Story of Plastic
– From Waste to Product

HOW COULD WE RECYCLE PLASTIC IN THE FUTURE?

HOW IS RECYCLED PLASTIC PROCESSED?

WHY DOES SORTING PLASTIC MATTER?

Dear reader,

in this brochure, we will tell you about plastics recycling as well as a project by the City of Espoo and the LAB University of Applied Sciences which helped promote the recycling of plastics.

Plastic in itself is a great material suitable for many purposes. However, as plastic users, we are responsible for ensuring that we do not produce and use plastic in unsustainable ways and that it will not end up somewhere it shouldn't. Responsible use of plastics requires functional plastic recycling, and the City of Espoo and the LAB University of Applied Sciences want to achieve this together with all the local residents.

On the next pages, you will learn more about plastic, processing it, the opportunities provided by plastic recycling and about how everyone can do their part in implementing circular economy.

Story of Plastic – From Waste to Product is a joint project of the City of Espoo and LAB University of Applied Sciences that has received funding from the Ministry of the Environment's support programme for the Plastics Roadmap trial and pilot projects.

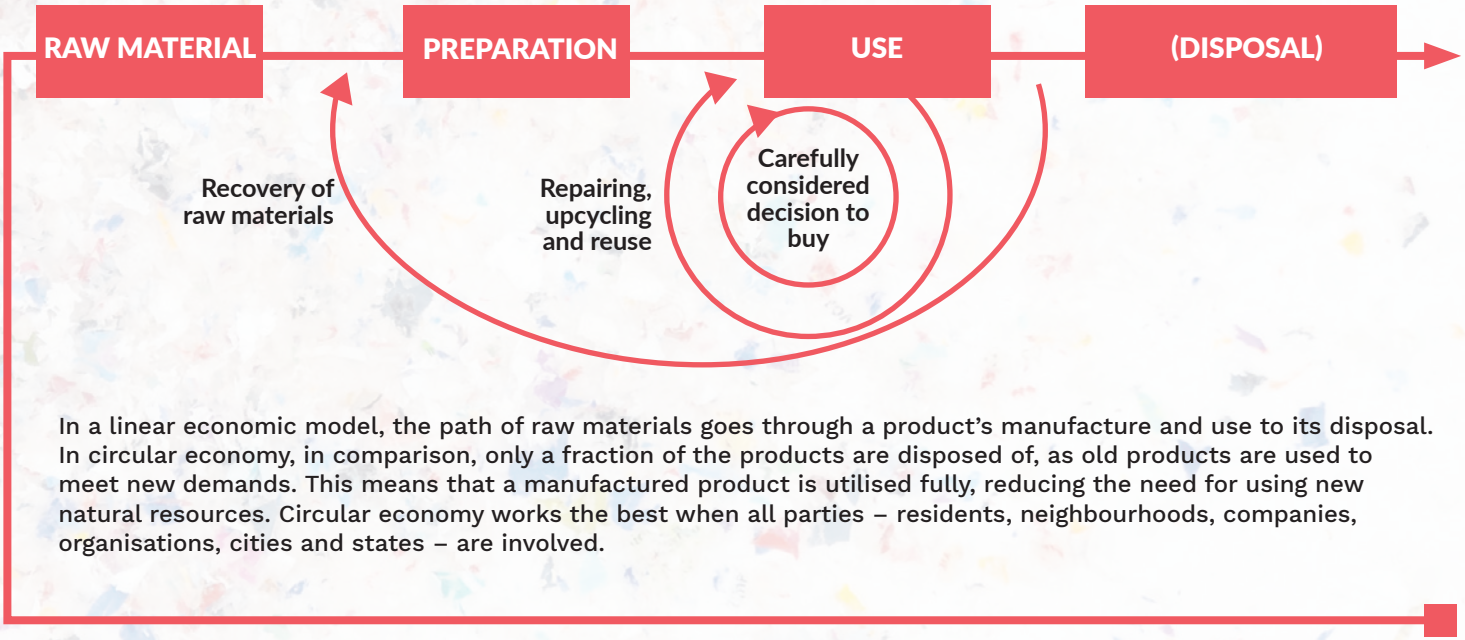
MULTIPURPOSE PLASTIC

We all have a purpose in circular economy!

SUSTAINABLE CONSUMPTION

What is circular economy?

Plastic is such a popular and useful material that recycling it is an especially central part of circular economy. Circular economy is an idea and an operational model that values the work that has been done and the resources that have been used and where nothing new is produced to replace something that can still be used one way or another. For example, a plastic item that is no longer needed is not considered to be a piece of rubbish, but, instead, an item that can be reused for some other purpose or material that can be recycled into raw material for another product.



In a linear economic model, the path of raw materials goes through a product's manufacture and use to its disposal. In circular economy, in comparison, only a fraction of the products are disposed of, as old products are used to meet new demands. This means that a manufactured product is utilised fully, reducing the need for using new natural resources. Circular economy works the best when all parties – residents, neighbourhoods, companies, organisations, cities and states – are involved.

Plastic serves many purposes

‘Plastic’ is actually a general term for a large group of different materials with very different characteristics. Typically, plastic is a light and durable material that is easy to process and mould, and these characteristics often make it a very sustainable choice as a material.

Plastic provides well-sealed and hygienic foodstuff packaging, which helps reduce food waste. The versatility of plastic has made it possible to create many devices facilitating our daily life and sustainable development, from home electronics to solar panels.

Thanks to its lightness, it takes less energy to transport plastic, and the material’s durability allows for less dense or thick plastic items, reducing the amount of material needed. Plastic is also a great material for recycling.

Virgin plastic is usually made from oil, which is a non-renewable resource and the use of which accelerates climate change. Additionally, oil – similar to plastic – damages the environment if it ends up in nature. But if we only produce and buy plastic for what we need and reuse the plastic we no longer need or recycle it, we can also continue enjoying the benefits of plastic in the future.

BUY A NEW PLASTIC PRODUCT ONLY

BASED ON CAREFUL CONSIDERATION

Your decision to buy a product sends a message to manufacturers on what kind of products should be made!

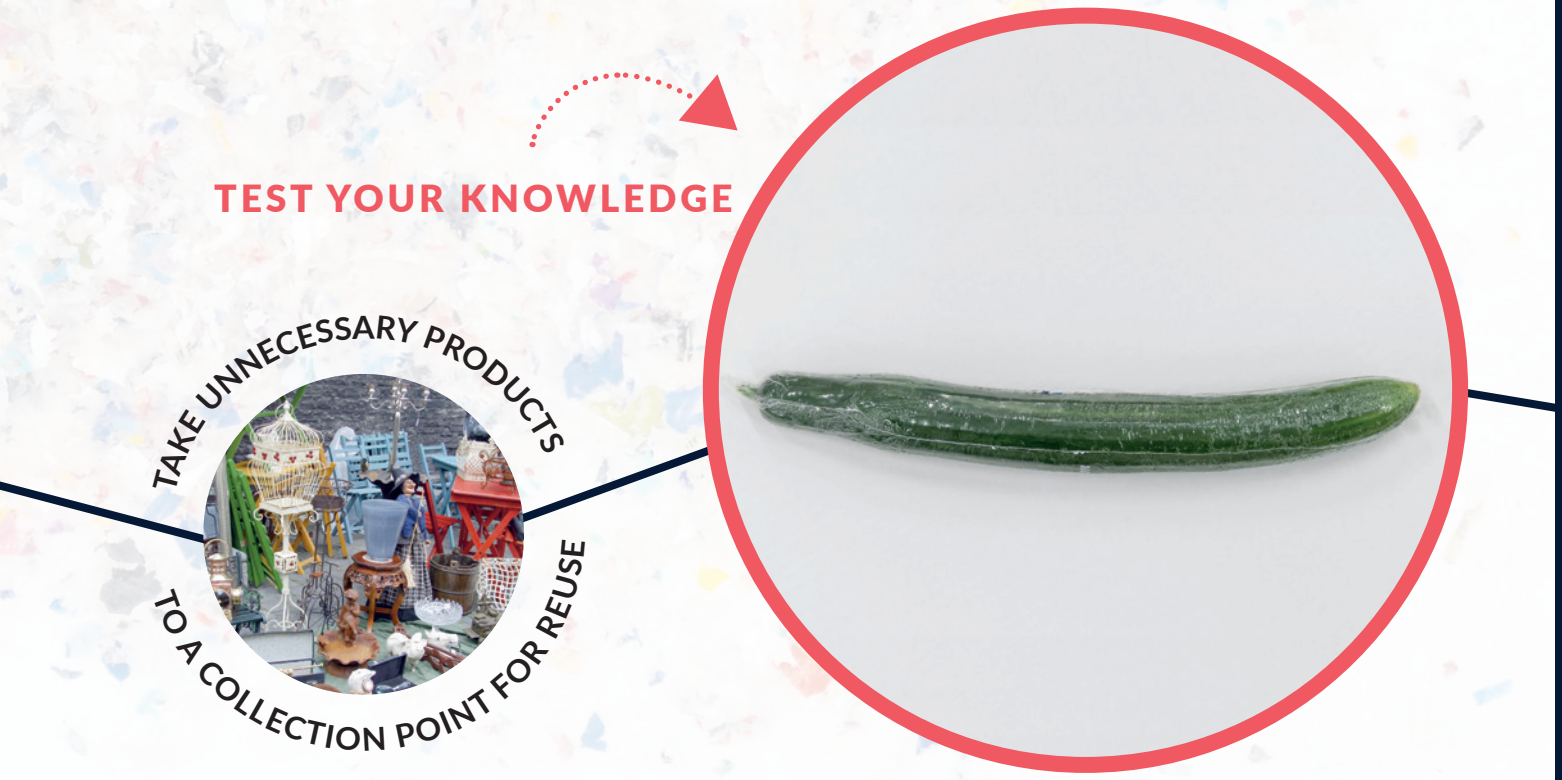
USE THE PRODUCT FOR A LONG TIME

Sustainable shopping

Beware of greenwashing, i.e. the misleading advertising of products' sustainability impacts! When you are shopping for household supplies, for example, you may need to consider whether to choose a plastic product or a product made from other materials.

Please keep in mind that not all plastic is unnecessary, and not all ingredients used to replace plastic are automatically ecological alternatives. A product made from recycled plastic is usually always a sustainable choice.

TEST YOUR KNOWLEDGE

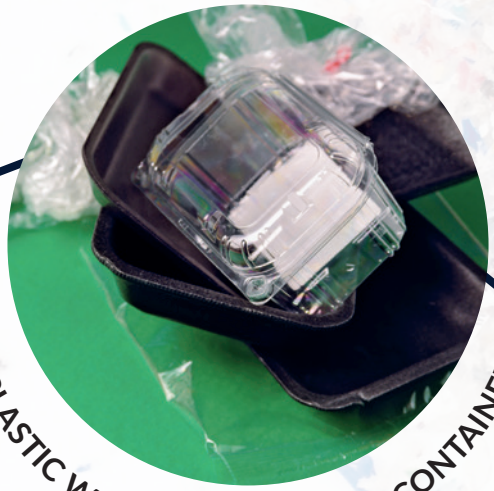


Plastic reuse now

At the moment, sorting plastic in Finland means collecting plastic packaging, as the law stipulates that packers and package importers need to organise recycling for their products.

However, not all plastic is collected yet, and it is not yet possible to process all types of plastic into new raw materials. The contributions of us all are needed to remove these obstacles, as anyone can set a good sorting example for their loved ones and ask for more sorting opportunities from their regional waste management company, for example. Additionally, industrial operators will not make major investments in the use of recycled materials until there is a stable supply of raw materials and until there is high enough demand for products made from recycled plastic. Plastic recycling is developing all the time, but it will develop faster the more there are people who are committed to promoting it.

Combustion of plastic into energy releases the carbon dioxide in the material back into the atmosphere and does not reduce the need for producing new plastic. Plastic sorted into mixed waste also ends up in combustion.



SORT PLASTIC WASTE INTO ITS OWN CONTAINER

NEW RAW MATERIALS FROM OLD PLASTIC

READ HSY'S SORTING INSTRUCTIONS

1. Plastic packages are collected into their own sorting bins.
2. The different plastics are separated mechanically from each other at a plastic processing plant.
3. An increasing amount of plastic can be taken into material production, but some still has to be used in energy combustion.

TEST YOUR KNOWLEDGE

Plastic ends up in mixed waste in many households. We still have plenty of work to be done!

New innovations through cooperation

Story of Plastic – From Waste to Product is a project where the City of Espoo and LAB University of Applied Sciences want to promote the recycling of plastic by both increasing the degree of sorting and developing new ways of processing recycled plastic. The importance of sorting was communicated to the residents and new sorting containers were brought to schools in Espoo. The plastic laboratory of the LAB University of Applied Sciences, on the other hand, started to develop ways to create new products from mixed plastic waste from Espoo without having to first separate the different types of plastic.

HOW TO MAKE PLASTIC RECYCLING

MORE EFFICIENT?

LAB: *Sure, great idea! We actually have a fancy new plastic laboratory that is well-equipped for testing and developing new kinds of processing methods. But we need plenty of sorted plastic waste for producing recycled plastic – where can we get it?*

Espoo: *Hi, LAB! We are thinking about how to recycle plastic more effectively. I believe you are thinking about the same thing, so maybe we should work together?*

LAB: *Sounds great! We could use the plastic waste of Espoo residents to make products for the City, in which the residents can see the story of plastic. Hey, maybe that could be the name of our cooperation project?*

Espoo: *The residents will start sorting when they understand its importance. So we should make the innovations and recycled products facilitated by sorting visible! Of course, we also need sorting bins which we could add to schools, at least.*

WATCH THE VIDEO TO SEE A DESIGNER'S GREETINGS TO PEOPLE SORTING THEIR PLASTIC

Products from recycled plastic can be made when enough people sort their plastic waste.

Utilising all plastic

Separating the different types of plastic from each other takes time and effort, and some plastics have better recycling markets than others. Story of Plastic – From Waste to Product project came up with tools to utilise all types of plastic equally. Utilising mixed plastics is challenging, as the different types of plastics behave in different ways when processed and will not necessarily mix together. At least for now, other coupling agents need to be added to the material to ensure its durability and processability. However, it is clear that all plastic types have their role in new products and that global problems related to the environment, climate and consumerism can be solved at a local level.

HOW WE RECYCLED MIXED PLASTICS:

Plastic sorting and collection

We needed all people sorting their waste for this.

Shredding the mixed plastics

We want to recycle all the plastics.

A NEW WAY OF PROCESSING PLASTICS

Refining the shredded plastics into granulate

In granulates, the shredded plastic becomes denser and mixed.

Designing a suitable product

The variations of the mixed material makes it unsuited to certain kinds of products.

Manufacturing the product through 3D printing

3D printing allows for continuous product development and small product batches.

Finished product

The finished product has given the plastic waste a new life.

New solutions for improving plastic recycling are being developed all the time!

MULTIPURPOSE PLASTIC

SUSTAINABLE CONSUMPTION

BUY A NEW PLASTIC PRODUCT ONLY BASED ON CAREFUL CONSIDERATION

USE THE PRODUCT FOR A LONG TIME

TAKE UNNECESSARY PRODUCTS TO A COLLECTION POINT FOR REUSE

SORT PLASTIC WASTE INTO ITS OWN CONTAINER

NEW RAW MATERIALS FROM OLD PLASTIC

HOW TO MAKE PLASTIC RECYCLING MORE EFFICIENT?

A NEW WAY OF PROCESSING PLASTICS

HOW WILL THE STORY CONTINUE? OWN YOUR ROLE!

See the other ways Espoo and LAB are working to promote circular economy.
espoo.fi/en/kestava-kehitys/carbon-neutral-circular-economy
lab.fi/en/RDI/circular-economy

ESPOO ESBO

LAB University of Applied Sciences

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