Federal Ministry of Education and Research

FONA Research for Sustainable Development BMBF

PlastikBudget – How Much Plastic Can the Environment Tolerate?

Plastics in the Environment – Sources · Sinks · Solutions

Plastics that are released into the environment through specific use, carelessness, wear and tear or weathering are a growing problem in our consumer and throwaway society. But what amount of plastic is just about tolerable for the environment? How long does it take for plastics to degrade completely? In order to answer these questions, the joint project PlastikBudget intends to propose a per capita budget based on scientific research and thus develop a clear basis for future political decisions.

Data Basis as Foundation for Budget Approach

The global production of plastics is growing and is an important economic sector in many countries. At the same time, a lot of plastics end up as waste in soils and oceans at the end of their life cycle. Already today, the ratio of plastics to biomass from the sea is 1:5, and may increase to 1:1 by 2050. These current figures show how important a sustainability-oriented shift in the handling of plastics is.

The global and inter-generational dimension of the problem requires a collective contribution from science, politics, business and consumers to reach a solution. In order to politically regulate the future handling of plastics, it is necessary to formulate target figures for plastic emissions. This will be supported by the budget approach that will be developed within the joint research project. The project intends to determine the total permissible quantities of plastic emissions worldwide as well as the 'permitted' annual per capita emissions of plastics into the environment.

Large and small plastic parts enter the environment from various sources.

The project partners bring together scientific findings on the sources, quantities and effects of plastics in the environment and the interests of relevant stakeholders. It is not the project's priority to define a specific budget. Instead, the researchers want to point out ways how such an emissions budget can be derived from empirically verified data and social values in order to create a widely accepted framework for future political decisions.

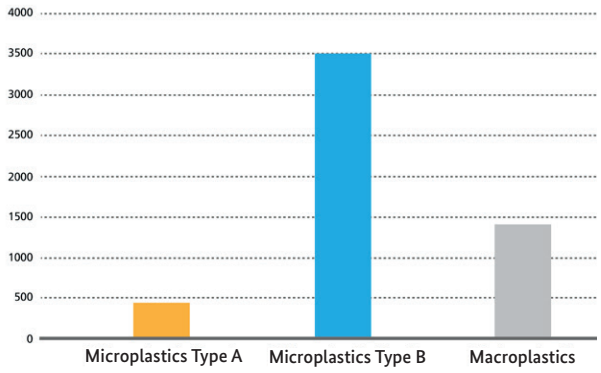
Consider Plastic Waste in Life Cycle Assessments

Furthermore, regulations on plastic emissions require that products, processes and consumer practices concerning the amount of plastics released and their downstream environmental impacts can be accounted for and thus be compared. To this end, the joint research project is developing an impact assessment methodology with corresponding environmental indicators so that plastic waste can be appropriately considered in life cycle assessments. In principle, this is already possible today: Toxic effects, e.g. from substances contained in plastics such as softening agents, can be determined using the standard categories of a life cycle assessment. The same applies to waste accumulations on land and in the ocean or climate-relevant effects such as the storage of carbon in plastic waste. Due to the increasing attention that the plastics topic has gained in environmental discussions in recent years, the project team also wants to examine new categories for environmental impacts. These could include, for example, the death of marine organisms through microplastics, the risk of smallest plastic particles accumulating in food chains or the negative aesthetic consequences of plastics in the environment.

Raising Awareness of Society and the Economy

In order to implement the idea of a plastic budget, it is essential to have communication strategies that increase understanding of political decisions and raise awareness among citizens and industry regarding the negative consequences of plastic emissions. What this kind of communication could look like, whether it will prove itself in the reality check and what resistance has to be expected in the future are further important guiding questions in the project.

The results of PlastikBudget should, among other things, contribute to standardization processes such as VDI guidelines as well as DIN/ISO standards and influence political strategies, e.g. the Marine Protection Framework Directive, the German National Sustainability Strategy or the EU's Circular Economy Action Plan.



Current estimates of plastic emissions in Germany in grams per capita and year (g/cap a); microplastics are divided into type A (intentional or accidental release) and type B (release due to wear and weathering).

Research Focus
Plastics in the Environment – Sources • Sinks • Solutions

Project Title
Development of Budget Approach and LCA Impact Assessment Methodology for the Governance of Plastics in the Environment (PlastikBudget)

Grant Number
01UP1702A-B

Duration
November 1, 2017 – October 31, 2020

Funding Volume
EUR approx. 1,000,000

Contact
Fraunhofer UMSICHT, Bereich Produkte,
Abteilung Nachhaltigkeits- und Ressourcenmanagement
Juergen Bertling
Osterfelder Straße 3
46047 Oberhausen
Phone: +49 (0) 208 8598-1168
E-mail: juergen.bertling@umsicht.fraunhofer.de

Project Partner
Kulturwissenschaftliches Institut Essen (KWI), Essen

Website
www.plastikbudget.de

Publisher
Federal Ministry of Education and Research (BMBF)
Department of Resources, Circular Economy; Geosciences,
53170 Bonn
Department of Systematic Mobility; City of the Future,
53170 Bonn

Editorial Work and Design
Project Management Agency Karlsruhe (PTKA)
DLR Project Management Agency

Print
BMBF

Photo Credits
Front page: Leandra Hamann, Fraunhofer UMSICHT
Back page: Fraunhofer UMSICHT

Version of
November 2018

www.bmbf.de