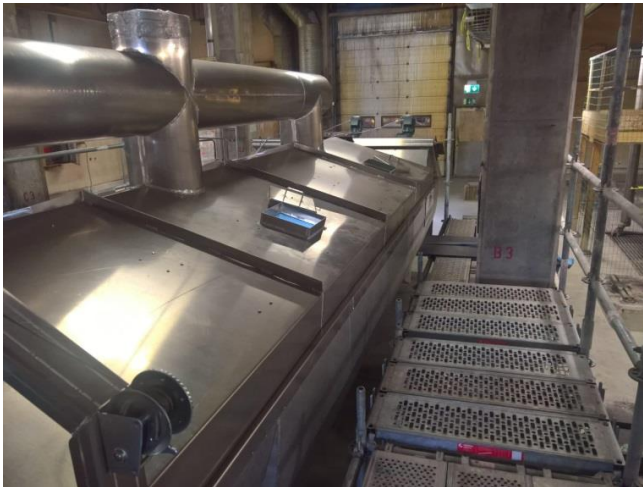


Hiedanrannan järvisedimentin nollakuidun hyödyntäminen (Zero Waste from Zero Fiber)

Sinisen biotalouden kärkihanketilaisuus 15.3.2019 Helsinki
Elias Hakalehto, Finnoflag Oy



Biorefinery pilot, operated by
Finnoflag Oy



Biogas unit, operated by
Tampere University of Technology



Compostor, operated by
Digi-Toilet Systems Oy

TAMPEREEN LIELAHTI (HIEDANRANTA)

”Zero Waste from Zero Fiber”



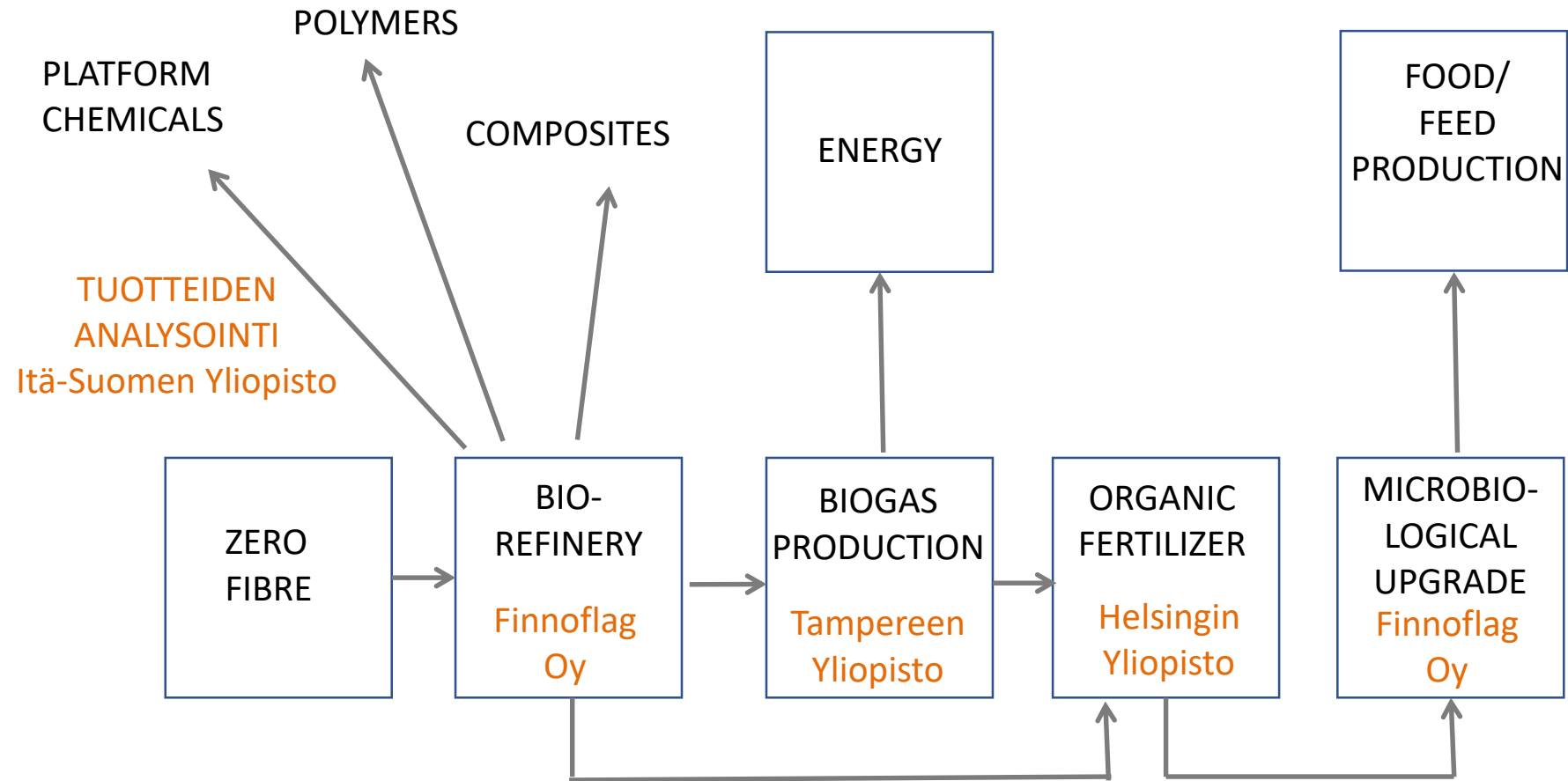
Lähde: Maanmittauslaitos



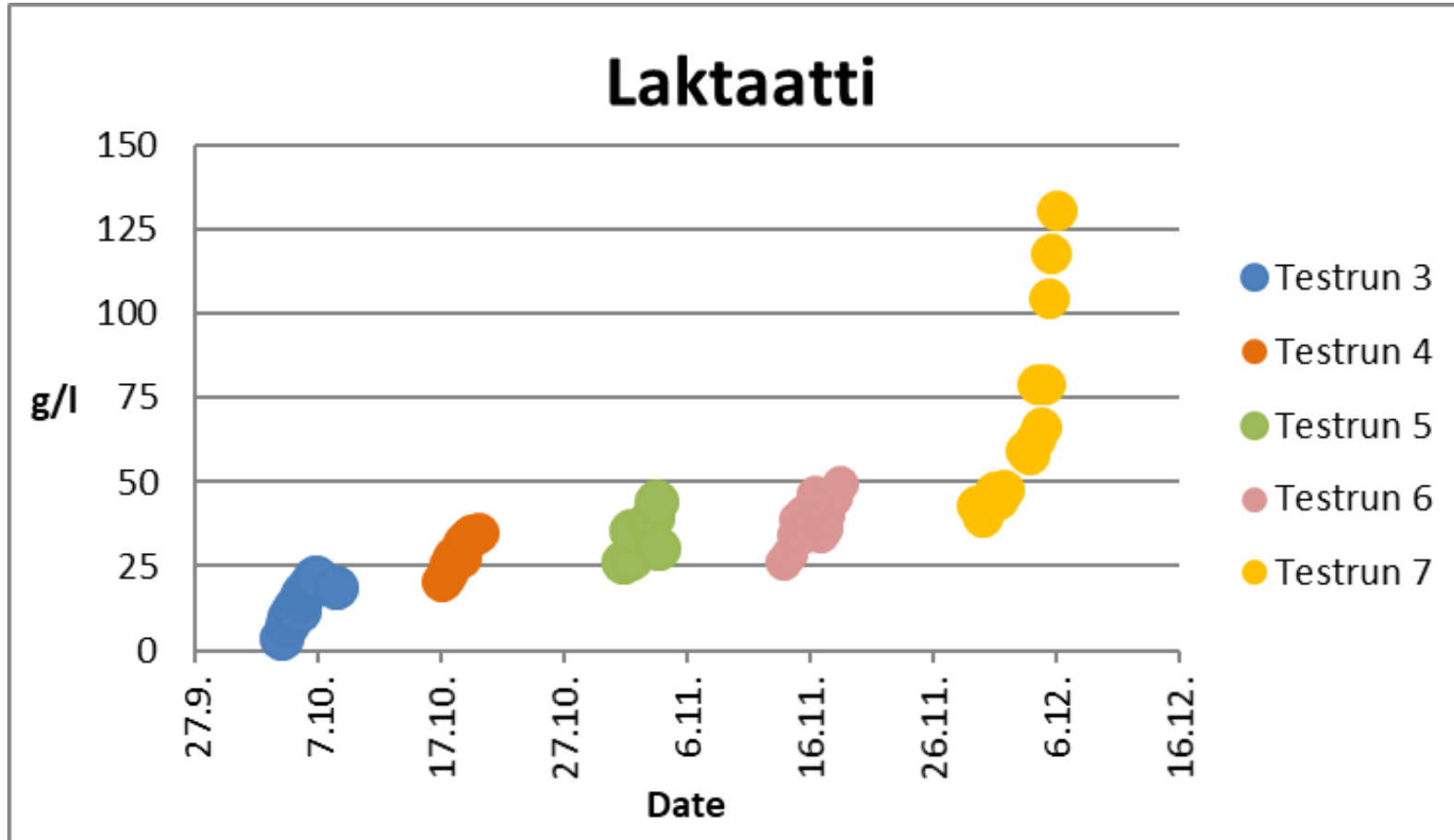
TUOTTEIDEN
PUHDISTUS
Mälardalen
University

HIEDANRANTA TAMPERE 2018

ELY-CENTRE: SININEN BIOTALOUS- PROJECT

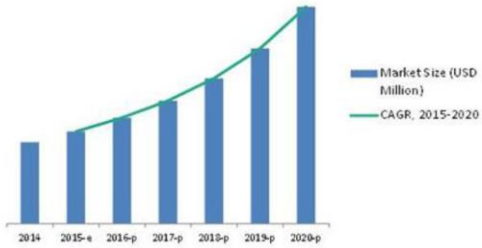


ESIMERKKI TULOXSISTA



Microbes and their enzymes facilitate new industrial revolution: BIOREFINERIES

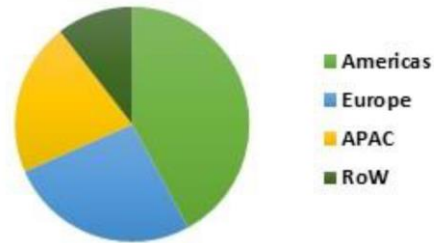
Lactic Acid Market Size, by Region, 2013 - 2020 (USD Million)



E - Estimated; P - Projected

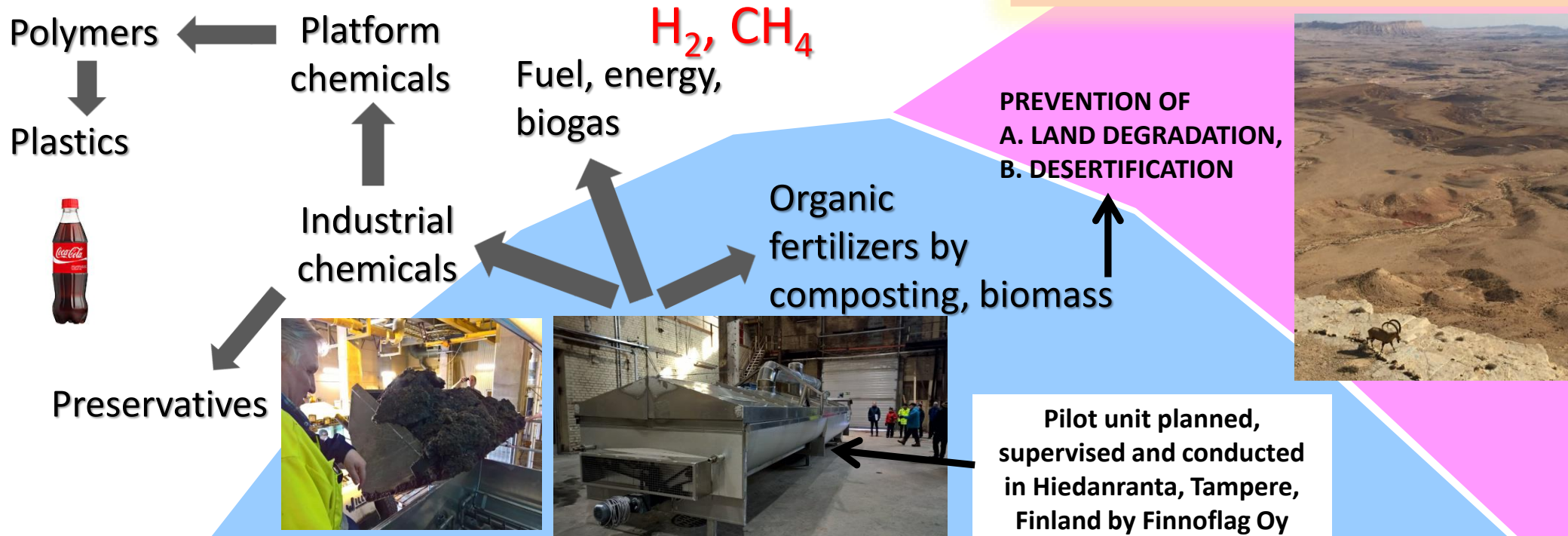
Source: Related Research Publications, Government Publications, Company Press Releases, Company Annual Reports, Company Websites, Company Publications, and MarketsandMarkets Analysis

Lactic Acid Market, By Geography (%)



Source: IndustryARCAnalysis, Expert Insights

- ETHANOL IS IMPORTANT FOR FUEL
- n-BUTANOL 9.9 B USD (2020)
- ACETONE 7.33 B USD (2026)
- 2,3-BUTANEDIOL 2.08 B USD (2018)
- PROPIONIC ACID 1.53 B USD (2020)
- LACTIC ACID (current price about 1500 USD/tn, value of 400 tn production 0.6 B USD)
- BUTYRIC ACID 0.29 B USD (2020)
- MANNITOL US MARKET 50 M USD (2023)
- ETC. ETC.



Dos Elias Hakalehto, Finnoflag Oy 15.3.2019