

Castor Oil Derivatives

Reaching the Next Orbit

Presented at: OFI India

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Mumbai, 19th May 2017

www.castoroil.in

***Castor Oil has less than 0.5% share
of the global vegetable oils market***

But it is unique among vegetable oils

*How can it add unique value to more markets
and products?*

About CastorOil.in

- Market research and consulting team for castor oil & derivatives
- Assisted companies, organizations and governments in making strategic decisions on castor derivatives
- Publish acclaimed reports and white papers
- www.castoroil.in is a popular web destination for the industry
- Team based out of Chennai, India

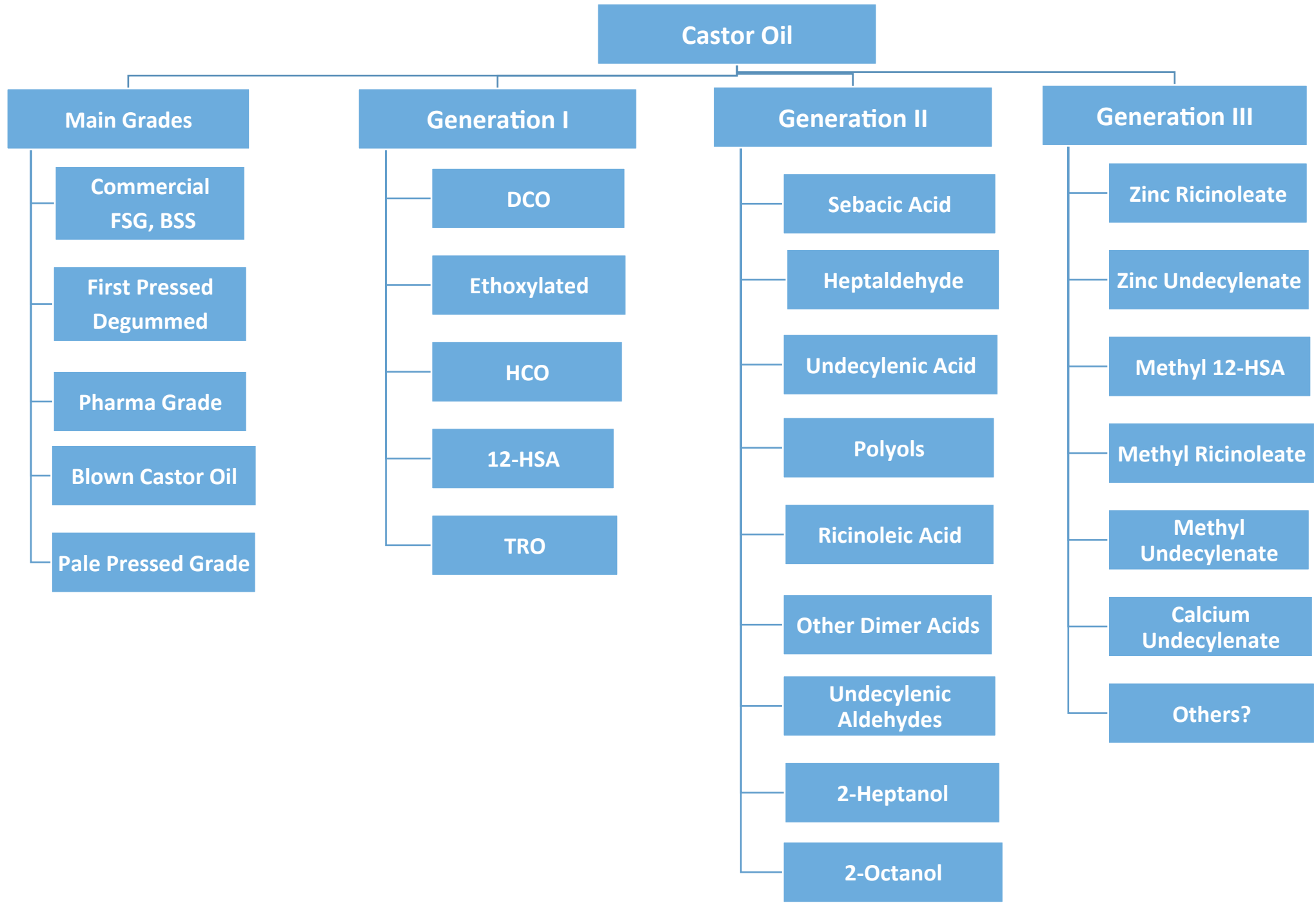
Presentation Topics

- **Current Status of Castor Oil Derivatives**
- **Where Can It Reach?**
- **Reaching New Heights**

CURRENT STATUS

Market Size (2016)

- **Global market size**
 - **\$2.3 Billion**
- **Basic grades and Gen I derivatives**
 - **\$1.3 billion** (0.6-0.75 million tons of oil per year)
- **Gen II derivatives**
 - **\$600 million**
- **Gen III derivatives**
 - **\$400 million**



Characteristics of Derivatives

Product Category	Type of Product	Margins
Basic grades	Commodity	V low (< 5%)
Gen I derivatives	Value Added Chemical	Low (5-10%)
Gen II derivatives	Value Added Chemical	Medium (10-20%)
Gen III derivatives	Specialty Chemical	Medium-High (%s quite variable, authentic data not available)

Market Segments for Castor Derivatives

Segments with significant short and medium term potential

- **Biopolymers**
- **Personal Care and Cosmetics**
- **Lubricants & Greases**
- **Textiles**
- **Paints, Inks & Coatings**

Other Segments

- Pharmaceuticals, Health & wellness
- Detergents
- Food
- Plastics & Rubber
- Other Specialty Oleochemicals

WHERE CAN IT REACH?

“New” Potential for Castor Oil Derivatives



Growth of Key End User Segments

Industry	Global Market Size	% Growth (CAGR)
Bioplastics	4.2 million tons (2016) – 75% durable bio-plastics	10% (2016-2020)
Biolubricants	\$1.9 billion (2015)	5.3% (2016-22)
Organic Personal Care Products	\$10.2 billion (2015)	13% (2016-21)
Organic Surfactants	0.36 million tons (2015)	5% (2015-23)
Green coatings	\$61 billion (2012), est \$86 B (2018)	6% (2012-18)

Emerging & New Uses

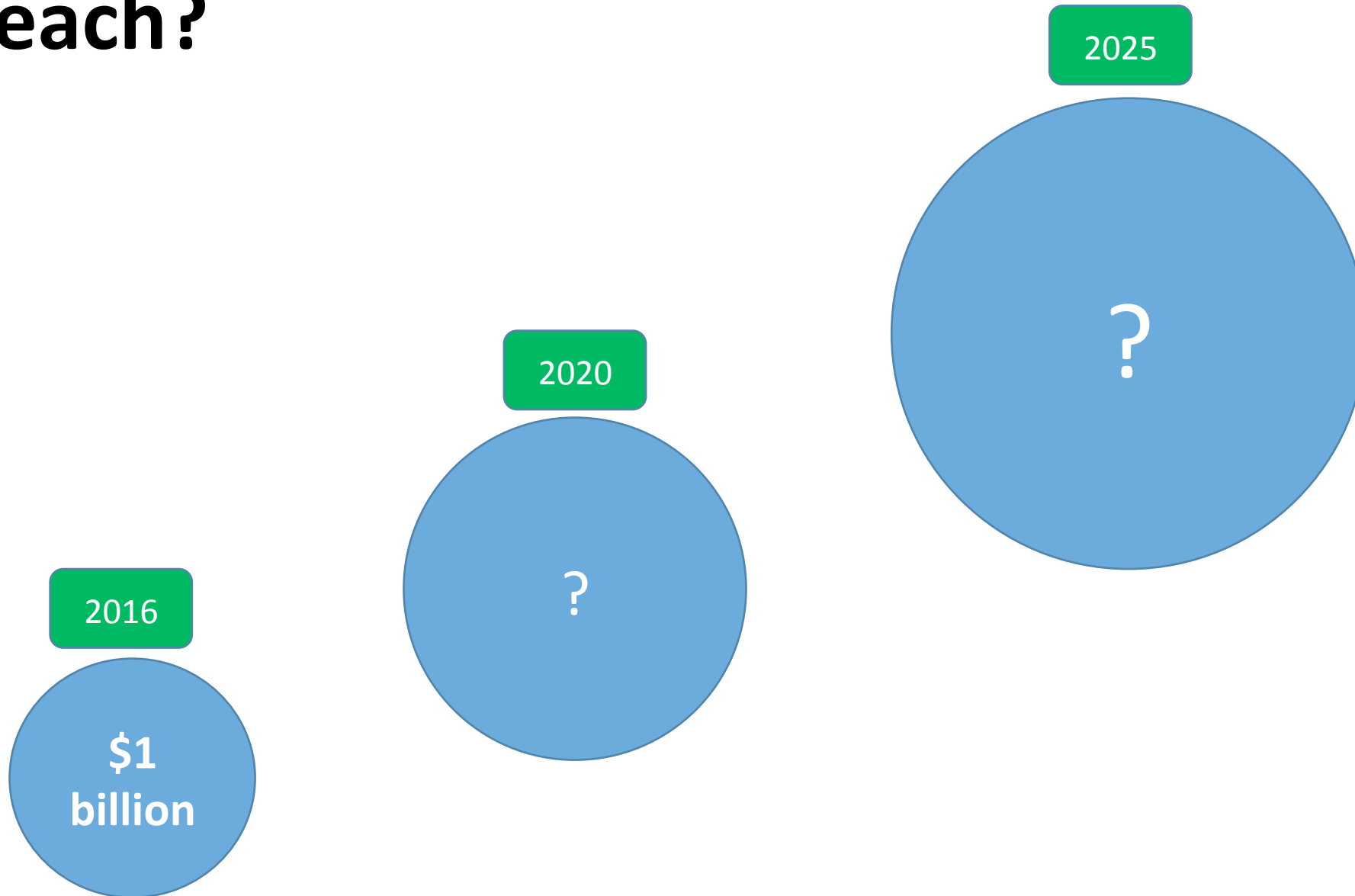
Many niche, emerging uses

Segment	Details
Biopolymers	Diverse end uses for PA and PUR in <ul style="list-style-type: none">• Auto components• Apparel & Accessories (shoes for instance)• Electronics• Consumer products such as toothbrushes• Solar
Personal Care	<ul style="list-style-type: none">• Natural exfoliation (HCO beads) in cosmetics as alternatives to plastic micro particles (PE and PP)• Premium deodorants, lipsticks, sunscreen lotions
Health & Pharma	<ul style="list-style-type: none">• Neuro-protective ingredients
Others	<ul style="list-style-type: none">• Flame retardants• Textile accessories• Sub-components in solar panels and wind turbines• Optics

Emerging/New Geographies

- The top 3 markets for castor oil and derivative consumption have been China, EU & USA (India consumes mostly basic grades and gen I derivatives)
- **USA, already a significant consumer, could consume significantly higher** quantities in near future for some derivatives
- Potential can increase significantly in Asian markets such as **Japan and S Korea and select S American markets in the short term**, and perhaps in completely new markets in the medium term

Gen II & III Derivatives - Where Can they Reach?



Where they can reach depends partly on external drivers, but also partly on how the industry stakeholders move

REACHING NEW HEIGHTS

Drivers

- Corporate aspirations for a **lower carbon footprint**
- Market & regulatory moves towards **safer products for plastics & packaging**
- Momentum in specific industries such as automobiles & textiles towards **environment friendly options** for their products
- The **sustainability movement** among end users

Challenges & Constraints

For New Market Creation for Derivatives

- **Global reliance on India** for Castor Oil supplies
- Low and fluctuating **prices of crude oil**
- **Proprietary technologies** for derivatives production
- **The China Factor**
- **Low market awareness** of the possible new uses of castor oil
- **Insufficient end user market intelligence** for companies to make decisions on new product development
- **Large, and sometimes risky, R&D investments** required for derivatives

Leveraging Drivers & Overcoming Challenges

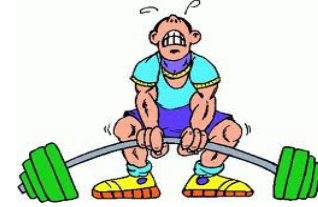
For all global stakeholders

- Promote **greater diversity in the cultivation of castor crop**, both across the world, and within India.
- Focus on products for which the **driver is not price** but some utility that cannot be provided by crude or synthetic alternatives (health, safety, CO2 abatement...)
- Focus on **specific emerging segments that show sustained growth**, based on strategic market research.
- **Create greater awareness** among target end use application companies about the benefits of using castor oil for their ingredients.

SWOT Analysis for Indian Castor Sector



- Access to supply of castor oil
- Economical labour availability
- Well established trading network



- Focussed only on commodity oil production
- Poor knowledge of end user markets
- Low investments in R&D



- Availability of skilled human resources
- Concentrated cluster of oil mills
- Growing domestic market for select derivatives



- Emergence of alternative chemicals to castor oil derivatives
- Production of derivatives from other countries - China, EU countries etc.

Thanks!

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