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THE DANISH GOVERNMENT

Plastics without waste

– The Danish government's plastics action plan

Ministry of Environment and Food

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Contents

We are on a common mission

We cannot do without plastics. They are durable and cheap to produce, and we use them for a multitude of purposes in industry and in the products we use in our daily lives. Plastics are useful materials, but the increasing global plastic pollution and lack of recycling are alarming. We must use plastics smarter, recycling them over and over again in new products.

We must separate our plastics waste to make sure it is recycled and not incinerated. It is a waste of resources to incinerate materials that could have been used again in new products.

Plastics aren't just plastics. It is a significant challenge that products are made from a multitude of different types of plastics in all kinds of colours and shapes, as it makes recycling difficult. Additionally, more knowledge and technological solutions are needed.

For this reason there is not just one solution to the challenges related to plastics. We need to find solutions in all steps of the life cycle of plastics - from design to the end of use. The way I see it, many Danes - businesses and citizens alike - agree to this and want to contribute. And this is important; if we are to succeed in this endeavour, we must all do our bit. It is a common mission.

This plastics action plan focuses on all important aspects of reducing plastic pollution: fewer plastics in nature, smarter production and consumption, increased collaboration across value chains, better waste management, an enhanced knowledge basis, and far more recycling.

Businesses, green organisations, local authorities, and consumers have already started. It is important that we all continue to develop and take ownership of solutions to ensure that the new initiatives we launch create synergy and bring us forward.

There is no way escaping the challenges related to plastics. Therefore, the Danish government will allocate DKK 50 million over four years for Denmark's first plastics action plan. This will ensure a focused and determined effort.

Jakob Ellemann-Jensen
Minister for Environment and Food

United Nations' Sustainable Development Goals

In 2015, the United Nations presented 17 Sustainable Development Goals to be reached by 2030. This plastics action plan contributes to sustainable development within ten of the SDGs.

Plastics – fantastic and problematic

Plastics are very useful materials – in many cases indispensable.

A plastic container protects its contents and can extend the shelf-life of foods, thereby bringing down food waste. Plastics are also easy to transport; for this reason we save fuel in connection with the transportation of goods.

Plastics make our daily lives easier and are an integrated part of Danes' lives – in everything from electronics to clothing and toys.

It is difficult to imagine a life without plastics. We have no other material available with the same properties and benefits as plastics.

Due to the many valuable functions of plastics it is not an objective to stop using them, but we must use them smarter. The problems related to plastics arise when they are overconsumed, designed in an inexpedient way, end up in the nature, incinerated instead of recycled, or cannot be recycled due to substances of concern.

Large consumption of fossil resources

In 1950, 1.7 million tonnes of plastics were produced. By 2014 the production had increased to 311 million tonnes, and in 2050 the production is expected to reach as much as 1.2 billion tonnes of plastics. Plastics are primarily an oil-based product and the increasing production of plastics puts pressure on fossil resources. It has been estimated that 6 percent of the world's oil consumption is used for the production of plastics. This figure is expected to increase to 20 percent in 2050.

The global production, consumption, and burning of plastics generate approximately 400 million tonnes of CO_2 emissions every year.

Measured in CO_2 emissions, one million tonne of recycled plastics is the equivalent to taking one million cars off the roads. Plastics contribute positively to CO_2 accounts by contributing to the prevention of food waste and the reduction of fuel consumption for transportation of goods due to their low weight.

The many types of plastic

There are many different types of plastics that are mixed with other materials and developed for each of their unique purposes. Plastics are used for everything from wind turbine wings to toothpicks. Plastics can be produced from biological materials such as sugar cane and maize. Some plastics can be composted and degraded under special conditions. Others contain so many substances of concern used for dyeing and plasticising that they must be landfilled at the end of their use.

We need more knowledge about which types of plastics are primarily used in Denmark, which sectors use the most, and what quantities are used. Part of the focus of the plastics action plan is therefore to produce more knowledge in order to identify the most suitable and efficient solutions.

In general, there are two main types of plastics:

Thermoplastics – that become soft when heated and hard when cooled.

Thermosetting plastics – that become irreversibly hardened upon being molded.

Some of the most widely used types of plastics and applications are:

Polyethylene terephthalate (PET)
E.g. plastic bottles, food packaging

Polyethylene (PE)
E.g. meat trays, bottle crates

Polypropylene (PP)
E.g. clothing, sports underwear, packaging for prepared meals

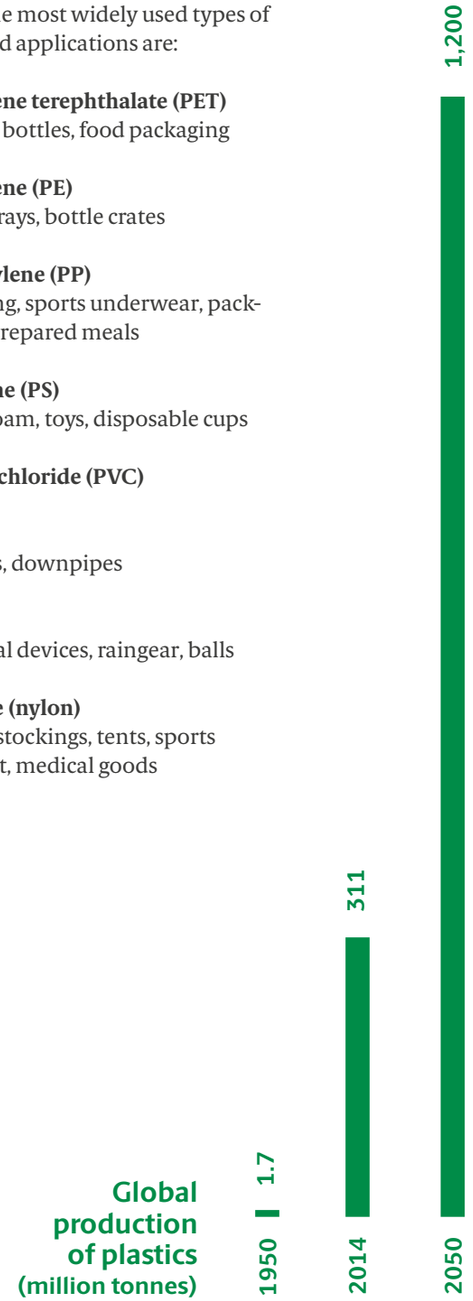
Polystyrene (PS)
E.g. styrofoam, toys, disposable cups

Polyvinyl chloride (PVC)

Hard PVC
E.g. gutters, downpipes

Soft PVC
E.g. medical devices, raingear, balls

Polyamide (nylon)
E.g. nylon stockings, tents, sports equipment, medical goods



Bioplastics cover two types of plastics:

Biobased plastics

Biobased plastics are comparable to oil-based plastics, but the plastics are produced from biomass such as maize or sugar cane and thereby without the use of fossil resources. Biobased plastics, however, are in some cases produced from foods for animals and humans, which is not necessarily an environmental advantage.

Biodegradable plastics

Biodegradable plastics are plastics that can degrade into CO_2 and water under very specific conditions.

At the present time there is no documentation that bioplastics under Danish natural conditions are better than plastics produced from fossil materials. Biodegradable plastics only degrade in industrial or composting plants under very specific conditions. Additionally, biodegradable plastics may prevent recycling if they are mixed with other types of plastics.

Plastics waste is incinerated, not recycled
It is difficult to recycle plastics waste because it consists of a mixture of many different types of plastics that contain different additives and are often contaminated with food residues or other types of non-plastics. This is particularly the case for household waste.

It varies much from one municipality to another how much plastics waste is collected from households. In 2015, collected quantities ranged between 1.4 and 33.0 kg/household/year. The large variation between the municipalities may be due to differences in sorting criteria (rigid/soft plastics), frequency of collection, and differences in housing types (single-family or blocks of flats). According to the most recent packaging statistics from 2016, the total supply of plastic packaging in Denmark amounts to 215,000 tonnes, and the Danish rate of recycling of plastic packaging waste is 36 percent. According to the new ambitious targets from the EU, Member States must recycle 50 percent of all plastic packaging in 2025 and 55 percent in 2030. In addition to this, the calculation method has been changed to the effect that losses in the recycling process must be deducted. With the new calculation method it is estimated that Denmark today recycles approximately 18 percent of our plastic packaging.

Currently, it is difficult to collect plastics waste of a sufficiently good quality and recycle it into new plastics of high quality. The existing recycled plastics are of varying quality, and subsequently the demand for recycled plastics as a feedstock is also low. It is assessed that the demand for recycled plastics as a feedstock only amounts to 6 percent of the total demand for plastics in Europe.

340,000 tonnes of plastics waste

Approximately 340,000 tonnes of plastics waste are generated annually in Danish households and businesses.

36% is recycled

Approximately 36% of the plastics waste from households and businesses is recycled.

63% is incinerated

63% of plastics waste from households and businesses is incinerated.

Plastics in nature degrade slowly and may turn into microplastics

2 years

Beverage containers made from plastics

30-40 years

Nylon degrades in 30–40 years

500 years

Plastic bags and bottles take roughly 500 years to degrade in nature. In the ocean, it takes up to 20 years for plastic bags to degrade, and up to 450 years for plastic bottles.

Plastics in nature
Plastics are a great problem when they end up in nature. They degrade very slowly. Plastics waste is also an increasing problem in the marine environment where plastics are a threat to wildlife. Marine animals confuse small and large pieces of plastics with food.

When we say that plastics degrade in nature it does not mean that they disappear. Plastics degrade slowly into smaller pieces that in the end become microplastics. Plastics account for some 39 percent of the total amounts of litter in Denmark's nature.

Plastics in Skagerrak

In 2015, the Danish Nature Agency counted waste in five selected coastal areas. The highest occurrences of waste were registered on Skagerrak beach in Skagen. Plastics were the predominant type of material of all waste found in this assessment. Marine waste on beaches is now included in the national monitoring programme, and it is monitored annually.

Microplastics

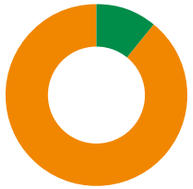
Microplastics are small plastic debris under five millimetres that are used either directly in products (primary microplastics) or that are formed in the fragmentation of larger plastic pieces or plastic materials (secondary microplastics).

In November 2015, the Danish Environmental Protection Agency published the first Danish study of microplastics. The report indicated that the most important source of microplastics is secondary microplastics, constituting around 89 percent of the total release. Tyre wear is the largest single source accounting for approx. 63 percent of total quantity.

Furthermore, textiles, footwear, road markings, and other paint release microplastics. Primary microplastics are used in cosmetics, artificial turfs, and as blasting abrasives in industry, among others.

Microplastics end up in the environment and may affect the soil and aquatic environment, including large marine animals. The acknowledgement of microplastics as an environmental concern is relatively new which means that our knowledge is still limited. Therefore, research is being performed at national and international levels, and efforts are made to understand more about the effects that microplastics may have on the environment and humans.

Sources of microplastics in the environment



89% comes from wear and tear of plastics (secondary microplastics)

11% comes from intentionally added microplastics (primary microplastics)

Sources of secondary microplastics in the environment

63% comes from tyre wear

37% of secondary microplastics come from other sources, such as textiles, footwear, and paint

Our vision: Circular plastics consumption

Denmark must have a more circular consumption of plastics. That means plastic products are designed for reuse and recycling and do not contain harmful chemicals. It means that we must only use plastics when necessary, and it means that plastics waste in nature must come to an end.

It also means that plastics waste is collected and recycled into new products over and over again.

> **We must have a proper functioning Danish market for recycled plastics.**

The Danish government's vision
Designers, producers, consumers, municipalities, and the recycling industry all play an important role in creating a closed, circular plastic loop in which plastics are used over and over again. Producers must make sure that fewer types of plastics are on the market, making them more uniform and thus easier to recycle.

We must have a proper functioning market for waste and recycled raw materials with equal terms of competition for businesses across the country. A waste management sector exposed to competition and more standardised collections will make it easier for the Danes to sort their plastics waste.

Solutions must be found through collaboration in the value chains, to ensure that waste management practices match the types of plastics on the market, and the recycling technologies are achieving the best possible recycling.

There is no solution that can solve all problems at once. There is a need to act broadly: from production and design, to the end of use, including collection and recycling.

Danish businesses must get in the loop and become frontrunners in the development of sustainable plastic solutions within design, reuse, recycling, circular business models, and recycling technologies.

The government will therefore implement 27 initiatives to move Denmark in the right direction.

Initiatives

1
National plastics centre – Bringing together the Danish plastics efforts

2
Analysis of Denmark's plastic consumption and management

3
Mapping of potentials and business opportunities for Danish plastics companies

4
Prioritisation of funds for research and technology development

5
Sector collaboration within, e.g., agriculture, building, hospitality and tourism, and retail

6
Extending the deposit--return system by 1 January 2020

7
Extended producer responsibility for packaging

8
Standards for sorting and collection of plastics waste

9
Denmark supports the EU Commission's single-use plastics directive

10
National information campaign to reduce littering

11
Fund for local initiatives for cleaning up Danish beaches of plastics

12
Ban on non-degradable shot wads

13
Survey of ghost nets in Danish waters and methods for cleanup

14
Ban on handing out free carrier bags

15
Ban on lightweight plastic carrier bags

16
Danish consumption of carrier bags must be halved by 2023

17
Development of requirements for reduction of single-use plastics consumption at major events

18
Analysis of packaging tax on single-use products in view of reducing plastics consumption

19
Ban on intentionally added microplastics in cosmetics

20
National network for research and innovation on microplastics

21
Knowledge building on microplastics in sewage sludge

22
Knowledge building on microplastics release from artificial turfs and possible alternatives

23
Knowledge building on advantages and disadvantages relating to biobased and biodegradable plastics

24
Mapping of PVC products on the Danish market and options for substitution

25
Common European requirements for design for recycling

26
Prioritising Denmark's international commitments

27
Enhanced efforts in the close marine areas

Solutions across value chains

The value chains for plastics from cradle to cradle are long and consist of plastics producers, product developers, designers, the retail trade, consumers, municipal waste management companies, private waste collectors, waste treatment operators, and buyers of recycled plastics for new products, among others.

Initiatives

1

National plastics centre – Bringing together the Danish plastics efforts

- Launches value chain collaboration and guides businesses in the transition to a circular plastics consumption.
- Builds knowledge on plastics and communicates it to citizens and businesses.
- Identifies barriers for reuse and recycling of plastics in Denmark.
- Develops design manuals for plastics in order that plastic products are designed for reuse and recycling.
- Contributes to the development and establishment of common European design manuals.

2

Analysis of Denmark's plastic consumption and management

Plastic volumes in Denmark are mapped in more detail with an overview of different types of plastics and sectors as well as the fate of the different types of plastics when they end up as waste. This mapping is for example used to prioritise areas of focus for the national plastics centre.

3

Mapping of potentials for developments and business opportunities for Danish plastics companies

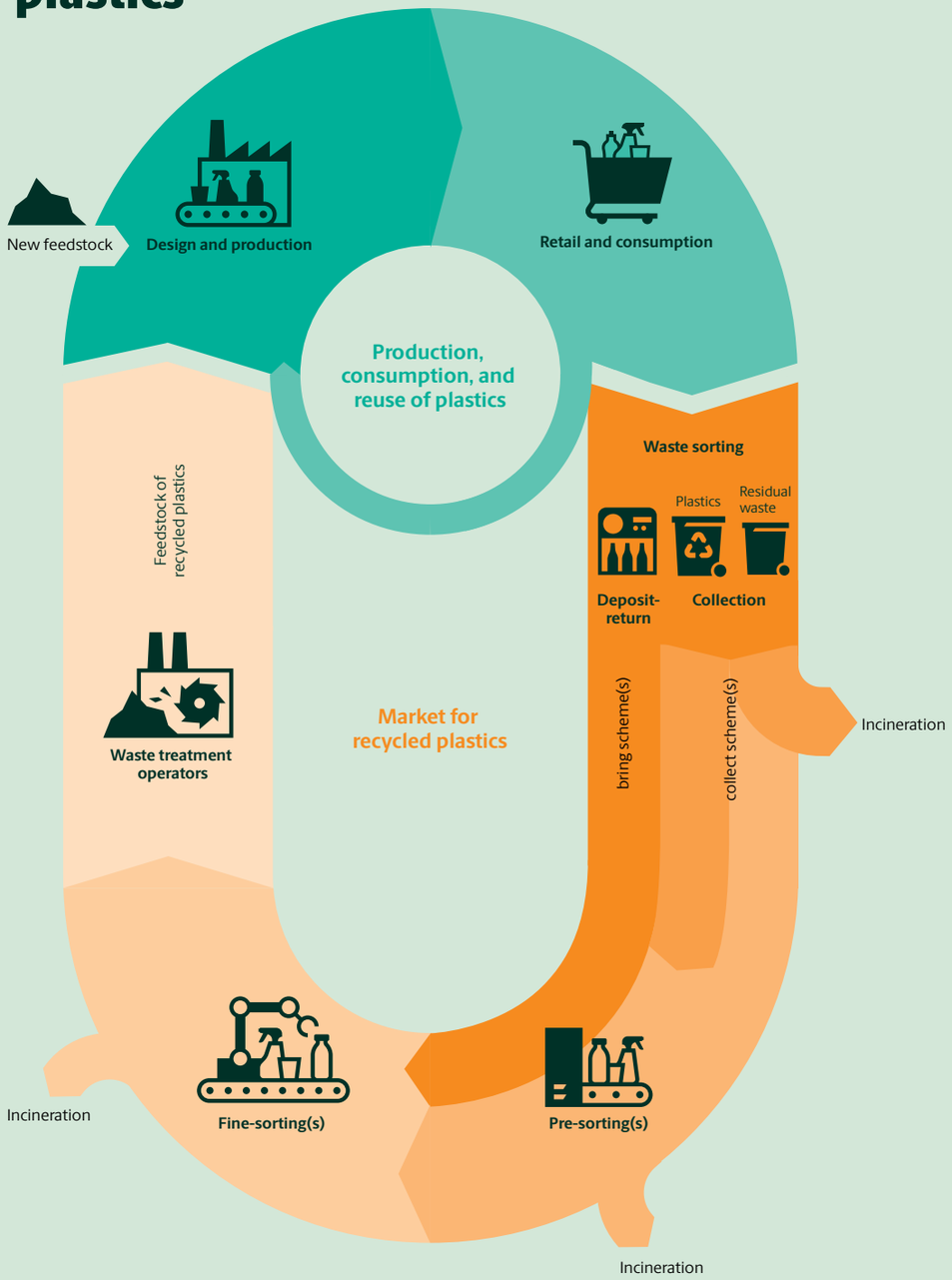
The Danish, European and global markets for plastics, plastics waste, and recycled plastics are mapped. In addition, the status for development and demand for sorting technologies for plastics waste is mapped. This mapping is used to identify the positions of strength of Danish businesses, and to prioritise areas of focus for the national plastics centre.

4

Prioritisation of funds for research and technology development

Projects focusing on technological developments for recycling and circular consumption of plastics must be prioritised in public subsidy funds under the auspices of the Environmental Technology Development and Demonstration Programme or others.

Material flow for plastics



“There is a major business potential in changing the way we design, produce, and consume plastics.

A more circular plastics economy holds both major potentials for the environment and may entail business opportunities for Danish enterprises.

It is estimated that for each 1,000 tonnes of plastics waste recycled instead of being incinerated or exported, 3-4 jobs can be created in Denmark and may lead to a turnover of at least DKK 6 million. At a global level it is suggested that 95 percent of the value of plastic packaging is lost after one single use, which means a loss of value of DKK 500-780 billion a year. These numbers show a major business potential in changing the way we design, produce, and consume plastic packaging.

In order to succeed with the transition to a more circular economy, it is necessary to extend current knowledge about the value chains for the different plastics types, quantities of plastics waste in Denmark, technologies, values of the waste, as well as experience related to solutions and barriers. Efforts and activities must focus on the value chains where the impact is largest, and on the most promising potentials for technological development in Danish businesses and exports of solutions. It may be difficult especially for small and medium-sized enterprises to transition to a circular economy and develop more circular business models. This may be due to lack of knowledge, time, and resources for establishing the necessary collaborations across the value chain.

Additionally, there is still no consensus regarding which types of plastics are the least damaging to the environment and which design choices are most suitable for reuse and recycling.

Therefore, we need a national gathering point for the Danish efforts concerning plastics. A gathering point that initiates collaborations across value chains, that develops and shares knowledge, and that creates common design manuals for plastic products focusing on more reuse and recycling. A gathering point that provides factual, professional, and neutral guidance to citizens and businesses regarding sustainable plastics consumption.

Responsibility from cradle to cradle

There is growing awareness about plastics among Danish businesses. That provides opportunities for finding more circular solutions, boosting reuse and recycling, and curbing unnecessary consumption of plastics.

There are several examples of businesses that already take responsibility for the products they sell in order for them to be reused and recycled in closed loops. This is seen, for instance, in the deposit-return system for beverage containers where beverage producers for many years have been in charge of the take-back and recycling of their own products. In the future all packaging producers must take responsibility for collecting and recycling all packaging types, including plastic packaging.

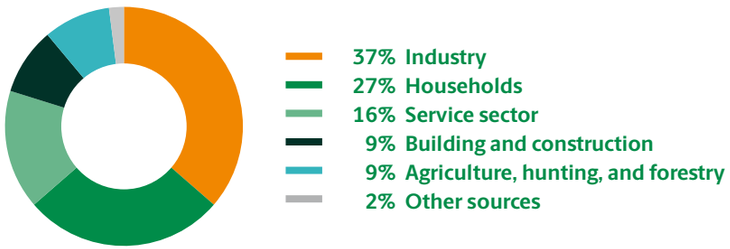
A number of sectors (such as the hospitality and tourism industry, the construction sector, agriculture, and the trade and transport sector) are focused on finding solutions to boost recycling and curbing the consumption of plastics.

They see the demand from their customers, but they also see a business potential in a more efficient utilisation of resources.

The different sectors call for a better dialogue in order to better plan and focus their efforts. The plastics sector has initiated a Forum for circular plastic packaging in which tests have been made with take-back and recycling in the wholesale stage of plastic clothes hangers, flower pots, and flower trays. The Danish Chamber of Commerce in the consortium Rethink Plastic has developed a design guide for packaging in order to boost the recycling of food packaging. The existing measures must be extended and enhanced with focus on testing for example take-back schemes that increase the reuse and recycling of plastics.

Deposit-return system
The deposit-return system is an example of producers taking responsibility for the products they sell. In 2017, the Danes returned 1.9 billion cans and bottles for recycling. Every time 100 plastic bottles are returned to the system, it saves approximately 6 kilograms of new plastics.

Sources of plastics waste in Europe



Initiatives

5

Sector collaboration within, e.g., agriculture, building, hospitality and tourism, and retail

The national plastics centre will launch a number of voluntary sector collaborations in selected sectors with focus on reaping potentials for more reuse and recycling of plastics through an active collaboration in the value chain.

6

Extending the deposit-return system by 1 January 2020

The deposit-return system is extended to also include bottles containing juice and fruit concentrates. The plastic bottles will be collected and recycled into food packaging. With this extension, it is expected that 52 million additional packagings will be recycled through the deposit-return system each year. The majority of these packagings are made of plastics.

7

Extended producer responsibility for packaging

An extended producer responsibility for packaging will be introduced as from 1 January 2025. The producer responsibility will promote the environmentally friendly design of packaging, including plastic packaging, and ensure that packaging is reused and recycled.

Businesses are already taking responsibility

As part of the EU plastics strategy from 2018, European businesses have been encouraged to commit to using more recycled plastics in 2025. The EU Commission's final target is to boost the demand for recycled plastics in the EU with 10 million tonnes in 2025.

At the request of the Confederation of Danish Industry a number of Danish businesses have opted in with more than 200,000 tonnes. This is the double of what would be Denmark's share in relation to our population in the attainment of the EU target.

Government Strategy for Circular Economy

In September 2018, the government published its Strategy for Circular Economy, and in October 2018 a political agreement was entered with the Danish People's Party and the Danish Social-Liberal Party on boosting the transition to a more circular economy. Altogether, DKK 116 million has been allocated for 15 initiatives contributing to a more sustainable society in which materials and products are recirculated, their value is fully utilised, and wastage is minimised. The transition potentially gives major benefits for both the environment and economy.

Building and construction sector

The building and construction sector in Europe uses every year approximately 10 million tonnes of plastics in the production of construction products as well as for packaging, corresponding to approximately 9 percent of the total European plastics consumption. This is the second largest consumption of plastics - after packaging. Although plastics are not always visible in buildings, they are widely used in insulation, piping, window frames, and decoration. The rate of reuse and recycling is minimal, since plastic materials are often closely integrated with other types of material. Also, they may contain substances of concern, in particular if buildings are old.

Agriculture

Agriculture uses major amounts of uniform plastics in their production. It is estimated that 5 percent of all collected plastics waste in Denmark comes from agriculture, corresponding to 5,000-6,000 tonnes annually. Plastics in agriculture are used for covering of soil, silage, etc. One of the recycling challenges is that plastics must be cleaned of soil and other organic materials before recycling. Cover plastics are therefore typically incinerated, since the costs of cleaning them exceed the benefit of recycling them.

Hospitality and tourism industry

In the hospitality and tourism industry there is a major consumption of single-use plastics and single-use packaging that are only recycled to a very limited extent. For instance, festivals and concerts have a huge consumption of single-use plastics that often end up in nature or in the streets. Furthermore, the entire take-away sector is growing, leading to a higher consumption of single-use packaging that is not source-separated and therefore ends up being incinerated.

Retail trade

In the retail trade large amounts of plastics are used throughout the entire value chain, including transport packaging and wrapping of goods, etc. There are many opportunities to change these applications to curb the consumption and boost recycling. Large parts of the sector have already taken initiatives, for instance through the publication of design manuals and a discontinuation of the sale of certain plastic articles.

Boosting recycling of post-consumer plastics

The recycling of post-consumer plastics waste must be boosted. We must collect more plastics for recycling and ensure that both quality and volume of the recycled plastics increase. New EU rules enhance the targets for recycling of plastic packaging waste and the requirements for collection schemes for plastics waste.

> **Today, we have an unharmonised collection system in which every local authority designs its collection schemes for plastics waste and sets up its own sorting criteria.**

The recycling of post-consumer plastics waste entails special challenges compared with other waste fractions. This waste typically consists of many different types of plastics with different additives for example for dyeing and plasticising of plastics. This means that a more extensive sorting of the plastics waste is needed after collection compared with, for example, glass and metal that can be sent almost directly for remelting after collection. Plastics waste is a very light fraction, but also a voluminous one, so it entails high collection costs. Altogether, it is more difficult to establish a profitable recycling of post-consumer plastics waste.

The current economic regulation of the waste management sector gives a higher incentive to incinerate waste compared to recycling it. In addition, we have an unharmonised collection system in which every local authority designs its collection schemes for plastics waste and sets up its own sorting criteria. This means that the waste management sector must adapt to different local solutions, which is a barrier to economies of scale and increases the costs of collection.

A waste management sector exposed to competition with a more standardised collection of plastics waste will ensure a cost-effective and environmentally superior waste management sector through a larger and more proper functioning market.

Initiatives

8

Standards for sorting and collection of plastics waste

Collection schemes and sorting criteria for post-consumer plastics waste are standardised all over the country in view of supporting a more proper functioning market for the recycling of plastics waste in large scale, and it will become more simple for Danes to sort their plastics waste.

The government's Utilities Strategy

In the Danish government's Utilities Strategy from September 2016, it is proposed to expose waste incineration and management of recyclable waste from households to competition. The government wishes to give consumers and businesses the option to contribute to the circular transition and to secure more efficient waste management to the benefit of households and businesses.

Full competition exposure will create security in the market and a larger volume of waste streams. In this way it will be profitable to establish new large sorting plants separating a larger proportion of the waste for recycling.

Collection

Approximately three quarters of Danish municipalities have introduced kerbside collection of plastics waste, while the last quarter of the municipalities has collection of plastics waste only at the recycling centres.

It also differs whether this kerbside collection is open to all housing types.

Sorting

There are differences in the sorting criteria and collection schemes for plastics waste among the municipalities, including whether plastics waste is collected together with for example metal and glass. This causes confusion and also makes it more difficult to recycle plastics efficiently.

Fight against plastic littering

Plastic pollution in the marine and terrestrial environments is a global problem, and Danes must contribute to solving it. Littering is expensive - both for nature and for our community. It is utterly inacceptable to leave your waste in other places than the bin - thereby leaving the cleanup bill for others to pay. Quantities of waste in nature and the litter cleanup costs must be reduced substantially.

> **We must stop littering and make sure to clean up after ourselves. A change of culture is called for so Danes quit these bad habits.**

There are several approaches to solving this problem. We can ban the types of plastics that are most widely thrown in nature, or we can develop alternatives that are more readily degradable once they end up in nature.

The EU has tabled an ambitious proposal focusing on the ten most common single-use plastic products found on the beaches of Europe. The EU plans to ban these single-use products if alternatives are available. This applies to plastic cotton buds, cutlery, plates, straws, drink stirrers, and balloon sticks. For items such as tobacco product filters, wet wipes, and balloons the EU also proposes an extended producer responsibility implying that producers contribute to paying the cleanup bill when their products end up in nature.

In some cases it may be difficult to avoid plastics waste in nature. This applies to hunting and fishing where gear is lost or plastics waste is abandoned, these products are difficult to find and pick up. In these cases we must focus on developing alternatives that can degrade in nature without leaving microplastics.

Initiatives

9

Denmark supports the EU Commission's single-use plastics directive

The single-use plastics directive will reduce the consumption of those types of plastics that most often end up in nature in Europe. The directive will be implemented in Denmark, focusing on ensuring collaboration across the value chain to address the challenges relating to waste in nature in an efficient way.

10

National information campaign to reduce littering

A nationwide communication effort is launched to prevent and reduce littering. The effort will focus on those types of waste that are most often seen in nature, such as single-use packaging from the take-away sector.

11

Fund for local initiatives for cleaning up Danish beaches of plastics

The national communication effort will be supplemented with a four-year subsidy fund for local voluntary initiatives for cleaning up the Danish beaches of plastics and other wastes.

12

Ban on non-degradable shot wads

The use of plastic shot wads that do not degrade in nature must be banned. For the preparation of a ban performance requirements for biodegradability under Danish natural conditions will be drawn up.

13

Survey of ghost nets in Danish waters and methods for cleanup

The extent of ghost nets (abandoned fishing gear) in Danish waters is mapped and methods for efficient cleanup are tested; guidance will also be provided to fishermen about how to prevent the loss of fishing gear.

20-30 tonnes

of plastics are abandoned in nature a year in connection with hunting

Hunting and plastics

During hunting shotgun cartridges are used, consisting of two pieces of plastics: a shot shell and a shot wad. The shot wad is needed due to safety, since steel shots cause harm to the gun barrel. The wads that are ejected together with the shots are rarely collected during hunting, as they end up 20-40 metres from the shooter.

Therefore, the shot wad is left in nature and it is estimated that this accumulates to some 20-30 tonnes of plastics in nature a year. The problem can be solved through the development of shot wads that are biodegradable in the Danish environment.

Many cleanup initiatives are organised around Denmark - large and small events around the country contribute to keeping our nature clean

Nordic coastal cleanup day

One day every year the coasts of Denmark, Sweden, Norway, Finland, Iceland, and the Faroe Islands are flooded with volunteers who are busy collecting waste from beaches, harbours, and the ocean. Keep Denmark Tidy coordinates the event.

Danish Society for Nature Conservation's annual waste-in-nature campaign

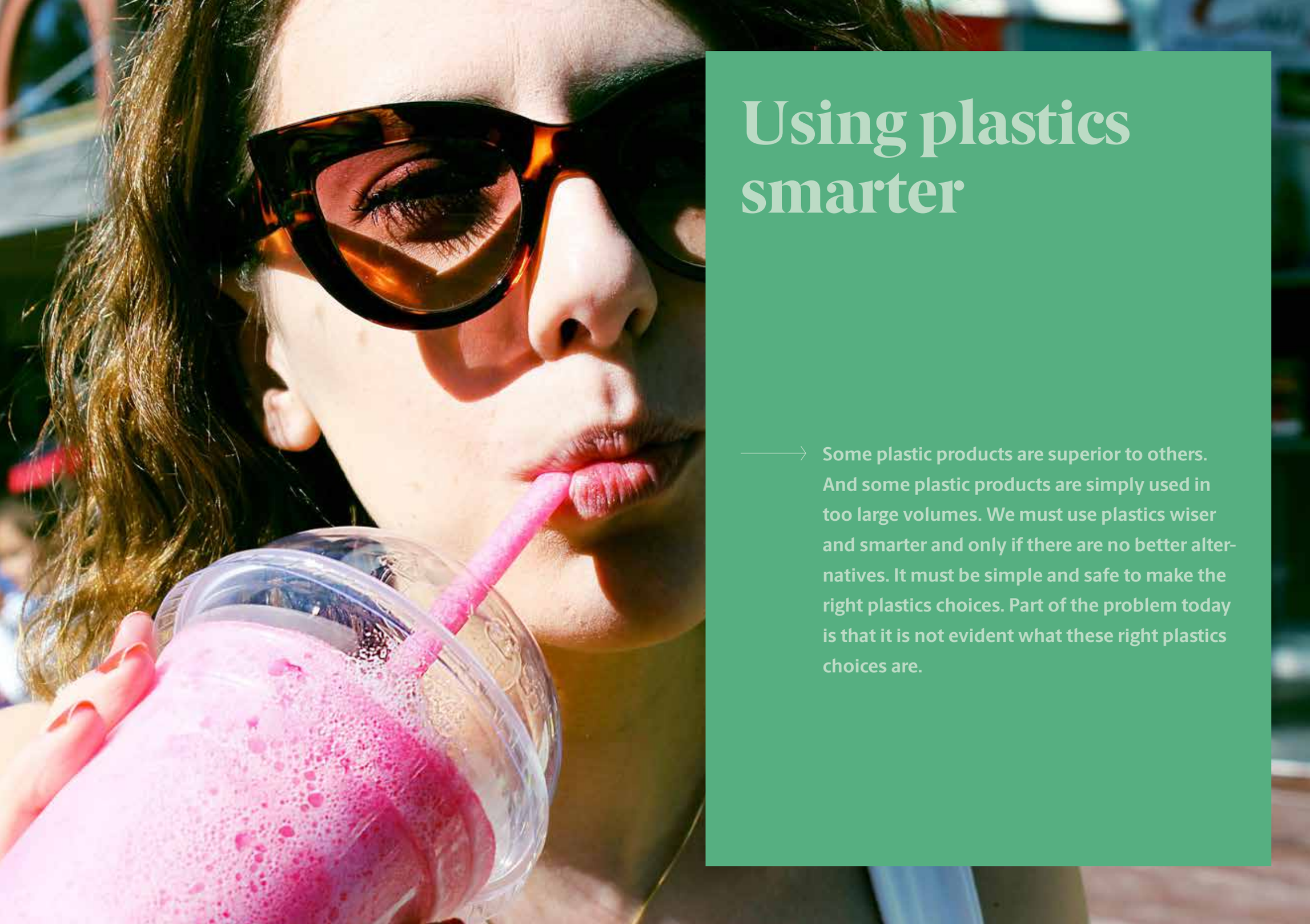
This event is Danish Society for Nature Conservation's annual collection of waste in nature. Every year, more than 100,000 Danish volunteers participate, giving a hand to nature by collecting more than 100 tonnes of waste.

Environmental kayak in Copenhagen and Aarhus

In Copenhagen and Aarhus you can borrow a kayak if you commit to collecting waste in the harbour.

The campaign "Together for an ocean without waste"

In 2018, the Minister for Environment and Food organised a major campaign "Together for an ocean without waste" with the participation of more than 30 different organisations. The purpose of the campaign was to reduce the quantities of waste found on our beaches and in the ocean.



Using plastics smarter

Some plastic products are superior to others. And some plastic products are simply used in too large volumes. We must use plastics wiser and smarter and only if there are no better alternatives. It must be simple and safe to make the right plastics choices. Part of the problem today is that it is not evident what these right plastics choices are.

Initiatives

14

Ban on handing out free carrier bags

The free provision of carrier bags with a handle in the retail trade is banned. This ban will apply to all types of carrier bags with a handle to incentivise consumers to reduce their consumption.

15

Ban on lightweight plastic carrier bags

The use of lightweight plastic carrier bags will be banned. The ban will not apply to bags such as freezer bags, garbage bags, and transparent fruit bags in supermarkets as they all serve a hygiene purpose for food.

16

Danish consumption of carrier bags must be halved by 2023

A voluntary agreement will be entered between the Minister for Environment and Food, the Danish Chamber of Commerce, COOP, and other relevant chain stores with the aim to halve the consumption of carrier bags by 2023.

17

Development of requirements for reduction of single-use plastics consumption at major events

The options for local authorities to regulate single-use plastics consumption in connection with the authorisation of major events will be mapped. In addition, a catalogue of ideas is produced with possible measures that can be used to reduce the consumption of single-use plastics. This may be measures such as installing drinking water fountains at major events.

18

Analysis of packaging tax on single-use products in view of reducing plastics consumption

The packaging tax on single-use tableware should only be differentiated according to material type if it makes environmental sense. To clarify the consequences a number of life cycle analyses of the alternatives to single-use tableware of plastics are conducted.

19

Ban on intentional addition of microplastics in cosmetics

The intentional addition of microplastics in rinse-off cosmetics will be banned. In addition, a decision-making basis is prepared to see whether intentionally added microplastics can be banned in Denmark also in other cosmetics (leave-on products).

Several music festivals have already initiated solutions reducing the consumption of single-use plastics and boosting recycling.

“We must rethink how we use plastics and curb unnecessary consumption.

Single-use plastic products are considered unnecessary consumption. Single-use plastic products are rarely recycled, but often incinerated or they end up as waste in nature. The upcoming EU directive on single-use plastics will mean that more single-use products are banned.

We already have a packaging tax on single-use plastic products such as plastic cutlery, plates, cups, and glasses. This contributes to a reduction of our consumption. However, today the packaging tax is weight-based, so the lightest packaging has the lowest tax rate. In many cases the lightest material will be plastics. This is not beneficial, since it makes it attractive to use plastics as the preferred material. However, it may be the smartest choice if the alternatives to single-use plastics are more harmful to the environment. We need more knowledge on this issue.

One of the situations where the consumption of single-use plastics is enormous is during major events in the public space. The large quantities of single-use plastics are not recycled and may end up in nature. Several music festivals have already initiated solutions to reduce the consumption of single-use plastics and boosting recycling. Experience and knowledge from these initiatives, however, have not been gathered and shared in a systematic manner.

445 million

taxed plastic carrier bags are used in Denmark every year

80

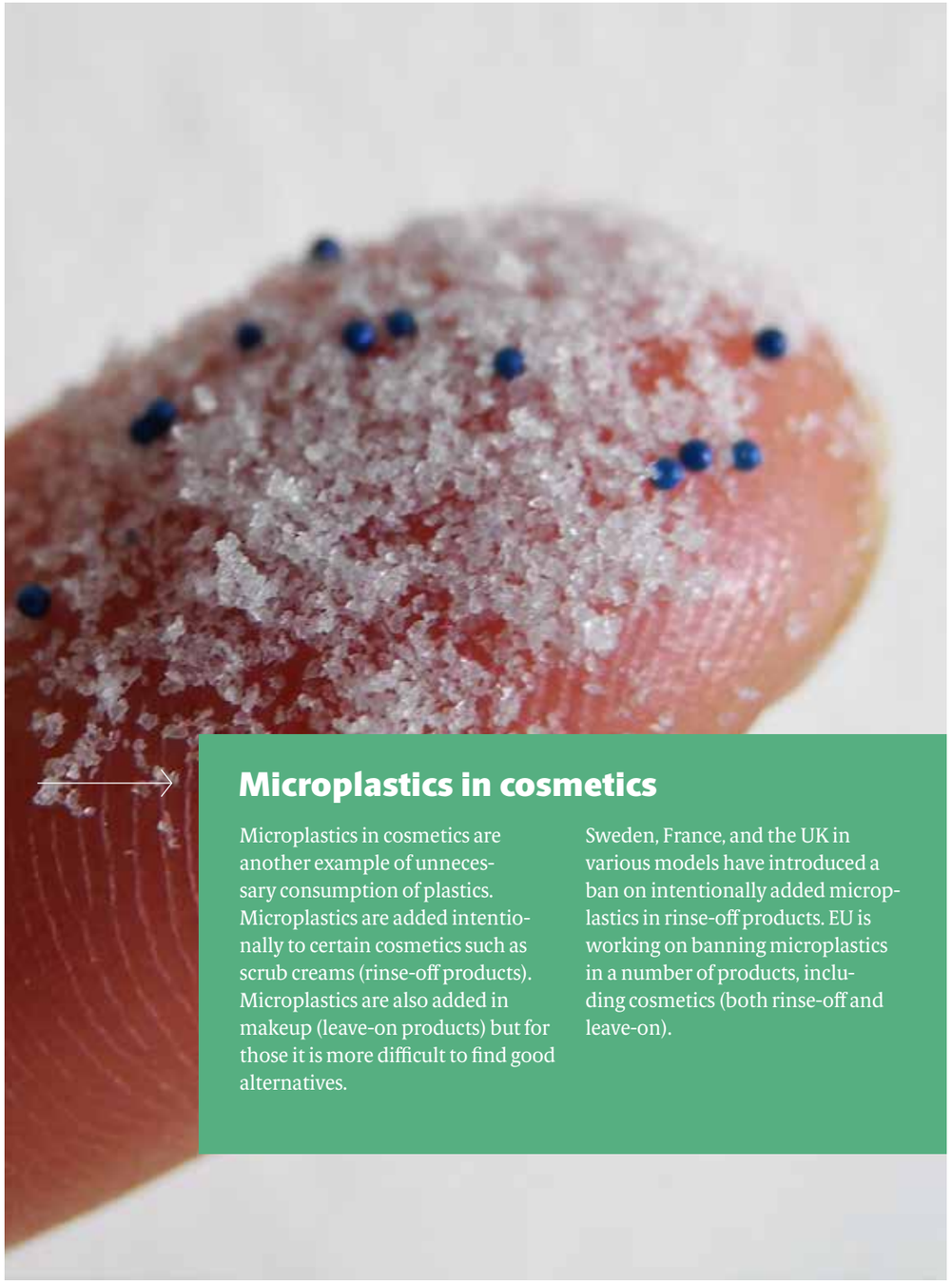
carrier bags are used by every Dane on average every year

9,000

tonnes of plastics are used for carrier bags alone every year

Plastic carrier bags

A plastic carrier bag is not necessarily a bad thing. The heavy duty plastic carrier bags in supermarkets can typically be used several times and end their useful life as a garbage bag. Such a consumption pattern reduces the overall material consumption. But many plastic carrier bags are handed out for free, so consumers do not consider whether they actually need a carrier bag. Also, these free bags are often so thin and delicate and/or of a size and form which make them inadequate for reuse or recycling as a garbage bag.



Microplastics in cosmetics

Microplastics in cosmetics are another example of unnecessary consumption of plastics. Microplastics are added intentionally to certain cosmetics such as scrub creams (rinse-off products). Microplastics are also added in makeup (leave-on products) but for those it is more difficult to find good alternatives.

Sweden, France, and the UK in various models have introduced a ban on intentionally added microplastics in rinse-off products. EU is working on banning microplastics in a number of products, including cosmetics (both rinse-off and leave-on).

Single-use plastics directive

The directive contains initiatives for the management of the top ten single-use plastic items and plastic fishing gear found in nature. These products are assessed together to constitute approximately 70 percent of all marine litter items.

The directive entails:

- **Ban on sale of single-use cutlery and plates, straws, balloon sticks, drink stirrers, and cotton buds made of plastics.**
- **Reduction in the consumption of plastic take-away packaging.**
- **Single-use drinks containers in the form of, e.g., plastic bottles and milk and juice cartons, must be designed in a way that their caps and lids remain attached.**
- **Extended producer responsibility and cleanup responsibility for, e.g., tobacco product filters, wet wipes, and balloons.**

Making informed decisions

→ There is a need for more knowledge about the plastics challenge in a number of areas, before the most suitable solutions can be identified. This is in particular the case for secondary microplastics, bioplastics, and PVC.

Initiatives

20

National network for research and innovation on microplastics

To ensure exchange of experience and synergy between the many different research projects on microplastics that are conducted in Denmark and abroad, a national network for research and innovation on microplastics will be established. The network will cover authorities, universities, consultants, consumers and industry associations, and it will be affiliated to the national plastics centre.

21

Knowledge building on microplastics in sewage sludge

The occurrence of microplastics in sewage sludge must be mapped. More knowledge must be gathered about the quantities of microplastics present in the sludge, as well as the associated environmental impacts when sewage sludge is spread on agricultural land.

22

Knowledge building on microplastics release from artificial turfs and possible alternatives

The quantities of microplastics released from artificial turfs to the surrounding environments must be mapped in more detail in order to assess whether there is a need for initiatives for the prevention of such releases. In addition, the options for using alternatives to the rubber granules will be mapped. This might be, for instance, granules of cork or coconut fibres.

23

Knowledge building on advantages and disadvantages relating to biobased and biodegradable plastics

The environmental and socioeconomic effects from the use of biobased plastics instead of fossil based plastics must be mapped. In addition, it must be investigated to which extent biodegradable plastics can biodegrade in the Danish environment.

24

Mapping of PVC products on the Danish market and options for substitution

Quantities, types, and consumption of PVC on the Danish market are investigated, including the rate of recycling and the options for substitution with other types of plastics.

> **Currently, we do not have sufficient knowledge to confirm with certainty that a shift to biobased plastics would be preferable.**

Microplastics

Despite the large focus on microplastics in the Danish research and knowledge environments there is still a need for more knowledge about sources, spreading, effects of microplastics in the environment, as well as development of monitoring and measurement methodologies. Studies show that microplastics seem to be caught to a large extent in the wastewater treatment plants in Denmark. Therefore it is assumed that the microplastics ending up in the environment today to a large extent come from sewage sludge spread on agricultural land together with important nutrients such as phosphorus and nitrogen. We need further investigations of the magnitude as well as the fate and effect of microplastics spread on agricultural land. In addition, we must generally establish more knowledge about the risks to public health and the environment associated with microplastics.

In Denmark, football clubs increasingly use artificial turf fields as a supplement to grass fields. Most artificial turf fields are established as an artificial turf carpet with a granule filling. More than 80 percent of the artificial turf fields use granules from used tyres. It is estimated that between 450 and 790 tonnes of microplastics are released annually from football fields of artificial turf. This corresponds to around 6 percent of the total quantity of microplastics released to the environment.

Bioplastics

Another area where we need knowledge is bioplastics. Currently, we do not have sufficient knowledge to confirm that a shift to biobased plastics would be beneficial. Biobased plastics may have negative effects due to the need for using agricultural land for the production instead of for feed and/or food production. In addition, it may affect the recycling possibilities negatively to have mixtures of biobased and oil-based plastics on the market. There is a need for more knowledge about the actual persistence of biodegradable plastics and the degradation products.

PVC

PVC is another type of plastic that is both beneficial and problematic. PVC is a very versatile and durable type of plastic that may create major pollution problems if it is not managed correctly at the end of its use. In some cases PVC is difficult to recycle due to its harmful chemical contents that have over the years been banned from use in new PVC.

Microplastics in drinking water

In autumn 2018, the Danish Environmental Protection Agency commissioned a study of microplastics in Danish drinking water. The results showed that the contents of microplastics were below the measurement limit in 16 of 17 water samples. For the sample exceeding the limit a subsequent analysis showed that it was primarily due to other particles than microplastics. As part of the project a reliable measurement method for the measurement of microplastics was developed.

Single market for circular plastics

Denmark cannot solve the challenges relating to plastics on its own. Plastic pollution is a global issue. If we wish to create a market for recycled plastics it must be done at least at the European level, where large scale demand can be created. The same applies to the regulation of chemical substances in plastics that are also solved most efficiently at the European level.

> **Requirements must be made for design and production of plastic products at the European level in order for plastic products to be designed for reuse and recycling.**

At the European level, a common plastics strategy was published in 2018. This will bring about a number of European initiatives to support a more circular plastics economy in Europe. An example of this is the proposal for a single-use plastics directive. In the auspices of the EU, ambitious recycling targets for plastic packaging in 2025 and 2030 have been agreed upon.

The government has been, and will continue to be, negotiating and working for establishing good conditions for a single market for recycled plastics. In a European perspective it is particularly important to the government that work is done to solve the two decisive problems relating to the recycling of plastics waste:

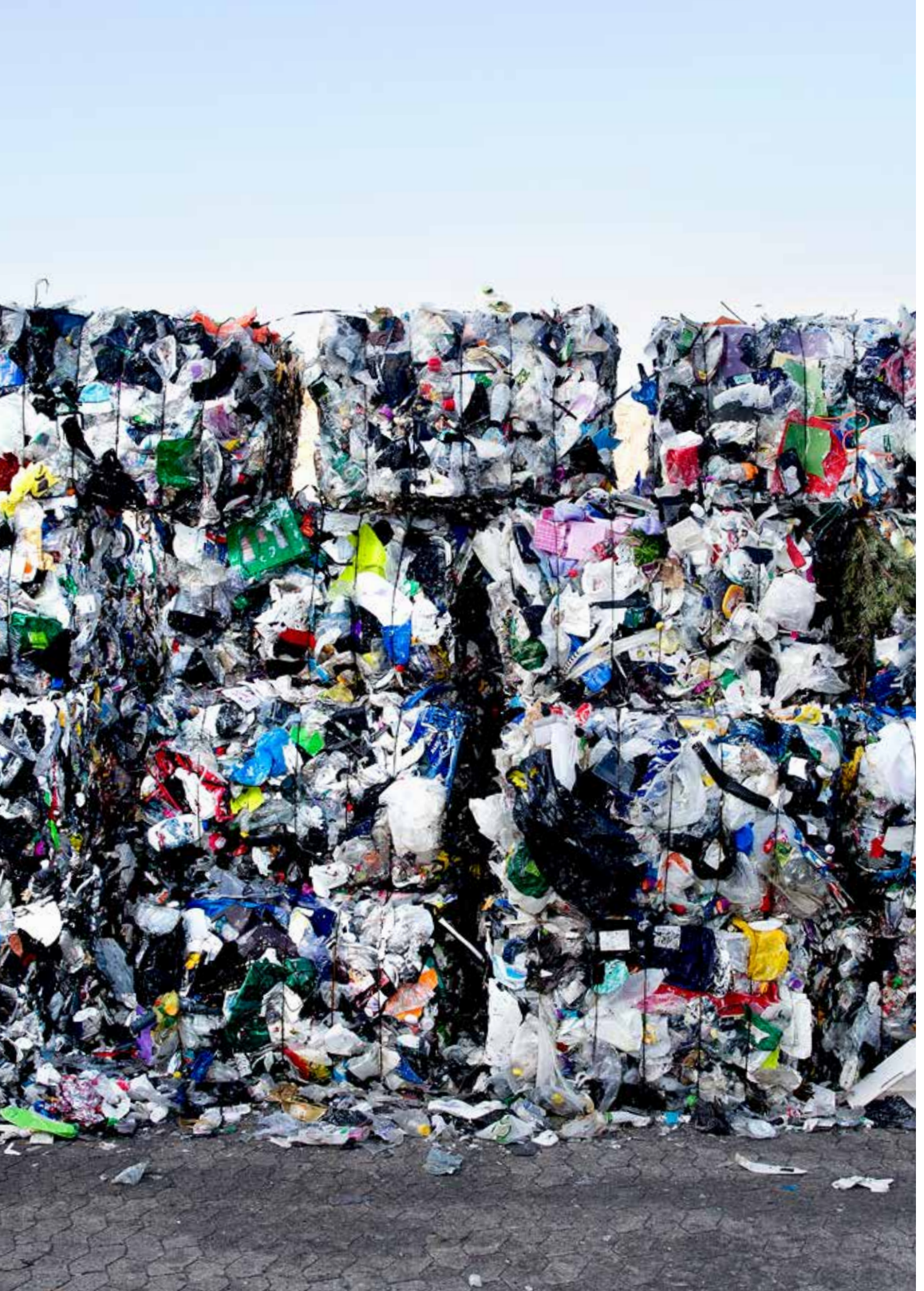
- **Product design, choice of material, and phasing out of substances of concern:** Plastic products must be designed for reuse and recycling.
- **Documented quality of recycled plastics:** Simple and safe trade and outlet for recycled plastics across borders.

Initiatives

25

Common European requirements for design for recycling

The government will work for having requirements at the EU level for the design and production of plastic products in order that they are designed for reuse and recycling and without substances of concern posing a barrier to recycling.



EU strategy for plastics in a circular economy

The strategy from January 2018 has been designed as a catalogue of possible instruments to be used in the realisation of the concrete vision for plastics and plastics waste in 2030 in Europe.

The 2030 vision of the strategy has four key points of reference:

1.

Recycling of plastic packaging waste has to reach levels comparable with those of other packaging materials. This means 75-85 percent, and minimum half of plastics waste generated in Europe has to be recycled.

2.

Sorting and recycling capacity has to increase fourfold since 2015, and export of unsorted plastics waste has to be phased out.

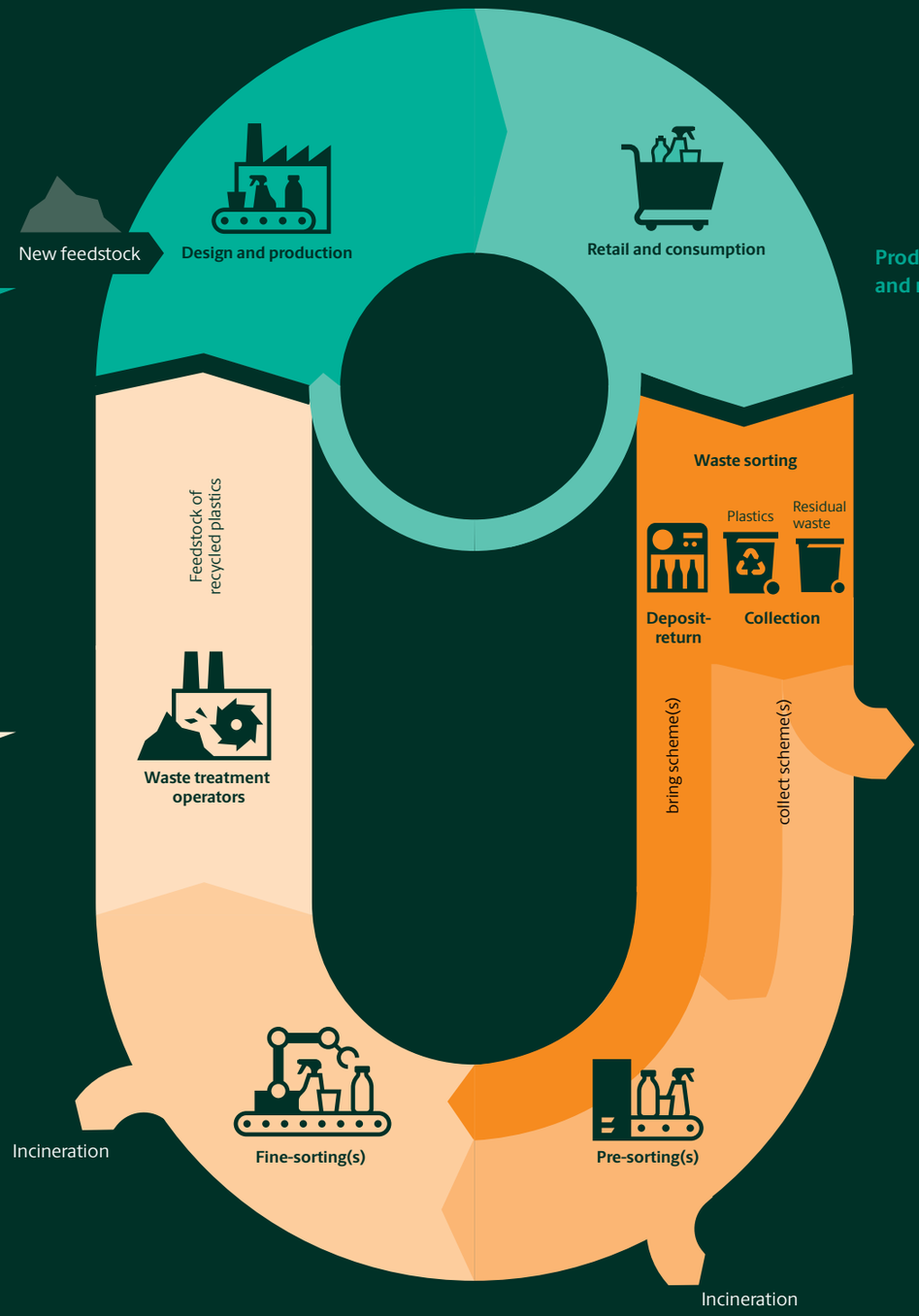
3.

The market for recycled and innovative plastics has to be successfully established, and will be based on solid industrial demand.

4.

Efficient measures will be implemented to prevent microplastics from polluting the environment.

Material loops and initiatives from the EU



Development of definitions of biodegradable plastics

Restrict the use of oxo-plastics and microplastics in the environment, for instance through regulation

Ban on intentional addition of microplastics

Limitation of release of plastic granules

Development of standards for the quality of recycled plastics

Eco-labelling visualising circular products to consumers

Labelling of compostable and biodegradable types of plastics

New EU guidelines for separate waste collection and sorting of plastics waste

Revised directive on port reception facilities for the delivery of waste from ships

Knowledge across the entire value chain

Revision of the packaging directive: All plastic packaging on the EU market in 2030 can be recycled or reused cost-effectively

Global challenges call for common solutions

Between 4 and 12 million tonnes of plastics end up in the oceans every year, and the consumption of plastics is increasing. This hugely affects fauna and socioeconomics through increased costs related to beach cleanups as well as nuisances to fisheries and people on the beaches and at sea.

“No country can solve this problem on its own. If waste enters the ocean, it knows no borders.

The largest sources of plastics waste globally are a number of Asian and African countries that have insufficient waste collection and management. So far, there are no technical solutions to cost-effectively remove the plastics waste from the oceans, and therefore we must focus on the prevention of plastics waste primarily from the major land-based sources.

Of the 17 SDGs adopted in 2015, goal 14 deals with life below water. This has substantially increased the global concern about preserving and ensuring sustainable use of the oceans and their resources, including curbing plastic pollution. Both regional and global forums have focus on this problem.

Initiatives

26

Prioritising Denmark’s international commitments

Denmark’s participation in regional and global forums will be boosted with a focus on contribution to solutions based on Danish positions of strength.

27

Enhanced efforts in the close marine areas

The Danish efforts in relation to regional sea conventions in the Baltic Sea and the North-East Atlantic will be enhanced. This may be done, for instance, by initiating initiatives or contributing with financial support of initiatives in connection with the regional action plans.

Global initiatives for combating plastic pollution

Regional sea conventions
The regional sea conventions play a major role in the work of combating marine litter. Denmark is a member of two regional sea conventions: OSPAR covering the North-East Atlantic, and HELCOM, covering the Baltic Sea. Both OSPAR and HELCOM have adopted regional action plans for marine litter, and Denmark supports this work. In HELCOM Denmark has taken the role as lead country for an initiative on styrofoam in the Baltic Sea.

EU marine strategy directive
The EU marine strategy directive addresses the challenges associated with marine litter. In an upcoming report "Denmark's Marine Strategy II" Denmark will describe what is "good environmental state" for marine litter and set up environmental targets in view of reducing marine litter. This will be followed up by a monitoring and response programme.

Nordic Council of Ministers
Plastics waste has been a subject of collaboration within the Nordic Council of Ministers for several years, and common responses in relation to circular business models, efficient collection systems, recycling methods and systems, as well as plastics waste and microplastics in the oceans have already been implemented. As part of the Nordic Council of Ministers' biannual plastics programme 2017-18, Denmark participates in a number of projects addressing plastics. Projects range from the design of plastic products and waste management to the effects of microplastics on the marine environment.

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