A company in Tauragė that contributes to cleaner oceans

Success story

Taurage district municipality
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Climate change and biodiversity loss today are problems that are hitting media headlines. Scientists declare shorter and shorter deadlines for us to take action, change our habits, means of transportation, and mass production. Recently, the European Commission approved the European Green deal. It's a broad multisectoral strategic plan that helps us, Europeans, to fight climate change, pollution and to reach levels of circularity in our economy, where resources are used efficiently.

The aims of this plan are:

• Europe has to become a climate neutral continent by 2050 (by not emitting more CO2 than its natural areas can absorb)

• Economic growth should be decoupled from the usage of resources;

• While implementing those changes, no person and no area should be left behind

To make any new item, we need resources. Today we have reached our limits, where saving resources, reusing and recycling is not an option – it must be an obligation. The European Waste Framework Directive states that, to begin with, we should avoid making waste. If you are carrying on with an activity that produces waste, it should be reused. If there's no possibility for that neither – recycled. If the waste cannot be recycled, then it can be incinerated to create energy. Only if no other option is possible should it be taken to landfill. These principles are known as the waste hierarchy.

If all the Europe's waste were to be treated according to this hierarchy, there would be less risk for human health, the waste would not contaminate the environment, and the emissions of greenhouse gasses would be reduced.

European Circular Economy Action plan, adopted in March 2020, states that resources should circle in the economy as long, as possible. In this plan also the plastic sector was named as one of those where potential of circularity is high.

Although the principles of circular economy oblige us to use an item as long as it is possible, to fix or repair it, there are still sectors where items used are broken or torn every day, due to the specifics of the activity. One of these sectors is fishing or fish farms and the fishing nets used in these activities. Old fisherman knew how to sew nets but in recent times nets became made from yarn. Today, segments of plastic nets are repaired. They are left in the open sea and become traps for marine animals and birds.

For this reason the Norwegian private company "Nofir" collects discarded nets and various gear from fisherman and fish farms and recycles them or – if it is not impossible – utilizes them in a proper way. A big division of this company operates in Lithuanian town Tauragė, where around 10 000 tons of discarded nets are sorted out in a year. The company was established to gather old fishing gear from the coasts of Norway, but then received a financial boost from European Union. This particular financing helped to spread its activity to the whole of Europe and even other continents.

In the Tauragė plant discarded nets are weighed and analyzed. Special equipment can show composition of the net (usually PE, PP, PA6, PA66).

Some nets and also ropes, steel parts, metal chains, plastic tubes (used in fish tanks) can be recyled. Those which are not deemed as hazardous waste, although few years ago "Nofir" received an official permit to treat impregnated parts of the nets, which are covered in copper oxide, a hazardous material. What is the composition of plastic in the net? Illuminating nets with infrared rays helps to answer this question easily.

Discarded nets are driven to the Tauragė recycling plant by auto transport. Then they are weighed outside in the special lot or inside (if confirmed to be hazardous waste, i.e. impregnated by copper oxide).

In the meantime, nets that are not covered in copper oxide are washed with a high pressure water stream and then dried. After drying they are cut into one-meter long pieces, some pressed with a secondary material press. They are then sorted into waste that is appropriate for recycling, ferrous metals, non-ferrous metals and various parts that cannot be recycled. In the sorting process, floats, various parts of the net, stainless steel parts or ropes are picked out and given to companies that use them for making textile products or even clothing.

P6 type plastic (nailon) is pressed into big sheets, weighting almost half of a tonne, while plastic tubes are shredded to flakes.

What happens with the polluted nets? Ones that are impregnated with copper oxide are analyzed. If the pollution does not overstep the boundary of 25 percent of the whole mass, nets are cut into the 3-meter length stripes and sewn together. Then such stripes are washed in a closed stainless-steel camera, with the water from 8 high-pressure blades. "Nofir" pays attention to the wastewater that is a left after such washing – it is cleaned by chemicals and a magnetic-mechanic process (being treated with different materials, pollutants combine into larger particles and can be filtered out). The process may sound complex, but it allows the company to use the same water repeatedly to wash the nets. Water circulates in a closed system, is filtrated and used again for the same purpose. What is filtered is made into sludge, which later is passed to waste handlers.

No unpleasant odors are spread while washing the nets, because some of them are washed indoors and sludge from the washing process is gathered in a closed tank. As nets are cut into longer pieces, this process does not create micro plastic particles.

Company "Nofir" had found a way to recycle both hazardous and non-hazardous waste of fishing gear, so from the technology readiness perspective it had reached level 9 of proven and functioning new technology.

So what are nylon nets used for? After recycling they can be made into thread, which is then woven into new clothes, carpets, furniture parts (e.g. hammocks), and shopping bags. Recycled nylon is called "Econyl" and this material became quite popular when models wearing garments from it showed up in the collections by the "H&M" company.

When T-shirts are produced from secondary material in this manner, 170 000 tones of CO2 are saved because there is no need to produce new nylon from oil.

Parts that are not suitable for any recycling, are sent for incineration close by, at Klaipėda‘s incineration plant, „Fortum“. In winter this company provides heating to many of Klaipėda‘s houses.

Since the start of their activity "Nofir" has gathered almost 48 000 tons of nets (453 tones have been gathered from Lithuanian fisherman and small businesses). These amounts of nets do not float in open ocean or seas and do not harm marine animals and birds.

Communication between different companies (event the smallest startups) pushes us closer to the common aim to use things as longer as it is possible. For example, the net recycling company „Bracenet“ produces belts for cameras from the net rope it receives from „Nofir “.

In regards with ISMW framework, the stakeholders in this case was private company, also the beneficiaries – service users, buyers of recycled fishing gear material.

The system includes elements of waste collection, transfer and transport, treatment and disposal, so as the recycling of waste.

This case covers technical and environmental aspect of waste management. Technical – in a way that a new technology had to be created for recycling the gear that seemed unusual, environmental – that it help to use a resource that is harmful to the marine animals and birds if left in the marine environment.

While operating, this company creates jobs in Tauragė, cleans oceans, recycles waste gathered and, in collaboration with partners, create new prospective products. This is an example for businesses to follow. Lessons learned:

1. The collection of waste – even the hazardous type of waste – can be useful not only for the environment, but also from the business perspective – useful material can be reclaimed and returned into a circular economy.

2. The recycling work helps to create new green jobs even in distant small regions. In this case – big Norwegian company chose small Lithuanian town Tauragė for building its recycling unit.

3. The nets are not only sold as a recycled material (nylon or other type of plastic), new collaborations was born in the recycling process, such as „econyl“ material later used by company „“H&M”, or selling metal parts, knots for the artists. This shows that it is essential to spread a word about an idea or technology, always search for possible collaborations, because sometimes the only obstacle for the technology to come to life is the lack of partners.