

Kids & Schools



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 **Bio-based Industries
Consortium**



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Where do all the natural resources come from?

We are living in a time where it is possible to build complex cities, buildings and roads. We can buy anything we want almost instantly – like all kinds of different food, luxury goods, computers, mobile phones and much more. We have gotten used to this comfortable lifestyle and **rarely think about where the materials we use come from.**

Most of the materials we use today comes from **fossil resources**, such as crude oil (petroleum), coal and natural gas. Fossil resources were formed in the Earth over hundreds of millions of years from the remains of buried organisms (animals and plants). **The planet's supply of fossil resources is limited:** once they are used up, they will be gone forever and cannot be renewed. Another downside of using fossil resources is that **they harm the environment.** When petroleum, coal or gas are burned, they release greenhouse gases into the atmosphere, which contribute to climate change.



Where do all the natural resources come from?

Instead of using fossil resources, we can use **renewable resources**, such as plant and animal-based materials, which are also known as “biomass”. Unlike fossil resources, **biomass can be regrown**, and if this is done properly, future generations can take advantage of them as well. Moreover, when you use biomass as a resource, **you no longer increase the amount of fossil CO₂ in the atmosphere**.



Bioeconomy - Changing the way we use and consume resources

In order to protect the environment and to preserve resources for future generations, we need to **change the way we use our resources**, start making better and smarter choices and re-think how things are done. We need to change the way we design and develop products and production processes in such manner that products are easy to repair, recycle and reuse.

What is bioeconomy?

Bioeconomy **describes everything that we produce from materials that come from plants and animals**. We call such materials “biomass”.

The word ‘bioeconomy’ is composed of two parts:

bio + economy

bio means life and *economy* comes from the Greek words for management and household. In a bioeconomy, goods, services or energy are produced from biomass as the main resource. It helps to preserve resources and to protect our planet.

Bioeconomy - Changing the way we use and consume resources

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If you want to play your part in making the world a better place to live in the first step you can make is to **reduce** the amount of products that you buy and use. Think about whether a new purchase is necessary. Do you really need a new school bag or can the one you have be mended? And give up on disposable shopping bags for example and use long-lasting alternatives, such as linen bags or a backpack. It is also a good idea to bring your snacks with you in a reusable box, rather than wrapping them in cling film or aluminium foil, which is discarded after use. The box can be washed every night and used again on the next day. Even better if the lunch-box is made of bio-based material.

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Often, we can find ways to **reuse** some of the materials we use for our everyday life, including paper, toys and any other tools. If we reuse them, then we do not have to buy a new item. By doing so, we save energy producing a new one and reduce the overall pollution.

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If an item cannot be reused, then they may be **recycled**. This means they can be used as raw material to produce a new item that will be useful to us. This way, we waste less and help our environment. Setting up containers at home and in school for the different recyclable materials, such as paper, glass or plastic, can help save resources.

Bio-based materials – what exactly is that?

The term bio-based means that a **product or material is completely or partially made from biomass**. Biomass is any organic material, such as plants, agricultural crops or residues, municipal wastes and algae. The most used types of biomass are sugar, starch, plant oils, wood and natural fibres. Partially bio-based products also contain other ingredients e.g. minerals. By using bio-based materials, you use less fossil resources, which decreases the amount of greenhouse gasses released in the environment.



Bio-based materials – what exactly is that?

Bio-based products are already part of our everyday lives. Many traditional products are bio-based, for example, fibres from cotton in your t-shirt or paper from wood in your favourite storybook. Many companies are making an effort to reduce their use of mineral oil, replacing it with biomass in other products and processes as well. You can already find bio-based materials in furniture, toys, cosmetics or cleaning products.

Besides bio-based products, there are also **biodegradable products**, which will decompose under the right conditions and break down into their natural components. Bio-based materials are not always biodegradable but some are both, bio-based and biodegradable.



What bio-based products are there in the school environment?

Here are a few examples of bio-based products that could also appear in your everyday (school) life.

Stationery supply



Water-based felt-tip pens can be made from bioplastic. If they are refillable, they produce less waste as the same pen sleeve can be re-used several times.



Photo credits: Mr. Ellie Pooh

Paper products, such as booklets, pads and folders are made from wood fibres. Even elephant or goat dung can be turned into paper as it contains grass fibres, which are similar to those from wood.

What bio-based products are there in the school environment?

Textiles



T-shirts can be made using fibres from wood, bamboo, nettle or even used coffee grounds or left-over milk. The production of a t-shirt from these bio-based materials uses less water, which is good for the environment. They are also comfortable to wear, durable and fast drying.



Shoes and bags can be made from pineapple leaves waste or left-overs from apple juice or vine production. These materials are eco-friendly and non-toxic. They do not require raising animals, which means that the land used to grow animal food can be used for something else.

Photo credits: Piñatex

What bio-based products are there in the school environment?

Catering



Disposable tableware and cutlery can be produced from wheat bran or thistle (although it is best to go for re-usable tableware products if possible). Bio-based tableware is an environmentally-friendly alternative to single-use plastic tableware because it will not harm the environment when discarded properly.



Straws, which are traditionally made from plastic, can also be made from metal, glass, bamboo and even pasta or apple peel. While metal and glass straws can be washed and re-used, bio-based straws do not pollute the environment when discarded.

What bio-based products are there in the school environment?

Building



Wall paint can be made using pigments and oils from plants, such as flax, rapeseed or castor plant. They are an eco-friendly and non-toxic alternative to traditional paints.

Gardening



Plants will need nutrients to grow. Instead of using mineral fertilisers, it is also possible to nourish them with compost from kitchen waste.

What bio-based products are there in the school environment?

Toys



Toys can be made from wood or bioplastic. They are as durable as traditional ones based on petroleum and are better for the environment.

Packaging



Bio-based food packaging can be produced from unused elements of coffee, spinach, cauliflower plants or oranges. Those bioplastics look and feel the same as traditional plastics but are much better for our planet.

Is there a downside to sustainable products?

While it is good to use bio-based alternatives wherever possible, it is also important to critically look at our lifestyle. Even though bio-based products become popular and are already more available, it is important to understand that even though a product is bio-based and maybe even biodegradable, **it is still not ok to constantly buy lots of new things and throw old ones away.**

The goal should be to reduce overall impact on the environment. Switching to bio-based is a step in the right direction, but it is not the final solution.



Play with the bioeconomy

Play our **serious game** to get familiar with the bioeconomy.

→ For teachers and vocational centers: on our website you can find a handbook with scenarios suggesting how the game can be integrated into various school lessons.

Use our **label scanning app** to learn what the bioeconomy labels say about the products they are found on.

Serious Game Mission BioHero



Scanning App Label BioHero

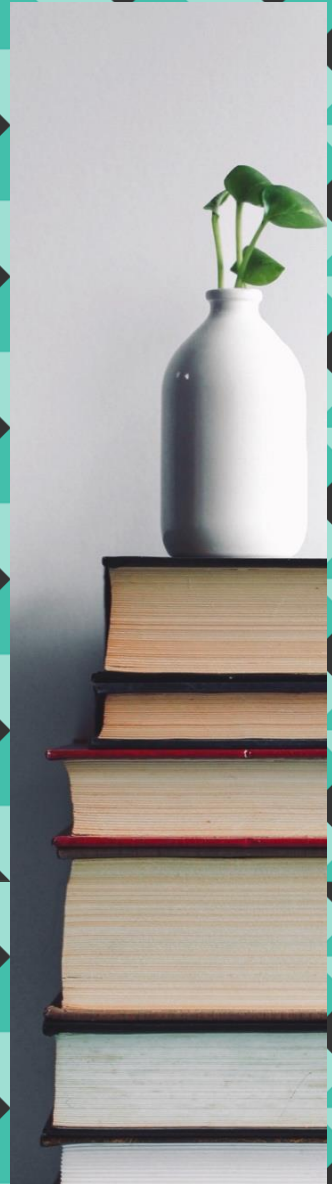


Join our **LinkedIn group** to discuss all matters related to the bioeconomy.

Curious to know more?

Further reading and information is available here:

- Discover the bioeconomy together with Farmer Hubert:
 - [Farmer Hubert and the colourful school](#)
 - [Farmer Hubert and the witch forest](#)
- Learn about sustainability [in this video](#)
- Or about biodegradable and non-biodegradable waste [on this interactive page](#)
- Discover [the bioeconomy and bio-based products](#)
- Bioeconomy – [YouTube clip](#)
- Bioeconomy in our everyday lives – BioWays project – [Youtube clip](#)



Beyond bioeconomy in general, the Allthings.bioPRO factsheets series covers the project's four missions, tangible themes that are familiar to the wider public, as follows:

- Jobs and Careers
- Kids and Schools
- Fashion and Textiles
- Food Packaging

The factsheets are living documents, that are refined and expanded over the duration of the project (September 2020 - August 2023), taking into account feedback collected during engagement with citizens and experts.

The latest editions of the factsheets can be found at the project website, www.allthings.bio.

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