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All that glitters is not green: Bioplastics as the new green washing scam

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- Do bioplastics really have an added value?
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- Demands on producers and politics





How to make one-way packaging appear eco-friendly?



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How to make one-way packaging appear eco-friendly?

- Multiple use packaging systems beat one-way packaging systems, in following categories
 - Use of resources
 - Global warming
 - Ecological packaging design
 - Waste prevention
 - ...



How to make one-way packaging appear eco-friendly?

- New trend: Bioplastics are used to give one-way products an eco-friendly appearance in the style of reusable products.
 - One-way plastic bags
 - One-way drinking cups
 - One-way yoghurt pots
 - One-way beverage bottles
 - One-way ...



How to make one-way packaging appear eco-friendly?

- Use of biodegradable plastics partly made of renewable resources
- Use of conventional plastics mainly made of renewable resources
- Use of biodegradable plastics made of crude oil



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Do bioplastics really have an added value?



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Do bioplastics really have an added value?

- No clear definition of bioplastics
- Fallacy „bio“
 - No indicator for organic farming of the raw materials
 - Bio can stand for “bio-based” (or “partly bio-based”) and / or “biodegradable”
- Not all bioplastics are biodegradable
- Not all bioplastics are derived from renewable resources
 - In practice: due to different additives there are no bioplastics made of 100 % renewable resources



Do bioplastics really have an added value?

- Evaluation of biodegradable plastics made of renewable resources published by the German Federal Environment Agency:

“Until now, there are no meaningful environmental considerations and therefore no statements available concerning the sustainability of the majority of products made of bio based biodegradable plastics. In those cases, where consolidated findings are available, they rather speak against biodegradable plastics made of renewable resources.”



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Do bioplastics really have an added value?

- Evaluation by the German Federal Environment Agency
(continuation):

„Solely the characteristics...

- *use of renewable resources*
- *being biodegradable*

... are not sufficient to justify an environmental superiority of these materials from the outset.“



Producers and users of bioplastics claim...

- bioplastics are „CO₂-neutral“ or „mostly CO₂-neutral“



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Producers and users of bioplastics claim...

untrue

- Bioplastics are „CO₂-neutral“ or „mostly CO₂-neutral“
- Indeed, renewable resources are in itself CO₂-neutral
- But with regard to bioplastics considerable CO₂-emissions must be added, which caused by
 - Use of large quantity of crude oil (crop growing, transport, processing)
 - Intensive agriculture, possibly wood clearing, fertilisation of crops cause high emissions (nitrous oxide)
 - Transport of raw materials, mainly from USA and Brazil
 - Processing into granulate and finished products
 - Additives (made of non-renewable resources)
 - Disposal



Producers and users of bioplastics claim...

- bioplastics products are 100 % biodegradable



The image shows a close-up of a green and white shopping bag. The bag features a circular logo with a green leaf and the text 'kompostierbar TP0227'. To the right of the logo, the text reads '100% kompostierbar' in large, bold letters. Below this, a paragraph of German text explains that the bag is fully biodegradable and compostable according to DIN EN 13432, made from renewable raw materials, and produces less CO2 during production and disposal compared to traditional plastic bags. At the bottom of the advertisement, the website 'www.aldi.com' is displayed in large, bold letters.

100% kompostierbar

Diese Tragetasche ist voll biologisch abbaubar und kompostierbar nach DIN EN 13432. Sie wird nach neuesten Umweltrichtlinien so weit wie möglich aus erneuerbaren Rohstoffen hergestellt. Im Vergleich zu herkömmlichen Tragetaschen entstehen bei der Produktion und Entsorgung deutlich weniger Treibhausgase. Bei der Herstellung werden weniger fossile Brennstoffressourcen verbraucht.

www.aldi.com



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Producers and users of bioplastics claim...

untrue

- bioplastics products are 100 % biodegradable
- „100 % biodegradable“ ≠ „100 % biodegraded“!
- **In practice: mostly they are not or poorly biodegradable**
- They won't or will only partly biodegrade in the domestic compost heap
- They won't or will only partly biodegrade in landscape and water
- No disposal in organic waste containers
 - Many cities and municipalities prohibit throwing bioplastics into organic waste containers
 - Compost and humus companies refuse the disposal of bioplastics via organic waste containers



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Producers and users of bioplastics claim...

untrue

- bioplastics products are 100 % biodegradable
- „100 % biodegradable“ ≠ „100 % biodegraded“!
- No or only poorly disposal in German composting facilities. A survey among 400 German compost and humus companies conducted by DUH found out that bioplastics products are not accepted for composting. In practice, bioplastics products are not composted.
 - No degradation within the usual dwell time in Germany
 - No advantages from degradation (no discharge of nutrient and no composition of substratum)
 - Composting facilities sort out bioplastics due to quality reasons



Producers and users of bioplastics claim...

- bioplastics products are „green“ and „good for the environment“



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Producers and users of bioplastics claim...

untrue

- bioplastics products are „green“ and „good for the environment“
- Just because products are (partly) made of renewable materials, they are not compulsively eco-friendlier as mineral oil-based ones
- There are no proofs for the alleged environmental advantages; no independent life cycle assessments (LCA) that confirm any ecologic advantages of bioplastics
- On the contrary: existing LCA's show that bioplastics products (e.g. yoghurt pots, bags, cups) do not have any ecological advantages



Producers and users of bioplastics claim...

- Bioplastics are made of renewable resources



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Producers and users of bioplastics claim...

half-truth

- **Bioplastics are made of renewable resources**
- Most of the time partly true
- It is kept secret that even bio based bioplastics contain additives, that are often based on mineral oil (lubricants, stabilizers and antistatics)
- Especially biodegradable hybrid plastics (partly bio based and mineral oil based) cause problems during their disposal (difficult to recycle, remains of mineral oil during the composition)





The dark side of bioplastics



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Usage of genetically modified plants

- PLA is one of the most common bioplastics type which is obtained from **corn**
- The production of the PLA used in Europe is almost exclusively based in USA – where 88 %* of the corn plants are genetically modified
- Intensive research conducted for genetically modified **sugar cane**, which is used for producing „bio-PET“ and „bio-PE“ (pilot project e.g. in USA, Brazil and Australia)
- No separate material flows for genetically modified and unmodified plants



Use of pesticides and fertilizers in renewable resources cultivation

- Increasing rivalry in land use leads to more pressure to increase the earnings per area – and also to a higher use of pesticides and fertilizers
- Paul Crutzen (Nobel Prize in Chemistry):
 - The use of nitrogen fertilizers is particularly damaging to the climate. The fertilizer is converted to the harmful nitrous oxide, whose greenhouse gas potential is three hundred times higher compared to carbon dioxide



Rivalry in land use and crop growing

- Not only oil, but also land is limited
- The more land is used for biofuels and bioplastics, the less land is available for crop growing
- Some companies indicate this problem:

„One can not produce biofuels and feed the increasing population of the world at the same time. Therefore, no food crop should be used for the production of fuels.“
(**Nestlé**, 2011)



Lack of recycling and composting problems

- There are recycling technologies and -capacities for conventional plastics (e.g. PE, PET), regardless of whether they are made of mineral oil or renewable resources.
- There is no post-consumer recycling for specific bioplastics (e.g. PLA), not even for separate collected fractions (e.g. cups from soccer arenas)
- Bioplastics are contraries in recycling plants as well as in composting plants. (They reduce the output quality or have to be sorted out.)





Increasingly popular: greenwashing with bioplastics



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New yoghurt pot from Danone

- April 2011: Danone introduced the new PLA-pot for their Activia-yoghurt

Unser neuer umweltfreundlicherer Becher



Danone stellt mit Unterstützung des WWF als erste große Joghurtmarke in Deutschland auf umweltfreundlichere Verpackung um. Die Becher des Activia Joghurts bestehen ab April aus dem Biokunststoff PLA (Polymilchsäure). Im ersten Schritt stellt Danone das gesamte Sortiment des Activia-Joghurts (4x115g, 8x115g, 460g) auf PLA-Becher um. Das entspricht etwa 80 Prozent des Gesamtvolumens aller Activia-Produkte. Nach und nach sollen auch die anderen Activia-Produkte (Drinks, Cremegenuss, Activia mit feinem Fruchtpüree und die Großverbraucherformate) auf Verpackungen aus nachwachsenden

Rohstoffen umgestellt werden. PLA wird aus pflanzlichen, und somit natürlich nachwachsenden Rohstoffen hergestellt. Ziel ist es, fossile Ressourcen zu schonen und den Ausstoß an Treibhausgasen zu reduzieren: Für den neuen Becher werden 43% Prozent weniger fossile Rohstoffe benötigt.

Seine Klimabilanz ist um 25% besser als die einer herkömmlichen Verpackung. Zusätzlich will Danone mit PLA mittelfristig einen neuen, geschlossenen Wertstoffkreislauf initiieren: PLA-Verpackungen sollen wieder zu PLA recycelt werden.

Source: Auszug von <http://activia.de> vom 11.07.2011



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Misleading Activia advertisement

- „**NEW**– eco-friendlier* pot“
- „Our new eco-friendlier* pot“
- „Danone switches [...] to eco-friendlier packaging“
- „Packed eco-friendlier“
- „New, eco-friendlier* ACTIVIA® pot“
- „This yoghurt pot consists to 93 % of renewable resources and is therefore eco-friendlier.“

* Neologism from Danone



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Misleading Activia advertisement



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Greenwashing



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Facts about the Aktivia-pot

- Results of a LCA carried out by the IFEU-Institute:
 - Overall ecological the bioplastics pot has no ecological advantages compared to the PS-pot
 - PLA-pot is only better in 3 from 12 examined impact categories and life cycle inventory parameters
- Finally, Danone has retracted this misleading advertisement





One-way beverage packaging made of bioplastics



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One-way beverage packaging made of bioplastics

- Initiatives from Coca Cola, Pepsi and Danone Waters



PlantBottle
(Coca Cola)



eco-PET bottle
(Danone Waters)

- Use of bioplastics solves no problems because:
 - Virgin material is used for bioplastics
 - No environmentally compatible packaging approach
 - No incentive for waste prevention
 - Experiences with regard to other products made of bioplastics tend to be ecological disadvantageously
- No handing over of LCA's upon request until now





Demands on producers and politics



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Minimisation of environmental impacts caused by packaging

- Packaging waste needs to be **prevented** (implementing the highest level of the five-step waste hierarchy) through:
 - Use of reusable packaging
 - Waiver and reduction of packaging material...
- Packaging material with environmental impacts as low as possible
 - No focusing on single environmental issues but on the **overall environmental impacts**
- Securing a **high quality recycling** of used packaging materials – according to product responsibility and protecting the environment





Thank you very much for your attention.

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