Running circles - the future of plastic usage from a NGO perspective

Sascha Roth, 27.11.2019

International Recycling Forum, Wiesbaden

Presentation structure

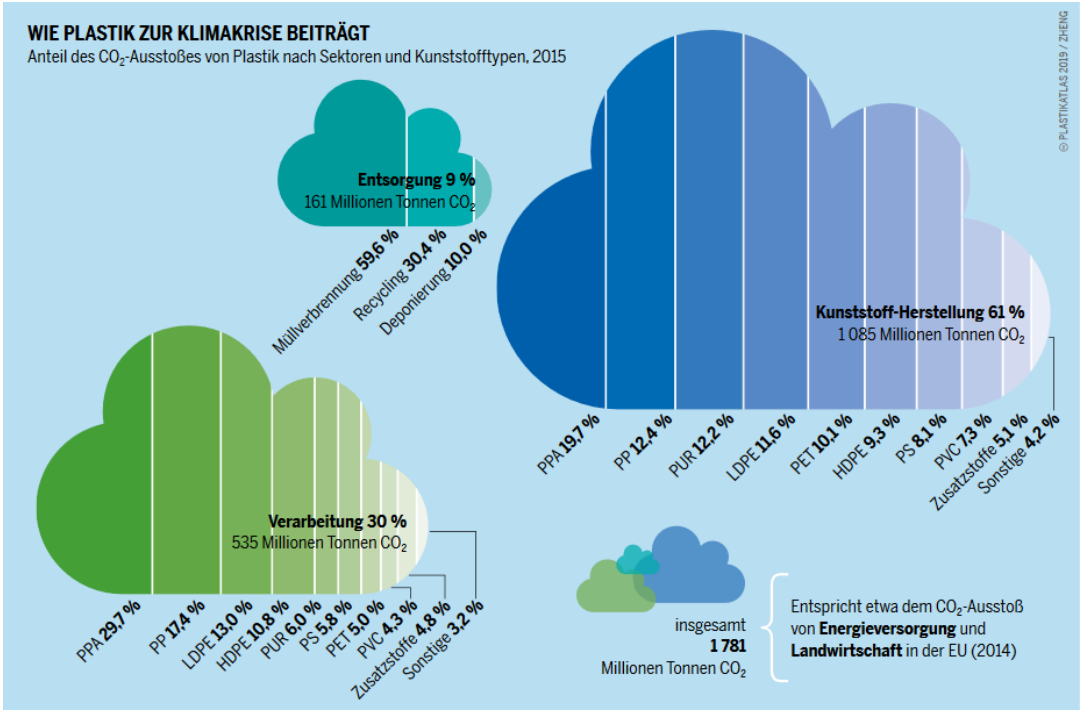
A. Overview – Environmental aspects of plastics

B. Current usage of plastics and why it is wrong

C. Goal: eco-friendly usage of plastics in between planetary boundaries

D. Agenda for an eco-friendly plastics production and usage

99 percent of plastic are fossil based (coal, oil and gas)



Source: BUND-Plastikatlas 2019

EU Commission plans *"first European Climate Law to enshrine the 2050 climate-neutrality target into law"*

In a business as usual scenario, plastic production until 2050 will be responsible for 10-13 percent of the limited CO_2-budget to achieve the 1,5° target

Additives (plasticizers/fluorinated compounds/ brominated flame retardants/endocrine disruptors) harm health and environment

Extreme lack of transparency of the chemicals in most plastic and its production processes prevents a full assessment of its impacts

Sources: www.ciel.org www.theguardian.com

(Micro)plastic pollution in the environment

Source: NABU/N. Möllmann

(Micro)plastic pollution in the environment

- In Marine environment, but pollution of soil and inland waters 4-23 times higher
- Steady pollution
- Plastic is persistent (we don‘t know the degradation time)

Source: NABU


NABU
Müll im Meer
So lange dauert es, bis sich der Abfall zersetzt
ZIGARETTENKIPPEN
BIS ZU 5 JAHREN
GETRÄNKEDOSE
200 JAHRE
PLASTIKFLASCHE
450 JAHRE
STYROPORBECHER
50 JAHRE
WOLLSOCKE
BIS ZU 5 JAHREN
PLASTIKTÜTE
BIS ZU 20 JAHREN
DOSE
50 JAHRE
SPERRHOLZ
BIS ZU 3 JAHREN
ANGELSCHNUR
600 JAHRE
WEGWERFWINDEL
450 JAHRE
PAPPKARTON
2 MONATE
www.NABU.de/plastik
www.meere-ohne-plastik.de

Source: NABU

Plastics create mass consumption…

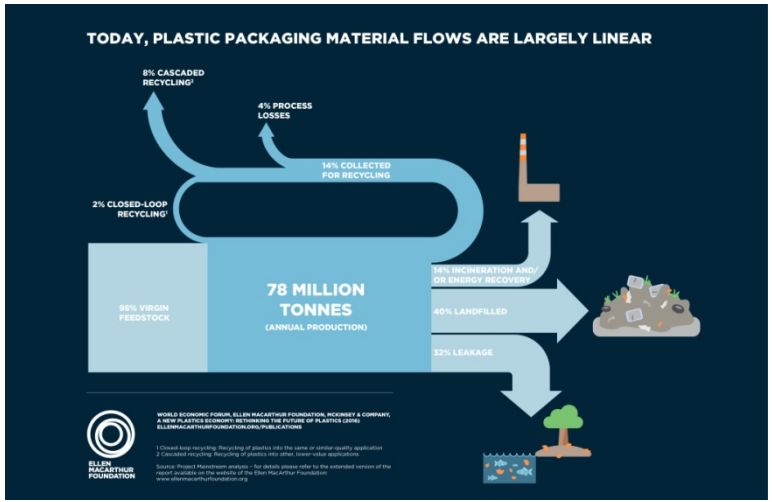
… mass disposal

How we use plastics

TOO MUCH!

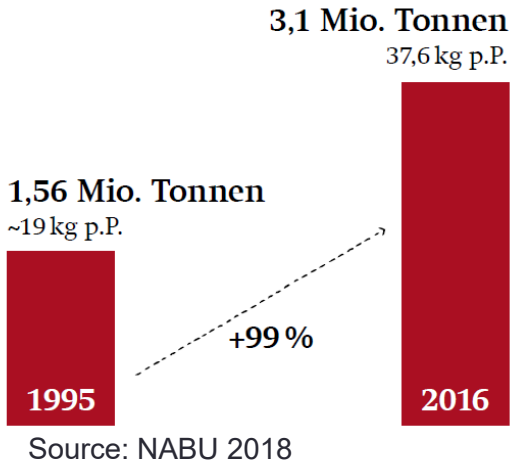
IN THE WRONG WAY!

IN A NON-CIRCULAR DESIGN!



Sources: Ellen MacArthur Foundation NABU

Verpackungsabfälle aus Kunststoff
Steigerung



Source: NABU 2018

How NABU imagines an eco-friendlier plastic usage in the future

1. Much less (use of re-usable solutions in the packaging sector and beyond) – no substition
2. Eco-friendlier feedstock (ressource-efficient/bio-based)
3. High reduction of „hazardous“ additives in the production sector
4. Design for Recycling
5. High content of recyclates

Much less

Source: gdb.de

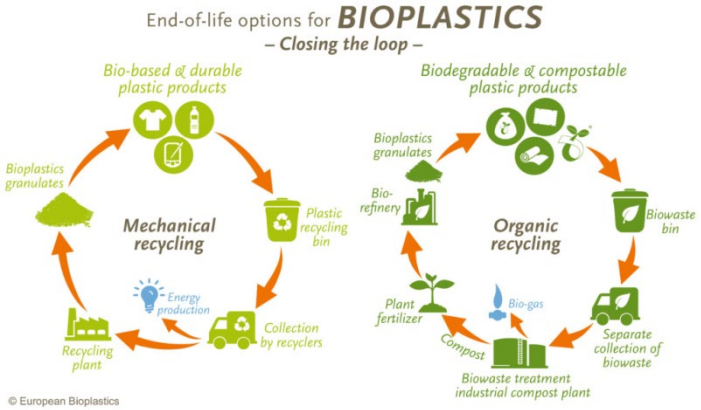
https://initiative-frosch.de/mondi

https://www.originalrepack.com/

Eco-friendlier feedstock

- Current biobased alternatives are not convincing (LCA show pros and cons)
- Minimum requirements: eco-certified standards for biobased plastic production (biodiversity/GMO/Land use change)
- Preferably: Usage of non-recoverable residues from biomass sectors)
- Concentration on „drop-in“ plastics

Charakterisierungsfaktor	Tendenz zu Biopolymeren	Begründung seitens der Biopolymere	Begründung seitens der konventionellen Polymere
Energieverbrauch	↔	Unterschiedlicher Energieverbrauch für verschiedene Biopolymere	Unterschiedlicher Energieverbrauch für verschiedene konventionelle Polymere
Treibhausgaspotential	↑	Hohe CO_2 Aufnahme während des Pflanzenwachstums	Hohe CO_2 Emission während thermischer Verwertung
Abiotische Ressourcenverbrauch	↑	Bio-basierte (erneuerbar)	Erdöl-basierte (endlich)
Eutrophierungspotential	↓	Verbrauch von Düngemittel und Pflanzenschutzmittel	Nicht notwendig
Versauerungspotential	↓	Verbrauch von Düngemittel und Pflanzenschutzmittel	Nicht notwendig
Landnutzung	↓	Agrarfläche notwendig	Keine Agrarfläche notwendig
Wasserverbrauch	↓	Prozesswasser und Wasser für die Bewässerung	Nur Prozesswasser



Source: European Bioplastics www.ifbb-hannover.de

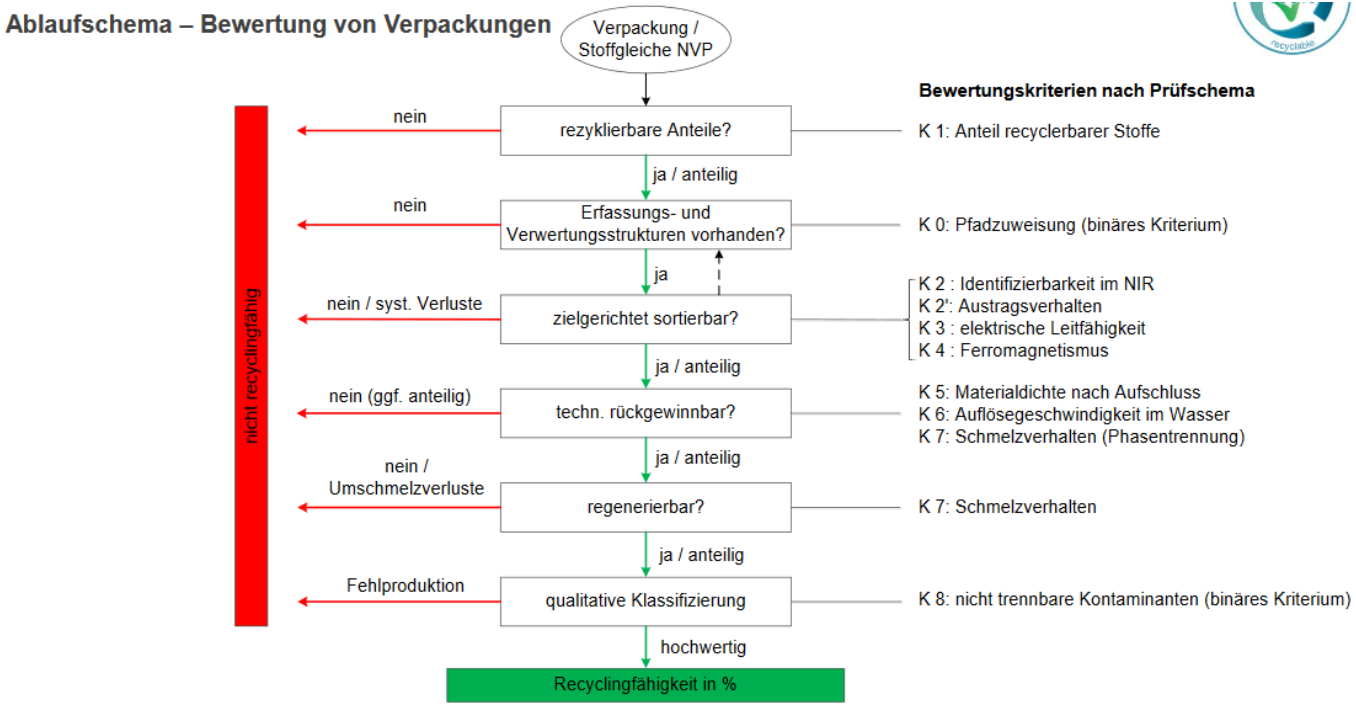
Reduction of „hazardous“ additives

- Research on the impact of micro- and nanoparticles concentrante mainly on marine environment, while impacts on human health received much less attention
- Precautionary principle has to be applied at every life cycle stage (esp. Polyurethanes/ PVC/ epoxy resins/ PS →mandatory declaration along the supply chain helps consumers and recyclers
- Better scrutiny in controlling plastic products from importeurs
- Producers should be forced to highlight the use of chemicals (esp. Toys/furniture/textils)

Design for Recycling

- Extending producer responsibility into after-use phase
- Realizing „low hanging fruits“ (different colours/different adhesives/ monomaterials)
- Lack of knowledge in the design process
- Modular design (e.g. electronical waste)
- Confusion because of many differing guidelines

Design for Recycling (II) – German example for measuring recyclability



The role of chemical recycling in the future

Current situation: Many questions regarding LCA, energy efficiency, treatment of residues, quality of recyclates

Promising areas of application: Recycling of mattresses, recycling of E-waste with brominated flame retardands

BUT

- Pyrolysis-products must become plastics not gas in order to be labelled chemical *recycling* (carbon must stay in the product)
- Chemical recycling is not an answer to the lack of design for recycling (Primacy of material/mechanical recycling as indicated in the EU waste hierarchy)
- High expenditures for sorting and logistics mean high margins of needed plastic waste → competition to mechanical recycling

The role of chemical recycling in the future (II)

Legal requirements

- Legal definition for chemical recycling on EU-level
  - must exclude processes, where plastic is not transformed in new plastic
  - Must exclude processes, where CO_2 emissions are equal or higher than in the virgin material production
- Chemical recycling should only be allowed to recycle degrated and contaminated plastics which can‘t be recycled mechanically
- Establishing verification systems , so that chemical recycling plants do not produce energy fuels
- Additional step in the waste hierarchy below mechanical recycling and above energy recovery (only for mixed waste streams who would be burned otherwise)

Agenda for an eco-friendly plastics production and usage

“I want Europe to lead on the issue of single use plastics... I want to open a new front in our fight against plastic waste by tackling micro-plastics.” (Ursula von der Leyen, President of the European Commission – EU Green Deal)

Future tasks of EU circular economy policy

- Prioritise waste prevention within Extended Producer Responsibility (EPR) Schemes: All EPR schemes should support waste prevention by financing and promoting reuse of waste and products and using eco-modulation of fees to discourage non-circular products.
- Phasing out hazardous substances through requiring information provision on chemicals and not reducing thresholds for secondary materials
- Supporting waste prevention and reuse in the packaging sector through zero waste, refillable/deposit refund systems and waste prevention targets
- Making green procurement the default approach for public authorities and for companies engaged in corporate social responsibility

„Let plastics, not debates, run circles“

NABU-Bundesgeschäftsstelle
Sascha Roth
Charitéstraße 3
10117 Berlin
Tel. +49 (0)30.28 49 84-1660
sascha.roth@NABU.de
www.NABU.de