New methods for recycling plastic and textile waste

One of today’s most pressing environmental issues is the increase in materials use and waste generation. Finding new methods to process waste and utilise it as a resource is among the Nordic Prime Ministers’ green growth priorities, and a new initiative, Resource Efficient Recycling of Plastic and Textile Waste, has just been launched. The objective is to develop Nordic waste collection and waste treatment methods, as well as new business models that contribute to green growth and can be exported to the rest of the world.

Significant potential for greater resource efficiency

The Nordic Waste Group (NWG), a working group under the Nordic Council of Ministers, has initiated six projects aimed at identifying ways in which the recycling of plastic and textile waste can be increased.

“The potential is significant. The Nordic countries discard over 1,5 million tons of plastic waste every year. Only around 20% of these materials are recycled today,” says project coordinator Jon Fonnlid Larsen, Senior Advisor at the Norwegian Environment Agency.

While the Nordic population is accustomed to the idea of recycling plastic, textile recycling is a relatively unknown concept.

“If you look at the Nordic region today, only approximately 17% of textiles are reused and no more than 2% are actually recycled. The rest is either incinerated or landfilled. By using these resources in new ways, we would reduce harmful emissions and waste treatment costs, all while making a profit on recycling and reuse,” says project coordinator Yvonne Augustsson of the Swedish Environmental Protection Agency.

A whole new industry can be created

Increased reuse of textiles would mean a more developed second-hand market with potential for devising new business models, both for commercial actors and the voluntary organisations that account for the majority of Nordic textile collection today.
Industrial recycling capacity in the Nordic region and Europe is both limited and
dominated by downcycling methods. If the Nordic countries are to exploit the growth
opportunities available in the industry, further technological development will be needed.

“By developing an efficient collection, sorting, reuse and recycling system, we could
establish a whole new industry involving voluntary and commercial actors alike. This
offers considerable potential for job creation and economic growth,” Augustsson says.

The aim is to ensure that reuse will be given top priority, as according to the EU waste
hierarchy, and that aspects like durability and recycling possibilities are integrated all
along the textile value chain. One of the issues at hand is the fact that garments and
textiles are often made from fabric blends, which complicates the recycling process.

“This is a design issue, which clearly illustrates that we need to look at the process in all
its phases – design, production, use, collection and the waste phase,” says Augustsson.

The Nordic Textile and Recycling Commitment project aims at developing a common
quality system for companies involved in textile collection, sorting, reuse and recycling.
A Nordic Strategy for Collection, Sorting, Reuse and Recycling of Textiles seeks to
improve the region’s reuse and recycling infrastructure.

The third project, An Extended Producer Responsibility (EPR) System and New Business
Models to increase Recycling of Textiles in the Nordic Region, will develop policy
instruments for Nordic authorities and suggest new business models to the textile
industry.

In addition, the project will develop an Extended Producer Responsibility model,
specifying producer involvement in the effort to reduce their products’ environmental
impact. This includes making textiles which are more suitable for repair, reuse and
recycling, and making sure that they do not contain hazardous substances.

**Substantial carbon emission savings in plastic recycling**
The plastic waste projects forming part of the initiative are aimed at improving existing
collection and recycling systems, optimising Nordic plastic value chains, and developing
guidelines for plastic sorting at municipal recycling centres.

The first objective will be achieved by charting collection and recycling systems in the
Nordic countries and through subsequent analysis of the key factors that contribute to
successful collection. For the second project, electrical and electronic waste has been
chosen to provide a case study of how to optimise Nordic plastic value chains. The aim is
to analyse which types of plastic are suitable for recycling and how hazardous
substances can be identified.

The third project will be concerned with drawing up guidelines on how municipal
recycling centres can reduce the quantity of plastic waste sent for incineration and
instead step up recycling rates. As with the textile projects, the work will be conducted in
cooperation with reference groups comprising of relevant stakeholders in the Nordic waste and recycling industry.

Fonnlid Larsen explains that increasing the recycling of plastic waste to 40-45% would result in a reduction in CO2 emissions equivalent to three times the emissions from the entire car fleet in Copenhagen.

“Recycling one ton of plastic instead of incinerating it reduces CO2 emissions by 2,4 tons – a factor of 2,4 – and saves energy that would otherwise have gone into the production of new plastic. So there is a large environmental benefit in increasing the quantity,” he says.

**Large volumes a prerequisite for profitable recycling**
The Nordic countries have participated actively in developing the so-called ‘end of waste criteria’ in the EU. These establish when various materials can be treated as raw product rather than just waste. This has already been achieved in the case of steel, aluminium, copper and glass, and the EU is now directing its attention to plastic materials.

“This is certainly a growing field in Europe and internationally. There will be more and more recycling of plastics and it is likely that EU targets for recycling will be raised significantly towards 2020. It is important that we stimulate the Nordic market, get volumes up, and develop technologies for sorting, identification and recycling of different types of plastic,” Fonnlid Larsen points out.

“The central challenge is to make systems that allow collection and sorting of very large volumes of plastic waste types, of sufficient quality to enable high-grade, profitable recycling,” he adds.

According to Augustsson, optimising the economic potential of the Nordic recycling industry requires the Nordic countries to work together. “One of the main challenges for recycling in the Nordic region is the relatively small size of each country. Large volumes are a prerequisite for a profitable recycling industry, which is why we need to come together on this issue.”

**Growth all along the value chain**
Fonnlid Larsen hopes that recycling of plastic waste can become a profitable Nordic industry in the coming years and decades.

“Recycled plastic raw materials can either be utilised by the Nordic market or exported to increase our share of the European market,” he explains.

“Internationally, we can contribute to a more sustainable economy by demonstrating how to develop cost-effective collection systems and technologies that secure a high degree of waste collection and recycling, without the risk of unintentional content of harmful substances in the end products. This would spur growth along the entire value chain,” Fonnlid Larsen concludes.
Video from Rio+20:
Natural Capital in a Green Economy

Sustainable Development Indicator: Development in municipal waste generation and in municipal waste management by treatment method in the Nordic countries

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