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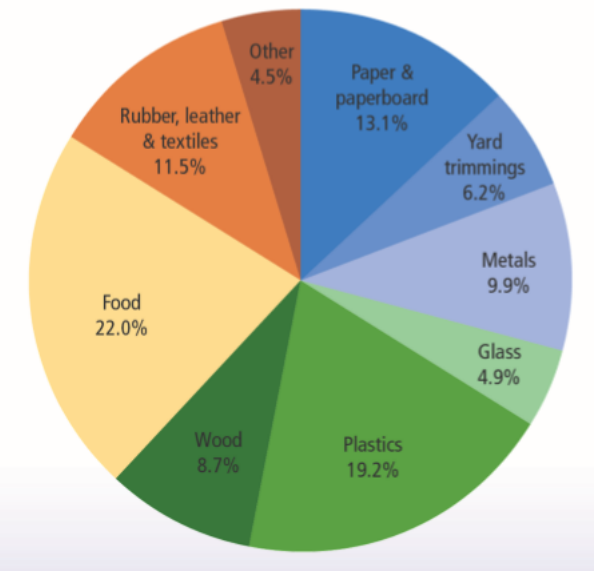
**Advancing the Bioeconomy: From Waste to
Conversion-Ready Feedstocks Workshop**

02/20/2020

Landfill-designated waste streams: organics and post-consumer absorbent hygiene products (AHPs)



Figure 8. Total MSW Landfilled (by material), 2017
139.6 Million Tons



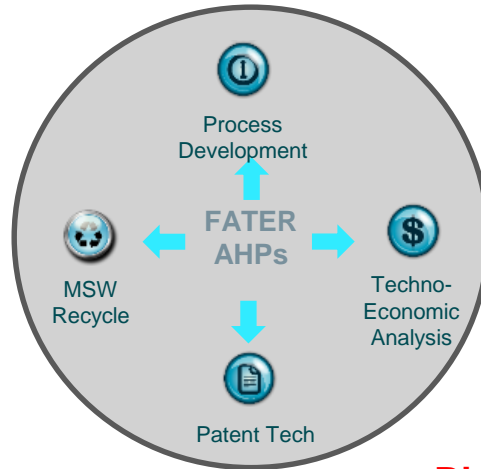
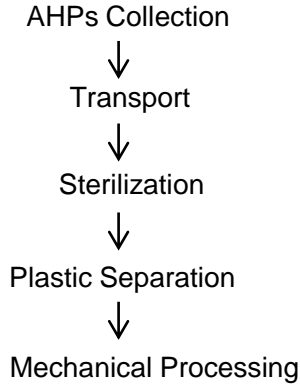
Organics: ~ 30-50%

MUNICIPAL SOLID WASTE
4%

CONSIDERABLE COST OF DISPOSAL

AHPs

Upgrading and conversion of post-consumer AHPs



"Once a challenge, now reality"

MARCELLO SOMMA
Head of R&D and Business Development

Thanks to the innovative technology – the first in the world – created by Fater, a single plant may now process about 10,000 metric tons of absorbent hygiene products per year, equal to waste produced by 1 million people. On October 25th 2017, at the company **Contarina**, in Treviso, we have launched the first-ever plant in the world able to recycle 100% of used absorbent hygiene products.

[VIRTUAL TOUR OF THE PLANT](#)

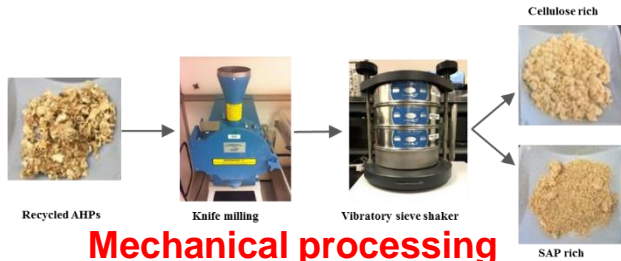
[OPEN THE INTERACTIVE MAP](#)

FaterSMART

A PLANT, 100% RECYCLING

The first industrial plant in the world for 100% recycling of used absorbent hygiene products. The solution to the diaper end-of-life issue is now reality.

Biological conversion



Liang et al. 2018, ACS Sustainable Chem. Eng. 6, 3589-3595.

Li et al. 2017, European Union Patent No. Patent Application# PCT/US2016/042863.

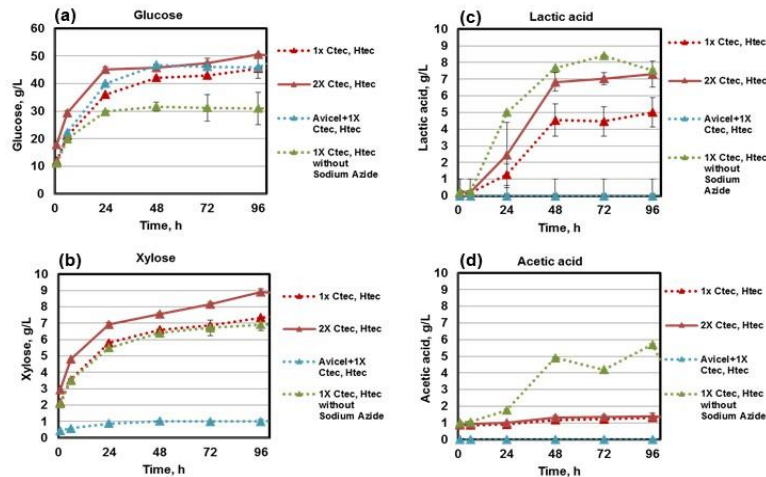
Characterization and conversion of landfill-designated organic waste streams



Food Waste



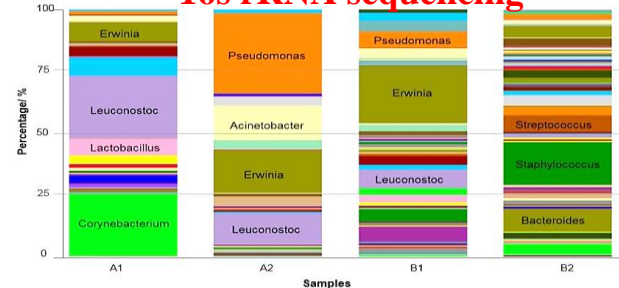
Paper Waste



Major chemical composition of the sorted MSW streams

Sample	Moisture (%)	Glucan (%)	Xylan (%)	Lignin (%)	Ash (%)	Starch (%)	Others*
Paper-rich MSW	22.8	41.2	5.2	7.2	8.6	2.6	12.2
Food-rich MSW	63.2	7.8	0	5.5	6.8	4.1	10.4

16s rRNA sequencing



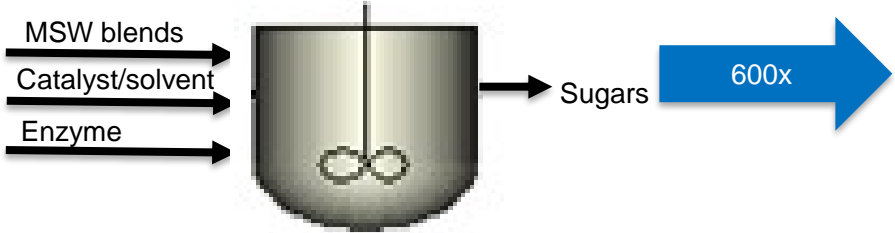
Liang et al. manuscript submitted
Liang et al. U.S. Patent Application 62/578,248



Bioenergy Technologies Office (BETO)

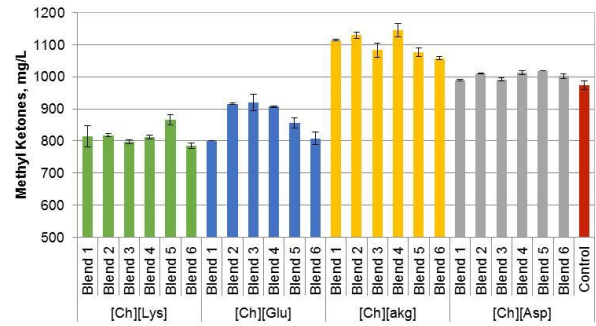
Municipal solid waste (MSW)+ lignocellulosic biomass blends conversion

INL: MSW blends



SNL: Deconstruction

ABPDU: Deconstruction scale-up & Fermentation



The waste stream did not inhibit the conversion process compared to the regular lignocellulosic feedstocks

1) Sun et al, 2015, Bioresource Technology, 200. 2) Liang et al, 2017, RSC Advances, 36585. 3) Li et al, 2017, Biotech. Biofuel. 2017, 10, 13. 4) Yan et al, 2019, ChemSusChem.

