



Viridia Bio-Refinery Project

Louisiana Agricultural Technology & Management Conference

19 February 2016

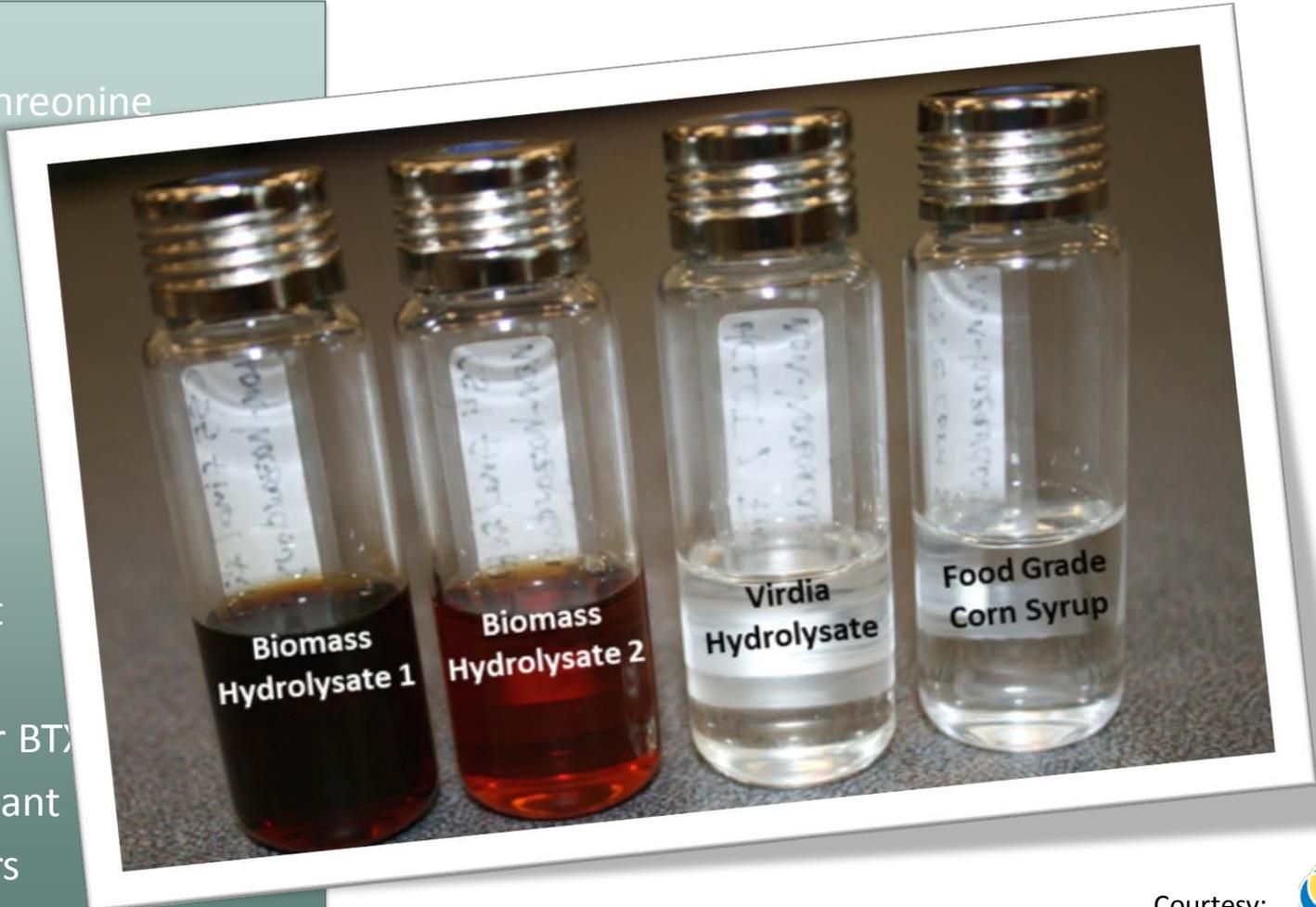
Bio-refining is critical link in the value chain of the bio-economy

Threshold entry requirements:

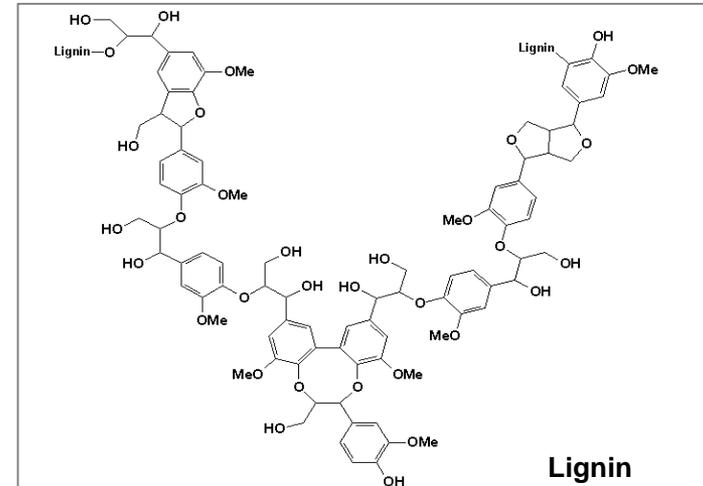
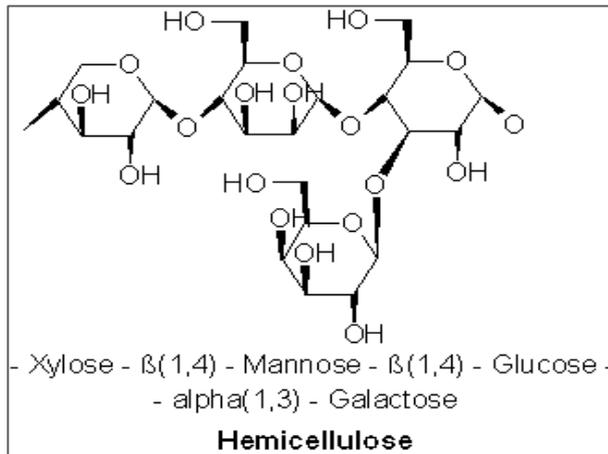
- Chemical grade quality:
 - High purity (99+%)
 - Controlled chemical structure
- Cost competitive
- Volume fit with market
- Scalability
- Environmentally sustainable

Chemical grade SPECS

Lactic Acid
Lysine and Threonine
p-xylene
PHA
Succinic acid
Ethanol
Jet Fuel
Diesel
Xylitol
Bakers' Yeast
Butanol
feedstock for BTX
Flame retardant
Carbon Fibers
graphite products



Biomass is a complex composite

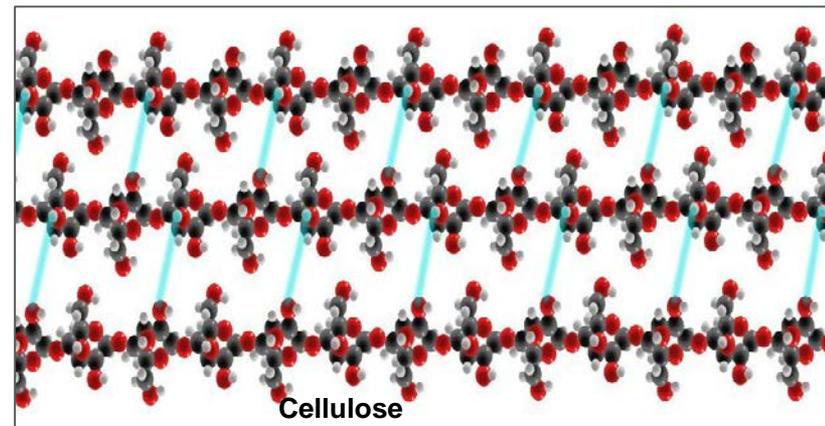


Order of extraction:

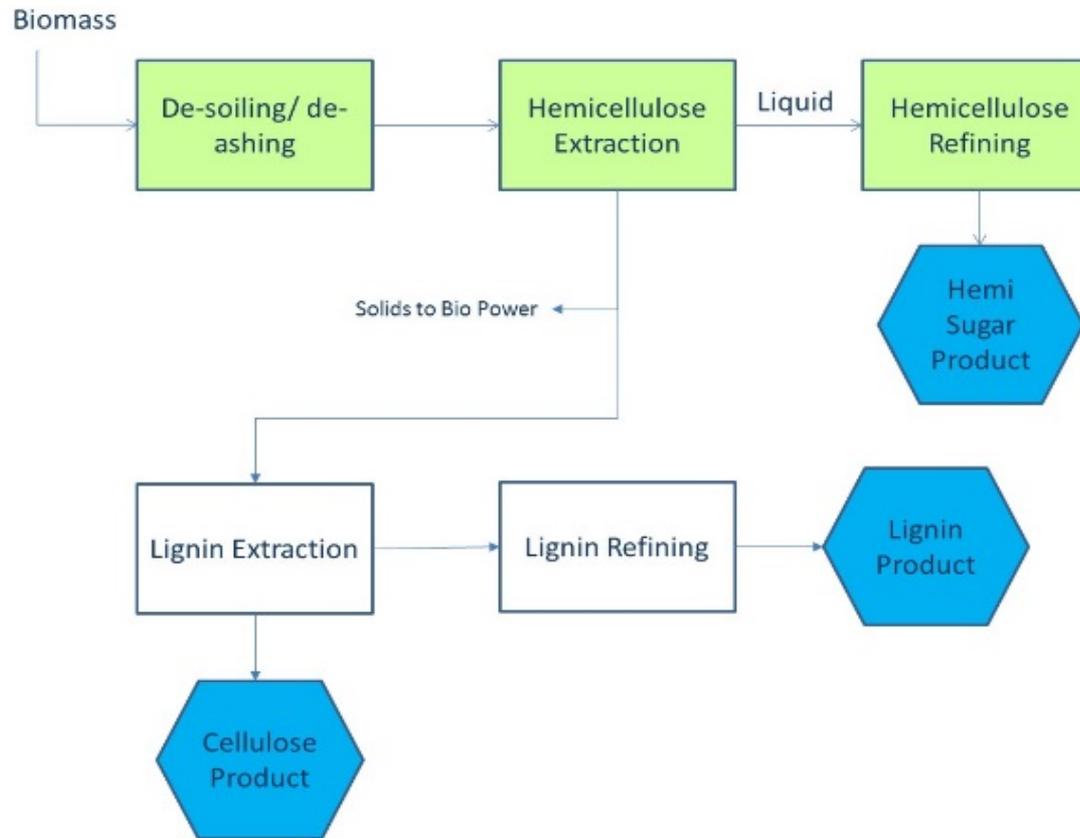
Hemicellulose

Lignin

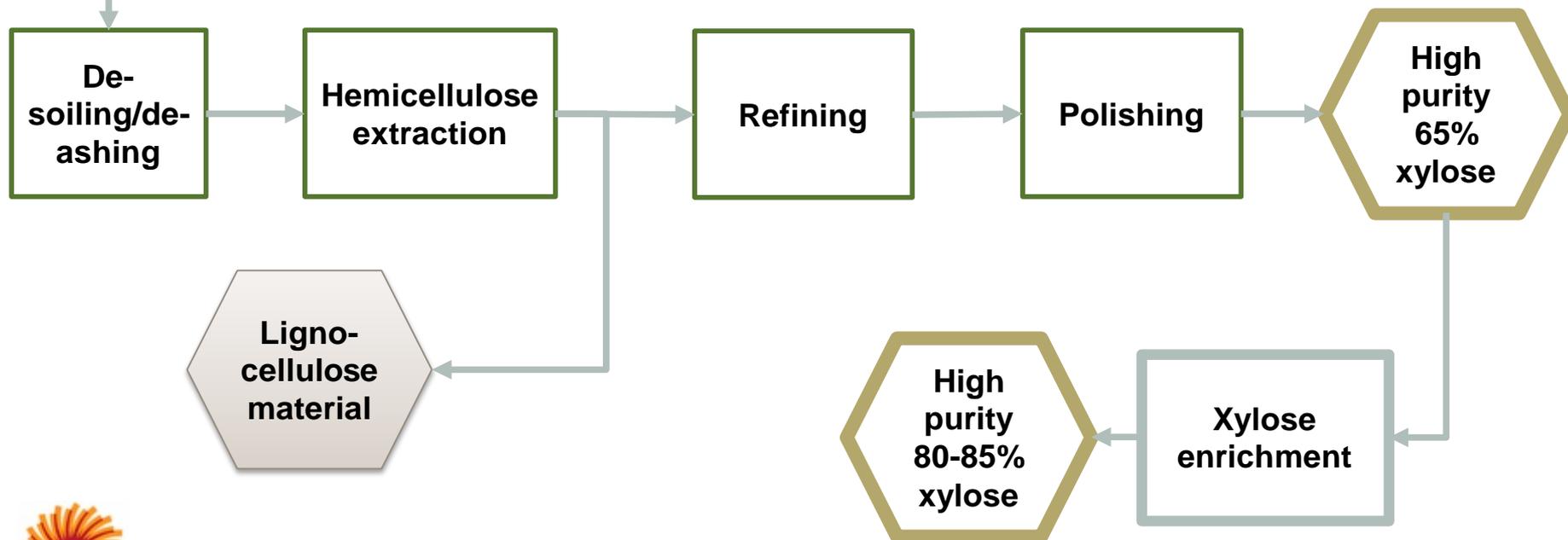
Cellulose



The Virdia Process has multiple platforms for product flexibility



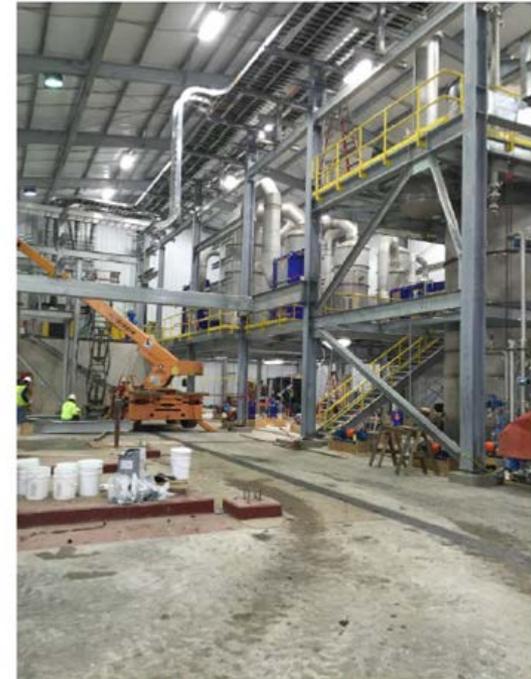
Platform 1 – currently in construction at the RRS site



Raceland plant construction on target for June 2016 start



Main plant area

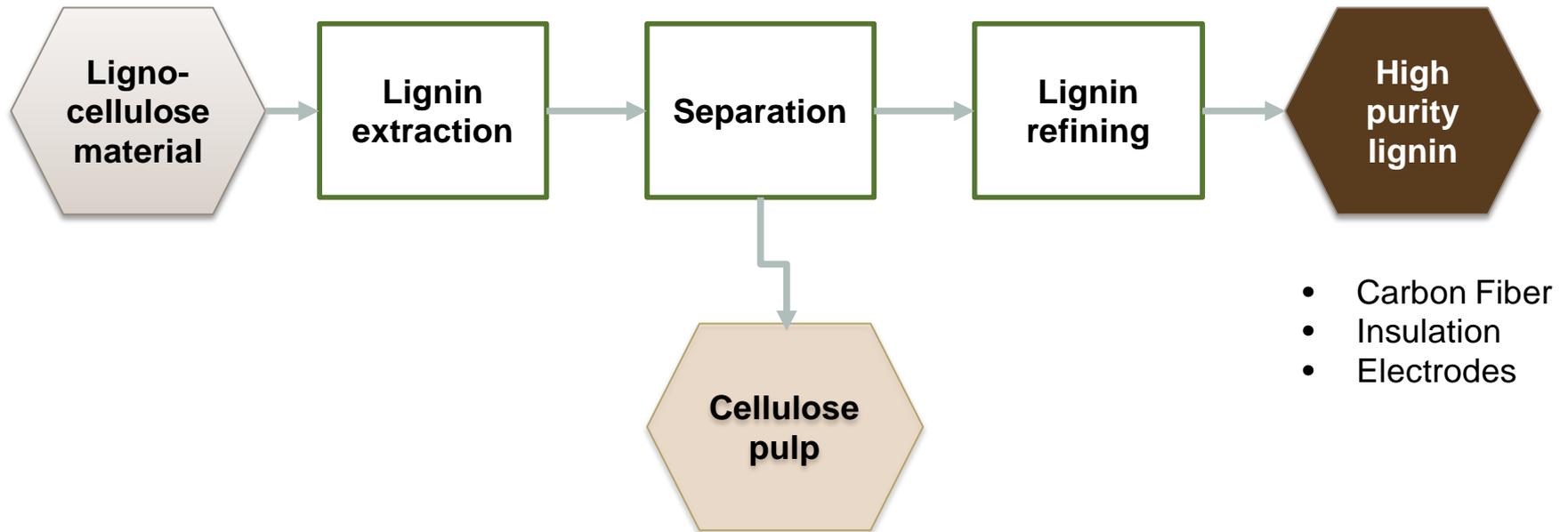


Main process building

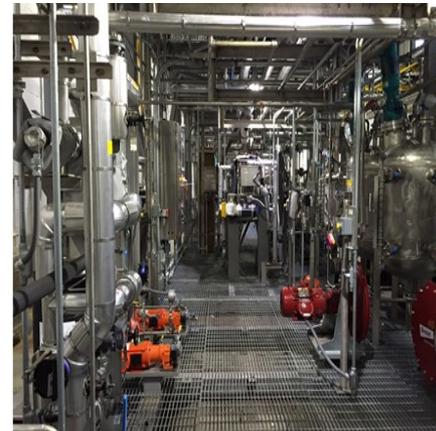
Danville, Virginia - Process Development Center



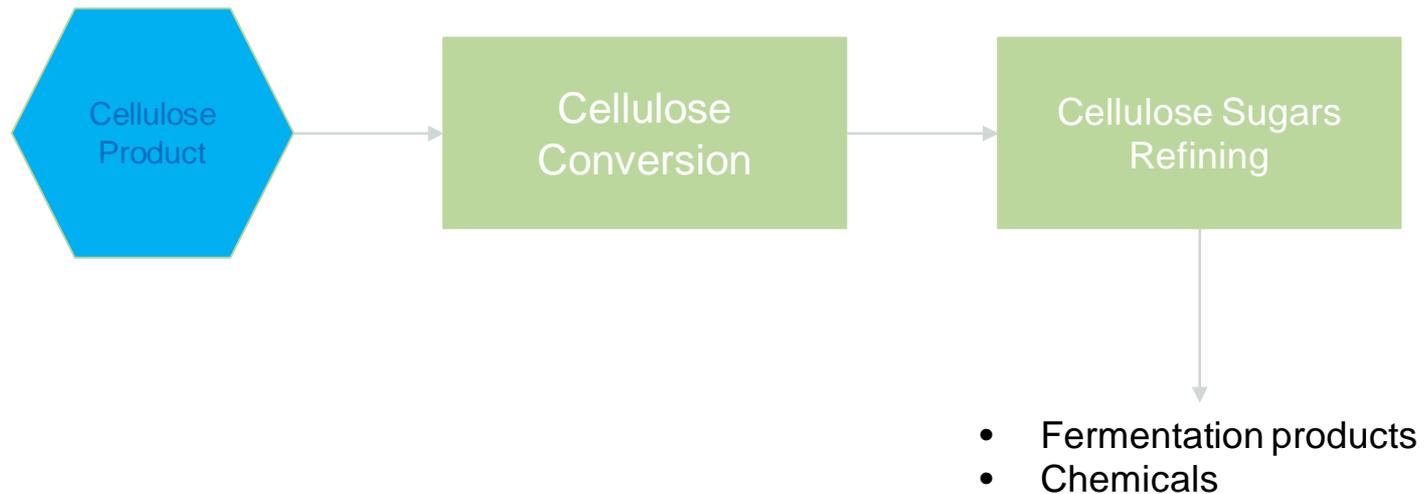
Platform 2 – scale-up is in final stages in Danville



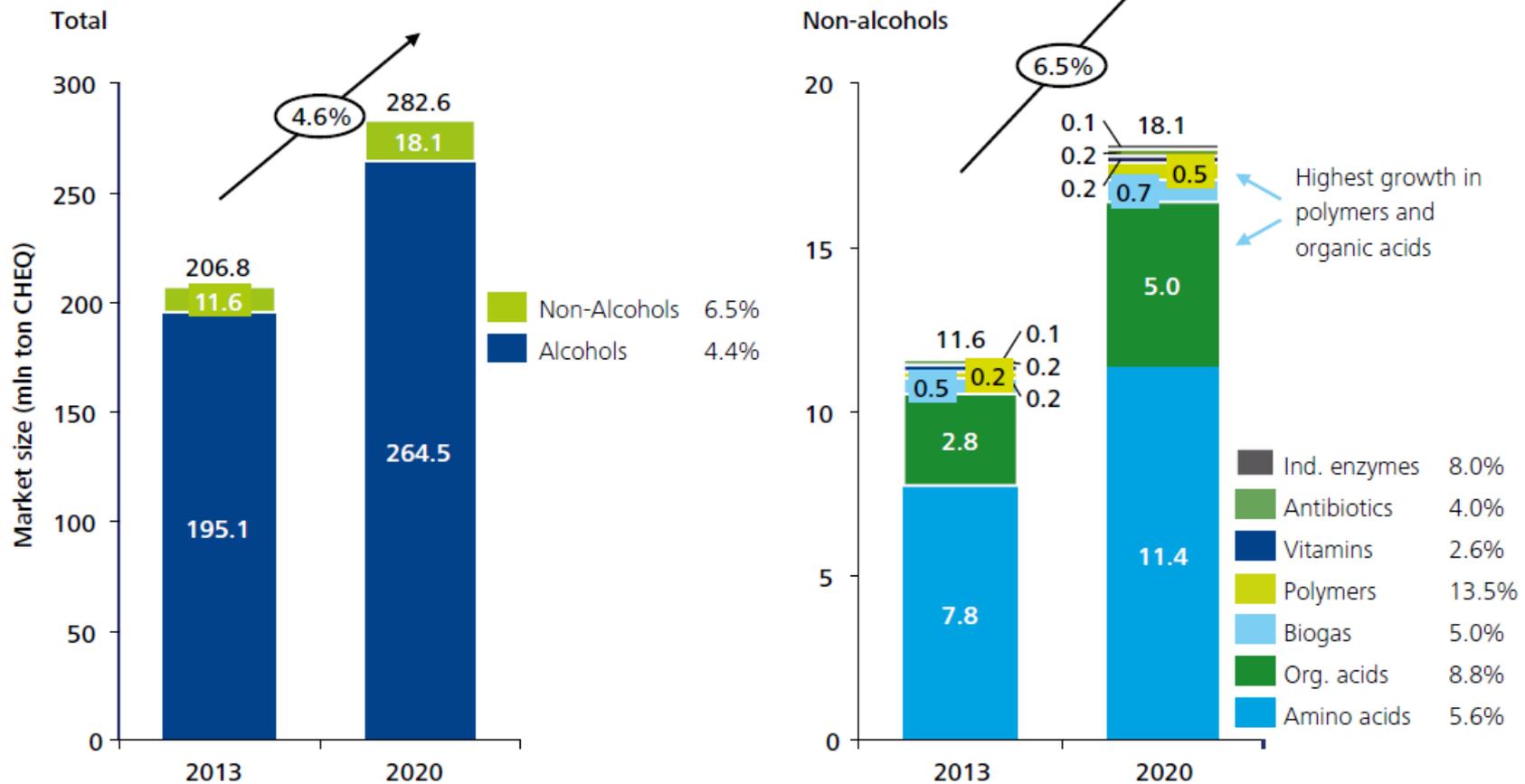
Lignin/cellulose separation system



Platform 3 – in the development stage



Products made by fermentation of carbohydrates



Developing Technologies – our core strength

- Successfully tested in Danville several tons of leaves
- Can now operate with bagasse and leaves as feedstocks
- Field trials for leaves collection planned for next campaign
- Our team working jointly with the Raceland Team



From the sugar cane fields to high value products – New economy, utilizing waste

Hemicellulose products



Cellulose products



Lignin products

