.thejournal.ie/wet-wipes-bockages-4337029-Nov2018/, URL accessed 2 April 2019.

[361] https://www.telegraph.co.uk/news/2018/01/17/balearic-islands-ban-plastic-2020-bid-clean-beaches/, URL accessed 2 April 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
Pro arguments: Findings from a consumer awareness survey in Germany (commissioned by Germany's Federation of German Consumer Organisations – vzbv) from September 2018 support this claim. Consumers show a lack of awareness on degradability of wet wipes: 31% of the more than 1,000 citizens surveyed (aged 14 and older) do not consider wet wipes a burden the environment. They believe that wet wipes decompose in water and nature (BEUC 2018; vzbv und KANTAR EMNID EMNID 2018) Hence, awareness raising on the lacking biodegradability of wet wipes could contribute to consumers not flushing wet wipes any more. Moreover, awareness-raising campaigns for sensitizing resident to binning instead of flushing wet wipes should be developed and rolled-out, according to Art. 10 of the SUP-Directive. Such campaigns should also provide information on available sustainable/reusable alternatives. Product marking requirements corresponding to Art. 7 of the SUP-Directive should focus on appropriate disposal of wet wipes to prevent them from being flushed. This would need better placement on the front of wipes packaging (on packs or on individual items if individually packaged) concerning • the impact of flushing on a) the sewer network b) the marine environment. • sound disposal via solid waste stream bins (i.e., do not flush, but put into the bin) (Eunomia 2018; European Commission 2018b). Therefore, we suggest to apply clear and harmonized labels stating "do not flush" on products, packs and individual items. The labels should ideally show on the front side of the individual items – or at least on the front side of the packaging, and should big enough that they cannot be overlooked. Information on the presence of plastic in the product should also be included. Furthermore, using pictures of impacts and icons for disposal guidance should be considered, such as the below label by European Disposables and Nonwovens Association EDANA (Eunomia 2018, p. 37).	public awareness campaigns Columbia Marine Debris Research Team 2015). In 2018, New York City, US, launched a US-$2 million campaign aiming to sensitise residents also via subway ads to "respect the flush" and trash wet wipes, even those labelled flushable.[358]

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
 The Austrian Consumer Information Association (Verein für Konsumenteninformation VKI) used its magazine "Konsument" to inform on the impacts that disposing of non-flushable items, such as wet wipes, through the toilet has on sewer systems and wastewater fees (BEUC 2018).[362,] VKI used the below figure to visualise flushing as inappropriate disposal for wet wipes (and other items).  Only flushable products (once they passed corresponding tests) should bear the label "flushable", which could be similar to the one developed by the International Water Services Flushability Group IWSFG (see top picture below) (IFSFG 2018) or by Water UK (see bottom picture below) to be introduced in the UK[363].	

[362] https://www.konsument.at/cs/Satellite?pagename=Konsument/MagazinArtikel/Detail&cid=318907799783, URL accessed 4 April 2019.

[363] https://www.newscientist.com/article/2190358-fine-to-flush-label-will-tell-you-which-wet-wipes-wont-cause-fatbergs/, URL accessed 4 April 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage

In 2018, the IWSFG released new flushability specifications. They lay down criteria, terms and definitions and disintegration test methods for flushability.[364] Products labelled flushable, have to degrade in the wastewater treatment plant itself, which excludes any product containing synthetic fibres being labelled flushable (Eunomia 2018). Developing a mandatory label that states conformity with these standards, obliging wet wipe manufacturers to comply with these standards and use the label, could raise consumer awareness.

Contra arguments:
Environmental psychology research shows a clear gap between knowledge/awareness and actual behaviour – i.e., simply knowing and being aware of appropriate waste management options might, but does not necessarily, lead to the desired behaviour (Hirschnitz-Garbers und Langsdorf 2015). Hence, there is limited evidence of the effectiveness of awareness raising campaigns, clearly indicating they should not be considered standalone measures Eunomia 2018; ICF and Eunomia 2018).

Eunomia (2018) concluded that "relying on effective communication to help the consumer differentiate between flushable and non-flushable is highly unlikely to eliminate the issue entirely, and thus should not be a selected course of action" (Eunomia 2018, p. 38).

Hence, labelling and awareness-raising should go hand in hand with additional or more encompassing measures:

[364] http://iwsfg.org/iwsfg-flushability-specification/, URL accessed 2 April 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
As reusable and plastic-free single-use alternatives are available, banning the marketing of any plastic-containing single use wipes as flushable and biodegradable (ideally at EU level) seems the most effective way to reduce their impact (BEUC 2018; Eunomia 2018).[365] Plastic fibres (Polypropylene or Polyethylene fibres) should be banned from any wet wipe product labelled as flushable (Eunomia 2018). Positive incentives could include retailers selling reusables and toilet paper spray in the same area as / close to wet wipes so that consumers get the chance of making more sustainable choices without having to proactively search them out (Eunomia 2018). Furthermore, green public procurement could be used for either reusable or plastic-free alternatives or at least clearly labelled as “do not flush” wet wipes (Eunomia 2018).	

[365] https://friendsoftheearth.uk/plastics/wet-wipes-keeping-them-out-our-seas-and-sewers, URL accessed 2 April 2019

A.2 Fact sheet: Lightweight plastic carrier bags

Fact sheet regarding EPR measures for lightweight plastic carrier bags, i.e., plastic carrier bags with a wall thickness below 50 microns

General notes: Lightweight plastic carrier bags are defined in Article 3(1c) of Directive 94/62/EC as plastic carrier bags with a wall thickness below 50 microns. EU legislation considers lightweight plastic carrier bags as a form of packaging and covers them under the provisions of the Packaging Waste Directive. In addition, lightweight plastic carrier bags are addressed by the Plastic Bags Directive ((EU) 2015/720). The Directive obliges Member States to "to take measures to reduce consumption of lightweight plastic carrier bags by defining a maximum consumption level (to be attained by end of 2019) and/or by requiring that such bags are provided to consumers at the point of sale free of charge (measures to be put in place by end of 2018). Member States have to report the annual consumption of lightweight plastic carrier bags as of May 2018." (European Commission 2018, p. 38)

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
Collection phase measures – bin infrastructure and collection frequency Light plastic carrier bags are easily blown away by wind and therefore quickly end up in the environment after littering or when public waste bins are overfilled. It is estimated that plastic carrier bags can take up to 1,000 years to decompose after entering the environment, contaminating water as well as soil (UNEP 2018). Therefore, a good bin infrastructure, frequent collection (particularly in peak seasons) as well as adequate bin design are required. **Pro and contra arguments:** Lightweight plastic bags are prone to be moved by wind. Especially overfilled public bins pose a high risk for their unwanted entry into the environment. Therefore, it is paramount that municipalities establish a sufficient collection frequency of public bins depending on the number of visitors, season, public events and weather conditions (FoEE et al. 2019). In addition, municipalities need to pay attention that public bins are designed in a weatherproof way so that light plastic packaging or other waste items cannot escape through wind (e.g. bins with a lid). A survey on littering behaviour in German cities (Van der Meer et al. 2018) has shown that optimising the bin infrastructure in public places can help to prevent littering. The survey revealed that main reasons for littering are convenience, laziness, lack of education, overfilled bins as well as poorly visible bins. However, increasing the number of bins alone is not sufficient to change consumer behaviour. More important is the location of bins, their design and the frequency of collection. One good practice example is Berlin. In all public places in the capital, public garbage bins are within reach of 50 to 100 meters and bins have a striking orange colour in order to be easily visible.[366]	Art. 8 No. 2 of the SUP-Directive requires producers of lightweight plastic carrier bags to cover costs for a) awareness raising; b) collection of waste of those products discarded in public collection systems, including infrastructure and its operation, and subsequent transport and treatment; c) clean-up and subsequent transport and treatment. *SUP-Directive obliges producers of lightweight carrier bags to cover costs for collecting items discarded in public collection systems, including the needed infrastructure and its operation.* **Please note that for plastic carrier bags, estimated annual costs for producers and public administration are not available in the SUP impact assessment (ICF and Eunomia 2018).** Infrastructure for public waste collection systems and its operation includes the installation and maintenance of public bins as well as collecting the waste from public bins in appropriate frequency. Currently, municipalities in Germany are facing **rising costs** for public waste collection due to the littering problem (which includes littering of lightweight plastic carrier bags). This particularly applies to the summer season, when people frequently have barbecues and

[366] https://www.deutschlandfunk.de/abfall-im-oeffentlichen-raum-vermuellung-aus-bequemlichkeit.697.de.html?dram:article_id=416487, URL accessed 11 April 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
In order to enable recycling of plastic carrier bags that consumers discard in public waste receptacles, communities need to consider establishing separate waste bins for plastic waste (or all recyclable materials). **Transport phase measures:** As mentioned above, communities should consider establishing separate waste bins for plastic waste / recyclable waste) to enhance recycling. This would also require separate transport.	picnics in parks, open air markets and festivals take place, etc. (Deutscher Bundestag 2018). [367, 368] No specific cost estimates are available for plastic carrier bags. Examples of waste management programmes in specific communities in Germany give a first impression on the volume of investment needed to address the littering problem. For example, the city of Stuttgart initiated the programme "Sauberes Stuttgart" in 2019 and plans to invest 10 million € per year until 2022 to keep the city clean. **Relevant for the collection phase:** As part of the programme, the city will install 1,000 additional bins. Furthermore, in the inner city, existing bins with 50 litres loading capacity will be replaced by bins that can hold 90 litres.[369] Besides, as in many other cities, **more staff** was needed in Stuttgart to handle the increasing waste volumes: 123 new employees were hired as part of the programme.[369] *SUP-Directive obliges producers of lightweight carrier bags to cover costs for transport of both, items collected in public collection systems (i.e., public bins) and clean-ups.* In recent years, the amount of single-use plastic waste (including plastic bags) in public bins as well as littered in public places has increased considerably in German municipalities (Deutscher Bundestag 2018).[367, 368] Consequently, more frequent collection and transport of waste discarded in public collection systems as well as from clean-ups is required in many municipalities, which entails additional costs. This can require investments in additional waste collection vehicles. For

[367] https://www.abendblatt.de/hamburg/article214090821/Was-vom-Grillen-uebrig-blieb-Hamburger-vermuellen-Gruenflaechen.html, URL accessed 24 May 2019.

[368] https://www.sueddeutsche.de/wirtschaft/abfall-so-verzweifelt-kaempfen-staedte-gegen-die-vermuellung-1.3961729, URL accessed 24 May 2019.

[369] https://www.stuttgart.de/item/show/273273/1/9/671338?, URL accessed 24 May 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
	example, the city of Hamburg has purchased 162 new vehicles[370] in order to manage the increased waste generation and to clean public places more frequently.[368] Similarly, the city of Stuttgart ordered 45 new vehicles[371] in 2019 to transport waste and clean the streets.[369]
Treatment phase measures **Pro and contra arguments:** Lightweight plastic carrier bags are recyclable in principle, yet their recycling involves high efforts and costs. Recycling is difficult due to the plastic bags' thin and lightweight nature, as well as due to their composition, which usually is a mix of polymers. Moreover, recycling of lightweight plastic carrier bags requires that a sufficient amount of them is collected. In addition, washing the thin bags requires high amounts of water due to their thinness (Bio Intelligence Service 2011).[372] Incinerating lightweight plastic carrier bags (with energy recovery) is economically much more attractive, as they have high caloric values of around 43MJ/kg (BIO et al. 2011). In Germany, in the past recycling companies usually focused on harder plastics to achieve the recycling rate of 36 % for packaging waste, while lightweight plastic bags and other plastic films were incinerated. In fact, currently only few recycling plants exist in Germany that have the technological capacities to recycle thin plastic films.[373] The new recycling targets of the German Packaging Act (58,5% in 2019, 63% in 2022) could promote recycling of lightweight plastic carrier bags discarded in the yellow bags at household level. Lightweight plastic carrier bags from residual household waste and public bins are usually incinerated.[374]	*The SUP-Directive obliges producers of lightweight carrier bags to cover costs for treatment of items collected in public collection systems (i.e., public bins) as well as of items collected during clean-ups.* If lightweight plastic carrier bags are supposed to be recycled in the future, investments are needed to build up technological capacities in recycling plants. Although lightweight carrier bags are more costly to recycle and plastic film is worth less in the market than for example PET bottles, they can still be a valuable material for recyclers – e.g. when sufficient quantities are gathered or price signals change. However, focusing investments on avoidance of single-use, lightweight plastic carrier bags and on promoting reusable alternatives could be more efficient. Moreover, raising public awareness to proper disposal of lightweight plastic bags is a key issue in order to enable recycling and prevent littering.
Clean-up phase measures Lightweight plastic carrier bags find their way into the environment mainly though littering and by being blown away by wind from (overfilled or inappropriately covered) waste receptables or landfills.	As clean-ups are necessary for a number of littered items, including lightweight plastic carrier bags, costs for clean-ups cannot be (easily) related to single categories of single-use plastic products.

[370] No cost data available on the mentioned vehicles. 162 vehicles were purchased as part of a programme that started in 2018 to keep the city of Hamburg clean of littering. Overall, the city invested additional 27 million € per year for the programme. With this budget, next to financing the vehicles, the city hired 440 new employers for the city cleaning, increased inspections in public places and established a smartphone app that enables citizens to report littered areas.[368]

[371] No specific cost data available. Investment in vehicles was part of the programme "Sauberes Stuttgart" initiated in 2019 (overall investments of 10 million € per year; see above: collection phase measures).

[372] https://www.scotsman.com/news/environment/shoppers-are-throwing-away-billions-of-non-recyclable-plastic-produce-bags-1-4862837, URL accessed 23 May 2019.

[373] https://www.stern.de/panorama/weltgeschehen/wird-mein-plastik-muell-recycelt--fuenf-probleme-mit-kunststoff-recycling-8167176.html, URL accessed 23 May 2019.

[374] https://www.nabu.de/imperia/md/content/nabude/abfallpolitik/150905_faq_plastiktueten.pdf, URL accessed 13 August 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
Particularly problematic for this product type is the light weight and shape. Wind can move lightweight plastic carrier bags quickly and over long distances. Once they enter waterways, plastic bags can quickly travel farther through the movement of water. This way, plastic bags and their residues end up in ecosystems far away from urban centres, which are their usual spot of littering. Researchers have even found plastic bag residues in the Arctic Ocean (SAAN 2017). Plastic bags are harmful to wildlife, as animals often mistake them for food or get entangled in them. Plastic bags can also clog drains of sewer systems (SAAN 2017, Thomas et al. 2019, UNEP 2018). Therefore, it is essential to clean up littered lightweight plastic carrier bags on beaches and in parks as quickly as possible in order to prevent them from entering more remote areas that are more difficult to clean up, and also to prevent them from breaking down into microplastics. **Pro and contra arguments:** Clean-ups for lightweight plastic carrier bags should encompass cleaning of beaches as well as parks, green areas and other public places, as the thin bags are easily dispersed by wind. Hence, plastic carrier bag producers should cover costs for the above clean-up activities in relation to their products' contribution to littering. From the environmental perspective, a problem in Germany is that regular beach clean-ups organised by municipalities are focused on beaches that are relevant for tourism. Scientific evidence shows, however, that plastic waste also ends up on remote beaches and beaches under nature conservation. A recent study has shown that a considerable amount of plastic waste is buried and cannot be removed easily (Lavers et al. 2019). Hence, policy-makers should give overall more weight to efforts to avoid waste than to efforts to clean-up.	Costs for clean-ups are mostly covered by public administrations, as apart from volunteer-based clean-ups, mostly municipal waste management is responsible for beach litter clean-ups and regular clean-ups of parks and public places. Cost estimates for cleaning beaches across the entire EU arrive at a range of several hundred million EUR to up to 2 billion EUR per year (ICF and Eunomia 2018, Annex p. 135). This range is due to lower cost for beaches vs. bathing beaches as well as to assumptions that beach clean-ups would need to increase in frequency to handle increasing beach litter masses in the coming years. Hence, costs for cleaning up beaches and waterways differ depending on a number of factors (e.g. beach and waterway lengths, cleaning intervals, tourism relevance, population size) from one locality to the next. A survey among 49 coastal municipalities along Germany's North Sea and Baltic Sea shores found estimates for clean-up costs (which encompass personnel and machinery for collection, transport and disposal of litter collected during clean-ups) for on average 2.6 km long beach stretches of around 55,000 EUR per year (Holzhauer 2016). Regular clean-ups of parks and public places are also essential to combat plastic waste and to prevent it from ending up in the oceans. Cleaning public parks, squares and pedestrian areas lies in the responsibility of municipalities and costs vary (Deutscher Bundestag 2018). For example, in Berlin cleaning parks, green areas and playgrounds costs 9.8 million € per year.[375] The city of Köln spends 7 million € per year to keep parks and green areas free from littering. Currently, the city shifts the costs for this to the consumers via an increase of the waste charges.[376]

[375] https://www.morgenpost.de/berlin/article214191693/Saubere-Sache-BSR-uebernimmt-34-weitere-Parks.html, URL accessed 13 May 2019.

[376] https://www.sueddeutsche.de/wirtschaft/abfall-so-verzweifelt-kaempfen-staedte-gegen-die-vermuellung-1.3961729, URL accessed 23 May 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
	The city of Stuttgart initiated the programme "Sauberes Stuttgart" in 2019 and plans to invest 10 million € per year until 2022 to keep the city clean.[377] Available funding through extended producer responsibility schemes can help municipalities in stemming the financial burden of clean-ups. Besides, they would enable improvements of clean-ups (e.g. increased frequency, financing modern technology/equipment).
Awareness raising measures According to estimates, globally between one to five trillion plastic bags are used per year (UNEP 2018). In Europe, approximately 98.6 billion plastic carrier bags were placed on the EU market in 2010. The vast majority of them were lightweight carrier bags. Calculated per capita, each EU citizen consumed about 198 plastic bags per year (European Commission 2013). In Germany alone, about 2 billion plastic carrier bags are used per year, plus an additional 3 billion lightweight plastic carrier bags for packing up vegetables, fruits, etc.[378], [379] Through a voluntary agreement of the industry to cease handing out plastic carrier bags without a charge, the use of thicker plastic bags has been considerably reduced since 2015. Very lightweight plastic carrier bags are excluded from the agreement and are still available for free (in supermarkets, open air markets, meat counters, etc.). The consumption of such bags remains high. **Pro and contra arguments:** Awareness raising measures are perceived as an important lever to reduce plastic bag consumption and littering and to support other policy measures (Bio Intelligence Service 2011, Willis et al. 2018, Xanthos and Walker 2017). Awareness raising should focus on waste avoidance, i.e., changing the throw-away culture of consumers and encouraging them to use available reusable alternatives instead of single-use plastic bags. Such alternatives encompass for example reusable nets for fruits and vegetables, reusable bags, baskets or crates as well as backpacks. Alternatives should be reused as often as possible and, ideally, be made of	*According to Art. 8 2. SUP-Directive, producers of single-use lightweight plastic carrier bags need to cover the costs for awareness raising measures aiming to reduce littering of lightweight plastic carrier bags.* Ireland has launched a successful awareness raising and information campaign to support the introduction of a plastic bag levy in 2002. Its aim was to sensitise the public to environmental problems related to plastic bag littering and to provide a good rationale for the levy. The success of the levy and its wide public acceptance was partly attributed to the campaign. The Irish campaign cost 358,999 EUR (Anastasio and Nix 2016, Bio Intelligence Service 2011).

[377] https://www.stuttgart.de/item/show/273273/1/9/671338?, URL accessed 24 May 2019.

[378] https://www.umweltbundesamt.de/umwelttipps-fuer-den-alltag/haushalt-wohnen/plastiktueten#textpart-3, URL accessed 24 May 2019.

[379] https://www.tagesspiegel.de/politik/mehr-als-drei-milliarden-hemdchenbeutel-pro-jahr-deutsche-packen-obst-und-gemuese-noch-immer-gern-in-plastikbeutel/24417624.html, URL accessed 13 August 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
recycled material and be recyclable. Avoiding lightweight plastic carrier bags is in line with the EU waste hierarchy. Awareness raising campaigns are a suitable means to point out the ecological and economic advantages of waste avoidance and of using reusable carrier bags or alternatives (Bio Intelligence Service 2011, DUH 2015). As consumers might be unaware of the ecological impacts of littered plastic carrier bags, campaigners should inform about negative effects on various species and ecosystems and point out the bags' characteristic to be easily carried away by wind and water. Moreover, to ensure engagement and acceptance of consumers, awareness raising measures need to convey the value of a plastic bag and inform about the effort, costs and environmental impact along the value chain. This includes not only raw material extraction, energy input for production and ghg emissions, but also the waste management phase (EXPRA 2014). Also, awareness raising measures should inform consumers on how to appropriately dispose of lightweight plastic carrier bags (i.e. at household level in the yellow bag). In addition, NGOs emphasise that awareness raising measures should also address • very lightweight plastic bags (i.e., less than 15 microns thick), • paper bags that include synthetic fibres, • bio-based or biodegradable plastic bags (DuH 2015, FoEE et al. 2019).[380] Bio-based bags and biodegradable bags are often only compostable only under controlled conditions, thus posing a danger to the environment when inappropriately disposed.[380, 381]	

[380] https://technology.risiinfo.com/packaging-technology-114, URL accessed 24 May 2019.

[381] https://www.umweltbundesamt.de/biobasierte-biologisch-abbaubare-kunststoffe#textpart-3, URL accessed 13 August 2019.

A.3 Fact sheet: Tobacco products

Fact sheet regarding EPR measures for tobacco products with filters and filters marketed for use in combination with tobacco products

General notes: To ease readability, this table will refer to the product as "tobacco product filters" which here encompasses both 1) tobacco products with filters and 2) filters marketed for use in combination with tobacco products.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
Collection phase measures Most tobacco product filters sold today are made of cellulose acetate, which is a synthetic fibre that does not degrade naturally when released into the environment (Curtis et al. 2017). Used cigarette filters contain about 7,000 chemicals. Many of those chemicals are toxic, e.g. nicotine, arsenic and heavy metals. Moreover, filters contain plastic particles and once a filter breaks down, microplastics can be released into the environment. For marine and freshwater organisms, littered tobacco product filters are particularly harmful due to their toxic quality. As cellulose acetate filters can persist for up to 10 years in the environment, there is also a high risk that toxics leach into water and soil (Curtis et al. 2017, Novotny and Slaughter 2014).[382] Therefore, frequent collection and clean-up of waste tobacco product filters is essential to prevent negative environmental and health effects. This requires an adequate bin infrastructure. For the collection of waste tobacco product filters, separate bins or ashtrays are needed in order to prevent other waste fractions from catching fire. **Pro and contra arguments:** There is strong justification to extend manufacturer's product responsibility for filters to the waste management phase, as the products are toxic and contribute considerably to ocean pollution. To handle the problem of tobacco product filter littering, in many public places an expansion of bin infrastructure is necessary (FoEE et al. 2019). For example, the city of Berlin has installed 23,000 orange bins with integrated ashtrays throughout the city, yet this number was judged not be sufficient.[383] Here, EPR schemes for collection and take-back of tobacco product waste make additional funds available. For areas where the installation of bins and collection is not feasible, sufficiently large bins need to be placed at neuralgic points (e.g. beach access ways, parking areas) (DSD 2019). Bins or attached signs could display information on the risks of littering cigarette butts, thereby raising awareness on the issue. As a side-benefit, this could help preventing forest fires.	Art. 8 (3) of the SUP-Directive requires producers of tobacco product filters to cover costs for a) awareness raising; b) clean-up and subsequent transport and treatment, c) data gathering and reporting as well as d) collection of waste of those products discarded in public collection systems, including infrastructure and its operation, and subsequent transport and treatment. *SUP-Directive obliges producers of tobacco product filters to cover costs for collecting items discarded in public collection systems, including the needed infrastructure and its operation.* EPR schemes would lighten the economic burden of managing tobacco product waste for local governments and taxpayers. The additional budget available through EPR schemes could for example help to finance the installation of additional receptacles. At the same time, EPR schemes encourage manufacturers to find innovative solutions for the waste and littering problem, as is intended in the SUP-Directive (European Union 2019, Recital 16, p. 4). No specific cost data for the collection of tobacco product waste could be found. For the setting up of adequate bins at neuralgic points, an expert estimates that costs per year would amount to approximately 2 EUR per citizen (DSD 2019).

[382] https://globalnews.ca/news/4418956/cigarette-butts-ocean-pollution-ban/, URL accessed 7 February 2019.

[383] https://www.morgenpost.de/berlin/article215506875/Eine-Stadt-zwoelf-Bussgelder-fuer-Raucher.html, URL accessed 29 May 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
One solution for areas where the installation of bins and frequent collection is not feasible (e.g. certain beach sections, certain park areas) could be to provide portable ashtrays to smokers.[384] Incentives should be in place to make sure that the mobile ashtrays do not themselves become an object of littering (e.g. through deposit and refund schemes for mobile ashtrays). A major challenge for collection systems is smoker's behaviour. Dropping of cigarette stubs is common and often smokers do not discard used filters appropriately, even if ashtrays – installed or portable – are available.[384] Hence, it is essential to address consumer behaviour via awareness raising campaigns. A good practice example for a creative approach to raise awareness for the littering problem and at the same time keep public places free of cigarette butts are the "ballot bins" in the UK (see picture below). The concept is simple: 'Each Ballot Bin displays a question and two answers. Smokers vote by putting their cigarette butt in the slots underneath their preferred answer. The litter stacks up behind the clear glass front in two columns, showing which answer is more popular.' [385] The questions can be changed by the bin owner. Through topical, funny or provocative questions, smokers are stimulated to "give a vote" and hence to engage in proper waste disposal.	Regarding the share of costs that manufacturers should cover, a good practice example can be found in San Francisco (USA). Here, 'the municipal authorities have implemented a scheme whereby the manufacturers of cigarettes pay the municipal authorities the relative cost of clean-up of dropped filters. In this case the proportion is 50% by count, and so the companies pay this share of the total cost.' (ICF and Eunomia 2018, p. 49, footnote 96).

[384] https://www.nbcnews.com/news/us-news/plastic-straw-ban-cigarette-butts-are-single-greatest-source-ocean-n903661, URL accessed 29 May 2019.

[385] https://ballotbin.co.uk/#find-out-more, URL accessed 12 August 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
 Source: https://ballotbin.co.uk/	
Transport phase measures: No specific information found.	*SUP-Directive obliges producers of tobacco product filters to cover costs for transport of items collected a) during clean-ups and b) in public collection systems.*
Treatment phase measures Standard treatment is incineration.	*SUP-Directive obliges producers of tobacco product filters to cover costs for treatment of items collected a) during clean-ups and b) in public collection systems.*
Pro and contra arguments:	There are no cost data on waste treatment of tobacco product filters available, as municipalities do not report such numbers.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
EPR schemes could encourage manufacturers to participate in filter recycling programmes, as for example offered by the recycling company TerraCycle.[386, 387] The company recycles plastic contained in used filters and uses it to produce new products such as transport pallets, ashtrays or park benches. Recycling programs can reduce the amount of tobacco product waste being incinerated. They could incentivise clean-up and collection of used filters. However, cigarette filters are difficult to recycle; recyclers need financial support of manufacturers or state bodies to cover the costs.[387] Moreover, there is concern that products made out of recycled plastic from used cigarette filters may still contain toxics and pose risks to human health (Tobacco Control Legal Consortium 2013). In fact, solutions for biodegradable or compostable cigarette filters already exist. They are made of natural fibres such as hemp, cotton and food-grade starch (Tobacco Control Legal Consortium 2013). One example are "Greenbutts filters".[388] Proponents of such alternative filters argue that if manufacturers replace cellulose acetate filters by biodegradable, plant-derived cellulose filters, this will avoid plastic waste and reduce the amount of microplastics entering into the environment through littering. However, biodegradable cigarette filters would not change littering behaviour and littered filters would still leach out toxicants (Araujo and Costa 2019). In addition, caution needs to be taken for any alternative filters containing biodegradable plastics, as biological degradation in the natural environment may take long periods of time.[389] The mentioned example of Greenbutts, however, does not use biodegradable plastics, but purely natural fibres which are claimed to degrade within three to four days.[390] More innovation in the sector is expected. Another option could be to encourage manufacturers to sell cigarettes without filters. Regarding health considerations, in fact no demonstrable positive effects could be proven for the use of filters when smoking. Remnants of tobacco products without filters would still leach out some toxicants when littered. Yet, regarding the waste hierarchy, avoiding the use of single-use filters would be the most effective option to prevent plastic waste littering and save the cost of waste management. Consumers who prefer using filters have the option to use re-usable filters. While there remains a risk that re-usable filters become litter, we	Municipalities cover costs currently through waste management fees.[391] Considering the waste hierarchy, avoiding tobacco product filters containing plastic (e.g. through using filters without plastic or not use filters at all) is the best option, preferable over recycling programs.

[386] TerraCycle cooperates with manufacturers, retailers, municipalities and volunteers who send in the collected filters. A first such program was initiated in Vancouver in 2013; today several programs are in place, including in the UK and in Germany (cooperation with Frankfurt Airport).

[387] https://www.terracycle.com, URL accessed 7 February 2019.

[388] http://green-butts.com/, URL accessed 28 May 2019.

[389] https://www.umweltbundesamt.de/biobasierte-biologisch-abbaubare-kunststoffe#textpart-17, URL accessed 12 August 2019.

[390] https://thegreenfund.com/greenbutts-the-renewable-hemp-based-cigarette-filter, URL accessed 12 August 2019.

[391] https://www.morgenpost.de/politik/article216314055/Zigaretten-So-stark-verschmutzen-Kippen-unsere-Straende.html, URL accessed 29 May 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
expect that the costs for such filters incentivize re-use and help reducing the overall amount of tobacco product waste. Policy-makers may incentivize the marketing of tobacco products without filters through fee modulation within the EPR scheme. **Clean-up phase measures** Globally, tobacco product filters are the most common waste items found on beaches during clean-ups (Curtis et al. 2014, Novotny and Slaughter 2014).[392] Within the European Union, tobacco product filters containing plastic present the second most found single-use plastic item found on beaches. In Germany, 35% of littered waste consists of cigarette stubs.[393] More specifically, the city cleaning department of Hamburg calculated that about 137 million cigarette stubs end up on German pathways and streets every single day, which sum up 50 billion used filters per year.[394] A survey among 49 coastal municipalities along Germany's North Sea and Baltic Sea shores found that municipalities clean their bathing beach stretches mostly in combination of a machine-based mechanical basic cleaning followed by manual cleaning by hand, pincer or rake (Holzhauer 2016). Altogether, these municipalities collect more than 190 tonnes of waste annually during beach cleaning, more than 80% of which are plastics **Pro and contra arguments:** Clean-ups for lightweight tobacco product filters should encompass cleaning of beaches as well as of parks, green areas, pavements, streets and other public places where littering of cigarette filters occurs. Clean-ups need to be planned in adequate frequency, as otherwise microplastics contained in cigarette filters could be released and disperse into the environment.[392, 395] Hence, producers of tobacco product filters should cover costs for the above clean-up activities in relation to their products' contribution to littering of public places.	As beach clean-ups are necessary for a number of littered items, including tobacco product filters, costs for clean-ups cannot be (easily) related to single categories of single-use plastic products. Costs for clean-ups are mostly covered by public administrations, as apart from volunteer-based clean-ups, mostly municipal waste management is responsible for beach litter clean-ups. Cost estimates for cleaning beaches across the entire EU range from several hundred million EUR to up to 2 billion EUR per year (ICF and Eunomia 2018, Annex p. 135). This range is due to lower costs for beaches vs. bathing beaches as well as to assumptions that beach clean-ups would need to increase in frequency to handle increasing beach litter in the coming years. Hence, costs for cleaning up beaches and waterways differ depending on a number of factors (e.g. beach and waterway lengths, cleaning intervals, tourism, population size) from one locality to the next. A survey among 49 coastal municipalities along Germany's North Sea and Baltic Sea shores found estimates for clean-up costs (which encompass personnel and machinery for collection, transport and disposal of litter collected during clean-ups) for on average 2.6 km long beach stretches of around 55,000 EUR per year (Holzhauer 2016).

[392] https://www.nbcnews.com/news/us-news/plastic-straw-ban-cigarette-butts-are-single-greatest-source-ocean-n903661, URL accessed 28 May 2019.

[393] https://www.tagesschau.de/inland/verschmutzung-zigarettenkippen-101.html, URL accessed 29 May 2019.

[394] https://www.welt.de/wirtschaft/article185727004/Zigarettenkippen-Tabakhersteller-wollen-sich-nicht-an-Entsorgung-beteiligen.html, URL accessed 29 May 2019.

[395] https://www.nationalgeographic.com/environment/2019/05/beach-cleanups-missing-millions-of-plastic-pieces/, URL accessed 29 May 2019.

Waste management phase, measures and pro and contra arguments	Cost considerations, examples for cost estimates (where available) & responsible actors for cost coverage
	For tobacco product filters specifically, the effort to clean up is relatively high compared to other products, as they are small and widely littered in public places, parks, beaches etc.[396] For example, the City and County of San Francisco estimated the costs for municipalities to clean up tobacco product waste (litter clean-up and disposal) to be at $22 million per year.
Awareness raising measures A very specific challenge for tobacco product filters is that littering of used filters is a common behaviour among smokers. Research findings revealed that the littering rate of cigarette stubs is at 65% (while overall littering was estimated to be at 17%) (Curtis et al. 2017). Moreover, smokers often drop their cigarette stubs to the ground even if a receptacle is present (Novotny and Slaughter 2014). **Pro and contra arguments:** Awareness raising measures therefore need to address behavioural patterns of smokers in order to deal with the littering problem. This is a challenging issue, as dropping cigarette butts in public places is very common behaviour among smokers and widely accepted by society. While raising awareness on the impact of littering is essential, littering fees to address consumer behaviour would increase the effectiveness of the overall scheme (Curtis et al. 2017, 2014). Next, not all consumers are aware that tobacco product filters are made of plastic and mistake them as biodegradable (like paper). Awareness raising campaigns for consumers should thus inform about the material contained in cigarette filters and raise awareness on the effects of littering. Voluntary EPR activities in the past have often remained relatively ineffective, as tobacco industry focused on selective, well-publicized clean-up events, public information campaigns and disposal infrastructure restricted in time and geographical extent (for example in Australia) (Wallbank et al. 2017). This indicates that an effective approach should oblige manufacturers to take over responsibility for awareness raising on a regular basis (instead of one-off activities).	*According to Art. 8 (3) SUP-Directive, producers of tobacco product filters need to cover the costs for awareness raising measures aiming to reduce littering of used filters.* A neutral organization should be responsible for planning and carrying out the campaigns. This is to make sure the campaign is not abused for product marketing purposes (DUH 2019). Alternatively, independent bodies should strictly assess and monitor awareness raising campaigns when carried out directly by producers. For the West Coast communities in California, Oregon and Washington, USA, annual spending on public education on marine litter and waste disposal (including internet and television activities, public transit posters and school programs) for cities amount to on average roughly 81,000 US-$ (Stickel et al. 2012).

[396] https://www.welt.de/wirtschaft/article185727004/Zigarettenkippen-Tabakhersteller-wollen-sich-nicht-an-Entsorgung-beteiligen.html, URL accessed 28 May 2019.