



# Danish examples to reduce plastic pollution and making plastic circular

Case catalogue to serve as input to the coming European  
plastic strategy

November 2017

## Theme: Awareness key to reduce marine litter

The marine environment patrols (in Danish “Havmiljøvogter”) is a successful Danish campaign where private yachtsmen, anglers, rowers and others who spend their free time at sea have agreed to help look after our seas, by reporting oil spills and marine litter. The campaign is funded by the Defence Command Denmark and has existed since 2006. Today almost 20.000 people have signed up and act as ambassadors for a clean marine environment by flying a special pennant, keeping an eye on the sea, reporting oil spills and litter, setting a good example themselves and by collecting marine litter.

The marine environment patrols’ pennants have a preventive effect, as they are a very visible signal to everyone and the campaign has raised considerable awareness about the marine environment. During the lifetime of the campaign the number of observed oil spills in Danish waters has been halved and the marine environment patrols’ efforts are believed to have contributed to this substantial reduction.

The campaign is a good example of how to actively engage the public. It furthermore contributes to tackling the challenge of marine litter by raising awareness, increasing surveillance, preventing and removing marine litter.

Denmark suggests that the European Commission’s coming plastic strategy likewise consider engaging the public as important actors to raise awareness, for instance through European funding options.



## Theme: Marine litter and recycling

As a preventive measure for marine litter, marine vessels are in general allowed to deliver their waste at the harbors after a “no special fee principle”. The cost for the management of this waste is included in the standard harbor fee and does not vary with amounts or type of waste. This creates an incentive for marine vessels to dispose of their waste under safe conditions, as opposed to illegal dumping. The “no special fee” does not cover collected marine litter, but most harbors receive this none the less, and thus in practice pays for the additional waste management.

Danish regulation stipulates that recyclable waste of a certain amount is required to be recycled. This is further stimulated economically as there is no fee on waste sent for recycling as opposed to waste sent for incineration and landfill. A Danish company Plastix A/S has made a business of this and recycles old fishing nets into new plastic commodities. The fishing nets are collected at harbors across Europe, is subsequently sorted according to polymer type, and converted to granulate for other plastic businesses to use as a raw material in their production.

This example shows that with the right combination of economic and regulatory tools, as well as the development of new recycling technology for otherwise problematic waste fraction, can prevent marine litter and increase the amount of recycled plastic to substitute virgin plastic materials.

Denmark suggests that the European Commission considers similar initiatives that create incentives for marine vessels to bring their waste to harbor and to both economically and regulatory stimulate that the recyclable waste is directed for recycling, and for technology development with the aim of developing recycling technologies for the remaining currently non-recyclable waste.



## **Theme: Phasing out problematic substances in plastic**

Denmark has a long tradition for an active approach in relation to phasing out and substituting problematic chemicals. Such activities have proved to be efficient in phasing out problematic substances in specific products or product groups and thus increasing protection of health and the environment, which also have the side effect of increasing circularity of the products.

### ***The Danish Phthalate Strategy***

Phthalates are a group of chemical substances with the same general structure. The substances can be released during production and when products are used, so both consumers and the environment can be exposed to the substances. Some phthalates have proven to be of concern, but phthalates are different and not all have the same health and environmental impacts. The Danish Phthalate Strategy<sup>1</sup> was launched in order to be pro-active regarding the potential risk of substituting phthalates of concern with other phthalates, which could prove to be of concern in the long term and hence address the whole group of phthalates from a horizontal approach. Managing phthalates must be based on comprehensive knowledge about the whole group of substances, so that some phthalates are not substituted by other chemicals of equally high concern. The Danish strategy examines the phthalates generally being used in Denmark and the EU and point to measures within existing regulation, necessary to protect health and the environment against undesirable phthalates. Guidance for industry<sup>2</sup> and consumers<sup>3</sup> is also developed with the aim of increasing the efforts to limit the use of phthalates of concern. The strategic approach has played an important part in regulatory initiatives such as the restriction proposal under REACH on phthalates in articles.

### ***Restriction on lead***

In Denmark, a restriction on the import and placing on the market of products with more than 0.01 % (w/w) lead entered into force in 2000<sup>4</sup>. The restriction also comprises plastic products. A similar more limited EU restriction proposal under REACH, on lead compounds in PVC, is under public consultation and is expected to reduce the use of this type of PVC across the EU, when adopted.

Denmark urges the European Commission to focus on constituents in plastic that are problematic for health and/or environment and at the same time making reuse and recycling (i.e. the circularity) of the plastic more difficult.

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<sup>1</sup> <http://www2.mst.dk/Udgiv/publications/2013/06/978-87-93026-22-3.pdf>

<sup>2</sup> [http://mst.dk/media/mst/9070328/branchevejledningftalater\\_uk\\_13122013.pdf](http://mst.dk/media/mst/9070328/branchevejledningftalater_uk_13122013.pdf)

<sup>3</sup> [http://images.netdoktor.com/dk/Emnecenter%20om%20Kemi/65.000\\_english.pdf](http://images.netdoktor.com/dk/Emnecenter%20om%20Kemi/65.000_english.pdf)

<sup>4</sup> Banning the use of lead in hard PVC products from 2003.

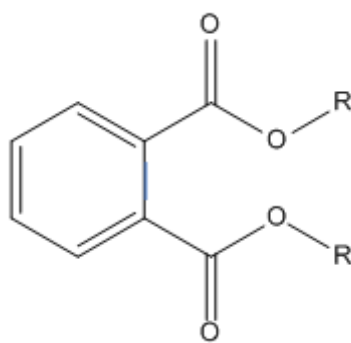


Photo: The general chemical structure of phthalates

## Theme: Preventive circular business models for food packaging

Plastic packaging is the largest single use of plastic in Europe, the vast majority of which is single use with a short lifetime of less than a year. The use of plastic will continue to rise and measures to reduce the use of single use packaging are paramount to decouple the plastic production from virgin fossil feedstock and reduce environmental impacts from plastic production.

There are several industries that deliver key elements related to reusable packaging. The below examples present some of these. Common to the examples are that they have all been in business for years, thus demonstrating that circular business models for food packaging has proven to be practical, feasible and with a solid business case. Reusable transport packaging is used in almost every industry types including bakery, meat, fish, dairy and vegetable industries.

Reusable packaging requires a packaging that is durable and robust. Schoeller Plast delivers exactly this with their transport crate. Schoeller Plast markets their transport crates for direct food contact, with many examples of more than 10 years use time.

Another company, Brüel Systems, provides washing and handling plants that are vital for preparing the transport crates for recirculation once the crates are returned from use. Brüel Systems A/S is Europe's biggest supplier of large scale automatic washing systems, which has been their core business since 1976.

Denmark suggests that the EU-commission considers the strong merit of these established industries within prevention and packaging, when considering measures to decouple from virgin fossil feedstock and reducing environmental impacts from plastic production. Prevention is both environmentally and economically beneficial as well as practically possible.



Photo: Vegetable transport crates from Schoeller Plast

## **Theme: Means to prevent plastic pollution and ensure functional market for secondary materials of high quality**

Dansk Retursystem A/S is a non-profit environmental company, which has the exclusive right to operate the deposit and return system in Denmark. The company's task is to collect the drinks packaging included in the deposit system to enable recycling of the materials. The packaging carries a label that identifies that the bottle or can is a part of the deposit and return system. Any packaging returned with attached deposit label, gives the consumer right to receive a deposit payment. The deposit label is therefore equated with cash.

Dansk Retursystem A/S was founded in 2000 by the Danish breweries in cooperation with the grocery traders, and since 2002 the company has had the exclusive right to operate the Danish deposit and return system.

In 2016, 9 out of 10 sold disposable packaging were returned, and Dansk Retursystem A/S received over 1.15 billion returned bottles and cans, equivalent to 3.5 million packaging units per day. The majority of the material – glass, plastic and aluminium - is sent for recycling. In 2016 this amounted to roughly 48,000 tons.

It is many times more expensive to produce packaging of new raw materials than producing packaging of recycled packaging material. But the value of recycling can not only be measured in monetary terms. By creating incentive for consumers to return drinks packaging in reverse vending machines, the environment is protected by preventing that drinks packaging is littered in nature. In addition to saving energy, we also avoid using valuable resources. When we recycle, we deduce less sewage and less environmental impacts than when we produce new packaging.

The deposit and return system has the additional benefit of collecting a clean stream of high quality food grade material. This allows for the recycled material to be recycled into new food grade packaging, which is one of the highest grades of recycled material possible, and a sought after commodity.

This is circular economy.

Denmark suggests that the coming European plastic strategy includes measures that likewise support high return rates that supply the recycling and manufacturing industry with high quality waste materials.



## **Theme: Stakeholder involvement and cooperation**

Results from a recent analysis initiated by the Danish Environmental Protection Agency show that the emission of microplastic from Danish wastewater treatment plants to the aquatic environment is minor compared to the total load on the plants. The average emission to the aquatic environment is calculated to 0.3 percent of the microplastic mass coming into the plant. This shows that the use of efficient and intelligent water technology solutions can play a key role in meeting the challenges of microplastic pollution in the aquatic environment.

### ***Microplastic Partnership***

In the past 2 – 3 years Denmark has made strategic efforts in identifying, analysing and mapping the occurrence and sources of plastic pollution in wastewater. As this topic is a relatively new focus area, these efforts have been challenging and to some extent fragmented. On this background the Danish Environmental Protection Agency initiated a Microplastic Partnership focusing on plastic pollution in wastewater thereby consolidating the existing knowledge base through a cross-sectoral approach, covering national and local authorities, utilities and technology providers. The Partnership has also identified knowledge gaps and key considerations on standardization of a cost-efficient methodology for analysing microplastic in wastewater.

The purpose of the micro plastic partnership is to bring stakeholders together to discuss, knowledge share and finally to make recommendations to the Danish Environmental Protection Agency. The micro plastic partnership is still ongoing, but already the stakeholders are positive about the forum and optimistic about the task they have been assigned.

Denmark suggests that the European Commission uses this positive example of stakeholder involvement, in the coming plastic strategy, to consider similar stakeholder forums bringing them together to exchange knowledge and make recommendations for further actions.





## **Theme: Economic instruments to support the waste hierarchy**

Denmark has good experience with economic instruments to support the waste hierarchy. Economic instruments can create incentives to consume less and produce more environmentally conscious. Taxes can encourage the development of new and cleaner technologies, and encourage shifting demand towards more environmentally friendly goods.

Packaging tax was introduced on carrier bags in 1993. The introduction of the charge led to a significant drop of the consumption. Today, the consumption of plastic carrier bags is estimated to be low, which is highly due to the packaging charge. The packaging tax continuously lead to a public debate on reducing carrier bag consumption, and many retailers are charging their customers much more for the carrier bags, than the actual cost including the tax.

Incineration tax was introduced in 1987. The aim was to create an incentive to help reduce the amount of waste going to incineration and to promote recycling. The incineration tax is a combination of a tax on heat from waste, an additional tax and a CO2 tax.

Landfill tax has also been in place for many years. The main objective with landfill tax is to direct waste higher in the waste hierarchy towards recovery and recycling, through giving the other options a monetary benefit. In general landfill tax has demonstrated to be an efficient instrument to divert waste from landfill and to increase recycling rates.

Economic incentives have proven to be effective in Denmark. Municipalities and others responsible for directing waste to recycling often need to show that it is economically reasonable. The charges for incineration and landfilling are helpful on this point. Recycling is not always economical beneficial in itself, but if it is cheaper than routing the waste for incineration and landfilling, that creates the necessary economic incentive.

Denmark suggests that the European Commission in the coming European plastic strategy considers options to utilise taxes as an economic instrument, as it was done with the amendment regarding reducing the consumption of lightweight plastic carrier bags to the Directive 94/62/EC on Packaging and Packaging Waste.