



The aim of this text is to summarize the authors' practical experience with innovation projects in the area of the circular economy; and to give readers some examples of innovations for their inspiration.

Introduction of the authors



Lenka Mynářová



Vladimír Víšek

We all know or think that the way we live, consume, and produce waste is unsustainable. Our planet has its limits.

One thing is to realize this fact; the second thing is to make concrete steps for a change. We are really proud that a group of great people – and coincidentally top experts – started to act.

In addition to a new generation of products that meet strict eco-design requirements (the first is Coconut Peeling Milk made by NAFIGATE Cosmetics), this White Paper is also a result of our activities.

It summarizes our knowledge and joy of our common work and common goals. We have left our “bubbles” and share the best we have learned with you.

The result can best be judged by you - our readers.

Enjoy your reading and get inspired.

On behalf of the authors

Shower peeling milk with natural polymer P3HB

Shower peeling milk removes dead skin cells and impurities. It contains organic polymer P3HB, which replaces the function of microbeads.

The organic polymer appears in the shower milk in the form of small white bits that along with the coconut oil and fragrance evoke a tropical experience.

Find more information at

www.nafigatecosmetics.cz/p3hb-prirodni-polymer



Expert's introduction to the concept of circular economy



Vojtěch Vosecký

Chief Business Officer, INCIEN



The concept of a circular economy annually forges ahead, as it offers our society the possibility to prosper without depending primarily on raw materials. It turns out that this is not a new trend, but rather a need to change existing resource management – if everything goes the way it goes, in 2050, we will need three Earth planets to meet the world demand for resources.

Today, however, for many businesses, cities, and states, the circular economy is not just another unsuspecting topic. Now comes the time when plans and visions slowly but surely start to be applied in practice. At the global scene, ambitious corporate strategies are presented, and no one wants to be left behind. Even in the Czech Republic, circular solutions of established companies can compete with the world.

However, there is not enough inspiration in the field of the circular economy.

This document very well describes real examples of circular products and services and highlights the complex consequences of changes in design – when the product transforms into the circular economy, prices and customer behaviour might significantly change as well as the interaction with waste management.

Therefore, it is to be expected that 2019 will be marked by the establishment of non-traditional partnerships. Challenges facing the existing system can be overcome only through cross-industry cooperation enabling good intentions to become workable solutions.

Introduction

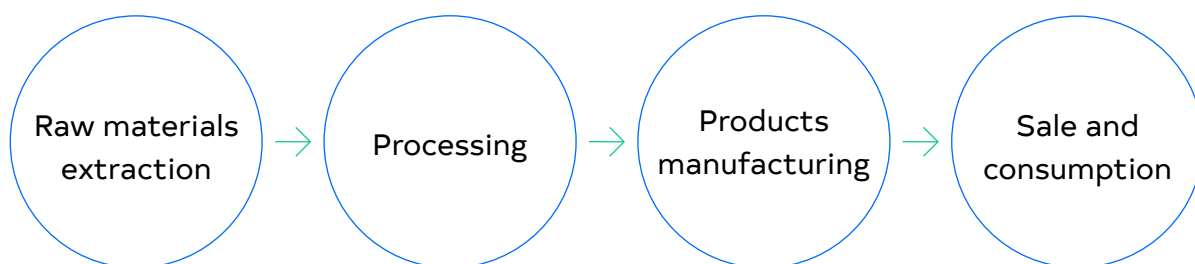
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1 What is Circular Economy

The basic principle of a circular economy is very simple: to create systems that keep the value of the product in the cycle as long as possible. However, what looks simple at first glance is, in fact, a fundamental change in the business model.

1.1 Linear vs. circular

Most companies and common people operate 99.9% in the linear model. That simply means:



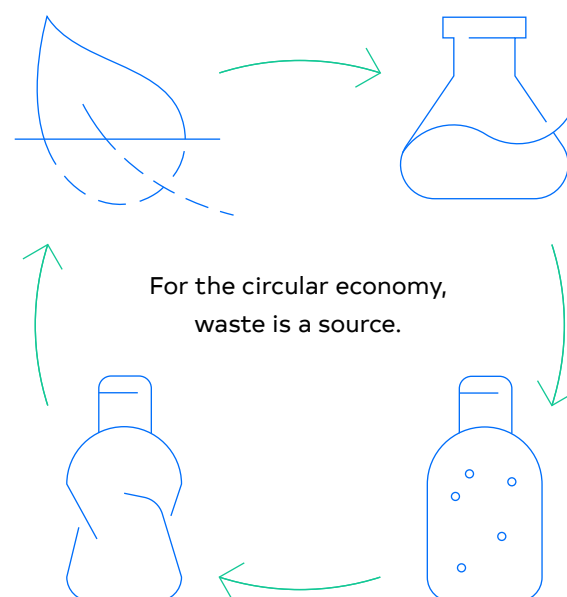
In a better-case scenario, we separate the waste what is left, however, we mostly simply throw it into a waste bin, from which the waste goes predominantly to a landfill.

This model is ceasing to function because our planet does not have enough resources. Therefore, we have to start looking for them somewhere else.

Waste, which we transfer to landfills or which ends up in rivers, oceans, and land, poses an enormous value. It is often reusable, not only through recycling but also through upcycling (a new product is made from waste with a new added value).

Hence, waste is a source for a circular economy, just as the definition of a circular economy according to INCIEN states: It is "an economy where materials circulate in cycles without loss of quality and with the highest added value."

However, we must not forget one important fact – the best waste is the one that is never created. Thus, the second rule of a circular economy is prevention of waste generation at all stages of product and process development.



1.2 Linear vs. circular cosmetics

Let's take the example of cosmetics to see how linear vs circular economy work in practice:

Linear (standard) cosmetics and product development:

1. The expert creates a product recipe with the emphasis on the functionality of the product.
2. The packaging specialist selects a suitable package with the emphasis on its function and design
3. The product manager provides labels, leaflets, and outer cartons.
4. The final and packaged product goes to the market.
5. Customers buy the cosmetic product.

The box gets into the waste immediately after opening the product, leaflet after having been read; the product packaging is discarded after the product is finished.

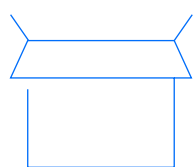
Circular cosmetics:

1. Experts design a new composition of the cosmetic product in order to maximize its functions but at the same time, they ensure that it does not harm the environment. All key ingredients must undergo the so-called LCA (Life Cycle Assessment), which proves that the product does not have any negative impact on the environment. Hence, there is the product content that functions, and harms neither the body nor nature.
2. Packaging experts have to find out what materials the packages and labels are made of, and harmonize them so that the label does not prevent the package from being recycled.
3. Recycling experts consult all packaging elements, such as metallic effects, which also prevent recycling and have to be eliminated.

When designing a circular cosmetic product, manufacturers remove all elements that have no other than an aesthetic function and that would just constitute unnecessary waste.

Products have neither a paper box nor a printed leaflet. The user can get the leaflet in the electronic version. Hence, the fully recyclable packaging is created. We will use it in the future to manufacture new packaging. We do not produce any unnecessary waste during the manufacturing process.

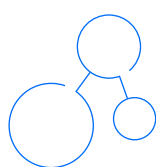
We have prepared for you a financial comparison of a linear and circular cosmetic product divided into the following items:



1:1

Packaging

Costs are the same.



8%

Abrasives

That provide a peeling effect – costs are very similar; the natural abrasive is about 8% more expensive.



5x

Surfactants (foaming ingredients)

Natural foaming ingredients are up to 5 times more expensive than synthetic ones.

Since our commitment is to manufacture products with no negative impact on the environment, we use natural surfactants in the production of circular cosmetics. The final product is, however, more expensive than standard ones. But we can say with pleasure that Czech consumers buy such cosmetic products despite their higher price.

1.3 The impact of circular cosmetics on nature is assessed by LCA

Life Cycle Assessment (LCA) is a systematic process of evaluating potential environmental impacts of products. It uses the so-called "cradle-to-grave" approach, taking into account all stages of the product lifecycle from a raw material to final landfill.

Via LCA, it is possible to identify the phases with the greatest environmental impacts, which are:

- ▶ with the highest consumption of raw materials and energy,
- ▶ the highest generation of emissions to water, soil, and air,
- ▶ and the largest solid waste production across the entire product system.

This means that no negative impact can be moved from one phase to another without leaving a trace. Thus, LCA provides the basis for potential energy and materials savings, for example in companies and households. Its results can be used to reduce emissions to air, water, and soil and to eliminate solid waste.

By comparing the LCA results with two or more products providing the same function, we can choose the one the environmental impact of which is smaller.

The undisputed advantage of LCA is the support for decision making at microeconomic as well as macroeconomic level, as it makes it possible to distinguish between information that is important for objective quantification of environmental burden and one that is more a matter of political priorities and social choices.

No other tool provides such a comprehensive view of the product under consideration. As a result, LCA's relevance for the decision-making support in both the government and the private sector is steadily rising.

1.4 Eco-design

Up to 90% of the product environmental impact is already determined at the stage of its development.

This fact illustrates how important this phase is not only for the product future function, quality, and appearance but also for its future impact on our environment. The approach that addresses the detailed distribution of individual life phases of the product and its impact on the environment is called eco-design.

"In general, eco-design can be defined as a systematic product design and development process, which in addition to classical features, such as functionality, economy, safety, ergonomics, technical feasibility, aesthetics, etc., puts a great emphasis on minimizing the environmental impact of the product, in terms of the whole life cycle." (Source: MoE)

The word "eco" naturally evokes an ecological and nature-friendly aspect. The important fact is that eco-design reflects this in all live stages of the products cycle.

Eco-design does not only evaluate the product that is already being produced and serves the consumer, but takes into account an ecological footprint of the product resulting:

- ▶ from obtaining raw materials necessary for its production
- ▶ the production itself
- ▶ the way the product is transported, packaged and sold
- ▶ how it serves consumers
- ▶ and what happens to the product at the end of its life.

Eco-design is an evolving discipline and there are a lot of interpretations for this approach. We divide the individual stages of eco-design into the six points below, which illustrate the entire life cycle of the product. We also include several examples from practice. Try to think and apply them to your product.

1.4.1 Product development / design

As already mentioned in the introduction of this chapter, 90% of the product environmental impact is determined already at the stage of its development.

At this stage, not only the product appearance, its features such as the size etc., are determined, but also:

- ▶ what it will be made of,
- ▶ what packaging the product will have,
- ▶ and whether and how it will be used again once its role is ended.

In any case, this phase significantly affects all subsequent phases.

1.4.2 Raw materials

The product environmental impact is affected by the choice of material, which is used in its production.

Therefore, it is necessary to take into account the criteria of whether the material is from renewable or non-renewable resources, whether the material is virgin (and from which part of the planet it comes from), or whether some recycled material is used. It is also necessary to take into account the amount of consumed material. Is it possible, for example, thanks to innovations, to use less material while maintaining the same quality and reducing its consumption? Another point for consideration is materials from so-called certified or preferred sources, such as the FSC certification standard ensuring responsible timber harvesting.



From abroad

The Swedish furniture company IKEA manufactures many of its products from recycled paper and plastics. However, IKEA goes further in its product range. It offers, for example, a carpet made from the textile remains that originated in IKEA bed linen production. In the past, these remains got discarded. The customer also finds pottery or pots made from water hyacinth, which is a weed plant that clogs the world's rivers and threatens their ecosystem. These examples illustrate the fact that what one sees as waste, another can see as a valuable material.



In the Czech Republic

In the Czech Republic, for instance, there is a project FOREWEAR, which transforms old and unused clothing into beautiful and practical recycled products. Furthermore, the manufacture is located in a sheltered workshop, thus, besides the environmental aspect, there is also a positive social impact.

1.4.3 Production

During the production of the product itself, naturally, some energy is consumed, and often waste or a certain form of pollution is generated. These aspects have to be taken into account when determining the environmental impact of the product.

At this stage, it is assessed how much energy is consumed during manufacturing the product, and also, what energy source it comes from. Energy from a wind farm has a significantly lower environmental impact than a coal-fired power plant. Furthermore, it is also assessed how much waste is generated and whether this waste can be minimized, reused or prevented completely.



From abroad

Since 2017, the Danish producer of the popular LEGO kit has used only renewable energy, which mostly comes from wind turbines, into which the company has massively invested. Besides, Lego has announced that they will produce selected components from plant materials, as opposed to virgin plastics.

1.4.4 Distribution

This phase includes activities such as product transport, packaging needed for the transport, and distribution of the product itself, or so-called green marketing.

Factors such as how far the final product is transported, which means of transport (their ecological footprint) are used, or to what extent the transport means are utilized, play a crucial role.

Another very important factor is the packaging – both for transport and for the distribution itself. Manufacturers have to ask a question whether the product actually needs some packaging. The form of packaging is also important. Very often, transport requires only minimal packaging. Excessive or unnecessary packaging only generates unwanted waste.

More and more companies are also beginning to experiment with the so-called green marketing, a form of marketing where the company publicizes an ecological problem, or tries to change the behaviour of customers towards a more sustainable behaviour etc.



From abroad

Patagonia, an American manufacturer of outdoor clothing, is famous for its "Don't Buy this Jacket" campaign, in which it urged its customers to consider extending the life of their existing jacket or other pieces of clothing, for example with appropriate repairs, before buying a new jacket. The campaign was backed by an online platform that inspired and advised Patagonia's customers to take good care of their clothes and extend their lifespan, and also provided advice on how to repair the damaged clothing at home.



In the Czech Republic

The theme of "packaging-free" sales in the Czech Republic is successfully publicized by a non-profit organization Bezobalu. Its aim is to promote the idea of Zero-Waste lifestyle, i.e. life without the necessity to produce waste. There are two "packaging-free" shops in Prague where customers can go to replenish supplies into their own containers.

1.4.5 Usage

At this stage, most of us come into contact with the product. In this phase of the product's life cycle, we have the product in our possession and we are using it.

The questions we should ask at this stage are, for example:

- ▶ What is the lifetime of the product and can it be repaired when it breaks?
- ▶ What is the energy performance of the product?
- ▶ Does it help save resources or does it waste them?
- ▶ Are any harmful substances being released during its operation or use?

1.4.6 End of life

The product has served us and can no longer be used for the purpose for which it was manufactured. At this stage, the question "How to deal with it?" is arising. Is it possible to disassemble the product and use it somewhere else, or recycle it? Or is the product condemned to end up in a landfill?

Here we come to the essence of the circular economy, that **"nothing is waste"**. Ideally, the product should serve as a "bank of materials" and, once it is used up, the material is re-used for something else or recycled. The major problem is so-called composite materials, which are a mixture of several materials that can no longer be recycled.

It is therefore clear that eco-design is a complex approach the individual steps of which are often interrelated. Every phase of the product "life" is taken into account, while the phase before the product is "born" is the most important one.



From abroad

Patagonia's founders are describing the ecological footprint of one of their polo t-shirts as follows:

"To produce the amount of organic cotton needed to produce one polo t-shirt, Patagonia uses 2,700 litres of water in an irrigated field, enough to cover the daily need of drinking water (3 litres per day) for 900 people. Each polo t-shirt generates nearly 10 kilos of carbon dioxide on its path from a cotton field to our Reno warehouse, ten times more than the weight of the product itself. A quantity of waste produced during the production of this t-shirt is equal to triple of its weight."

(Source: Responsible Company, Chouinard, Stanley, p.39)

Perhaps at this moment you think that we are exaggerating and what has been applied for many years must be good and proven. Unfortunately, it is not.

In the case of cosmetics, nobody has dealt with the impact of the ingredients on the environment yet. The difference is crucial.



We will show the effect on an example of a toothpaste

About 50% of toothpaste is formed by so called abrasive. These are substances that „wash teeth“. The most commonly used among abrasives is the so-called hydrated silica, which is extracted in a way that is not environmentally-friendly, and a large amount of electrical energy is consumed during its manufacturing.

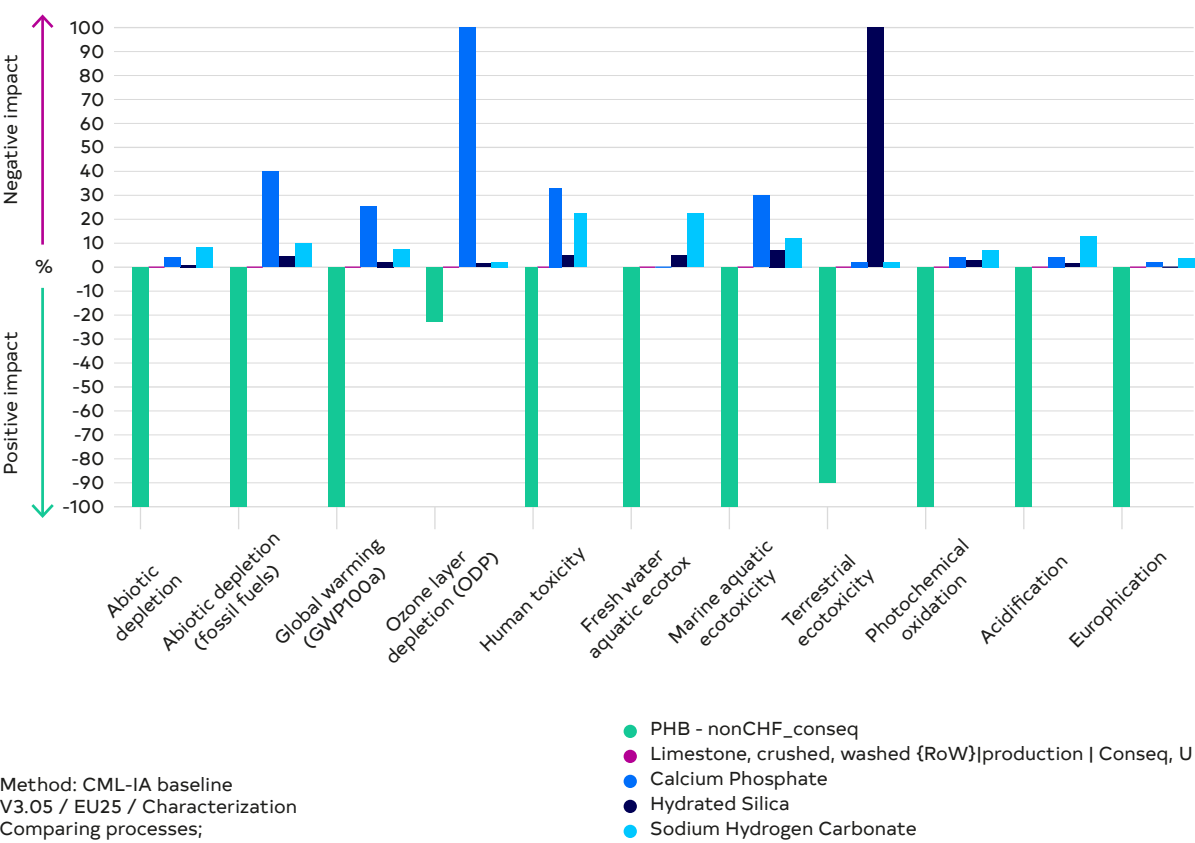
Our plan is to replace it with a new natural polymer that has the same properties as hydrated silica but it is made from waste.

Silica poses an extreme burden for the environment in all the impact categories we monitor in LCA. On the contrary, natural biopolymer does not affect the environment because it is made from waste, which means that we have avoided consuming a number of sources. The difference between both ingredients with the same functionality in terms of their impact on the environment is crucial.

You would probably like to ask: Why aren't toothpastes manufactured from natural polymers? The answer would be very simple – because it is more expensive.

Manufacturers demand the cheapest raw materials because we as consumers want the cheapest products and often forget about nature. The devastation of nature is not included in the price. But the result of production has an impact on everyone – it will affect the quality of water in which there are microplastics and other micro-pollutants. Small plastic particles get into the bodies of fish and other animals we consume.

We quantified the difference between the two ingredients in terms of environmental impact (LCA result):



The opinion of Lenka Mynářová and current state of the market



"It is a pleasing fact that not all consumers want the cheapest products. It is a widespread myth, which I would call an alibi of producers. There are hundreds of examples that show that this is not the case. The research we had conducted before the launch of Coconut Peeling Milk to the Czech market showed that about 30% of Czech population is ready to buy more expensive products – provided that the product really does not affect the environment.

I see this point as critical because for producers it means communicating, explaining and educating consumers – and that is not easy. Furthermore, it means a commitment to process LCA, and do testing of the products beyond the standards. Eco-innovations require new procedures and skills.

LCA is for everyone who needs an assurance that their products and technologies do not harm nature – it is a key tool. LCA has to be processed by professionals who have sufficient knowledge and experience with the LCA method and software tools enabling them the access to high-quality materials and databases."

1.5

Consumer

The consumer is the next key element of the circular economy. Consumers pay for the products, and with every purchase, they decide what to choose. Therefore, we decided to write this publication – we are keen on introducing the possibilities of the circular economy so that you can choose – product, approach, tools, etc. in order to understand that the customer's choice has power and influence on nature conservation.

Surveys on sustainability in the Czech Republic as well as in the world demonstrate that consumers are aware of environmental issues. However, the personal benefit (healthy lifestyle, cost savings, etc.) always prevails over more abstract topics, such as global warming or lack of resources, etc. The Czechs are also willing to contribute to dealing with these issues – but the solutions should not be too strenuous and should be simple and practical.

Functional, beautiful, high quality and sustainable product at an affordable price



Let's try to imagine it on a model product. How many of us are willing to pay more money for a product that is environmentally friendly?

Can we imagine buying a product that is not so nice, on condition that it is made of recycled material? And what about the function – are we willing to "sacrifice" the function of the product, i.e. it will not be as effective as the "ordinary" product just because it is more environmentally friendly? **In the case of the majority of the population, the answer would be "no".**



From abroad

The already mentioned IKEA is aware of consumers' behaviour. When designing its products, it uses so-called democratic design.

In practice, this means that each product has to meet five basic crite-

ria: function, design, quality, sustainability and affordability. In other words, the aim is to produce and sell such products that will serve us well for a long time, look good and have the least possible impact on the environment for a price that everyone can afford.

This issue is well summed up by the former Sustainability Global Manager for IKEA Steve Howard in TED Talk. In his message, he says that earlier customers had to make compromises if they wanted to buy a sustainable product. At that time, energy savings bulbs took 5 minutes to light and the light was not good enough anyway, or an ecological washing powder did not wash the laundry well enough.

However, products for which customers have to do compromises will never be used massively. Hence, if we want sustainable (circular) products to become a common part of our lives, and have a real impact on our environment, they have to be used by the mass of people.

1.6

Summary

The circular economy:

- ▶ It brings a completely new approach to the development and usage of the product – we desire to keep the product value as long as possible in the cycle, i.e. re-use and recycle the product as long as possible.
- ▶ It works as waste prevention – all parts of the product which can be eliminated means waste reduction.
- ▶ It focuses on consumers – if the consumer sees only the higher price for the product and does not know the context, he/she does not buy it. We need to explain to consumers what is part of the product price as well as whether the product has an impact on the environment. Also, we must not forget that the customer should not do compromises regarding the functionality or appearance of the product. If we do not manage this, the whole previous effort was useless.

1.7

Case study: cups replacing plastic cups at BUT in Brno (Brno University of Technology)

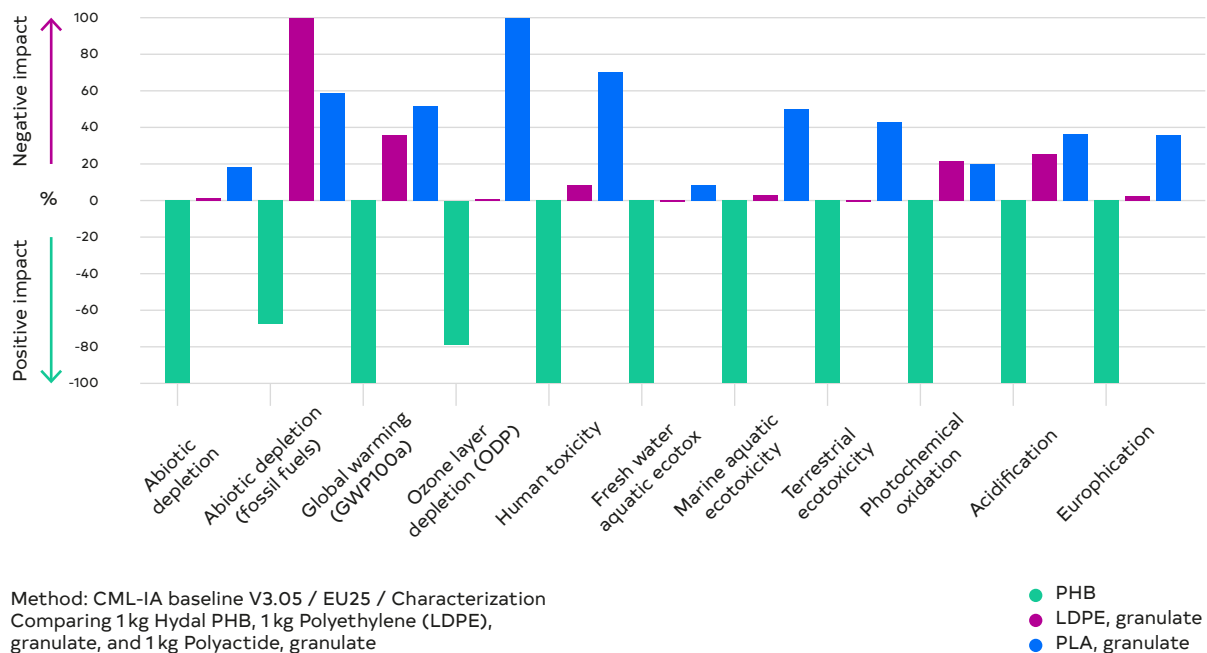
The last example in this chapter demonstrates how a good intention does not always mean a good result.

Initially, there was a good intention. Students of BUT came up with a desire to use ecological cups. Director of the BUT dormitories selected cups from PLA (polylactide acid, which is a bioplastic). The supplier declares it to be fully biodegradable and environmentally friendly. This effort was also supported by the Czech Television, which filmed a story, in which an editor puts the cup into a bin intended for plastics recycling.

Despite a good intention, the implementation failed.

First, let's have look at LCA. We compare the environmental effect of the production of synthetic plastic (polyethylene) and the production of PLA. For comparison, there is also PHA biopolymer made from waste.

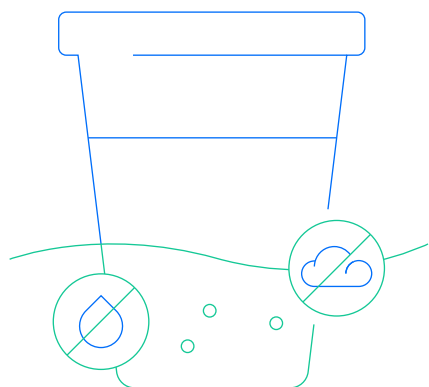
LCA of various types of materials – PHB, LDPE, PLA:



The chart demonstrates that the production of synthetic plastic is more environmentally friendly than the production of PLA. Polyethylene is a waste product from oil processing, and PLA is a bioplastic made from food. Plant cultivation is demanding for inputs, such as water. Hence, from an environmental point of view, synthetic plastic polyethylene is more suitable raw material than PLA.

Another issue is recycling. We can recycle polyethylene – it is one of the best recyclable plastics. However, we do not normally manage to recycle PLA. It is a completely different material with a different composition and it must not be put into a container intended for plastics recycling because it may contaminate the recycle.

The main weakness of bioplastics is their appearance – they look identical to synthetic plastics, thus staff in recycling facilities can hardly recognize them. Bioplastics would have to be collected separately but, unfortunately, the consumer does not have a chance to distinguish between these materials.



Furthermore, in the case of PLA cups, the manufacturer declares that they are compostable, i.e. in industrial composting facilities where it should be decomposed into CO₂ and water. We deliberately use "should", because these materials do not biodegrade even under ideal conditions. Not only the material itself, but also its volume decides about the extent of compostability, i.e. bulky (thicker) products decompose in the compost differently than thin films. In addition, the product actually loses its value by biodegradation.

If we place environmental protection on the first place, it is right to replace disposable dishes made of synthetic plastic either with glass (the best option according to LCA) or reusable variants from synthetic plastic, which might be recycled after the end of life.

Unfortunately, glass in the case of canteen cannot be used – hygienic regulations require special dishwashers only for glass for which there is no room.

We definitely do not recommend using PLA bioplastics in cases where the right end of the product life cycle is not ensured. Currently, we are not able to separate and recycle them. Badly sorted bioplastics might depreciate recyclates. PLA products are twice as expensive and their production burdens the environment much more than the production of synthetic plastics.

2 How is the CE approach reflected in the product development?

Product development is a key part of marketing. Each of us wants to have fully functional products without compromises. But many of us want something extra – products that do not harm nature and ideally help to conserve nature.

From the example above, it is clear that the CE approach has a crucial impact on the products development and suppliers at all inputs.

2.1 How to link particular steps of the new products development

When we started our activities, we did not know what expertise we would need. Later on, we realized that if we mean eco-design really seriously, the following experts should sit at one table:

- ▶ **Expert on waste management** – knows how to collect and separate waste.
- ▶ **Recycling expert** – knows recycling processes.
- ▶ **LCA expert** – assesses the impact of new methods on the environment.
- ▶ **Production manager** – guarantees that what we come up with can also be manufactured.
- ▶ **Packaging expert and logistics** – who are acquainted with the offer of packaging and their prices.
- ▶ **Designer** – responsible for product design and graphics.
- ▶ **Product Manager** – coordinates ideas to be applicable in a particular product and its way to the market.
- ▶ **Content Manager** – prepares a content strategy for online channels.
- ▶ **Marketing Researcher** – prepares documentation for new products, assign research, and is responsible for pre-tests.
- ▶ **Brand Manager** – responsible for implementing the brand strategy in all activities.

Another key function is educating our target groups. However, since we did not find an expert in this field, we perform this activity as a team. Together, we seek ways to educate consumers. We have agreed that the only way is to educate through products and on specific cases.

In this team, we reflect on each specialisation's demands, discuss upcoming steps and together we seek the best heading for new products.

2.2

Avoid skipping particular phases

Especially in product management, we wish to finalize everything as fast as possible – competitors do not sleep, and the consumer is waiting with impatience. However, reality has taught us that the development of products and solutions has its stages and needs time. Many precipitated products that have not been successful have clearly demonstrated that it is necessary to pass all the particular development phases and avoid skipping some of them.

Technology Readiness Levels

The European Technology Readiness Levels classification (TRL) facilitates the product development phase. Despite its name, the classification applies equally to products and technologies.

- 1 The idea.
- 2 Research and development necessary to verify the idea.
- 3 **Proof of Concept** – in the laboratory we verify that the idea is realizable. We develop the first prototype.
- 4 **Laboratory phase of development** – we try to transfer the prototype from the laboratory to a larger (pilot) scale.
- 5 The technology or product is verified on a pilot scale – we can, for example, produce dozens of pieces of the product.
- 6 We can produce technology or a product in a pilot environment in series.
- 7 We demonstrate the prototype production capability in the target (operating) environment.
- 8 The whole system is completed, verified and described, and we have set up quality standards.
- 9 We manufacture and get it to the market.

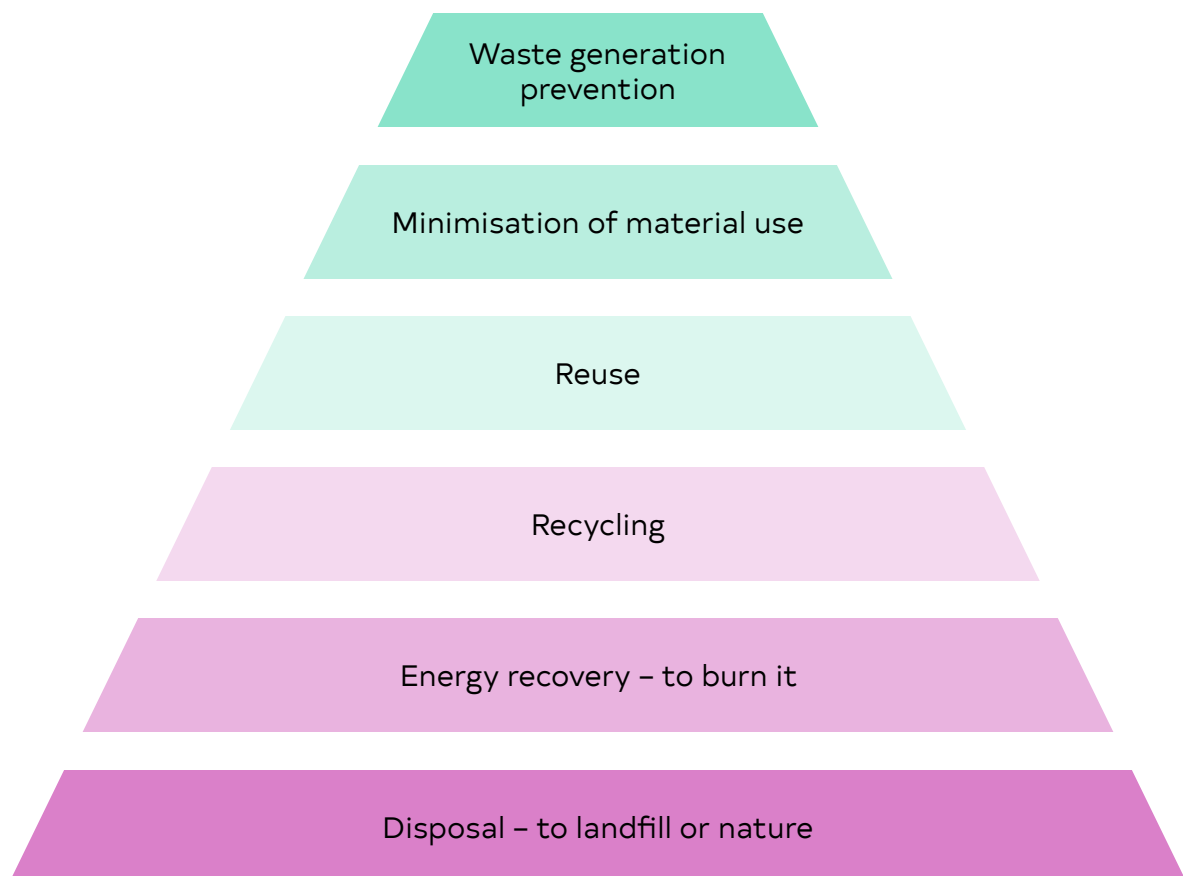
Do not skip development phases. Perform user testing at every step – see if the product really meets customer requirements.

If these steps are implemented by our suppliers, the same procedure should be applied when you do it yourself.

3 New mantras – recycling, recyclates, composting and biodegradability

3.1 Do not skip the product development phase

The purpose of a circular economy is to keep the value in the cycle as long as possible, i.e. reuse products and use waste in a material way. At the same time, the ideal waste is the one that is never created. Therefore, there is the so-called waste pyramid, ranging the options from the best to worst:



3.2 Biodegradability

Biodegradability is the ability of materials to decompose completely. Decomposition is caused by natural organisms – bacteria, for which biodegradable materials are “nourishment”. However, biodegradability also means loss of value. The goal is not to have products “disintegrated” but to use them repeatedly as much as possible, and recycle them after their end-of-life.

The only exception are products where biodegradability is necessary – for example in cosmetics. If the cosmetic ingredients are biodegradable particles instead of microplastics, it might be considered waste prevention because after using, the particles biodegrade in wastewater treatment plants. Another exception are plastics we need to use in the seas and soil. In this case, biodegradability is a necessary feature and a solution to existing problems.

3.3 Compostability

The ability of materials to disintegrate in industrial compost under controlled conditions and/or in domestic compost. It is a sad fact that most of the materials declared as compostable do not biodegrade in home composts in our climatic conditions. See conclusions of the project on this topic – TA01020744 Biodegradable plastics in waste management processes. Compostability means a loss of the product value as in the case of biodegradability.

3.4

Recycling and recycle

Recycling is a very important part of waste management. By recycling wastes, we produce recycle, which can be used in manufacturing other products. The basic precondition for recycling is waste separation and collection. Without this phase, waste cannot be recycled.

If separated materials contain materials of different composition, such as PLA, there is a risk of recycle contamination.

4

How to start your project

At the beginning of this publication, we mentioned that adopting the principles of the circular economy means a change of the business model for the majority of companies, putting pressure on the company's processes. Support of the company's top management is crucial for any change. Without that commitment, even a good project within the company is doomed to failure.

An approach towards manufacturing circular products must be comprehensive. For example, it is not enough to replace ordinary packaging with recycled packaging, and claim that we have a sustainable product. Therefore LCA, above mentioned several times, will help to you. LCA monitors all product phases, from material acquiring to the end of product functionality. Communicating only partial information about the product's environmental friendliness may be considered greenwashing.

The key point to success is cooperation, and not just within a company, but also with suppliers, experts and professionals standing outside our „bubble“. The circular economy still poses a new business model for most companies. Thus, implementation of the principles of the circular economy requires a certain amount of innovation. Briefly said, probably you will not come up with it on your own. By engaging various people in the process, you will not only gain experience from other disciplines but also „think out-of-box“.

5 Conclusion

Innovations in the field of the circular economy are a great challenge and a great opportunity. We are very pleased to be able to bring our experience closer to you, and prove that you can implement circular economy based on our example also in your companies.

We thank all of you who are with us on our journey and tirelessly seek a solution with us.

We will look forward to your experiences and stories.

The team of authors