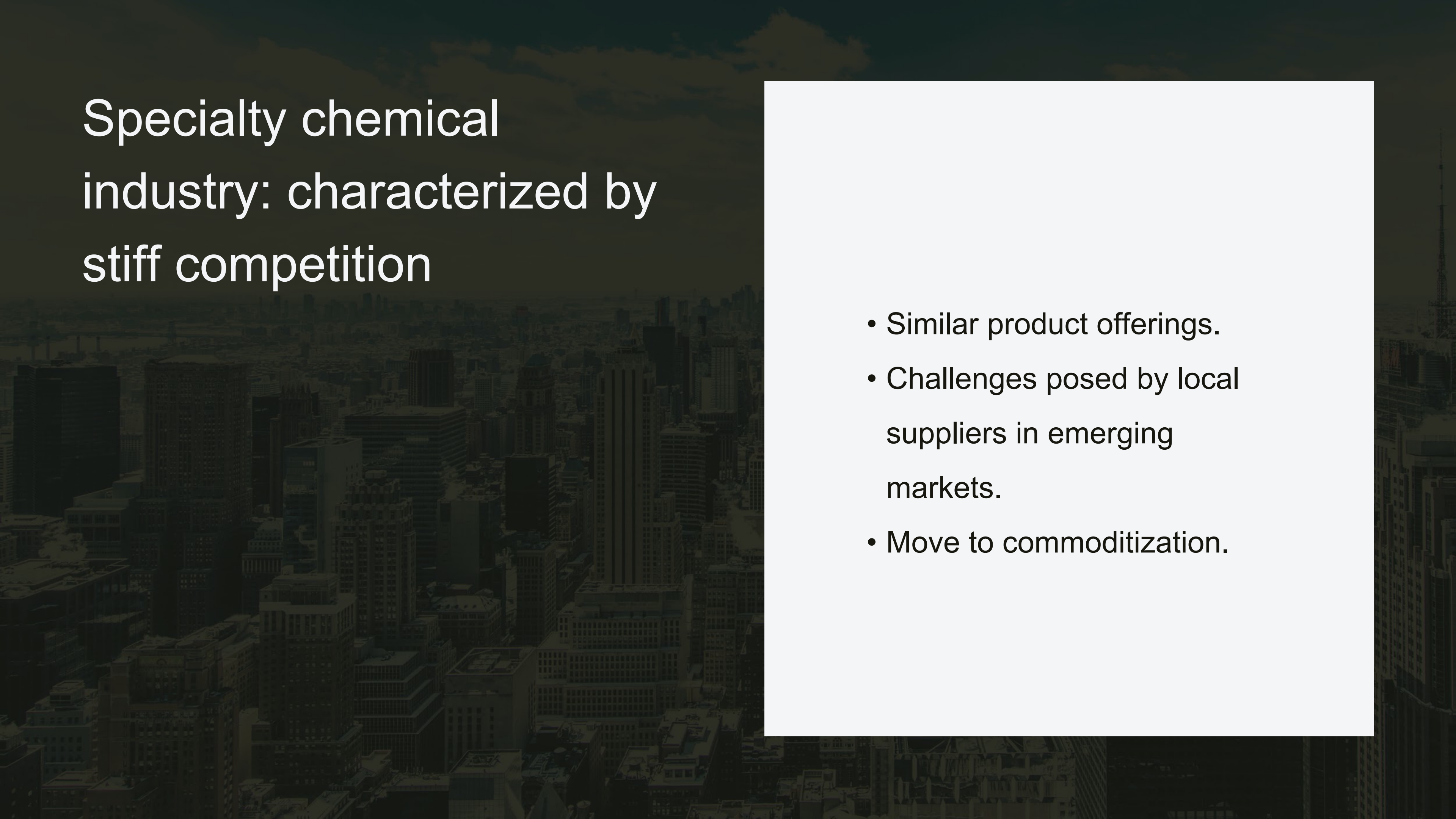


FROM GENESIS TO REALITY:

# How Solenis can deliver its sustainability promises



Alex Le, Claire Tran, Huy Nguyen, Bach Pham



# Specialty chemical industry: characterized by stiff competition

- Similar product offerings.
- Challenges posed by local suppliers in emerging markets.
- Move to commoditization.

# Specialty chemical industry: affected by increased demand for sustainable practices



## Government

Want companies to follow regulations that help protect citizens.



## Clients

Want products and systems to reduce environmental footprint and satisfy end consumers.



## End consumers

Want products produced sustainably by manufacturers.

# Specialty chemical industry: affected by increased demand for sustainable practices

20%

of asset under-management is sustainability-minded investment (BCG).

\$100B

is expected to be reached by 2020 by the market of "green" chemistry.

# Solenis's objective

Leverage existing resources, expertise, and innovation to address sustainability and stay differentiated amid competition.

# Recommendations

## CHANGE

Move away from oil-based products

## IMPROVE

Leverage existing AI capabilities

## EXPAND

Incorporate value-creating services

## IMPACT

Pass on sustainable legacies

# Recommendations

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# Product development is crucial and demand for eco-friendly inputs are high

- Global biodegradable packaging market is expected to grow at a CAGR of 14.2% from 2015 to 2021 (Research Nester).



# Partner with BASF to explore its biomass balance approach

- Certified renewable feedstock replaces fossil resources at the beginning of the value chains in the chemical industry (BASF).
- Only minor adaptation to existing standards is needed in chemical production (BASF).





## Feedstock

Fossil



Renewable

Use of renewable feed-stock in very first steps of chemical production (e.g., steam cracker)

## BASF Production Verbund



Utilization of existing Production Verbund for all production steps

## Products

Conventional product



Biomass Balance product

Allocation of renewable feedstock to selected products



# Decarbonizing ethylene production

- Switching fuels for heat production to zero-carbon hydrogen or biomass with Anaerobic technology plants (Water Online).
- Anaerobic technology plants.
  - Adopted by Latin-America producing companies.
  - Turn wastewater into biogas
  - Generate green power or fuel boilers and other factory plant fuel consumers.
  - Can typically pay back the cost of their introduction within two years or even less

# Recommendations

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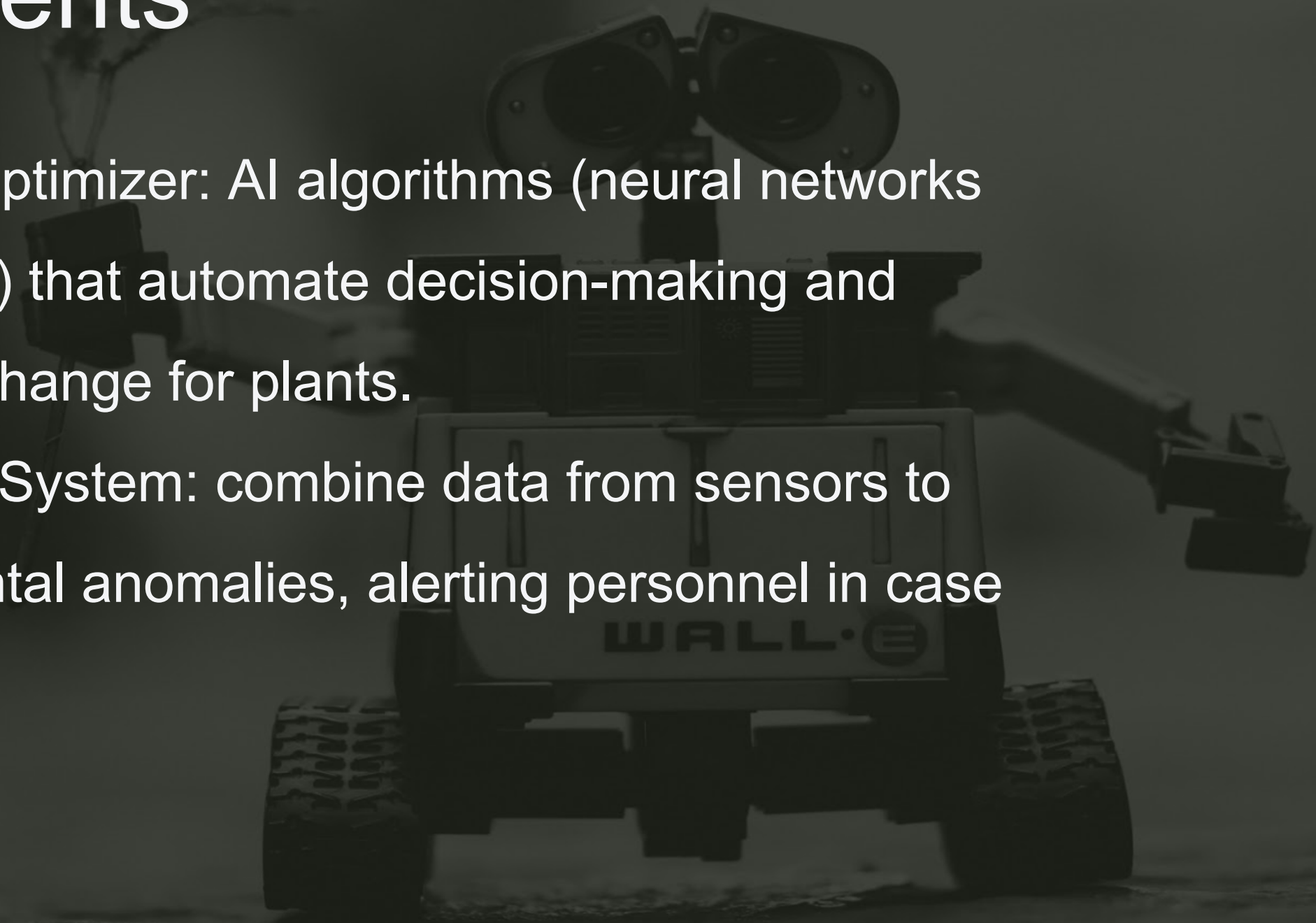
# Heavy industries show demand for advanced technologies to handle chemical-process operations



OPTIX - an AI-empowered tool to calculate real-time chemical inputs for papermakers

# Use OPTIX to create values for other segments

- Real-time Asset Optimizer: AI algorithms (neural networks and deep learning) that automate decision-making and system behavior change for plants.
- Real-time Control System: combine data from sensors to detect environmental anomalies, alerting personnel in case of safety issues



# Recommendations

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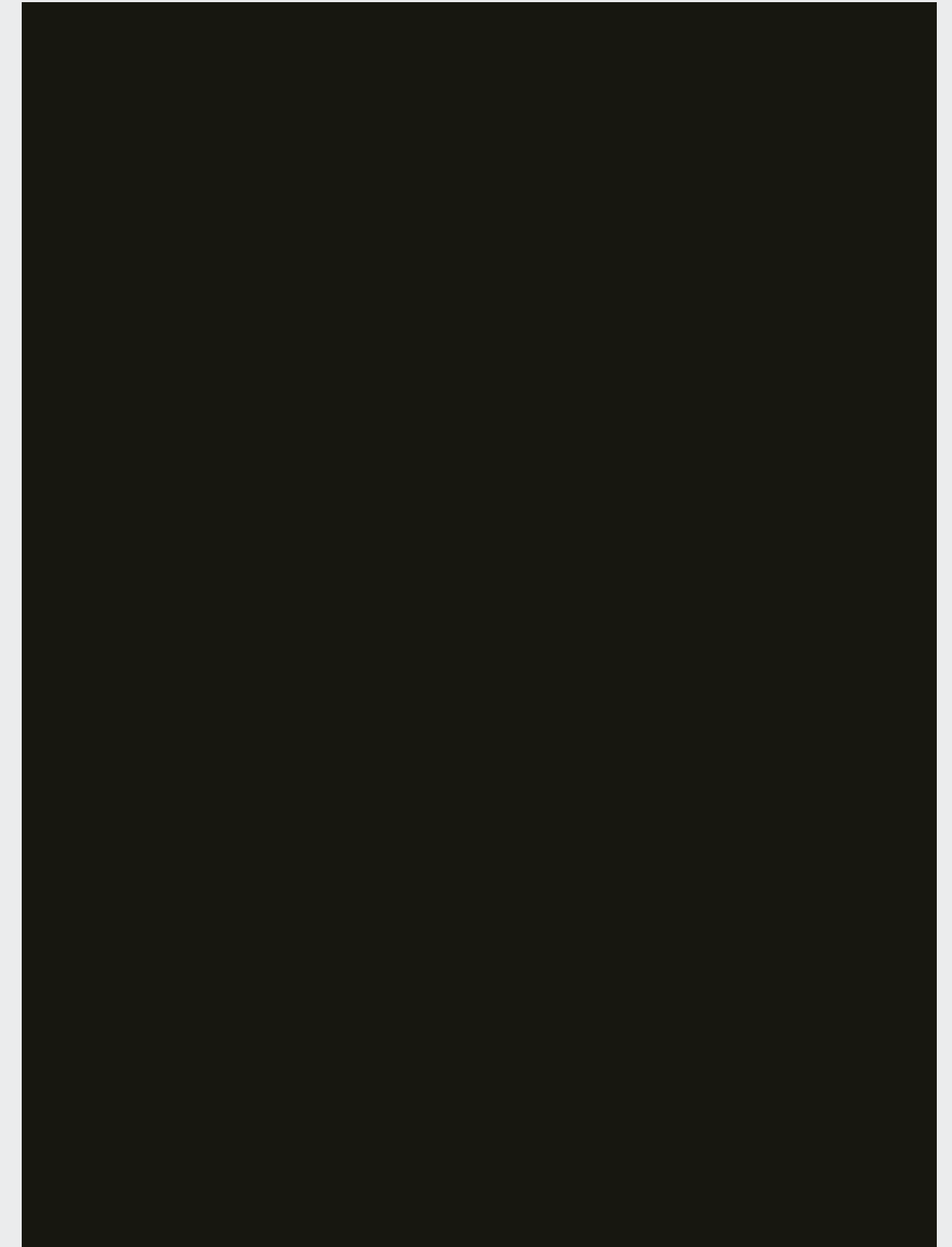
Incorporate value-creating services

## IMPACT


Pass on sustainable legacies

# Value doesn't lie in just the products

- Companies consider services as one of the most important things when sourcing for suppliers or partners.
- Exceptional services can produce ~ 25% in gross margin for a company (McKinsey).







# What does this mean in the sustainability age?

- Increasing demand for sustainable practices.
  - Clients lack personnel and resources to make sustainability happen (McKinsey).
  - Past & present: Services as the last layer of sales
    - Implement products, then what's next?
    - Minimal impact on client overall sustainability practices in the long-run
- ⇒ Clients need additional services which we should provide.

# Innovation Labs



- Owned by Solenis
  - Collaborative space where clients can:
    - Utilize Solenis systems and products to test out new product ideas.
    - Learn about sustainable practices and processes from Solenis employees.
- ⇒ Address the lack of resources and help sustainability HAPPEN.

# Consultant-for-Hire



- Clients can “borrow” experts from Solenis to staff on their sustainability projects.
  - Solenis experts collaborate with client employees.
- ⇒ Address the lack of personnel and expertise and make sustainability HAPPEN.

# Recommendations

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# Many energy companies are not up to standards on sustainability reporting

- Paper & Pulp Industry:

- 5th largest consumer of energy (4% of global energy use).
- Majority uses pulp bleaching process that creates environmental and toxicity risks.
- Slow to adopt advances in technology.  
(Environmental Impact).

=> Drive sustainability awareness and practices to suppliers and clients.

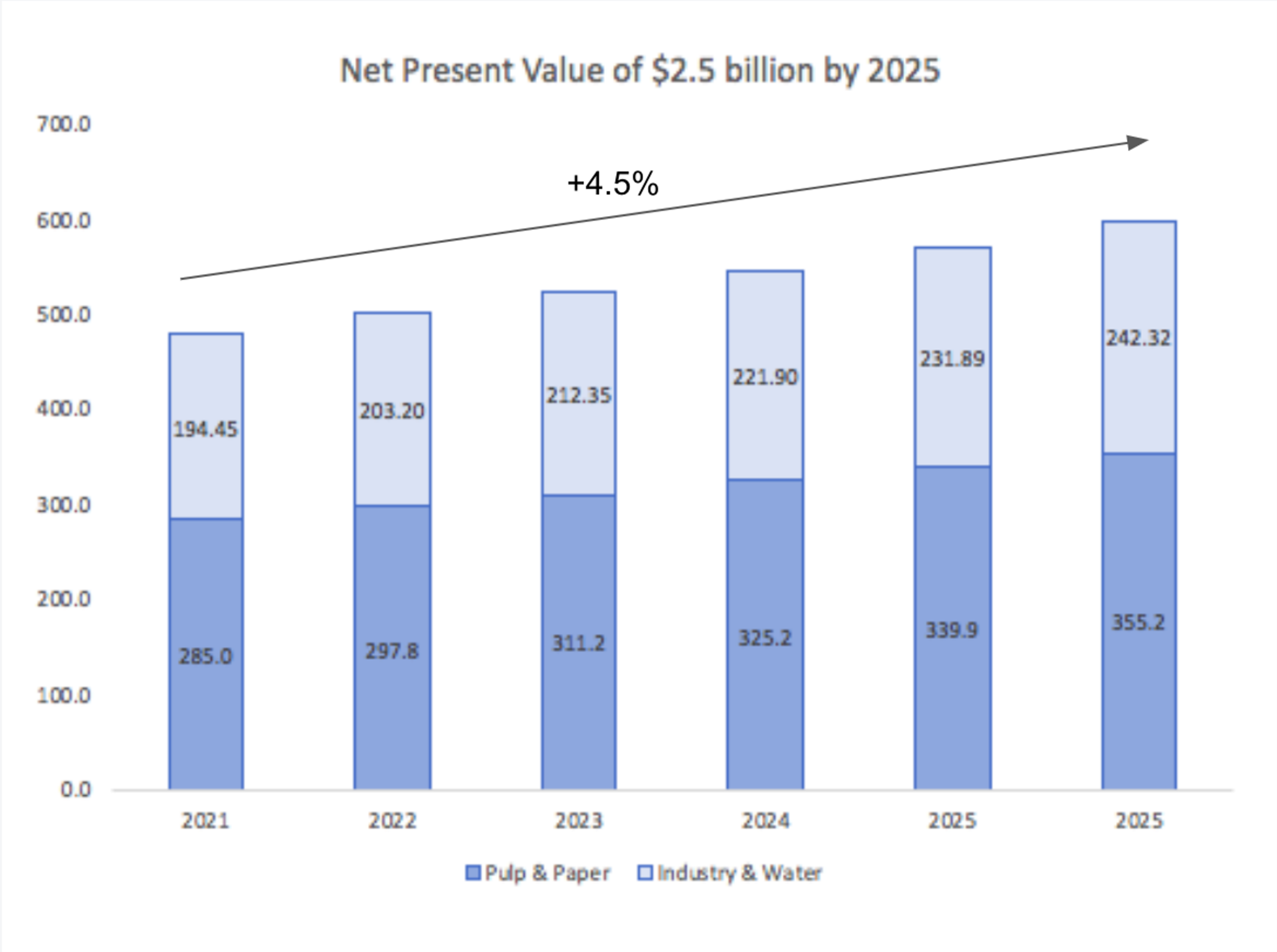
# Spread the News!

- Annual Sustainability Conference.
- Industry insights blog.



# Insights

# Financials



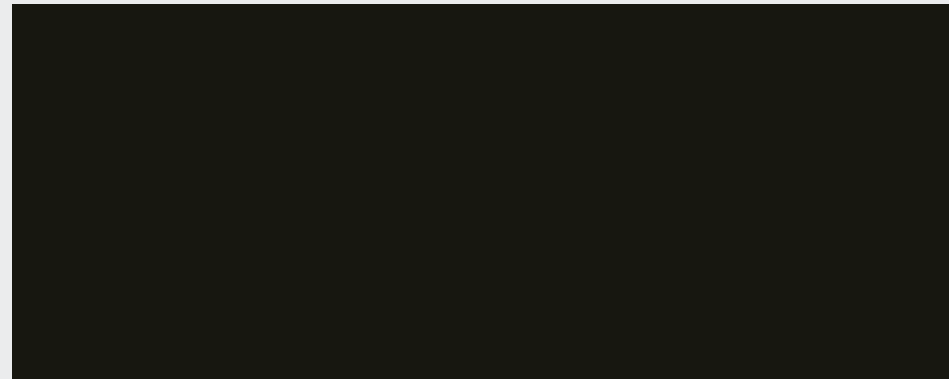
## INVESTMENT

- Research and Development
- Product roll-out
- Personnel training
- Capital expenditure

## ASSUMPTIONS

- Expected annual growth rate: 4.5%
- EBITDA Margin: 15%-17%
- Market share: #1 Pulp & Paper, #2 Polymers (water treatment, oil & gas) (Kemira)
- Discount rate: 8%

# Risks & Mitigation



Delay productions on eco-friendly initiative due to regulations  
Designate a compliance officer for constructions and R&D.

High level of technical barrier to use AI system  
User training, covering how the AI model works in the overall system, how to use the insights it generates.

Low retention rate on lab usage  
Actively measure customers' experience and offer follow-up specialized support.



# Impact

	<b>SOCIALLY FRIENDLY</b>	<b>ECONOMICALLY FRIENDLY</b>	<b>ENVIRONMENTALLY FRIENDLY</b>
<b>Company</b>	<ul style="list-style-type: none"> <li>• Maintain long-term relationships with clients.</li> <li>• Establish Solenis as an industry leader in sustainability.</li> </ul>	<ul style="list-style-type: none"> <li>• Provide an additional revenue stream.</li> <li>• Avoid fluctuating oil and gas prices.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce oil consumption and pollution during production.</li> <li>• Increase internal environmental interest.</li> </ul>
<b>Clients</b>	<ul style="list-style-type: none"> <li>• Improve company's reputation towards consumers.</li> <li>• Strengthen consumer loyalty.</li> </ul>	<ul style="list-style-type: none"> <li>• Minimize costs associated with the current sustainability practice.</li> <li>• Achieve profitability.</li> </ul>	<ul style="list-style-type: none"> <li>• Create more eco-friendly products.</li> <li>• Embrace good sustainability practices.</li> </ul>

# Summary

Leverage existing resources, expertise, and innovation to address sustainability and stay differentiated amid competition.

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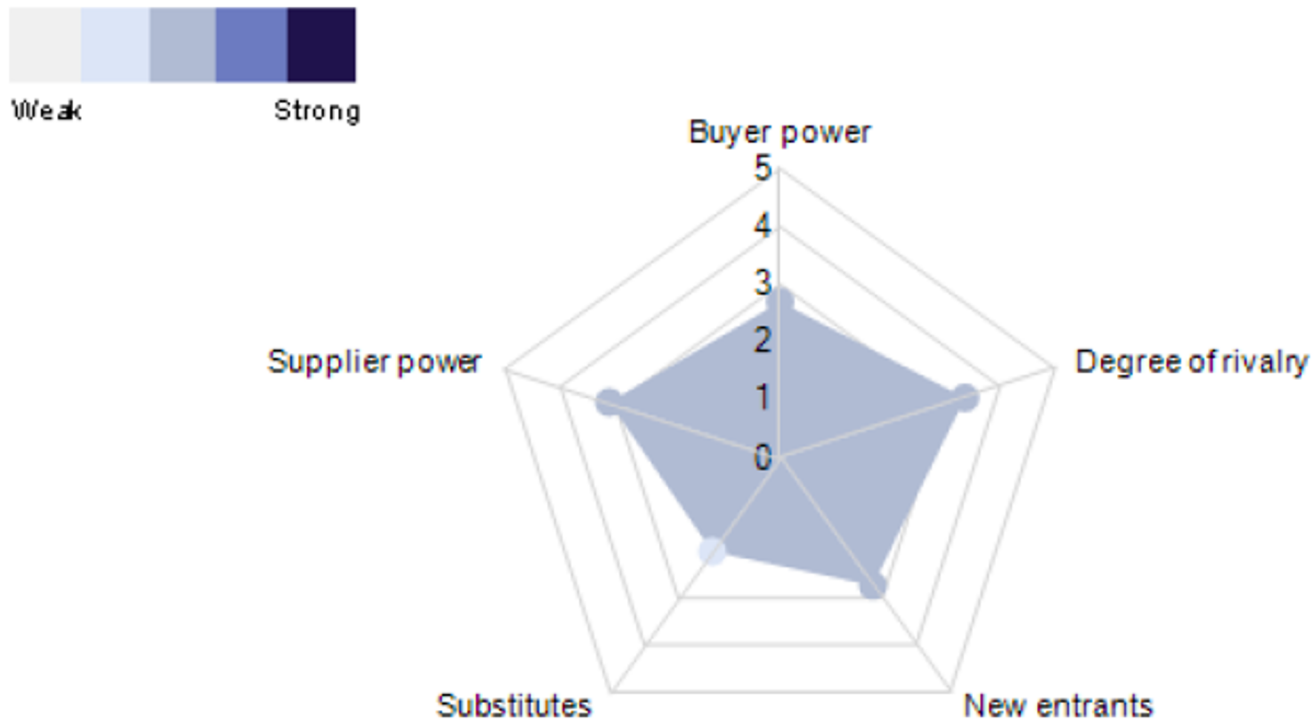
**SOCIALLY, ECONOMICALLY, ENVIRONMENTALLY SUSTAINABLE**

# Sources

- <https://www.mckinsey.com/~media/mckinsey/business%20functions/sustainability/our%20insights/how%20industry%20can%20move%20toward%20a%20low%20carbon%20future/decarbonization-of-industrial-sectors-the-next-frontier.ashx>
- <https://www.eesi.org/articles/view/moving-away-from-oil-biofuels-and-biobased-products>
- <https://www.globalreporting.org/information/sustainability-reporting/Pages/gri-standards.aspx>
- <https://www.ecolab.com/>
- <https://www.wwt.com/atc-lab-services>
- <https://www.mckinsey.com/industries/chemicals/our-insights/what-to-do-when-a-specialty-chemical-business-gets-commoditized>
- [https://www.valueline.com/Stocks/Industries/Industry\\_Overview\\_Specialty\\_Chemical.aspx#.XjzXo1NKhQI](https://www.valueline.com/Stocks/Industries/Industry_Overview_Specialty_Chemical.aspx#.XjzXo1NKhQI)
- <https://www.alliedmarketresearch.com/specialty-chemicals-market>
- <https://www.worldofchemicals.com/655/chemistry-articles/specialty-chemicals-manufacturing-challenges-and-market-trends.html>
- <https://cen.acs.org/business/World-Chemical-Outlook-2019-Around-the-globe/97/i2>
- <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.24.9538&rep=rep1&type=pdf>
- <https://solenis.com/application/files/6115/7057/1036/190172-PC-SustainPerformWB.pdf>
- <https://www.strategyand.pwc.com/gx/en/insights/industry-trends/2018-chemicals.html>

# Appendix 1: Industry Analysis

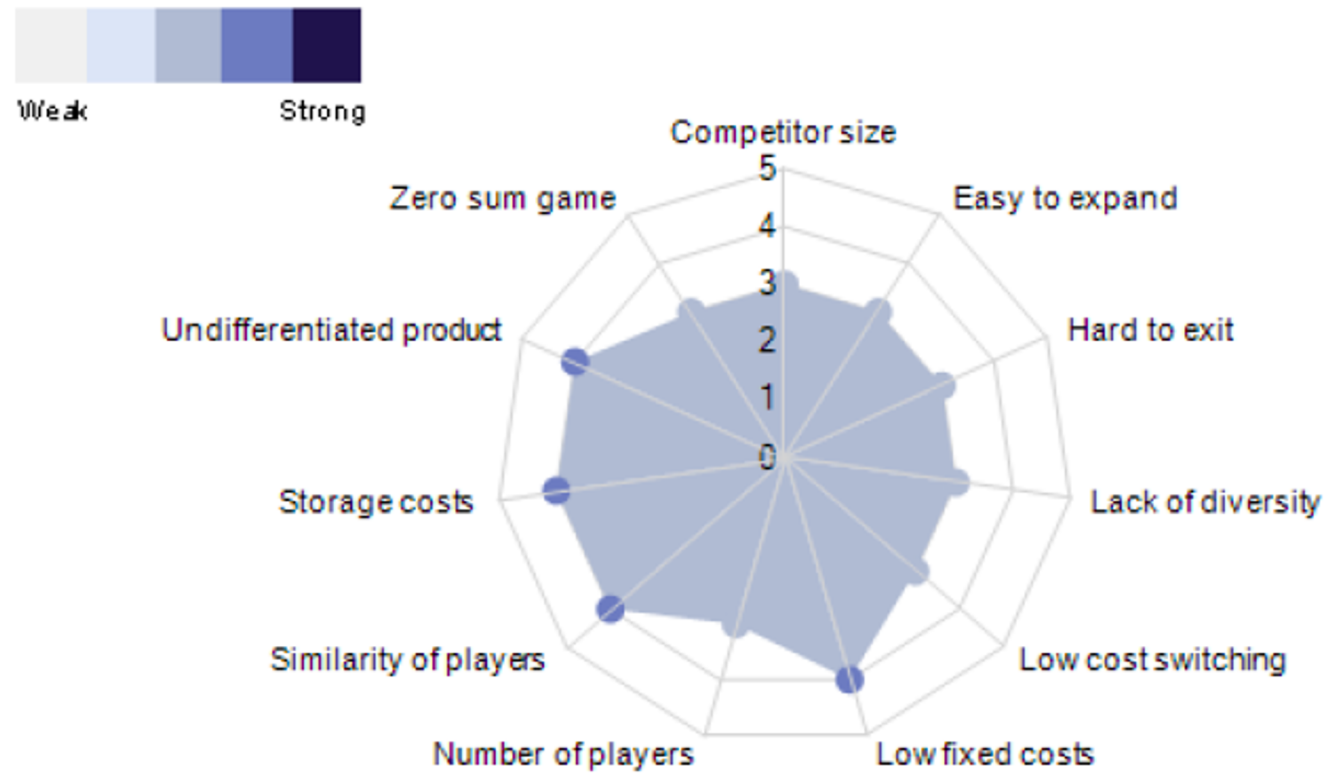
Figure 5: Forces driving competition in the global specialty chemicals market, 2015



SOURCE: MARKETLINE

MARKETLINE

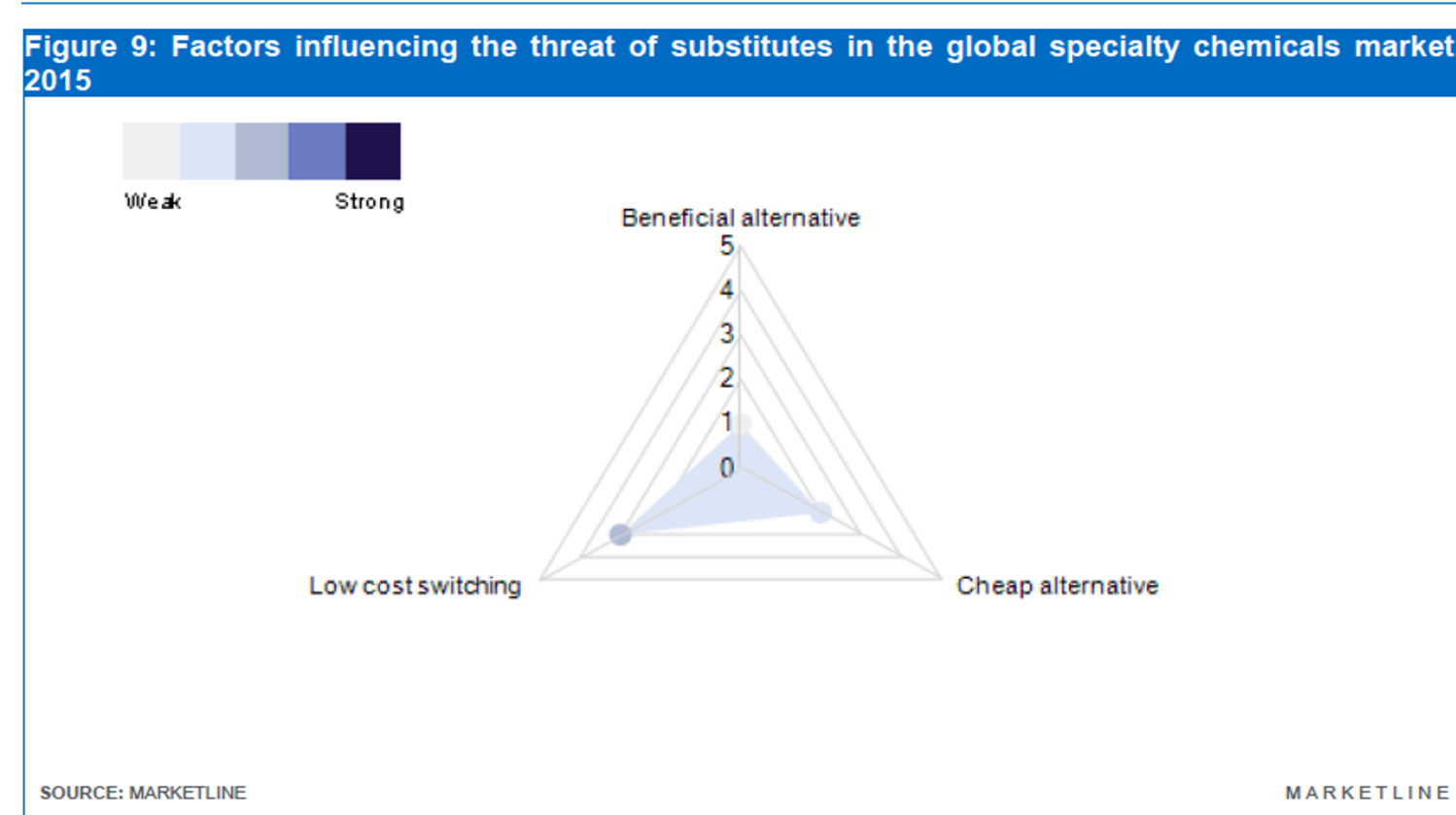
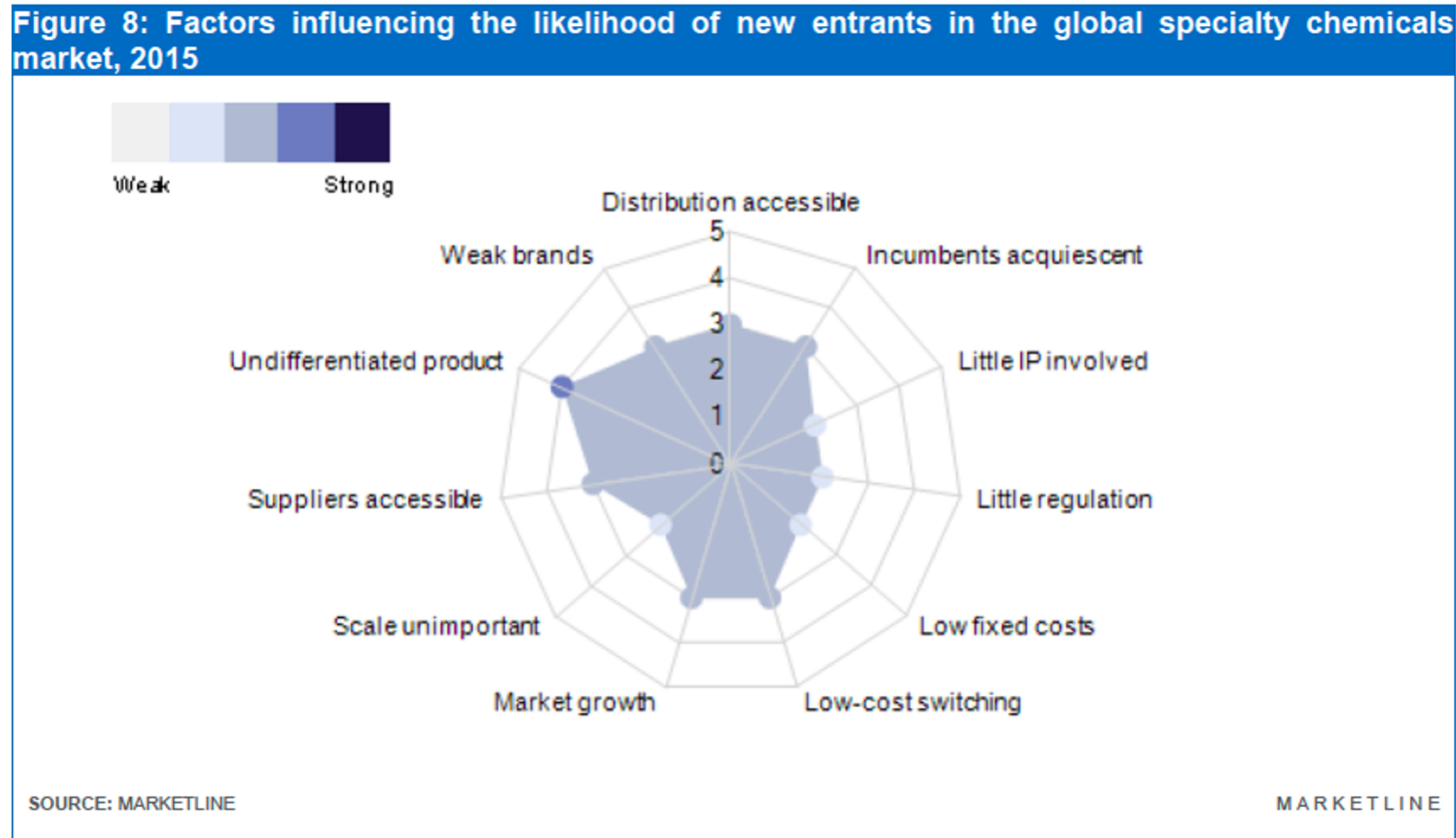
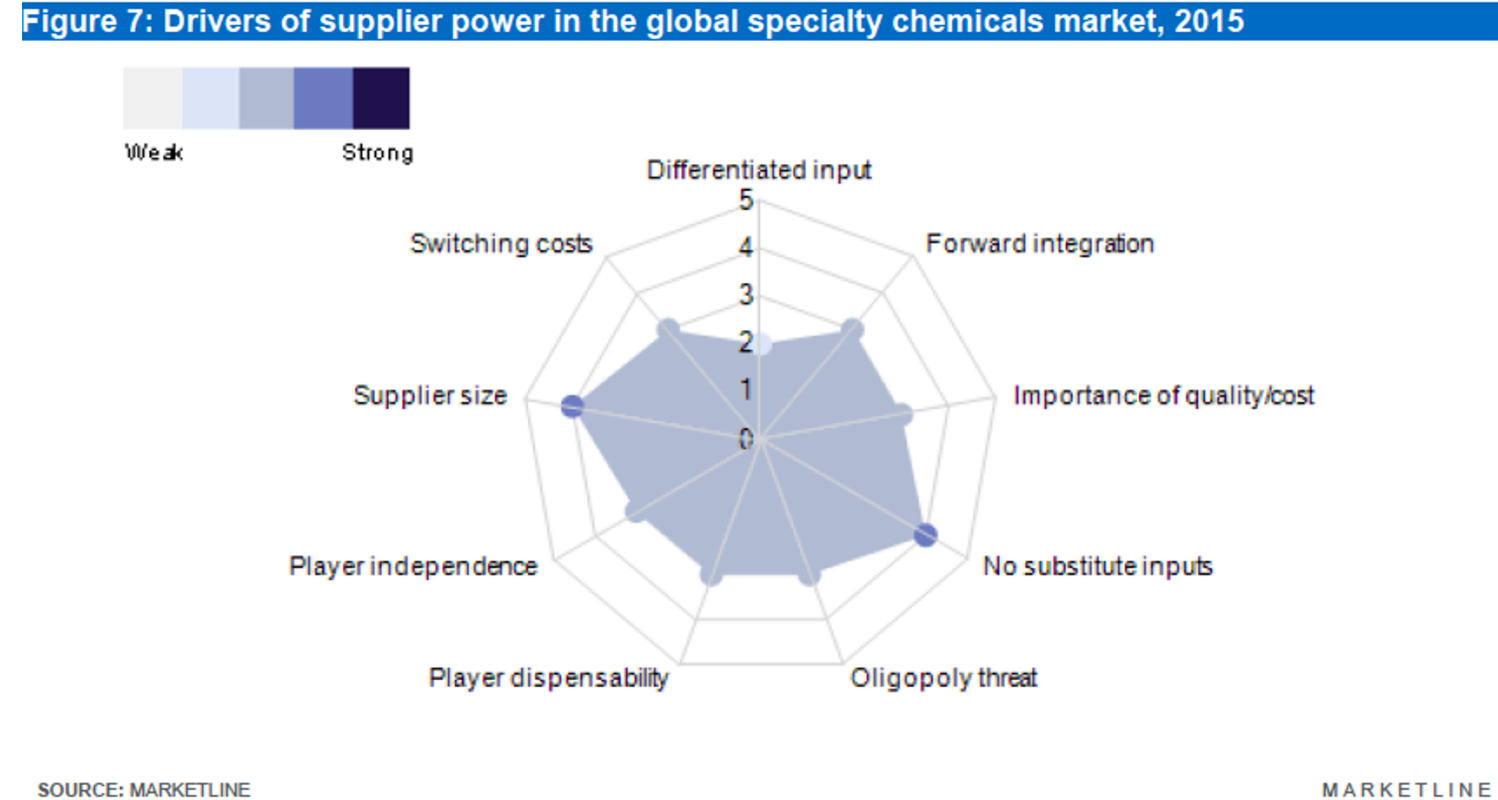
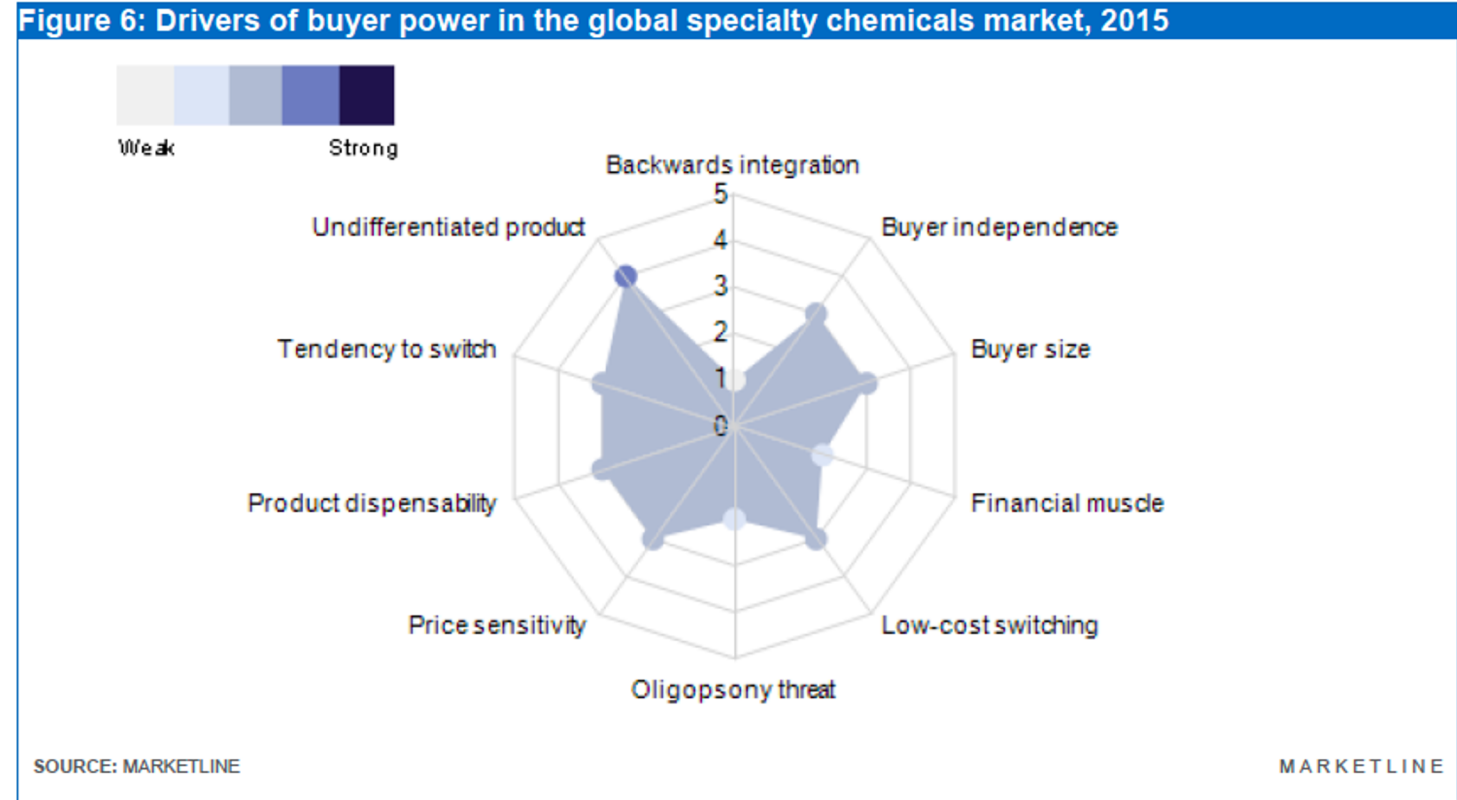
Figure 10: Drivers of degree of rivalry in the global specialty chemicals market, 2015



SOURCE: MARKETLINE

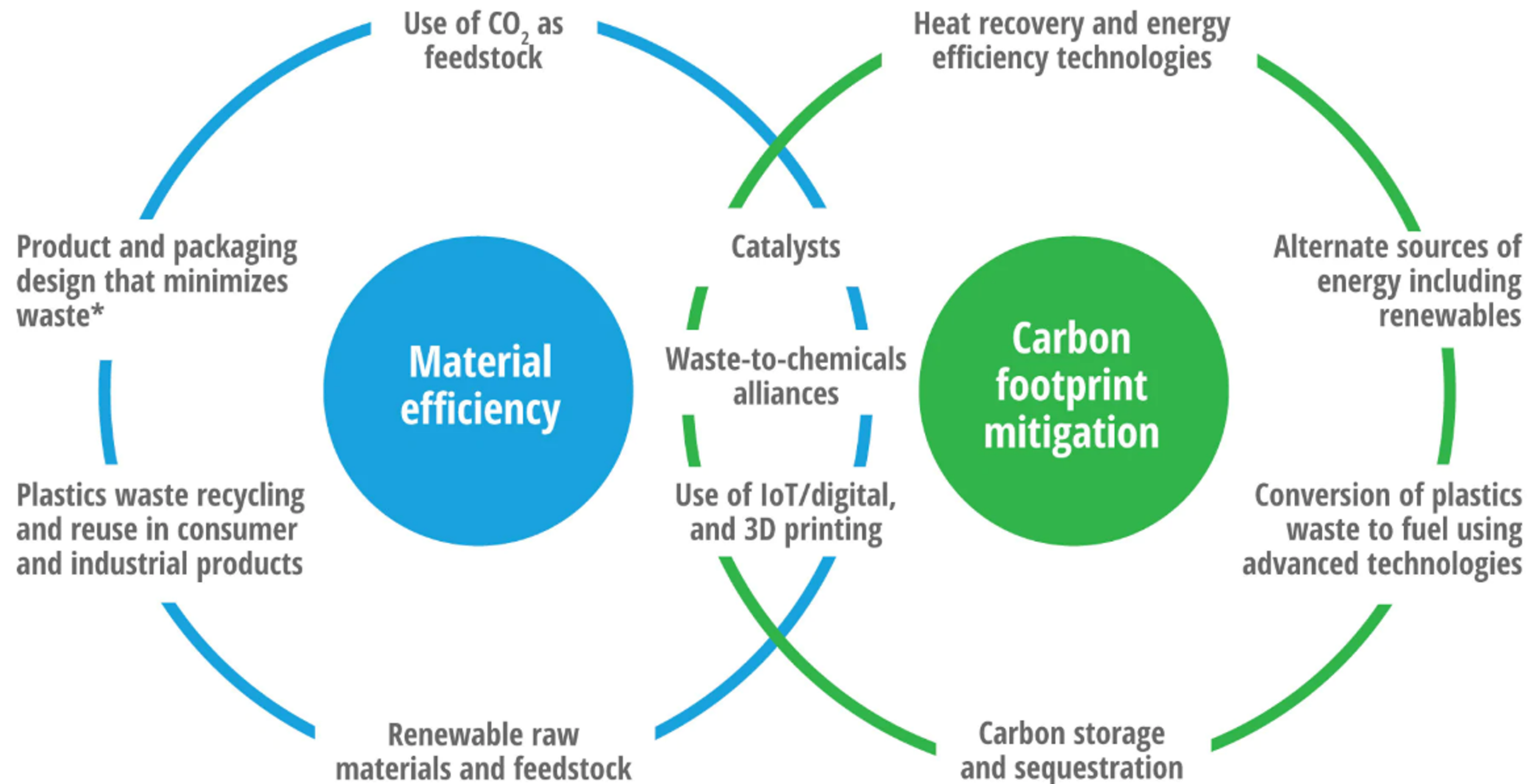
MARKETLINE

# Appendix 2: Industry Analysis



# Appendix 3: Circular Economy

A circular economy is one where everything is utilized and nothing goes to waste



# Appendix 4: Long-term solutions

**How well-prepared are chemicals companies to face the potential impact of long-term developments?**

■ Very high   
 ■ High   
 ■ Moderate   
 ■ Low

Long-term developments	Potential impact (by 2030) and level of preparedness					
	Natural Owners		Differentiated Commodities		Solution Providers	
	Potential impact	Level of preparedness	Potential impact	Level of preparedness	Potential impact	Level of preparedness
Fuels-to-Chemicals (FTC)	Very high	Moderate	High	Moderate	Moderate	Moderate
Digital transformation	Moderate	Moderate	High	Moderate	Very high	High
Sustainability and the circular economy	Moderate	Low	Very high	Moderate	High	Moderate

Source: Deloitte analysis.



# Appendix 5: Alternative Solutions

- Refine branding strategies.
- Impact Counter.
- Certified Program for clients.
- Acquire startups dealing with bio technology.
- Sell analytics APIs.
- Partner with Chinese government.