



## LEAF RESOURCES LIMITED

Sustainable products from plant biomass

21 October 2015  
Australian Securities Exchange Announcement

### Leaf Resources presents at the 6<sup>th</sup> Annual Australian Microcap Investment Conference

**Leaf Resources Limited (ASX: LER)** ("Leaf Resources") is pleased to announce that its Managing Director, Ken Richards, will present at the 6<sup>th</sup> Annual Australian Microcap Investment Conference ("Microcap Conference") on Wednesday, 21 October 2015 at 2.15pm.

The Microcap Conference is being held in Melbourne, over two days at the Sofitel Melbourne on Collins, in the 'Arthur Street on Auditorium'.

Leaf Resources' presentation for the Microcap Conference is attached.

#### **About Leaf Resources Ltd (ASX: LER)**

Leaf Resources is commercialising the Glycell™ process.

The Glycell™ Process is an innovative technology that uses a low cost, recyclable, biodegradable reagent glycerol, in a simple process that breaks down plant biomass into lignin, cellulose and hemicellulose at low temperature and pressure. The cellulose is then converted to cellulosic sugars through enzymatic hydrolysis and the lignin, hemicellulose and glycerol become valuable co-products.

Cellulosic sugars are a major feedstock for green, renewable biobased chemicals, bioplastics and biofuels, products whose markets are multi \$billions and fast growing. Many biobased products can now economically replace petroleum based products.

The Glycell™ process can produce cellulosic sugars at under \$50 per tonne when co-products are included. This compares with \$220 per tonne for sugars produced from the conversion of corn starch, the cheapest alternative and \$280 per tonne for raw sugar.

By dramatically reducing the cost of the main feedstock for bio based chemicals, plastics and biofuels, the Glycell™ process has the potential to change the face of global renewable production.

#### **Contacts:**

Ken Richards (Managing Director)  
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# GAME CHANGER FOR RENEWABLE CHEMICALS MARKET

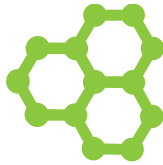
OCTOBER 2015

# FORWARD LOOKING STATEMENTS

*This presentation does not constitute, or form part of, an offer to sell or the solicitation of an offer to subscribe for or buy any securities, nor the solicitation of any vote or approval in any jurisdiction, nor shall there be any sale, issue or transfer of the securities referred to in this presentation in any jurisdiction in contravention of applicable law. Persons needing advice should consult their stockbroker, bank manager, solicitor, accountant or other independent financial advisor.*

*Certain statements made in this presentation are forward-looking statements. These forward looking statements are not historical facts but rather are based on Leaf Resources current expectations, estimates and projections about the industry in which Leaf Resources operates, and its beliefs and assumptions. Words such as “anticipates,” “expects,” “intends,” “plans,” “believes,” “seeks,” “estimates,” “guidance” and similar expressions are intended to identify forward-looking statements. and should be considered an at-risk statement. Such statements are subject to certain risks and uncertainties, particularly those risks or uncertainties inherent in the process of developing technology and in the endeavour of building a business around such products and services. These statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties and other factors, some of which are beyond the control of Leaf Resources, are difficult to predict and could cause actual results to differ materially from those expressed or forecasted in the forward-looking statements. Leaf Resources cautions shareholders and prospective shareholders not to place undue reliance on these forward-looking statements, which reflect the view of Leaf Resources only as of the date of this presentation. The forward-looking statements made in this presentation relate only to events as of the date on which the statements are made. Leaf Resources will not undertake any obligation to release publicly any revisions or updates to these forward-looking statements to reflect events, circumstances or unanticipated events occurring after the date of this presentation except as required by law or by any appropriate regulatory authority.*

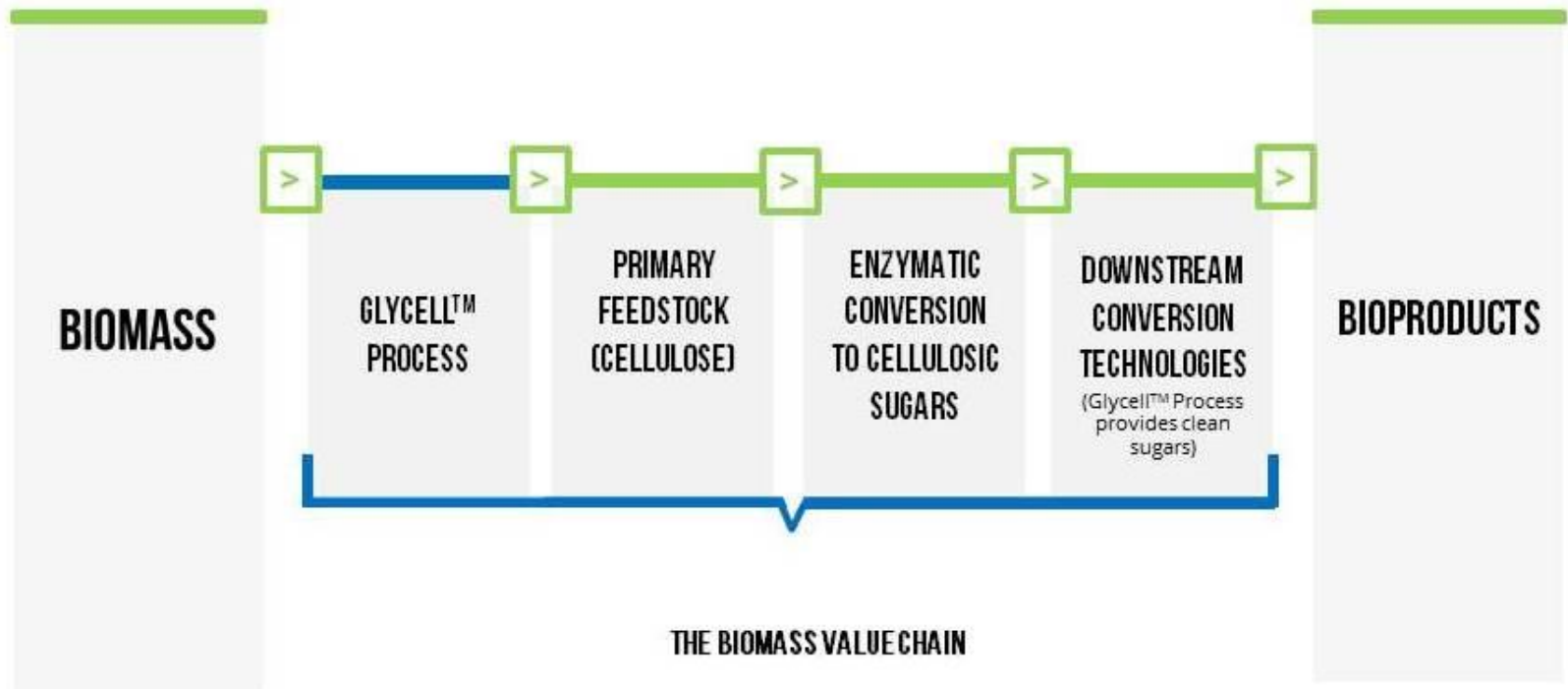
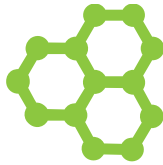
# GLYCELL™ PROCESS OVERVIEW



- *We make sugar<sup>1</sup> from plant biomass.*
- *Sugar is the key feedstock for renewable chemicals & plastics – fast growing markets*
- *Production cost estimated at under \$50/tonne (closest competitor<sup>2</sup> \$220/t).*
- *Low cost enables the replacement of many petroleum based chemicals and plastics.*
- *Highly scalable and versatile (multiple types of biomass)*
- *Renewable chemicals project can deliver after tax IRR of 81% (NPV of \$720m)*

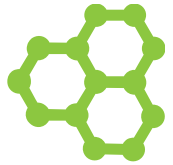
***Glycell™ process has the potential to change the face of global renewable production (Edison Research)***

# BIOREFINING A NEW INDUSTRY



*The industrialisation of biology will be as important in the next 50 years as semiconductors have been to economic growth over the last 50 yrs.<sup>1</sup>*

# BIOPRODUCTS MARKETS GROWING

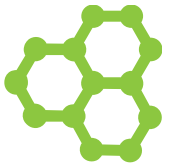


- **Renewable chemicals**
  - 22% of \$2 trillion chemical market by 2025<sup>1</sup>
  - Dupont, Proctor and Gamble – 25% of sales by 2020
  - Virtually all petroleum derived chemicals can be made from biomass
- **Bio-plastics**
  - Currently 3.5 Mt<sup>1</sup> \$2 billion<sup>2</sup> market in 2011
  - Fossil based plastics - 265 Mt (75 times larger)<sup>1</sup>
  - 80% -90% of plastics and polymers can be biobased<sup>1</sup>
- **Biofuels** - \$83 billion<sup>3</sup> market 2011 growing to \$185 billion<sup>1</sup> in 2021

<sup>1</sup> USA Department of Agriculture <sup>2</sup> Morgan Stanley

<sup>2</sup> Deloitte & Corelli “Economic Impact of a future tropical biorefinery industry in Queensland” <sup>3</sup> Pike Research

# What does the market think about this?



*"We are working to completely eliminate the use of nonrenewable fossil fuels in our plastic bottles while maintaining quality and recyclability"*



*"Reducing the environmental impact of packaging: we will be developing partnerships with 2<sup>nd</sup> and 3<sup>rd</sup> generation bioplastics manufacturers"*



*"Using 100% renewable or recycled materials for all products and packaging"*



**PEPSICO**

*"Reduce the carbon footprint of our operations"*



Unilever

*"Halve the greenhouse gas impact of our products across the lifecycle by 2020"*



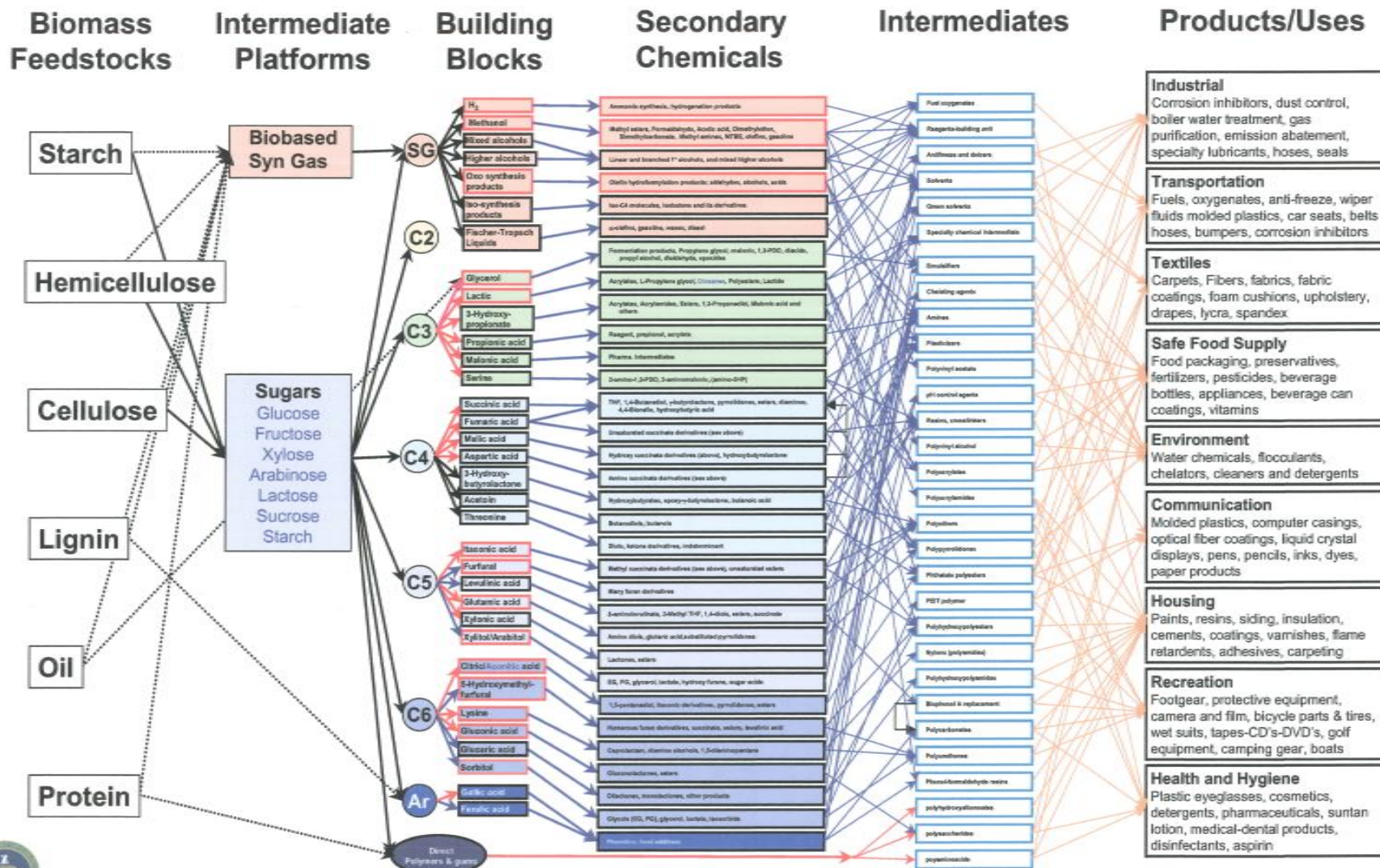
Nestlé

*"Leading in the development and use of packaging materials made from sustainably managed renewable resources such as bioplastics"*



*"Green. That's how we'd like the world to be. As an environmental leader, we do more than meet industry standards – we seek to raise them"*

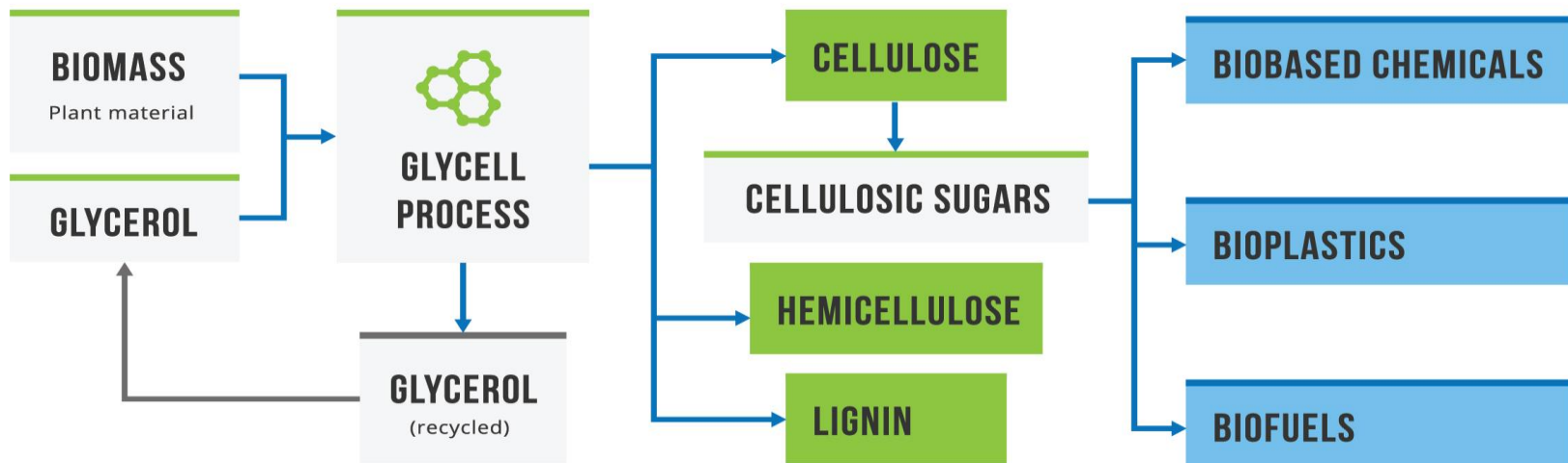
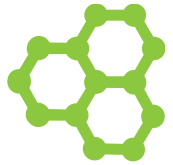




## Renewable chemicals from Biomass

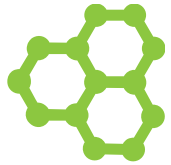


# GLYCELL™ PROCESS



*Glycell™ Process projected to have a 25% capital advantage over NREL dilute acid*

# THE GLYCELL™ PROCESS ADVANTAGES



The Glycell™ process has compelling advantages

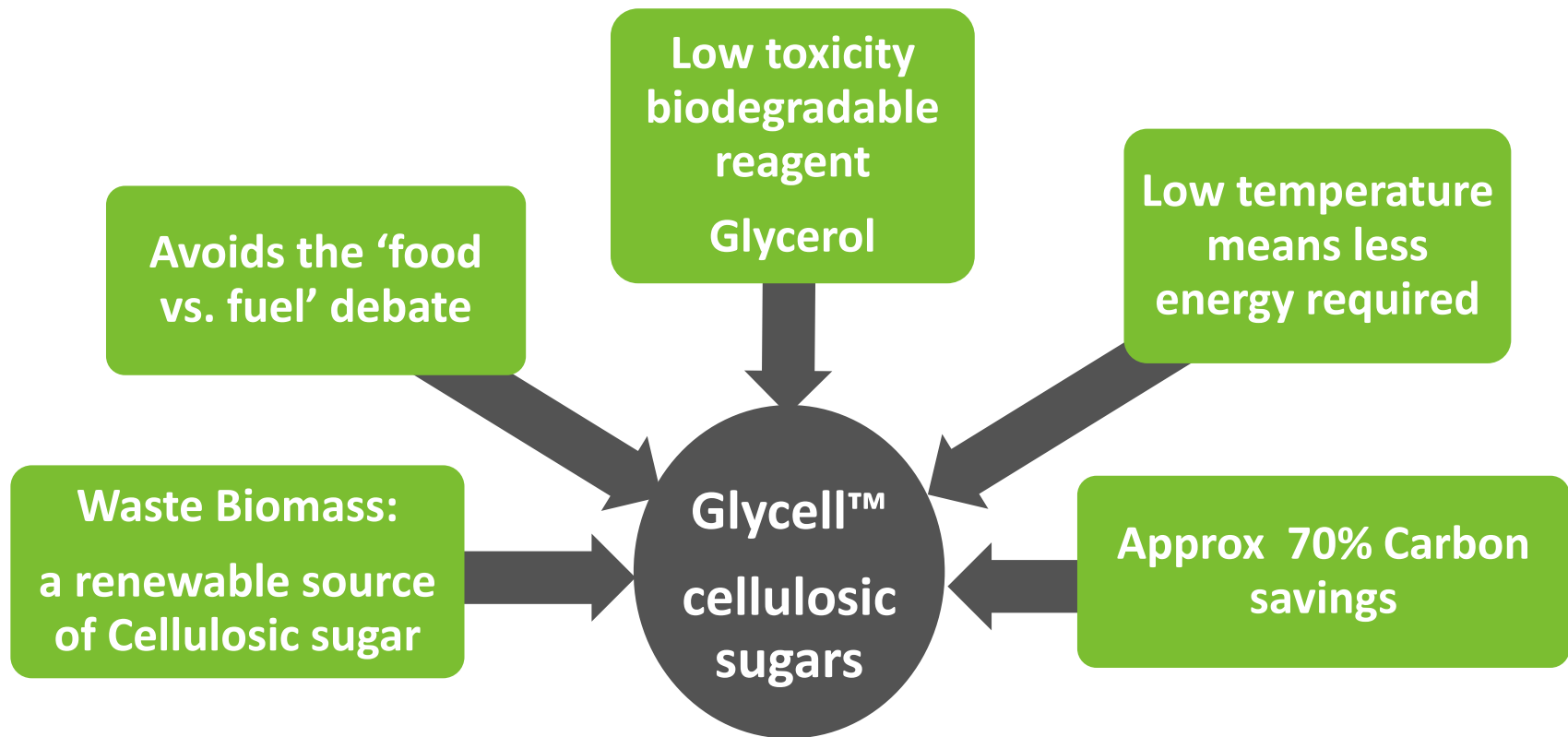
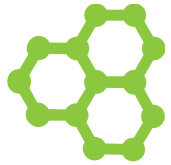
## Product benefits:

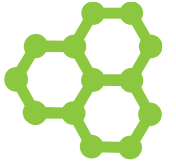
- *Low temperature and low pressure*
- *Benign reagent - Glycerol*
- *“Off the shelf” equipment*
- *Operates at any scale*
- *Quick & Continuous process*
- *Suitable for wide range of biomass*

## Economic benefits:

- *Significantly lower capital costs*
- *Significantly lower operating costs*
- *High Cellulose recovery 94%*
- *High conversion of Cellulose to Sugars 99 % in 6 hours (bagasse)*
- *Separate C5 sugars*
- *Lignin in usable form for chemicals*

# GLYCELL™ PROCESS ENVIRONMENTAL BENEFITS





# APPLIED TO A WIDE RANGE OF BIOMASS

Poplar



Bagasse



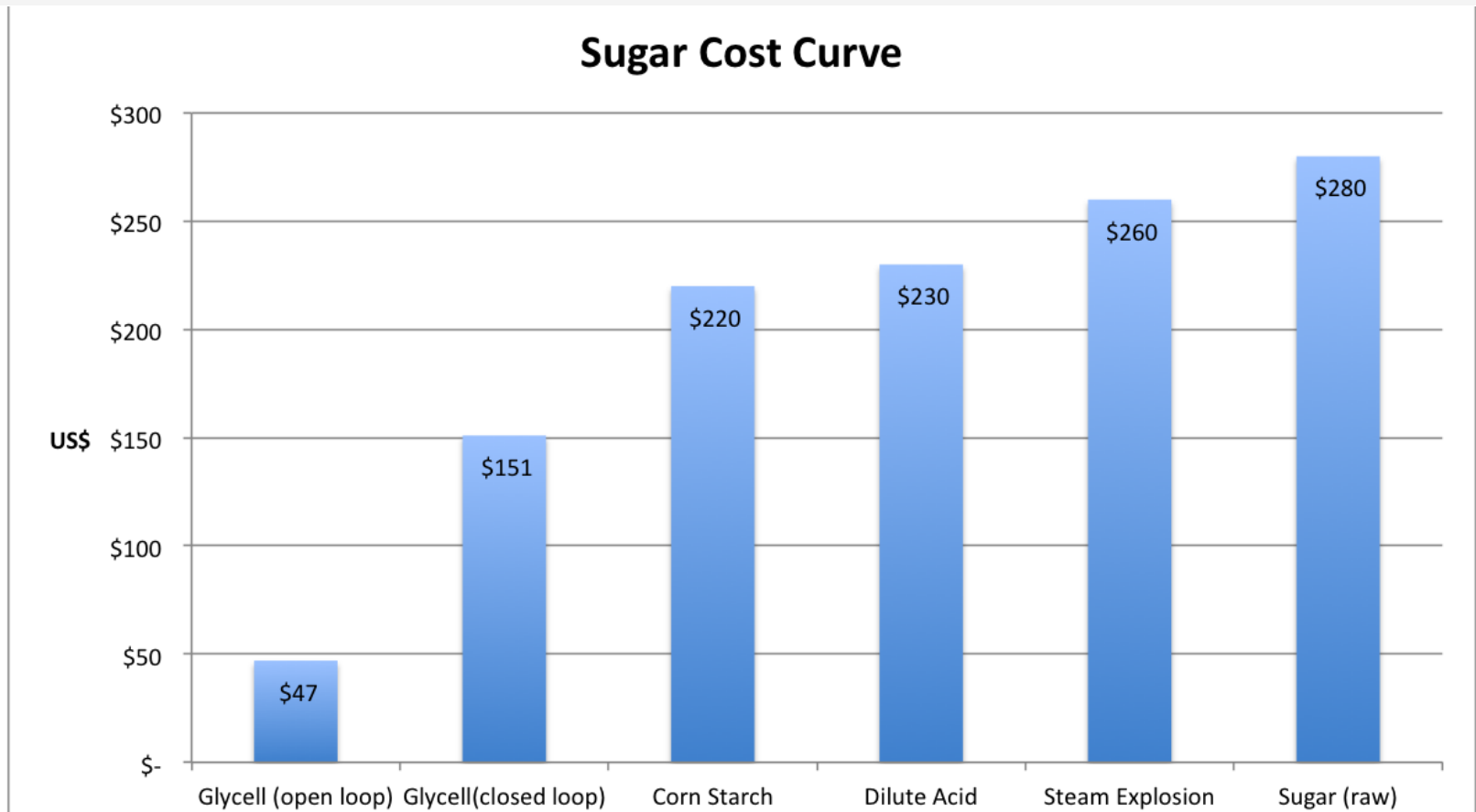
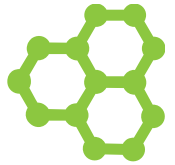
Eucalyptus



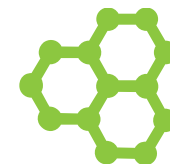
Empty fruit bunch fibre  
Oil Palm



# GLYCELL™ PROCESS CHEAP, CLEAN SUGARS



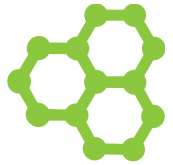




## **“Game-changer technology for bio-based products”**

- Glycell™ technology dramatically cuts the cost of producing cellulosic sugar from biomass,
- Glycell™ has the potential to change the face of global renewable production,
- The Glycell™ process has enormous valuation upside because of its potential global application.

# CURRENT MOU'S



- *Monaghan Biosciences*
  - *Bankable Feasibility study on project based on spent mushroom compost*
  - *Monaghan's Enzymes, Leaf's Glycell™ process*
  - *part of Monaghan Mushroom Group 2<sup>nd</sup> largest mushroom producer in world*
- *Norske Skog Australia*
  - *Investigate the use of Glycell™ to convert, Radiata Pine to cellulosic sugars and the subsequent conversion of those sugars to renewable chemicals.*
- *Large International Australian Agricultural company*
  - *Testing the agricultural waste with Glycell & work towards a feasibility study for a commercial operation in Australia.*
- *In discussion with over 15 companies*

# ROBUST PROJECT ECONOMICS



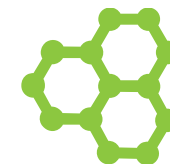
- **Results**

- NPV (after tax @10%) \$720m
- IRR after tax 81% pa
- Capital (green fields - worse case) \$229m

- **Key Assumptions**

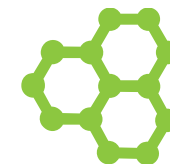
- Cellulosic sugars produced converted to “typical” Chemical via fermentation
- Biomass \$70 per BD tonne & scale 210,000 BDT pa
- Glycerol recovered & sold at higher value,
- Lignin revenue \$450/tonne
- Debt 60% at 8% interest
- Discount rate 10%
- 100% interest in project by Leaf Resources

# NEXT 18 MONTHS



- Finalise discussions for chemical conversion technologies
- Finalise sale contracts for chemical production
- Bankable feasibility for Monaghan project completed
- Stronger presence in USA but still listed on ASX
- Explore brownfield sites to reduce capital: e.g. newsprint mills + other possibilities
- Asian opportunities progressed – advantaged feed stocks
- License discussion progressed

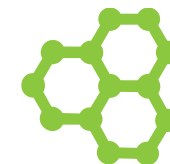
# QUALITY MANAGEMENT SUITED TO TASK



Ken Richards Managing Director	Track record in managing, growing and transitioning high growth ASX and private companies. As CEO of Norgard Clohessy Equity Ltd he took the company from a start up with capitalisation of \$60,000 to \$50M. (Bachelor of Commerce, MBA)
Alex Baker Chief Operating Officer	Over 20 years industry experience, science and technology commercialisation professional including waste stream value creation. CEO of Maverick Biosciences leading that company into the bio-medical product field. Bachelor and Masters degrees in science, biotechnology & technology management
Dr Les Eyde VP – R&D	25 years professional experience in research and development in Australia and in the US. Internationally recognised - since 2007 held the position of National Task leader, International Energy Agency, Bioenergy Task 39 – Commercialising Advanced and Conventional Liquid Biofuels from Biomass. PhD in carbohydrate chemistry, expertise in biofuels production processes and sustainable biomass supply.
Dr Marc Sabourin Executive VP – Business Development (Americas)	29 years professional experience in research & development, process engineering and project execution. Formerly held positions in process and research engineering in the pulp & paper industry, including senior roles at Andritz. Bachelor and Master's degrees in chemical engineering, Ph.D in science specialising in energy reduction mechanisms in thermo-mechanical pulping
Directors	Dr. Jay Hetzel (Chairman), Charles Wilson and Matthew Morgan



# LEAF RESOURCES LTD (LER) CAPITAL STRUCTURE AND SHAREHOLDINGS



<b>Ord Shares on Issue</b>	113.4m
<b>Options (10c exercise)</b>	5.0M
<b>Current Price</b>	\$0.165
<b>Market Cap</b>	\$18.7M
<b>Top 20 Shareholders</b>	54.0%
<b>Board &amp; Management</b>	25.4%
<b>Cash<sup>1</sup></b>	\$1.2m
<b>Enterprise Value</b>	\$17.5M



Source: ASX Trading Platform, 15<sup>th</sup> Oct 2015

A low cost entry into a world class sustainable technology