The aim of this infographic is to visualize existing discrete data on GHG emissions along the plastics value chain. It is not a continuous measure of the total carbon footprint of plastics production, nor is it the full picture. Data gaps remain so as to understand the full extent of the impact of plastic pollution on climate change.

The numbers in the infographic are compiled from the following reports:


MtCO₂e = metric tons of carbon dioxide equivalent

1 GtCO₂e

Estimated annual release in 2016

(that is 1,000,000,000 MtCO₂e)

2,129 Mt CO₂e

Estimated annual emissions due to plastic in the ocean

10 YEARS

Average lifetime of plastics in the economy

9% of global oil demand is for plastics production

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GREEN HOUSE GAS EMISSIONS
IN THE PLASTICS VALUE CHAIN

0.86 Gt of CO₂e
TOTAL FOR PLASTICS PRODUCTION,
CONSUMPTION & END OF LIFE IN 2019

ENVIROMENTAL DAMAGE

Increasing vulnerability of global ecosystems
Ingestions, suffocation and entanglement of marine wildlife
Land disturbance & Extensive water usage

150 million. Mt
Estimated plastic in the Oceans

100kg plastics used per person in a year (EU)

1Mt CO₂e
Return flight London - Mumbai

DATA

FOSSIL FUELS EXTRACTION
0.272 Mt CO₂
indeterminable emissions

RAW MATERIALS REFINING
1.89 Mt CO₂e

RESIN MANUFACTURING
0.544 Mt CO₂
indeterminable emissions

POLYMERIZATION & BLENDING
indeterminable emissions

CONVERSION INTO PRODUCTS
indeterminable emissions

RETAIL

CONSUMPTION

END OF LIFE

2.45 Mt of CO₂ embedded into the product itself

PLASTIC PACKAGING INCINERATION
0.9 Mt CO₂e *considering 2MtCO₂e is offset by energy recovery

MECHANICAL RECYCLING
-2.44 Mt CO₂ avoided in comparison to incineration

CHEMICAL RECYCLING
-1.91 Mt CO₂e saved if optimal

0.86 Gt of CO₂e

PLASTIC DUMPED IN THE OCEAN BY EU EACH YEAR:

Microplastics
136,078 - 453,592 Mt

Macroplastics
63,503 - 117,934 Mt

Climate-KIC

Designed by Unbeaten Studio
OVERVIEW PROJECTS / STARTUPS

GREEN HOUSE GAS EMISSIONS IN THE PLASTICS VALUE CHAIN

MICo2e = metric tons of carbon dioxide equivalent

MHCO2e = metric tons of carbon dioxide equivalent

EXPLORING SYSTEMIC SOLUTIONS

PROJECTS
- eCircular
- Plastics Engagement and Stewardship Programme
- Catalyzing Corporate Action Through Plastic Standards
- Circular Economy Indicators for Plastic Value Chain in Manufacturing
- Innovation Centre for Sustainable Retail

IMPROVING WASTE MANAGEMENT

STARTUP
- Encapsulae

PROJECTS
- Plastic waste recovery by regional blockchain networks
- Traceability for Circular Economy
- Centres for Urban Remanufacture
- Feasibility Study for a waste prevention consultancy on plastic packaging
- Circular Crowd Production Platform
- Service-based circular business models
- Closing the loop for material innovation

NON FOSSIL FUEL BASED MATERIAL INNOVATIONS

STARTUPS
- Made of Air
- FutuKlipp
- Bamboister
- Hemp Eyewear
- Kaffeeform
- Impact Acoustic
- Pulpitop

PROJECT
- B-Plas Demo

FOSSIL FUELS EXTRACTION

0.272 Mt CO2, indeterminable emissions

RAW MATERIALS REFINING

1.89 Mt CO2e

RESIN MANUFACTURING

0.544 Mt CO2

POLYMERIZATION & BLENDING

indeterminable emissions

CONVERSION INTO PRODUCTS

indeterminable emissions

RETAIL CONSUMPTION

END OF LIFE

2.45 Mt of CO2 embedded into the product itself

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PLASTIC PACKAGING INCINERATION

MECHANICAL RECYCLING

STARTUPS
- Reflow Filament
- elKTRIN
- CBPEN
- PolyVision
- Tetra

PROJECT
- ZVR for Municipal Waste

CHEMICAL RECYCLING

STARTUPS
- PlastoGaz
- Pyrolyze
- ObboDec
- Yased
- DePoly

PACKAGING ALTERNATIVES

STARTUPS
- Plastics
- Cupitiles
- Arekapakh
- Leafymade
- Notpla

1230

PROJECTS
- Packaging Circular Design
- Plastic Information Flows

ZERO WASTE SOLUTIONS

STARTUPS
- Encapsulae
- Cupitiles
- Arekapakh
- Leafymade
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1230

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MARINE DEBRIS MANAGEMENT

STARTUPS
- CleanSeaSolutions
- Great Bubble Barrier
- Noria
- One Earth One Ocean

MECHANICAL RECYCLING

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ENVIROMENTAL DAMAGE

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