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MGG
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ELV and WEEE Plastics Recycling – Recovery Targets at Risk

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ELV recycling - the core of the MGG business

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MGG Car-Shredders in Austria and Hungary

Since the opening of the EU borders – loss of ELV‘s

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In Austria forecast 2017:

- **353 000 new cars registered**
- **276 000 cars are de-registered**
- **Close to 60 000 ELV’s are shredded in Austria**
- **Some 217 000 ELV’s with unknown whereabouts**

So in 2004 MGG decided to diversify in WEEE recycling

And Christian Müller-Guttenbrunn was honoured

With the Cow Bell Award during the IERC conference of 2017 in Salzburg

The ICM honorary award

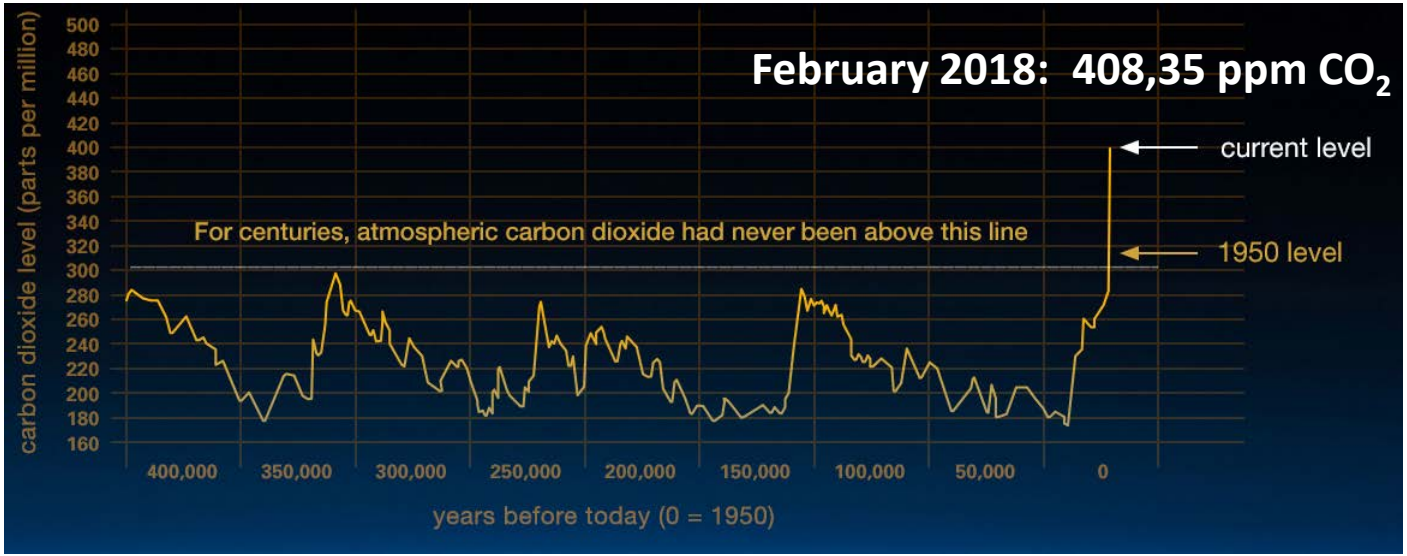
"Christian has won this award for his life's work, for the development of new recycling processes and the founding of new clean-tech companies in Austria and Eastern Europe in various fields, such as plastics recycling and metal sorting," said the IERC Steering Committee.

Plastics recycling – MBA Polymers Austria

- Founded 2004 as JV
- Constructed 2005
- In operation since 2006
- Capacity 50 kMT
- Producing PCR plastics
- 100 % MGG since July 2017
- **++News: since Jan, 1st ++**
- MGG Polymers

WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD
TECHNOLOGY PIONEER 2006

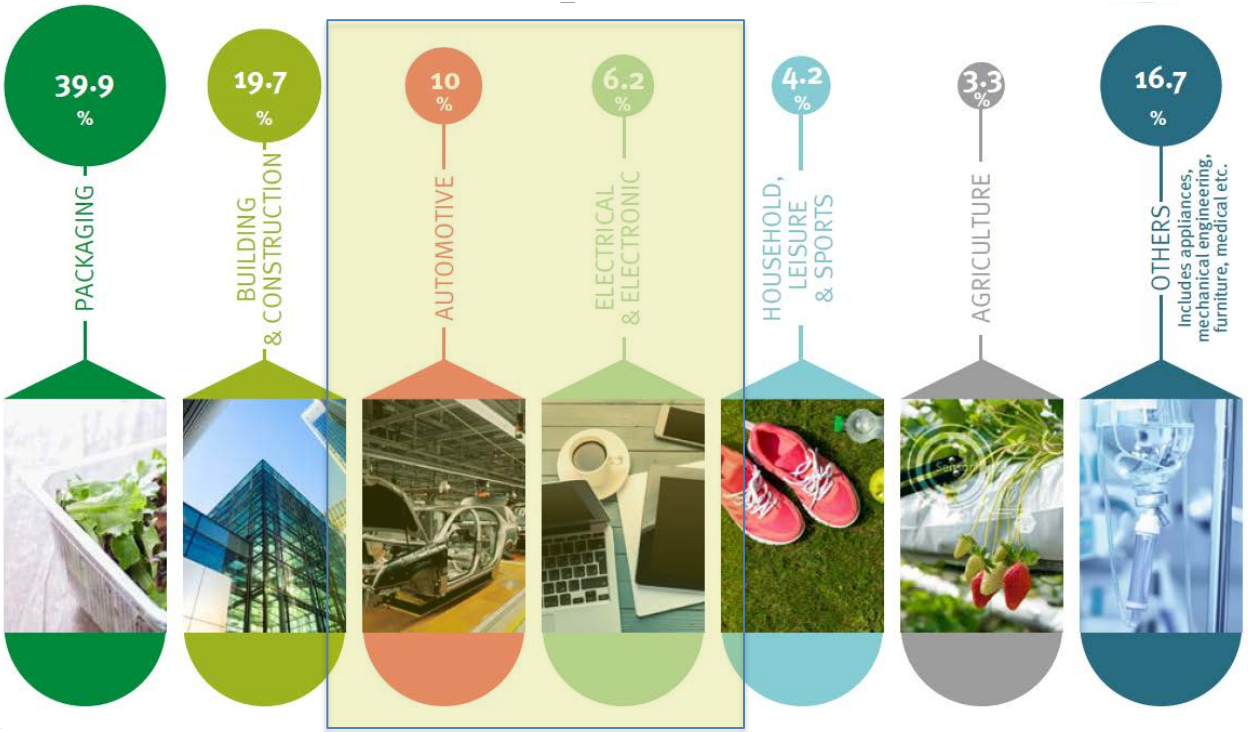
Exponential growth of an “invisible” Pollutant



https://climate.nasa.gov/climate_resources/24/

- Emitting CO_2 is free of charge
- It is a most urgent global environmental threat
- And……..this discussion decoupled from debates over toxics

Plastics volume used in the EU in Cars and Electronics

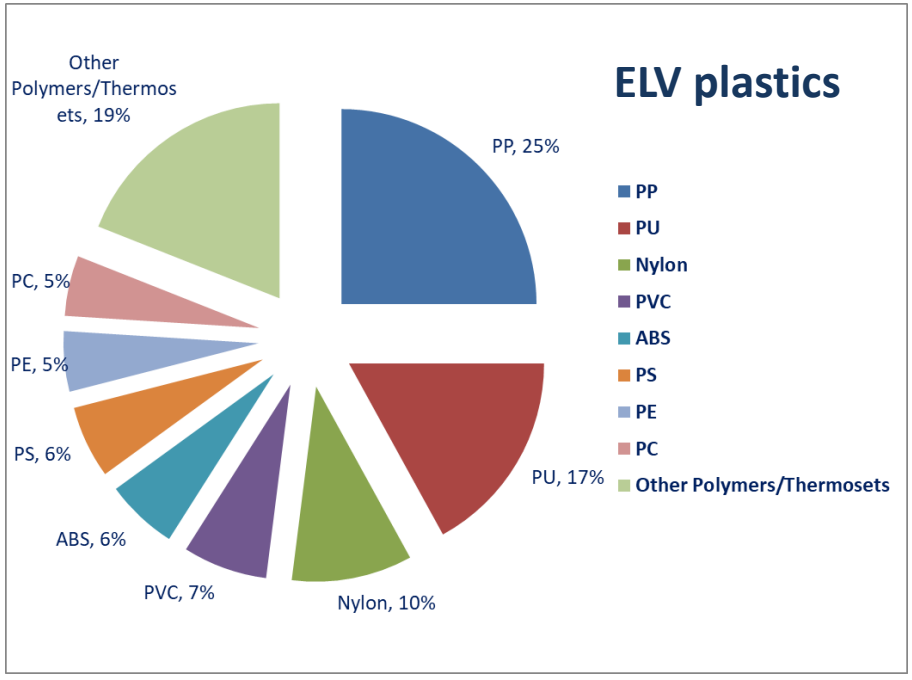


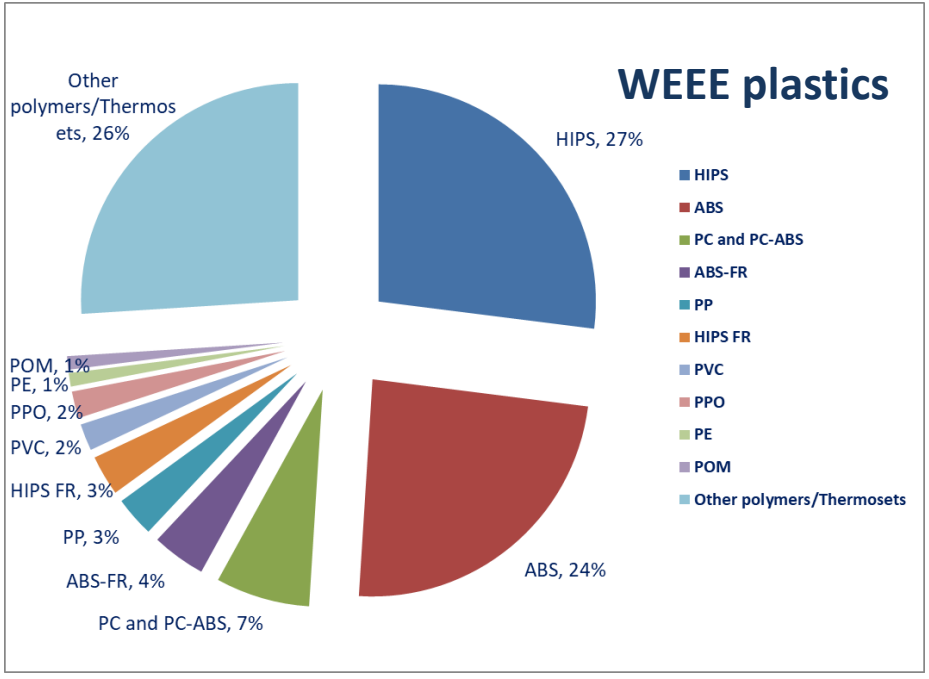
Total Converter Demand
49,9 Mio MT

Source: Plastics Europe

Converter Demand in Electronics and Cars is approx. 8.1 Mio MT's

Average composition of





Many of these plastics are high value tech plastics

Scientific Approach

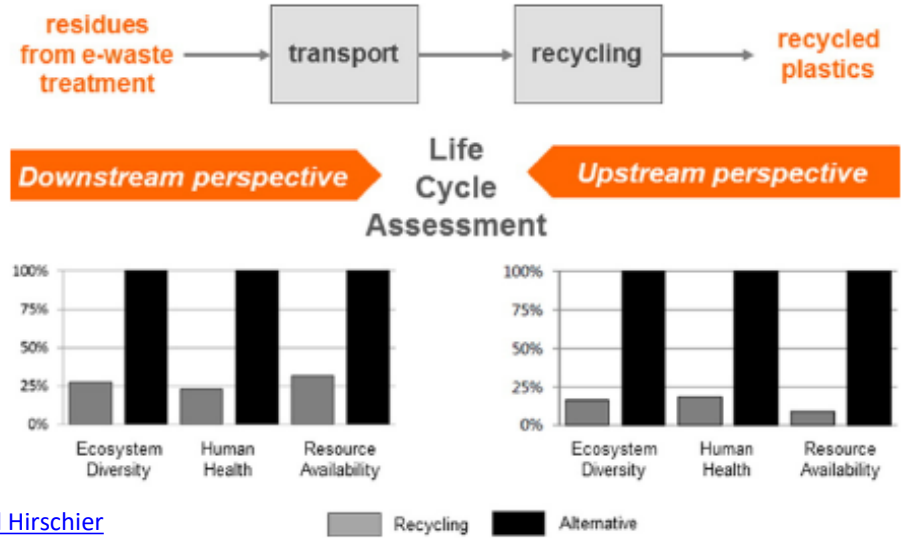
LCA PCR WEEE Plastic at MGG Polymers versus

1. Incineration of these plastics

Recycling PCR WEEE plastics 4 times better than Municipal Solid Waste Incineration

2. Production virgin plastics

Recycling PCR WEEE recycling option 6-10 times better than producing virgin plastics



Source: Science of the Total Environment 529 (2015) 158–167, Patrick Wäger, Roland Hirschier

If ELV and WEEE plastics recycling makes so much sense, why is there so little of it……

- It is difficult.....

Separation of plastic is difficult

Source: Mike Biddle, TED Talk

If ELV and WEEE plastics recycling makes so much sense, why is there so little of it?

- It is technically difficult.....but abolutely possible

Two examples of electronic products with 100% MGG Polymers

Two examples of car components with 100 % MGG Polymers

If ELV and WEEE plastics recycling makes so much sense, why is there so little of it?

- It is technically difficult.....but possible
- The legal framework makes it difficult

The complexity of the regulatory framework

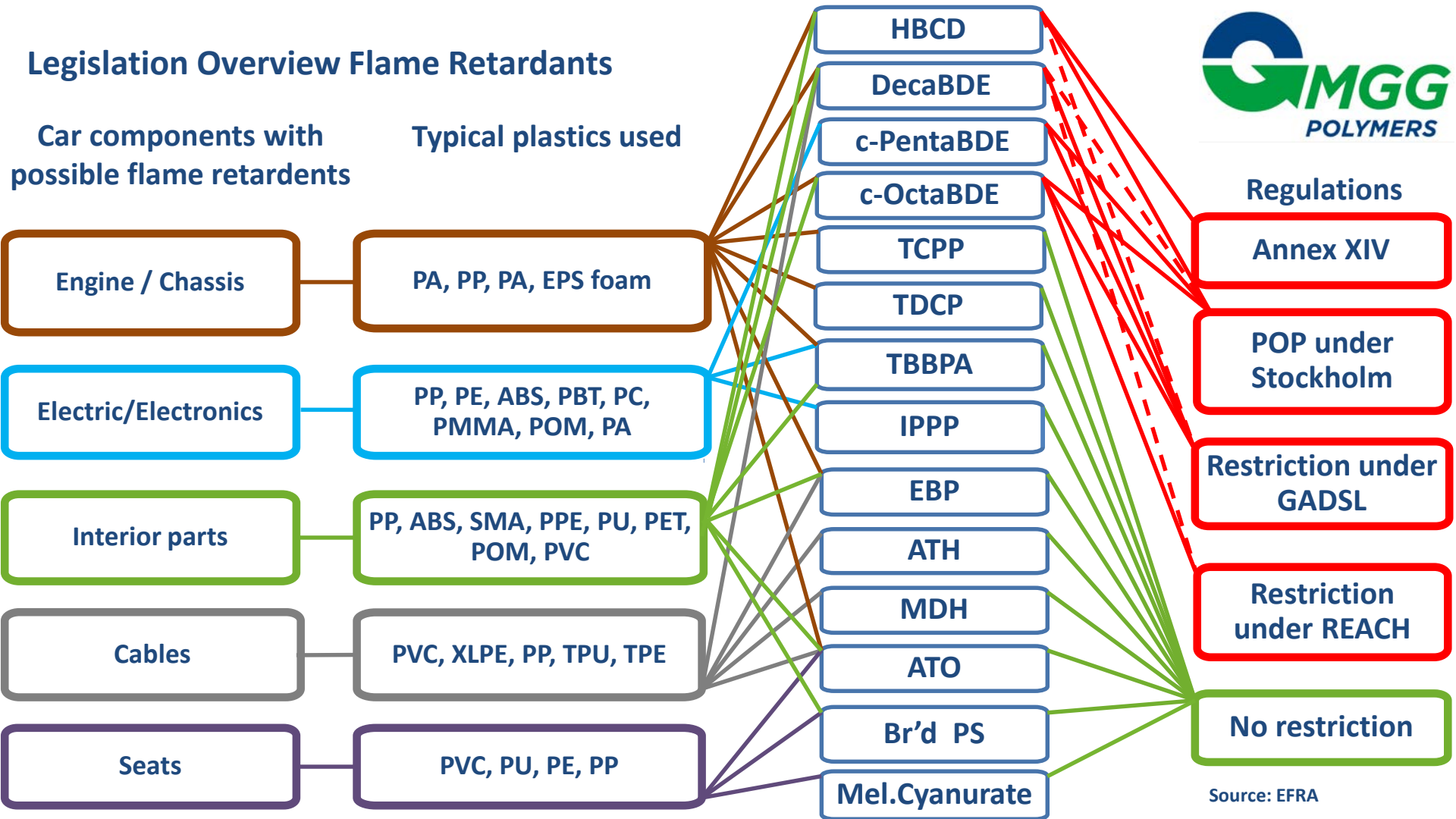
- **UN Conventions**
  - Basel Convention -> transboundary shipments of waste
  - Stockholm Convention -> POP's
  - Rotterdam Convention -> hazardous substances & chemicals

- **EU Waste Legislation**
  - EU Waste Framework Directive
  - EU Waste Shipment Regulation
  - EU WEEE Directive

- **Product Legislation and Listings**
  - EU General Product Safety Directive (GPSD)
  - REACH Regulation
  - Global Automotive Declarable Substance List (GADSL)

A continuous flow of new legal initiatives and… barriers

Legislation Overview Flame Retardants



Source: EFRA

As consequence of these compexities

- **Shredder Residues and Plastics from Shredder Residues**
  - Become listed as “POP” waste or even as hazardous waste
  - Cross-border transport with these wastes become increasingly difficult
  - Plastic recycling facilities do not have permits to take in hazardous wastes
  - There are even cases that the recycling of these plastics is not allowed anymore
  - Proposal deca-BDE POP threshold 50 ppm, implying the end of plastic recycling.

- **Most of the plastics ELV‘s and WEEE however are**
  - Not at all flame retarded
  - And if flame retarded often with allowed substances

- **There is a missing legal certainty for the recycling industry**
  - Investors are hesitent to invest in this newly developing industry

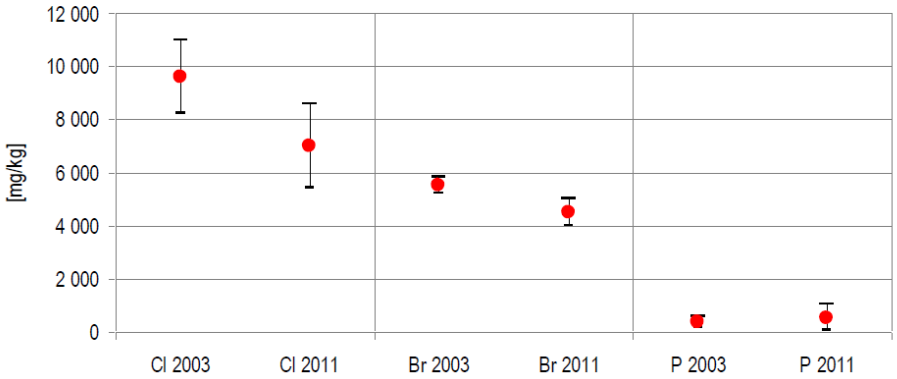
The recycling targets set for ELV’s and WEEE are at jeopardy

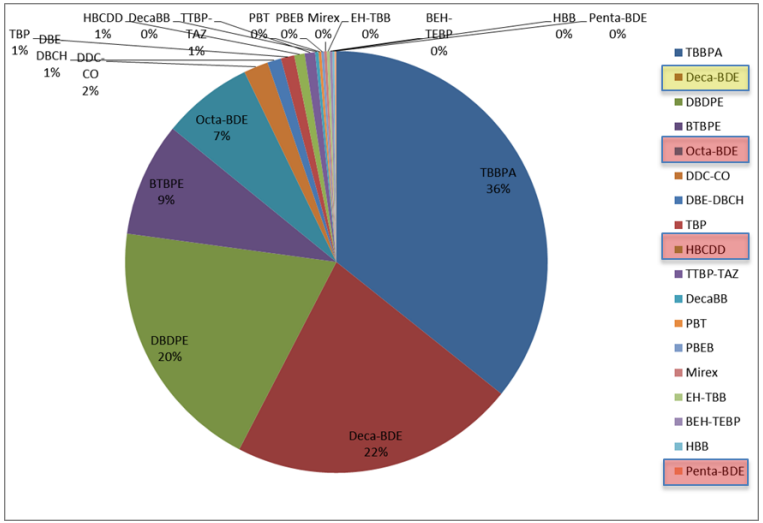
And this morning we got this statement…..

Austrian Treatment Obligation Ordinance plastic waste exceeding total **Br content: 2,000 mg/kg** - assumption that POP-limit is exceeded – destruction/irreversible transformation!

Abb. 34 > Vergleich der Gehalte an P, Br und Cl im EEKG-Schrott 2003 und 2011

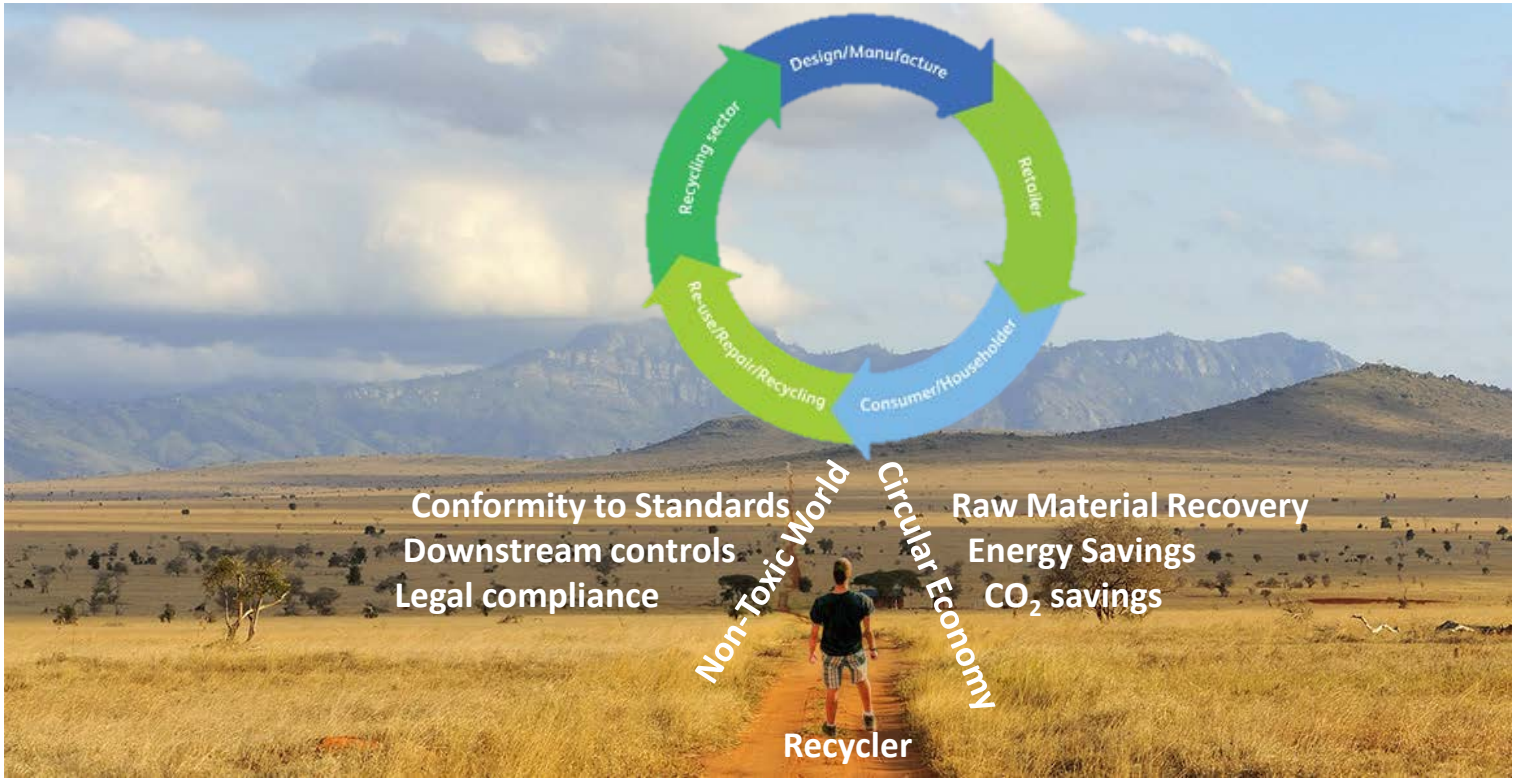
Mit Angabe des 95 %-KI.





This would simply make plastic recycling impossible

Plastic recycling a key contributor to the circular economy



We save approximately 1000 MT's of CO_2 per employee per year

Circular Economy and ELV and WEEE PCR plastics

- **Fast Track Notifications**
  - For input material to compliant recyclers (Art. 14 WSR)
  - Secondary raw materials are raw materials
  - Allow highly mixed recyclable materials as from ELV's and WEEE to move to recyclers
  - Plastics with BFR's are not a hazardous waste

- **Support the development of a EU recycling industry for PCR plastics**
  - Based upon reward based positive incentives
  - Applying product legislation on secondary raw materials such as PCR content
  - Not applying product legislation on wastes

- **Enabling factors for a step change in the development PCR plastic recycling**
  - Realistic and balanced thresholds for legacy substances
  - Legal clarity and certainty with regards to thresholds & the classication of wastes

Our Wish: more support to this plastic recycling industry

Let’s our teeth in plastics from ELV’s and WEEE…

…but let‘s not loose them on our way…