

Assessment of advanced biorefinery concepts integrated into existing industrial complexes

Bioethanol Sector

Laura Bermúdez López
Düsseldorf, 9th June 2010

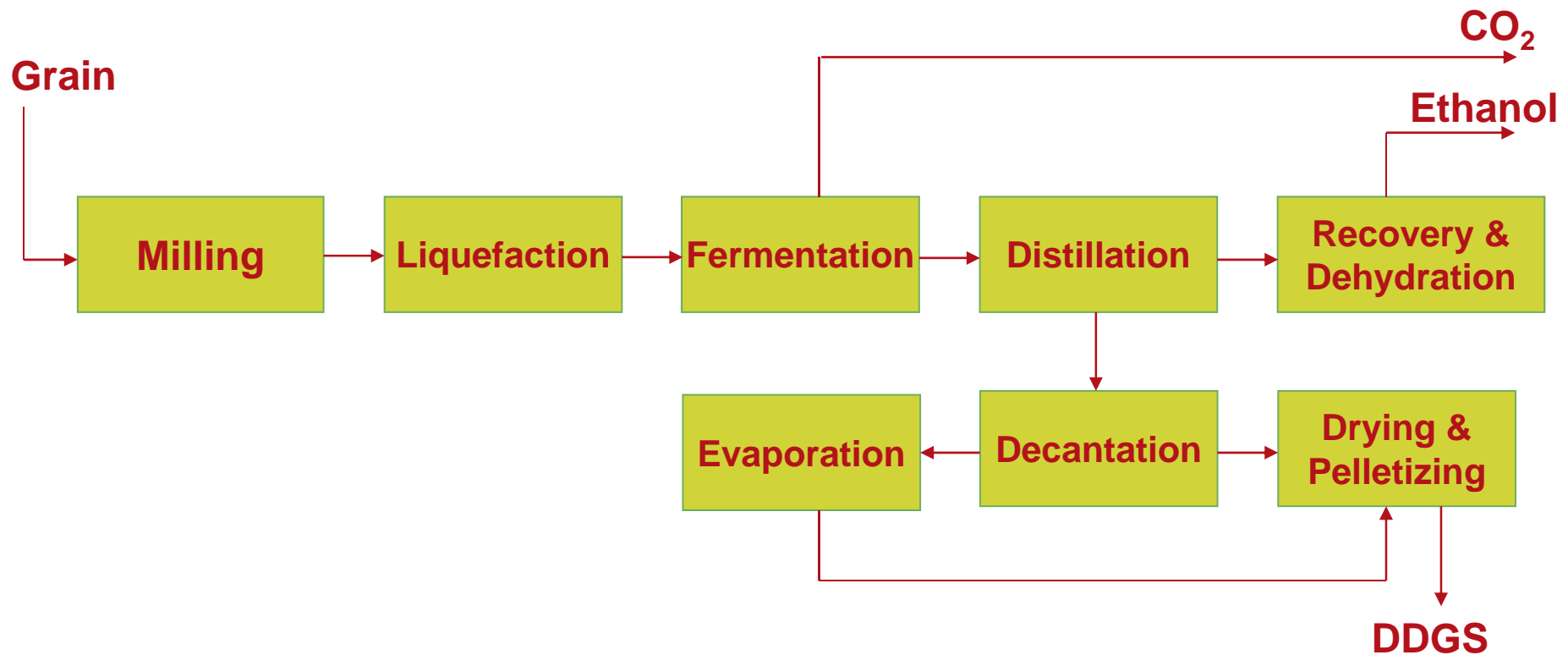
Contents

- 1. Base Case definition**
- 2. Integrated cases**
- 3. Results of techno-economic evaluation**
- 4. Technical and Commercial feasibility**
- 5. Conclusions and perspectives**
- 6. Questions?**



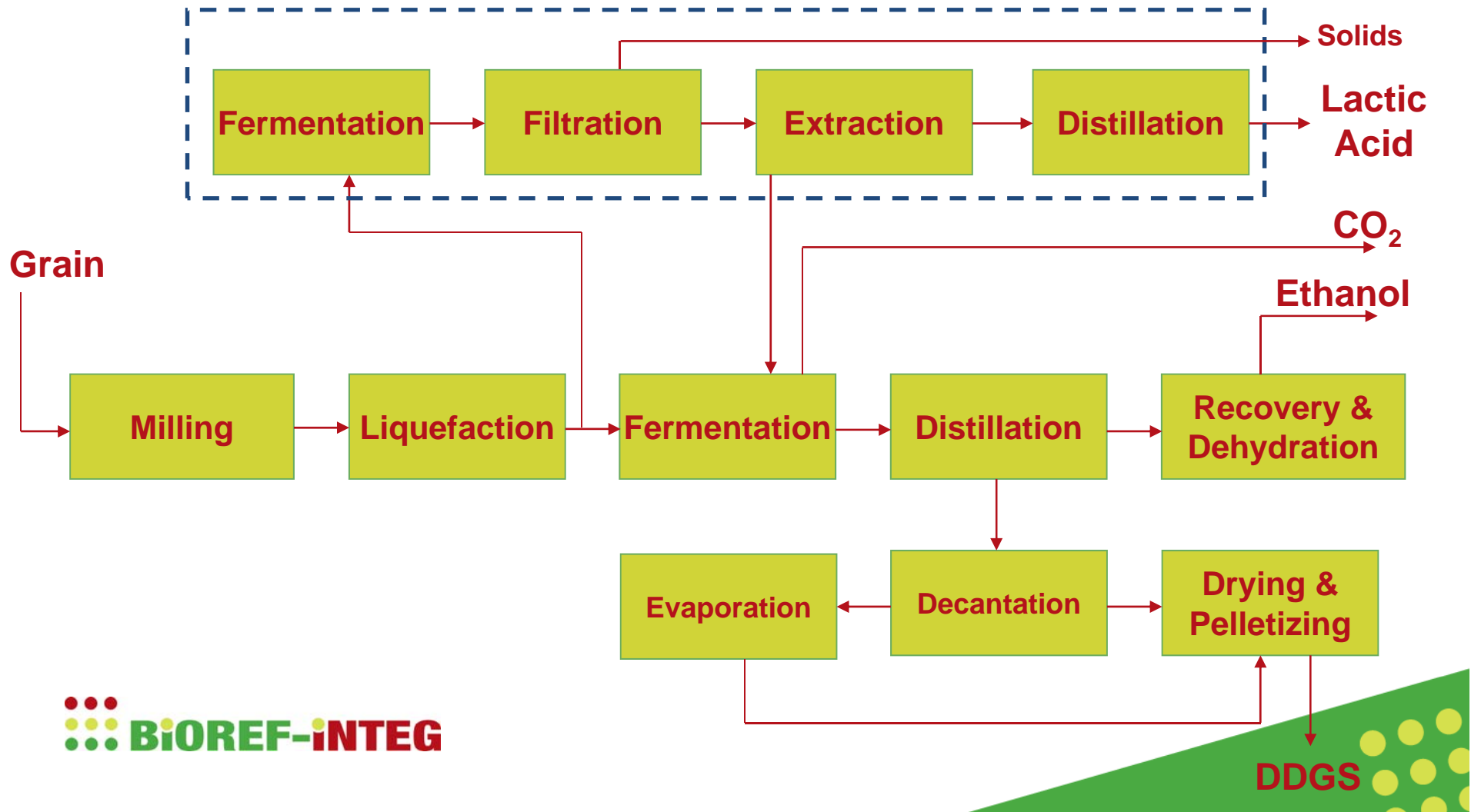
1. Base Case definition

Conventional Grain to Ethanol Plant



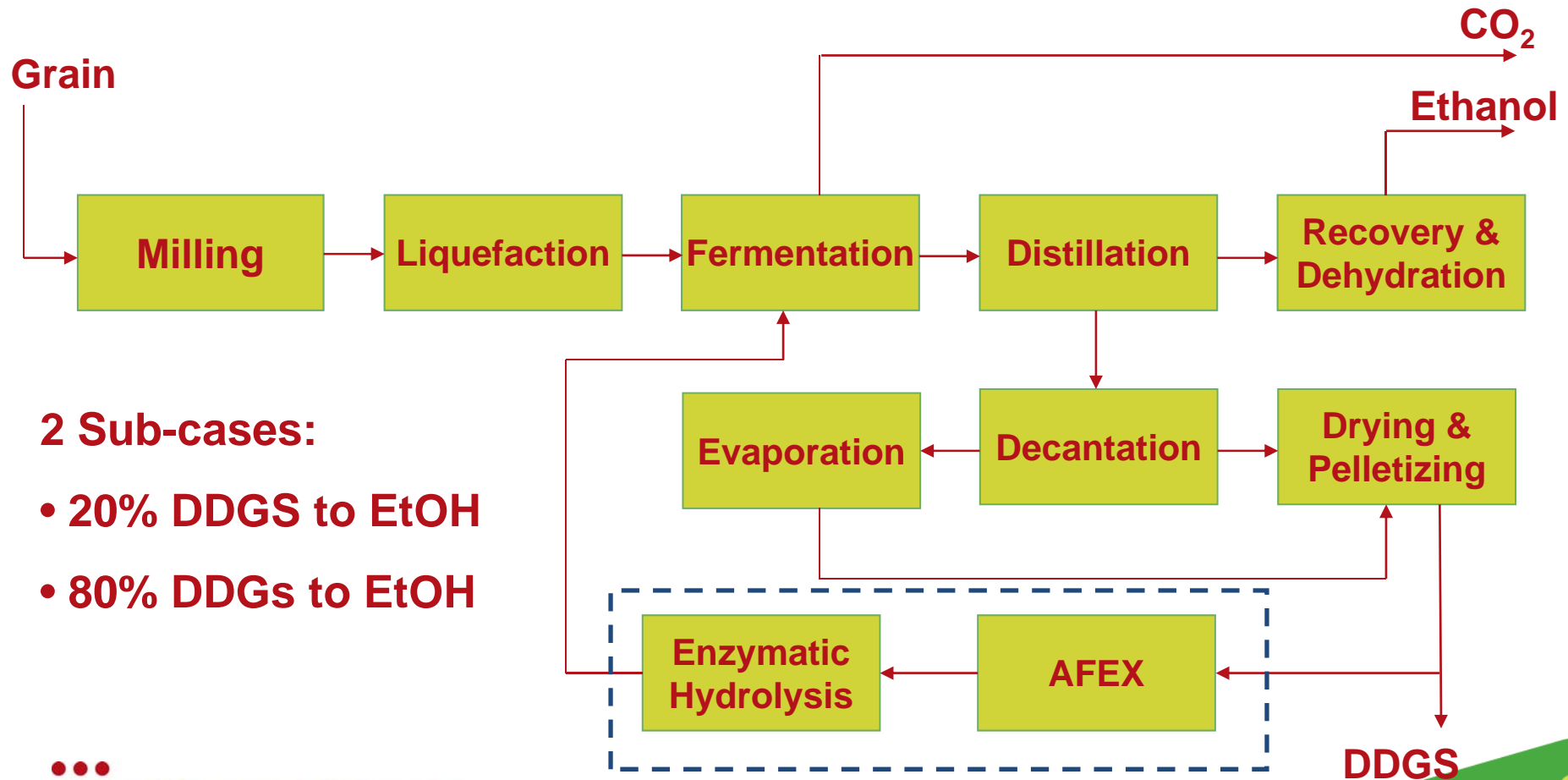
2. Integrated Cases

Lactic Acid Production from C6 sugars



2. Integrated Cases (II)

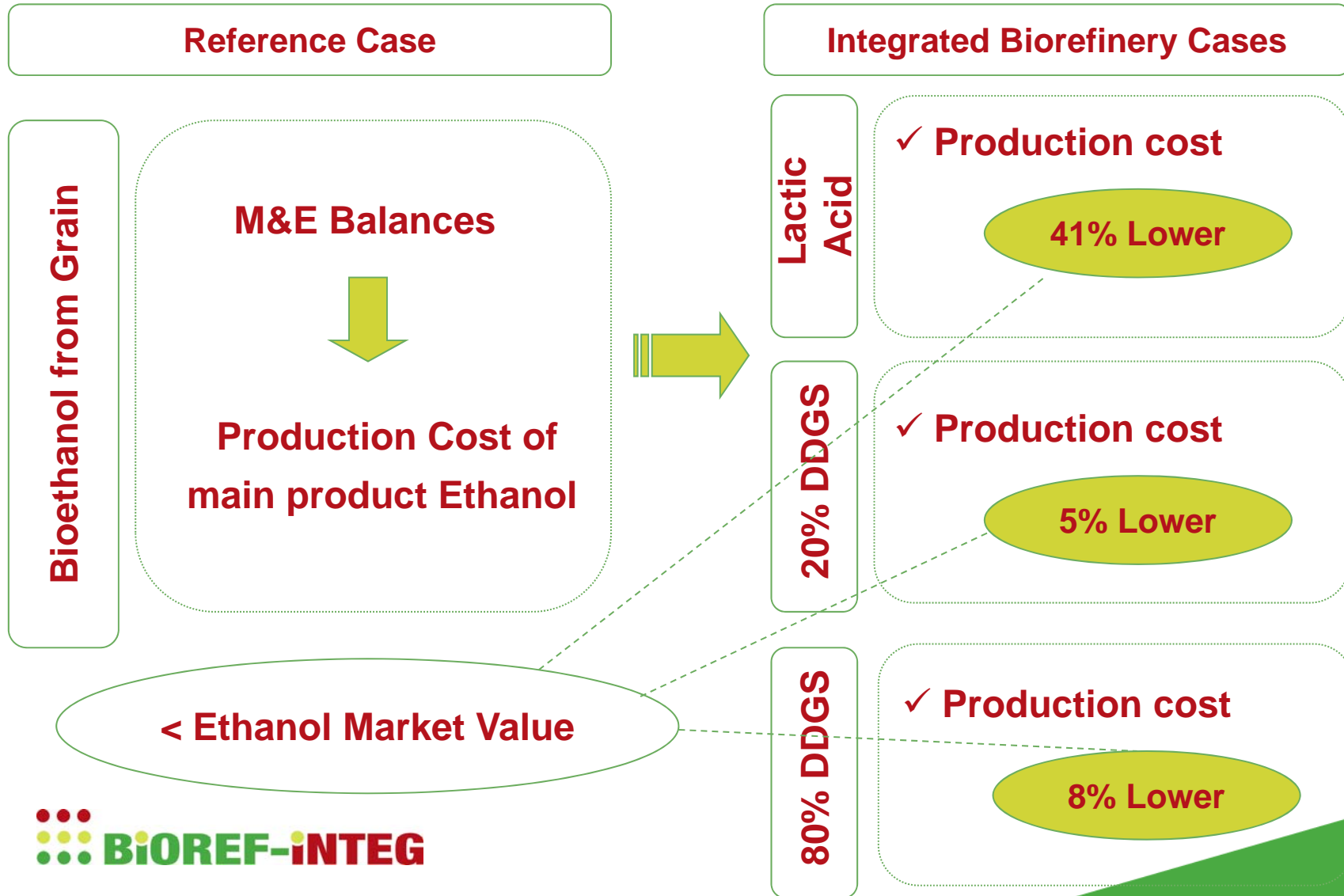
Ethanol Production from DDGS via AFEX Pre-treatment



2 Sub-cases:

- 20% DDGS to EtOH
- 80% DDGs to EtOH

3. Results of techno-economic evaluation



4. Technical and Commercial feasibility

	Technical feasibility	Commercial feasibility	SWOT Analysis
Lactic Acid	> Average	< Average	<p>S: Economic & Strategic Value</p> <p>W: Technological Challenge. Costs.</p> <p>O: Market, Raw material, Investors</p> <p>T: Food directive, CapEx</p>
DDGS	< Average	Average	<p>S: More value out of feedstock</p> <p>W: High cost. Immature status.</p> <p>O: New markets for ↑ quality product</p> <p>T: AFEX DDGS not yet accepted</p>



5. Conclusions and Perspectives

➤ In general, integration of an existing Bioethanol plant into the hereby presented Biorefinery Concepts leads to an increase of its competitiveness from an economic point of view...

 ... specially in the case of Lactic Acid production

- Lactic Acid production offers high potential in terms of technical feasibility
- DDGS concept offers higher commercial feasibility than Lactic Acid
- Weaknesses and Threats are nowadays limiting for industrial implementation of such concepts



6. Questions?

Thank you for your attention!

