



INDTECH2018

Innovative industries for smart growth

29-31 October, 2018
Vienna, Austria

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PILLAR 1

Session 1.1

Upcycling the PET/Polyester material: from T-shirt to bottle

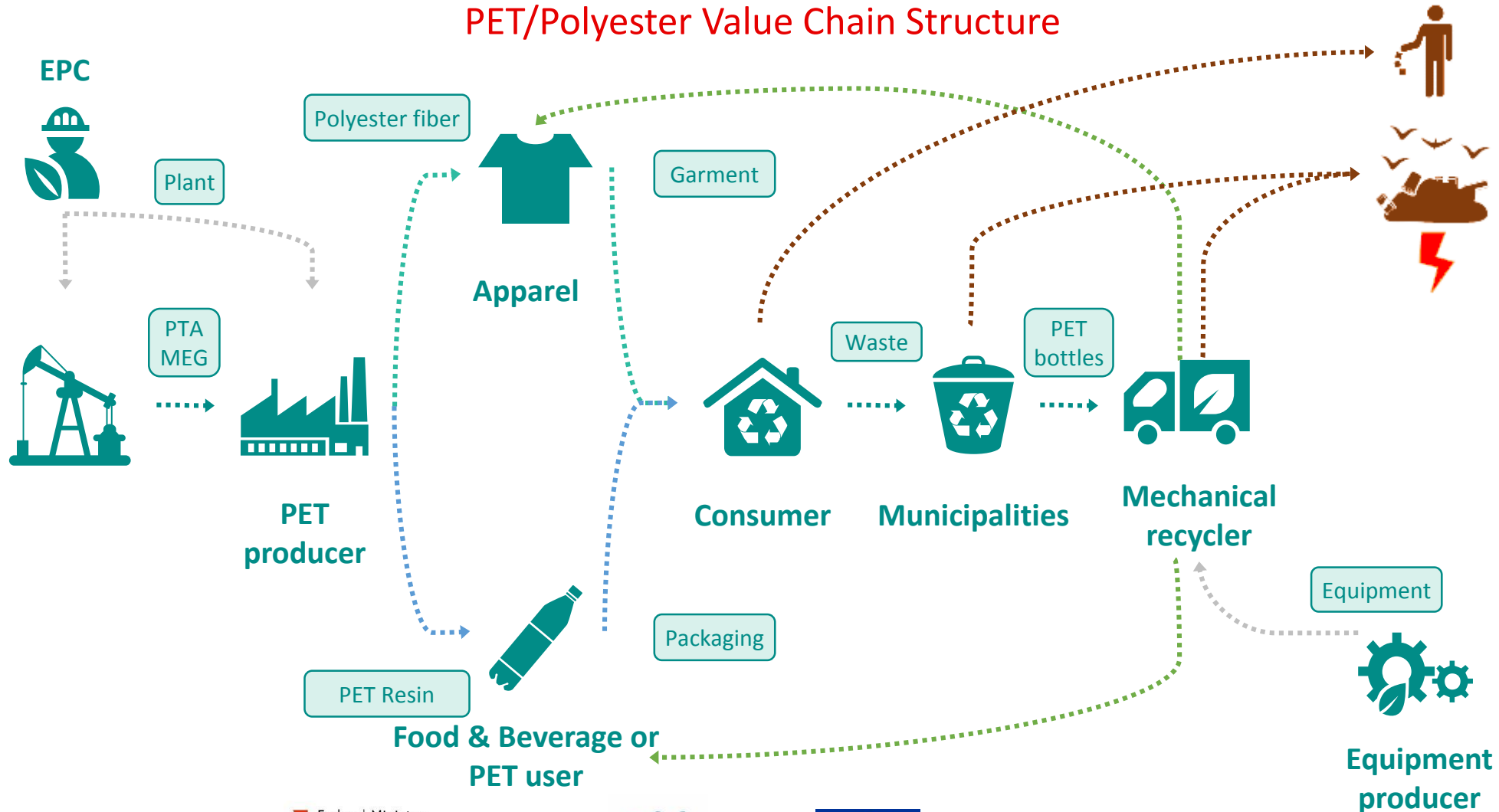
Maurizio Crippa, PhD

gr3n/demeto

30 October 2018

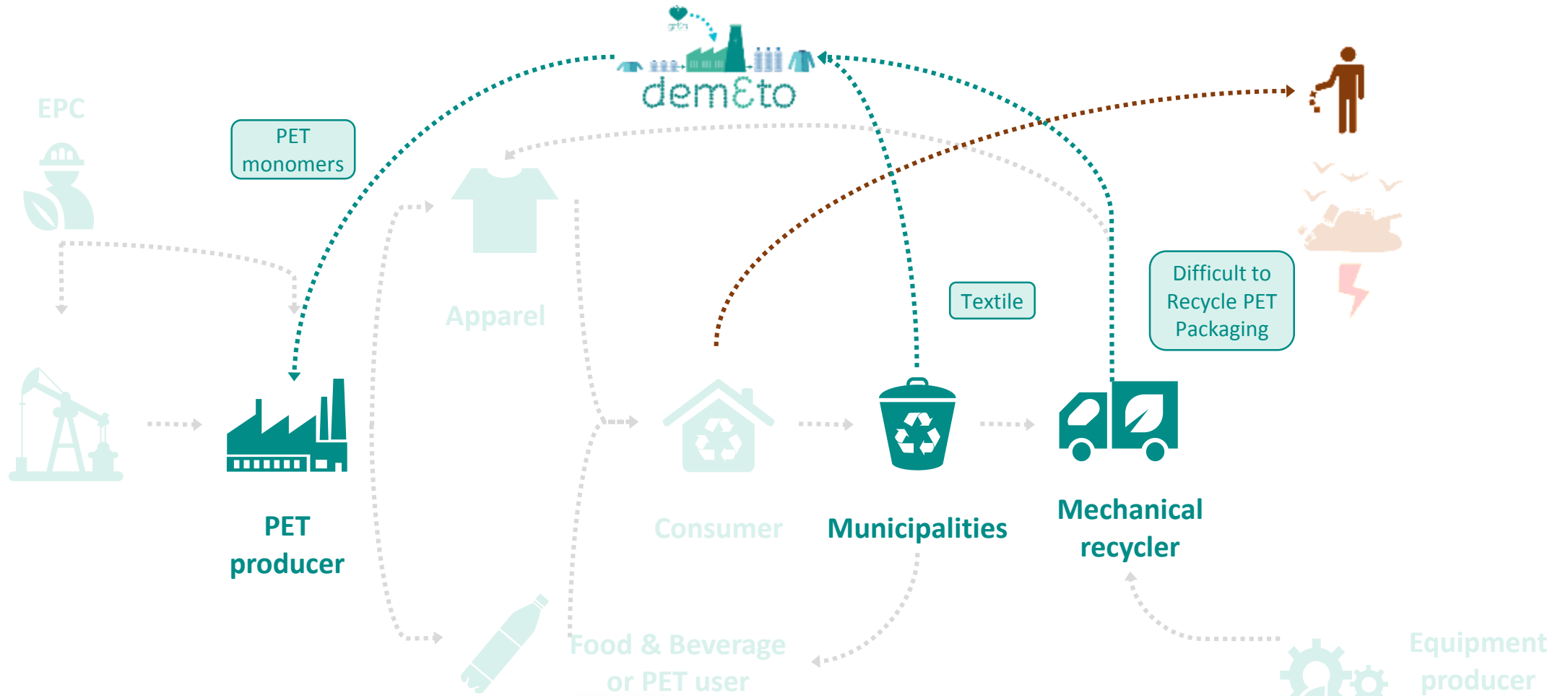


PET/Polyester Value Chain Structure



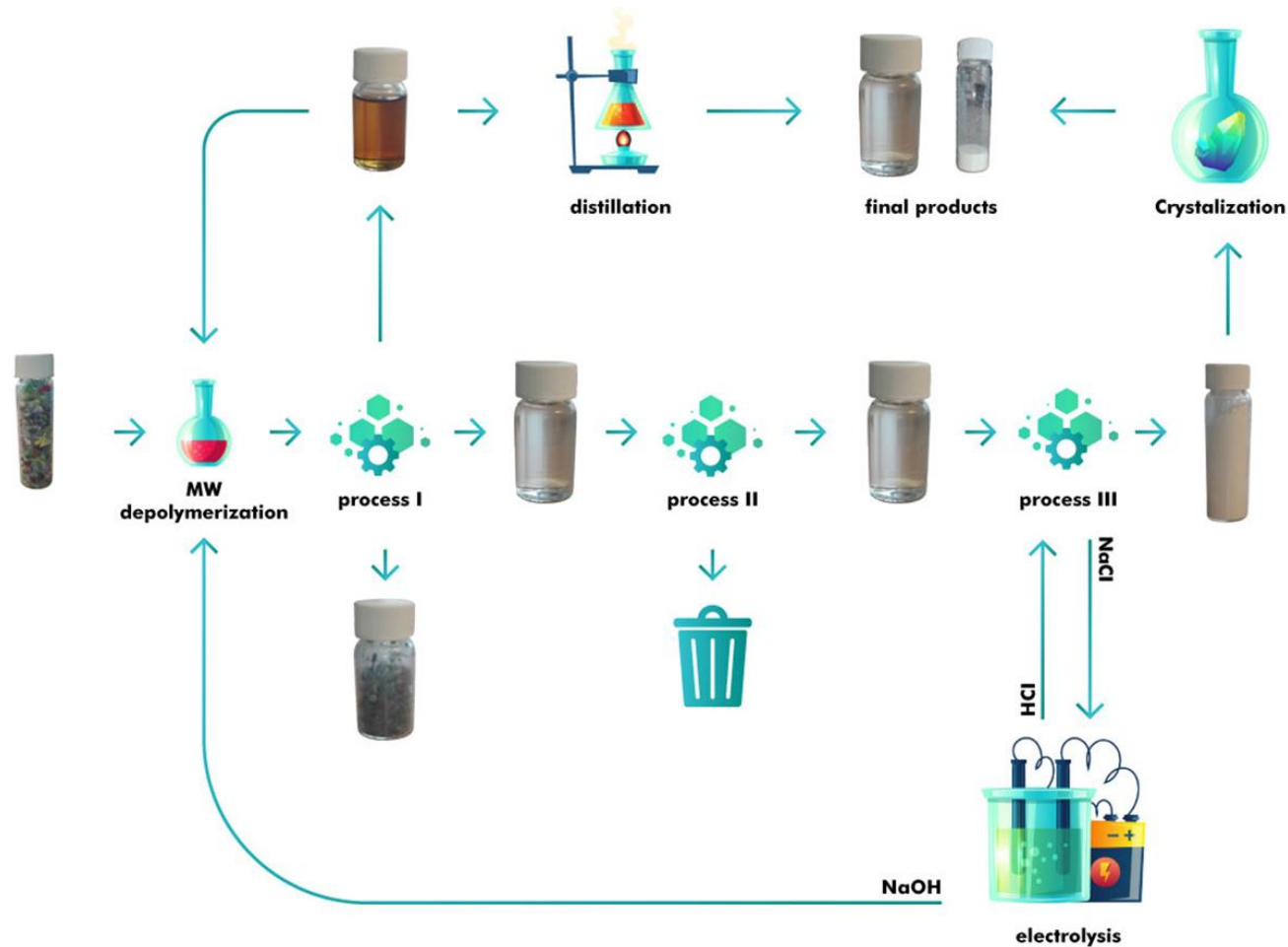


PET/Polyester Value Chain Structure: with gr3n/demeto

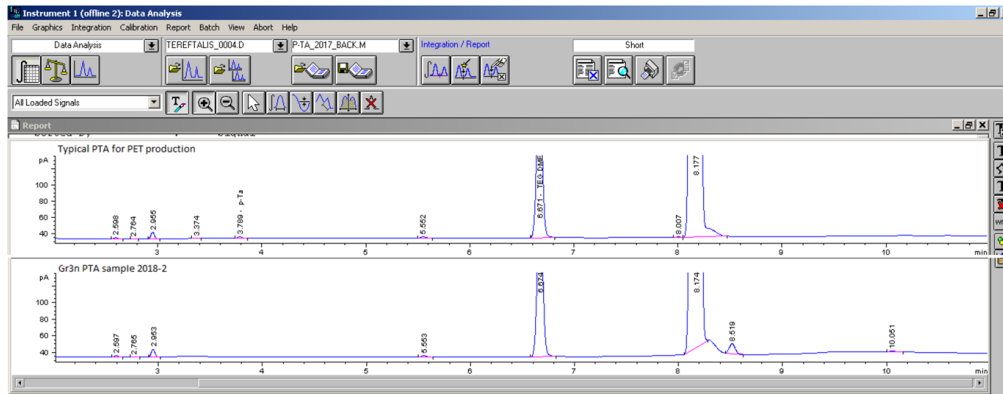




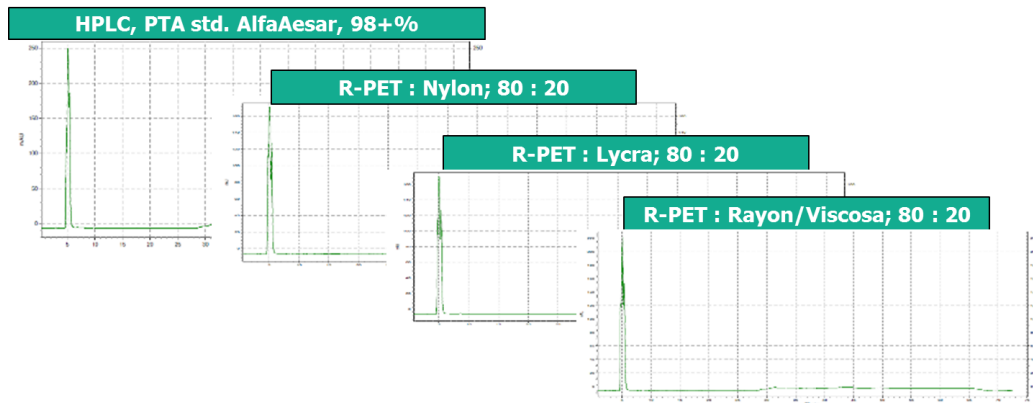
How it works: microwave de-polymerization





Virgin grade monomers and positive environmental impact



1 pic. GC peaks detected during p-toluic acid determination in three PTA samples, typical PTA for PET production, Gr3n PTA 2018-1 after precipitation, Gr3n PTA 2018-2 after crystallization.



All LCA evaluations for DEMETO have been done using the EcoInvent® Database

		
Non-renewable energy requirements (NREU) [MJ/kg _{PET} *]	66.3	21.6**
Global Warming Potential (GWP) [kg _{CO2} /kg _{PET}]	2.08	1.28
Acidification [kg _{SO2} /kg _{PET}]	0.00763	0.00571
Eutrophication [kg _{PO4} /kg _{PET}]	0.00225	0.00239
Abiotic depletion [kg _{SB} /kg _{PET}]	6.72E-6	3.84E-6

*Reference Unit is kilograms of PET produced for Oil-based production, kilograms of PET recycled for chemical recycling.
**These are preliminary data based on current assumptions about the purification process.

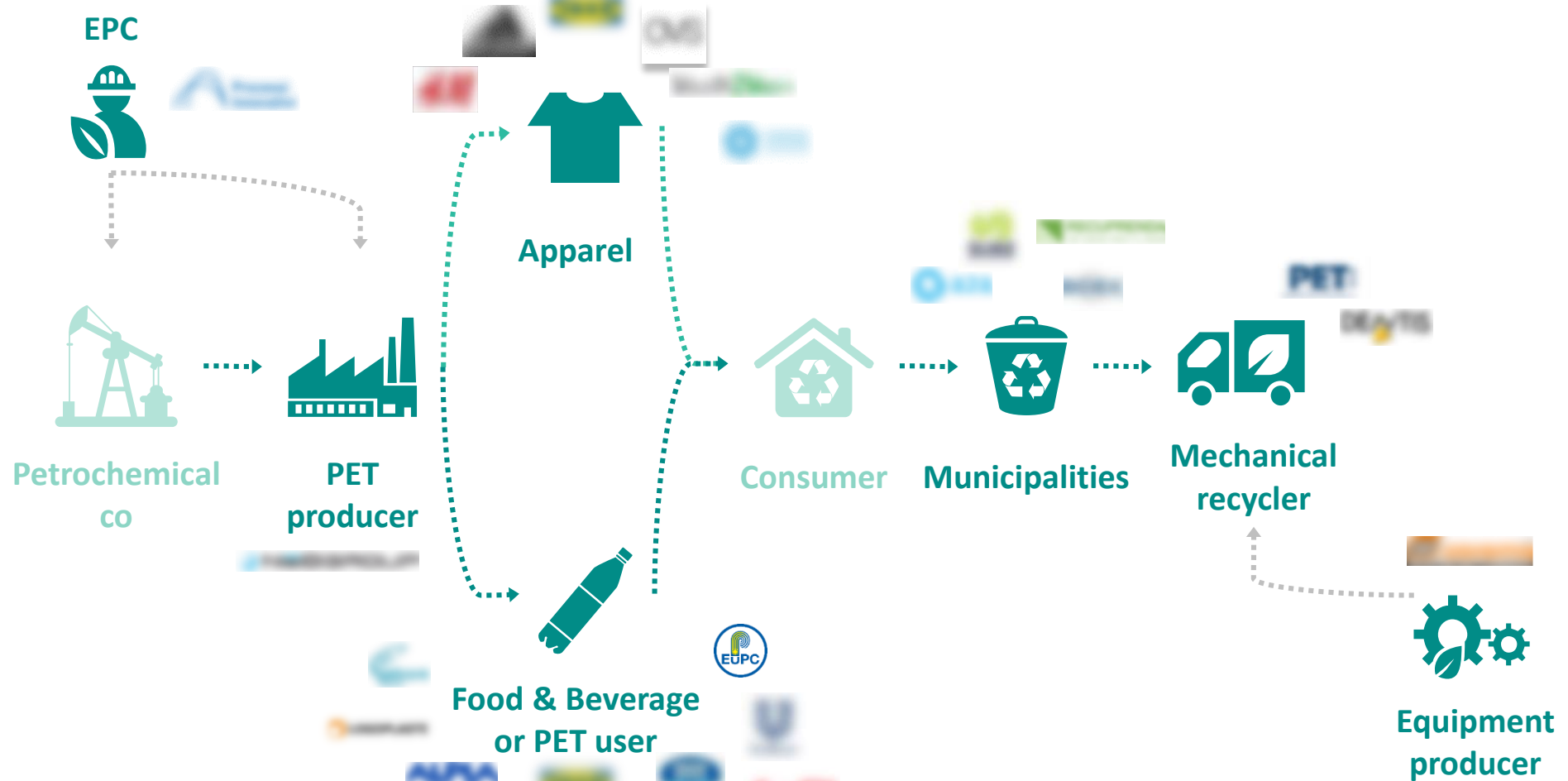
 -67.4%

 -38.5%

(-88.9% considering landfill avoidance)



gr3n, demeto and the industrial advisory board: technological and market validation with players





INDustrial TECHNOLOGIES 2018
Innovative Industries for Smart Growth



gr3n
REDUCE, REUSE, RECYCLE

Thanks for your attention!

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 Federal Ministry
Republic of Austria
Transport, Innovation
and Technology

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