

2023
Innovation
China Conference
创新中国国际论坛

中国, 安庆 | Anqing, China
15 • 05 • 2023



Revitalize!
Discover the science behind LOHAS
大健康和可持续发展 **复苏!**

Carbon to Value - Polyols

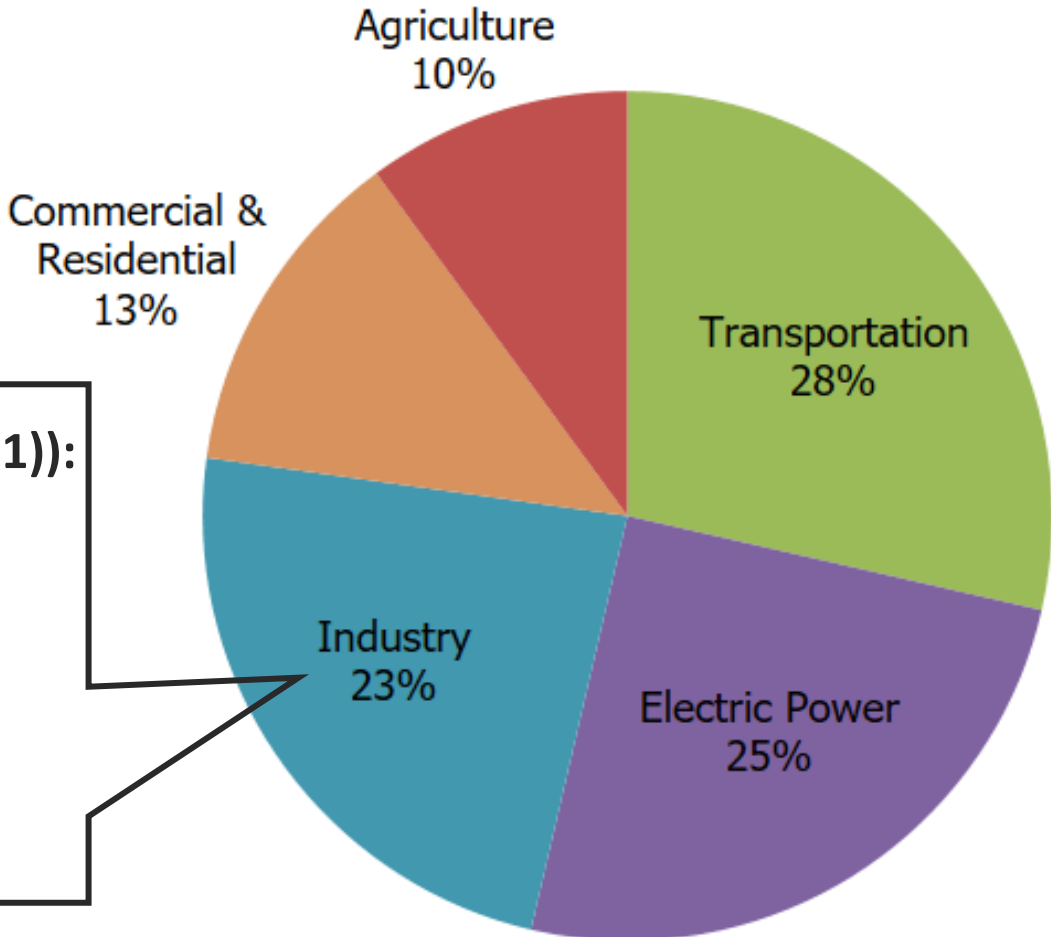
Keith Wiggins, CEO Econic Technologies Ltd



MANUFACTURING: LARGE GLOBAL GHG CONTRIBUTOR AND 54% OF THE WORLD'S ENERGY USAGE.

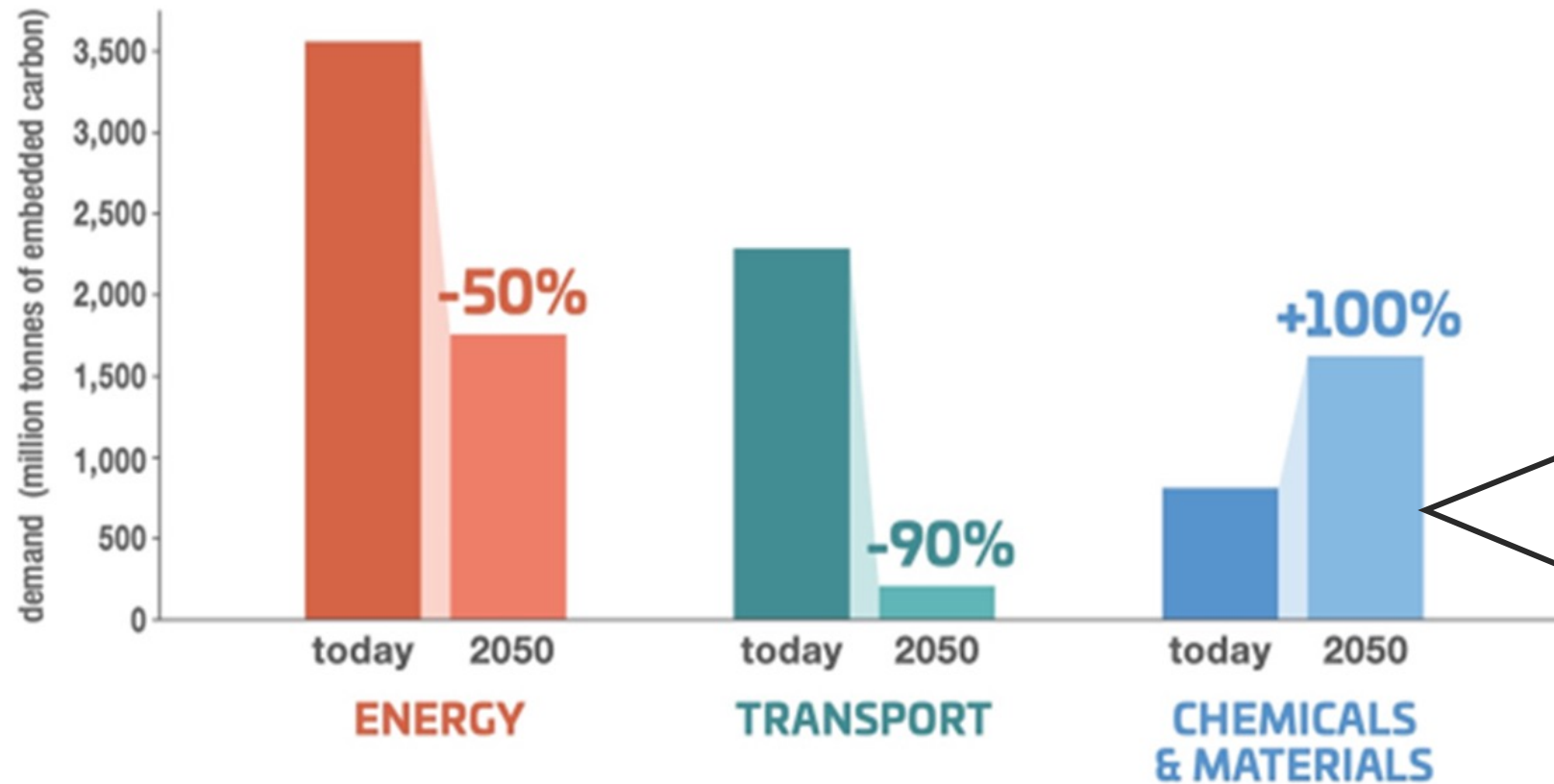
**Global Carbon Emission 2021:
36.8Bn Tonnes, by sector:**

- Top 3 GHG contributors (Bn Tonnes (2021)):**
- 1. Steel (2.6)**
 - 2. Cement (2.3)**
 - 3. Chemicals & Materials (1.2)**



Courtesy of World Bank – global impact report

EMISSION REDUCTION IS UNDERWAY – DEFOSSILIZATION WILL FOLLOW

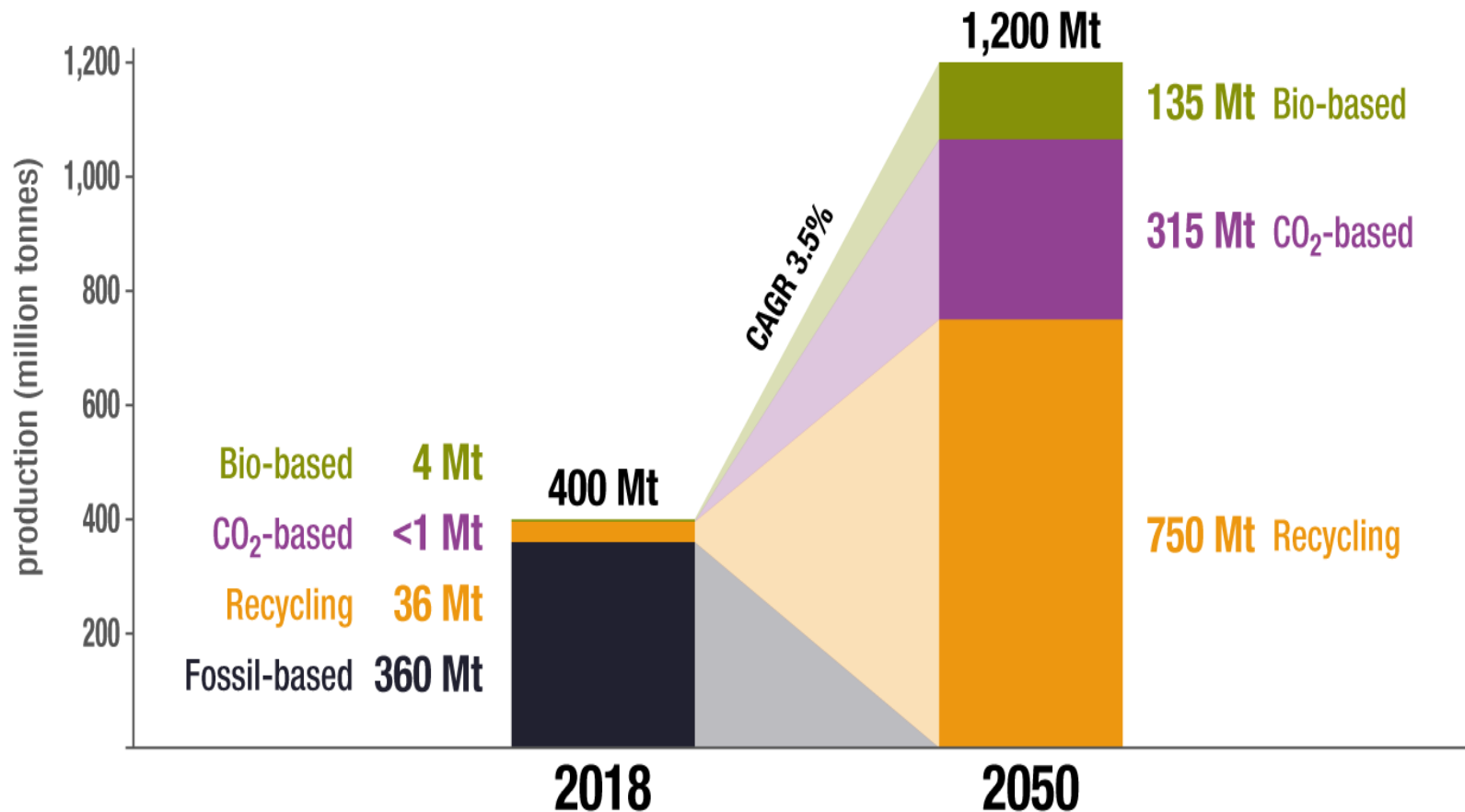


2022 1.2 Bn Tonnes
Embedded C/Yr

- Chemicals & Derivatives (710)
- Wood products (350)
- Textiles (160)
- Pulp & paper (14)

RENEWABLE CARBON INITIATIVE

Global Chemicals Production and predicted Carbon Feedstocks 2050



available at www.renewable-carbon.eu/graphics Courtesy of Nova Institute – Renewable Carbon Initiative



Carbon dioxide is a very stable molecule, and accordingly, energy must generally be supplied to drive the desired transformation. High temperatures, extremely reactive reagents, electricity, or the energy from photons may be exploited to carry out carbon dioxide reactions

....Unknown

Carbon Capture = **f**

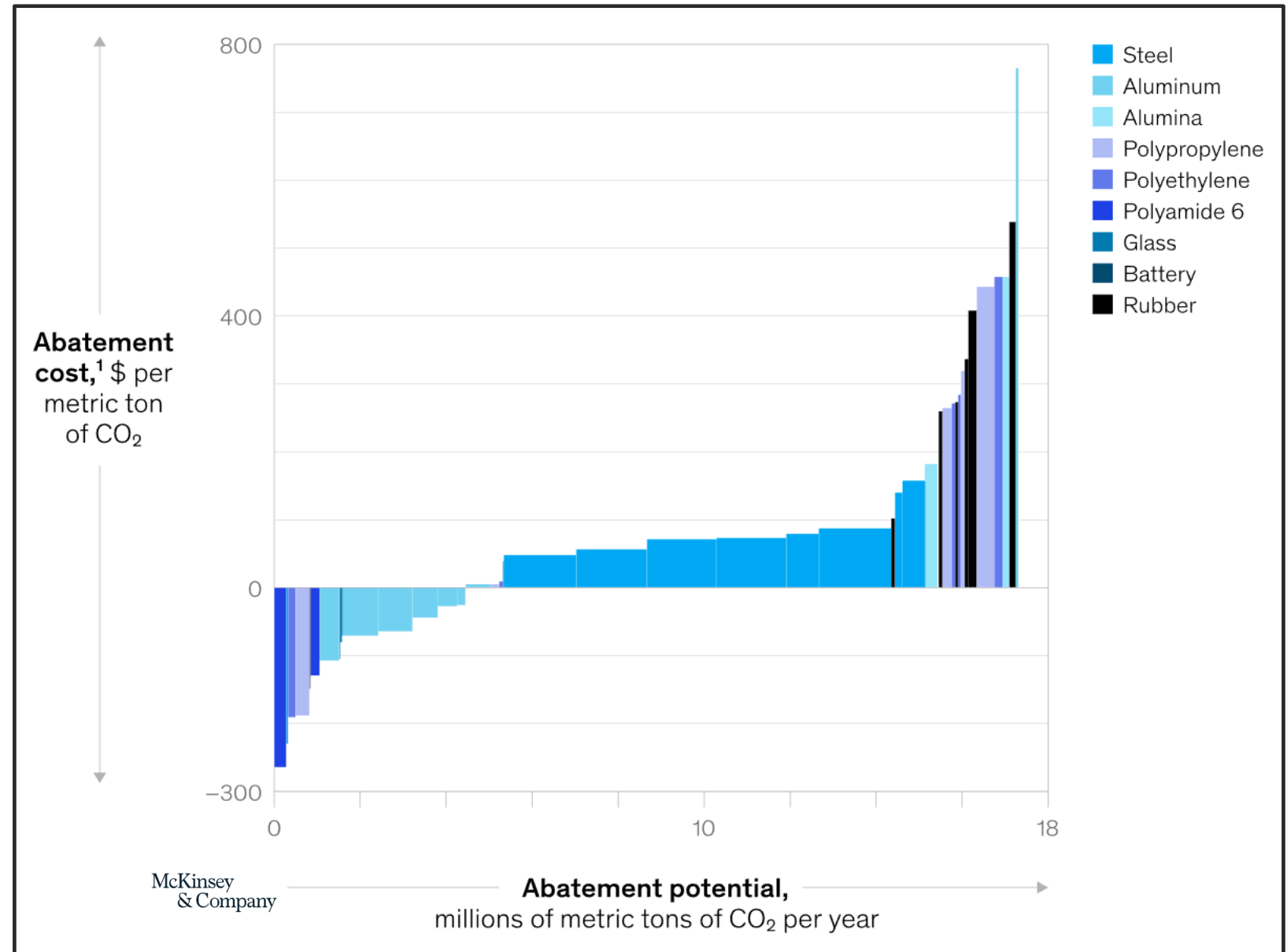
- (ESG)
- (legislation)

'necessary' cost. Subsidy dependent

Carbon to Value = **f**

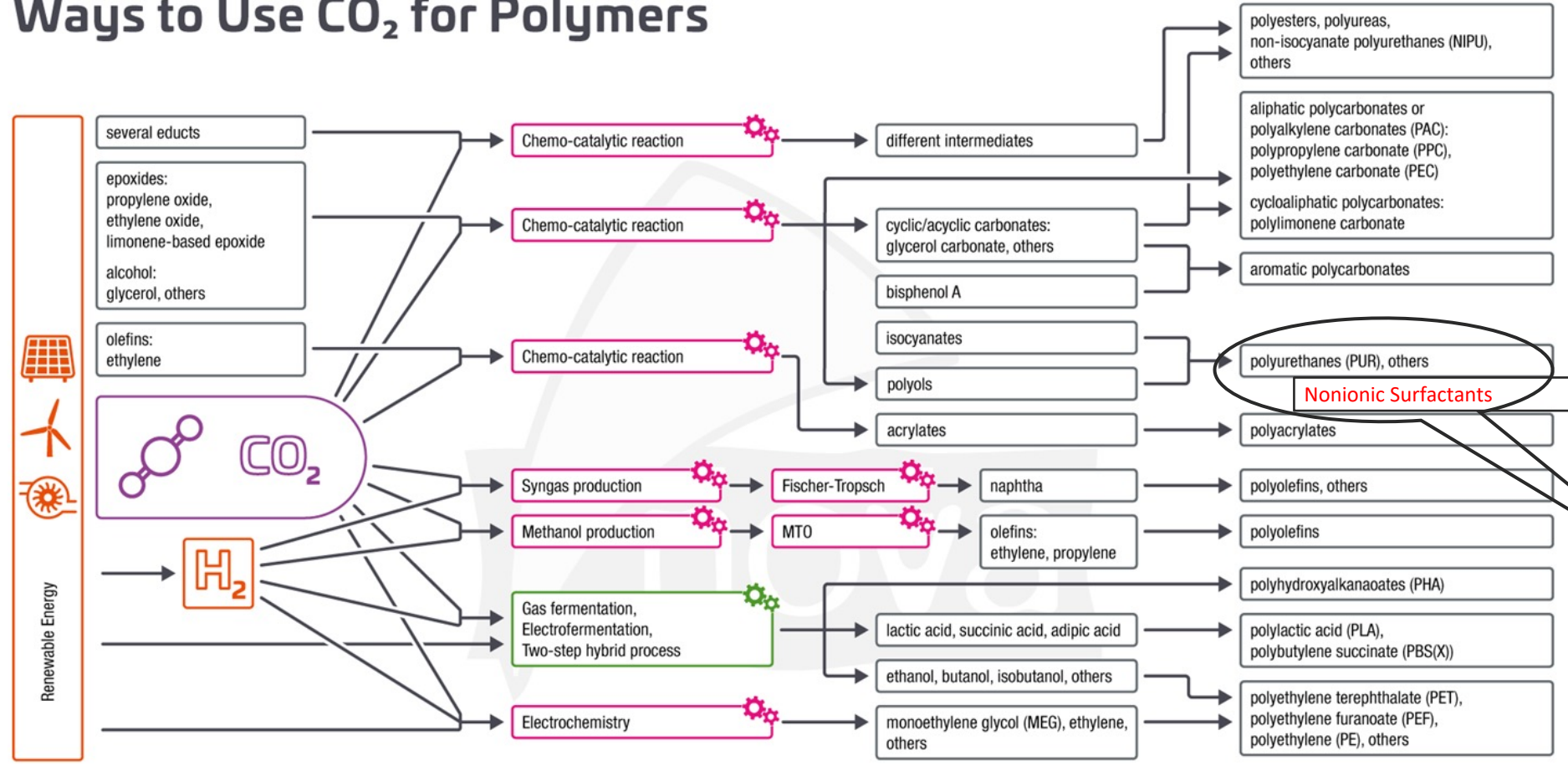
- (price of end product)
- (cost of raw materials)
- (processing cost)
- (supply chain)

Transforming costly waste into value creating products



WIDE POTENTIAL FOR CO₂ USE IN POLYMERS

Ways to Use CO₂ for Polymers



Opportunity for

 Catalyst Technology

#1 priority
 commercialization
 2022 - 2025

available at www.renewable-carbon.eu/graphics Courtesy of Nova Institute – Renewable Carbon Initiative

 Chemical conversion  Biotechnological conversion

COMPETITIVE LANDSCAPE

ECONIC's propriety catalyst system and process works at existing manufacturing process conditions, is retrofittable at low capital cost, and brings product and process upgrade opportunities vs competition.

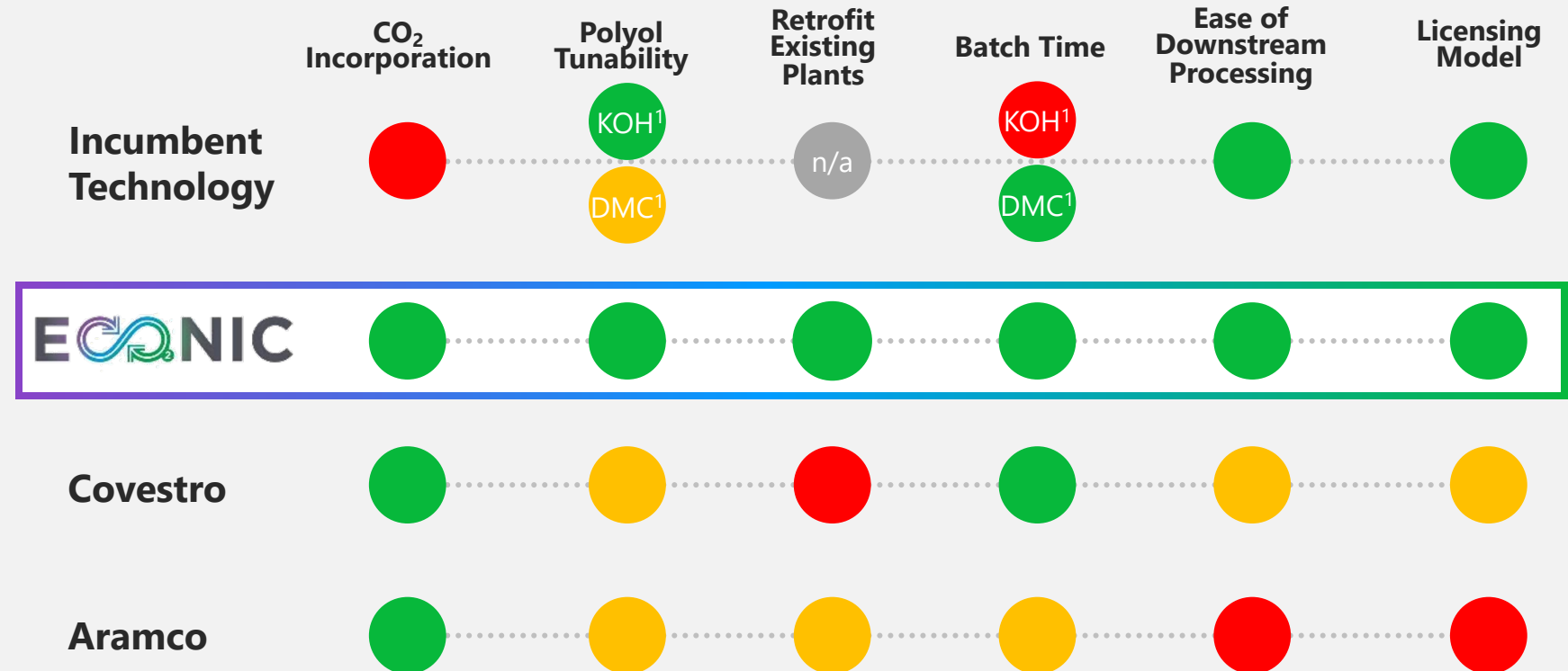
Market Update:

Covestro

- Capex
- Product Limited
- Challenged to expand capacity

Aramco

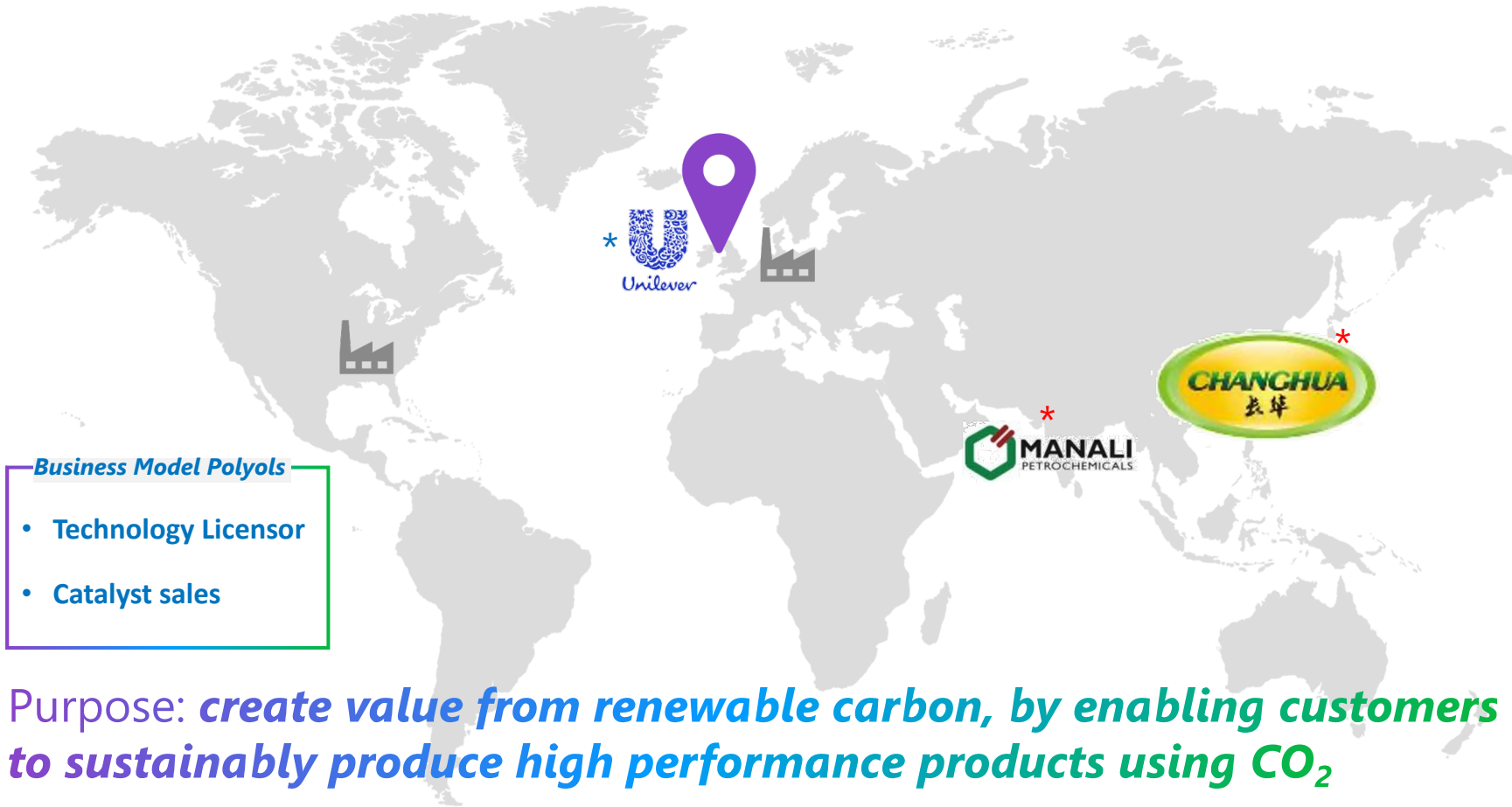
- Poor performing products
- Appears no longer strategic



¹ KOH represents ~80% of relevant (polyether) polyol market share, balance is DMC

ECONIC TECHNOLOGIES

Vision: *redeem CO₂ - redefining the make-up of essential products, for good*



- Business Model Polyols**
- Technology Licensor
 - Catalyst sales

Purpose: *create value from renewable carbon, by enabling customers to sustainably produce high performance products using CO₂*

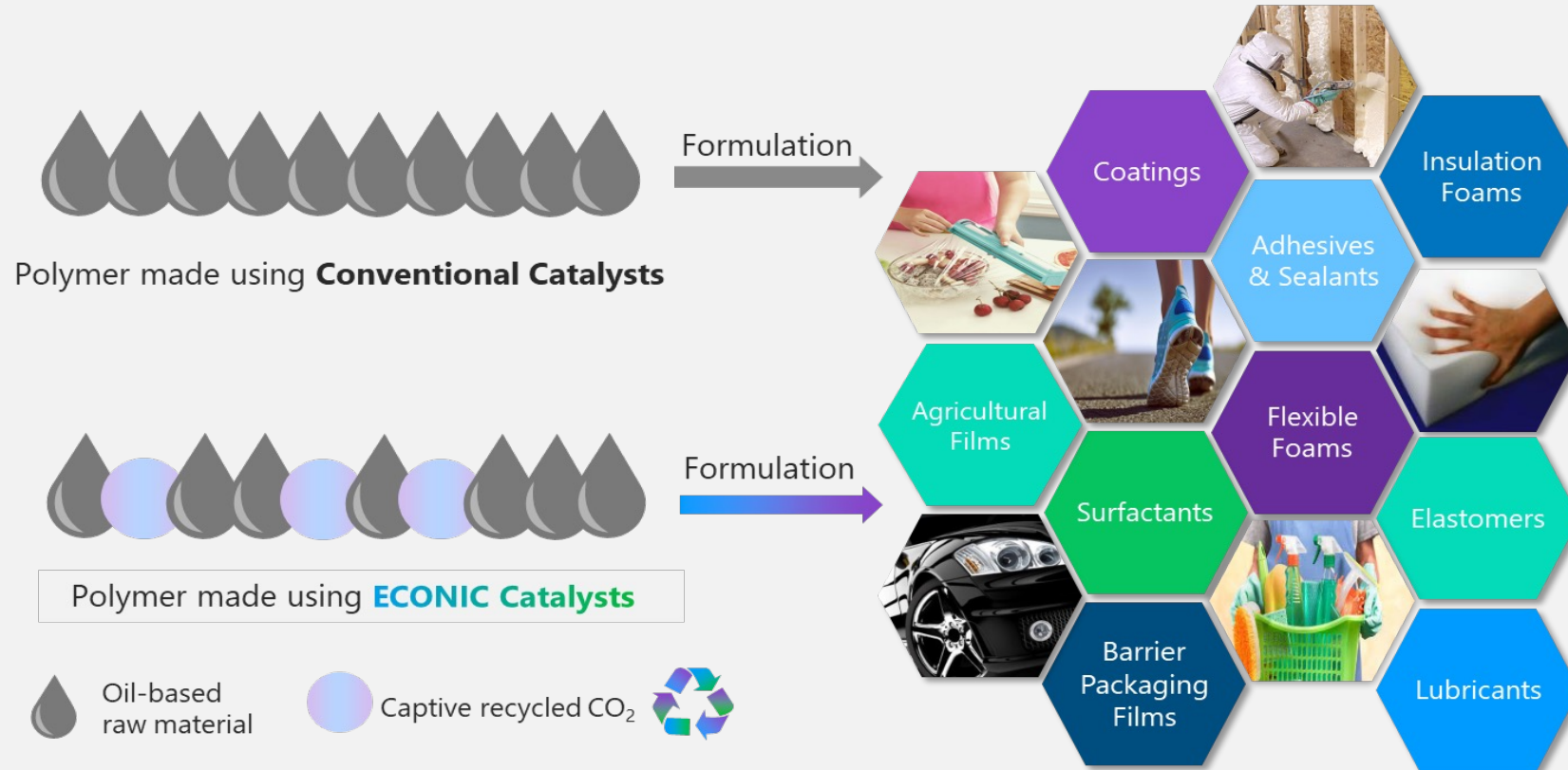
- Overview**
- Founded 2011. Imperial College London
 - HQ Macclesfield UK 2015
 - Pilot plant: Runcorn UK 2018
 - 60+ patents (granted)
 - 28 People

- Current Lead Investors**
-
- Capricorn PARTNERS
 - CM Venture Capital
 - OGCi OIL AND GAS CLIMATE INITIATIVE
 - GC VENTURES
 - ING

* JDA partner * Pioneer Licensee

ECONIC'S CATALYST SOLUTION

Cost effective recycling of abundant waste CO₂ as a raw material for polymer manufacture, replacing expensive fossil oil-based feedstocks, and supplementing bio-based feedstocks.



Market size

Polyols for Polyurethane & **Surfactants** market (combined)

- Est. Market size (vol): 22MM Tonnes pa (2020)
- Est. Market size (Rev.): \$45Bn pa (2020)
- CAGR : 3.6% pa (2018-2025)

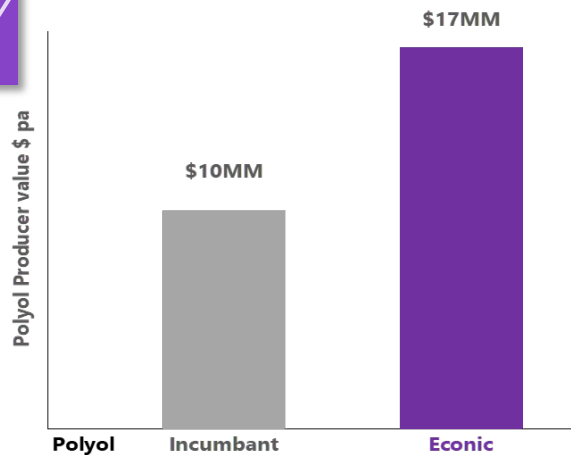
(source: combination of market reports and internal data)

TRIPLE BOTTOM LINE!

Disruptive CO₂ technology adds value throughout the supply chain, using existing infrastructure to make higher performing products, at lower cost, with sustainable environmental impact

Economic Value

Annual Gross Margin Development



- Lower Cost

Performance Value



- Higher Performance

Environmental Value

30% improved environmental impact



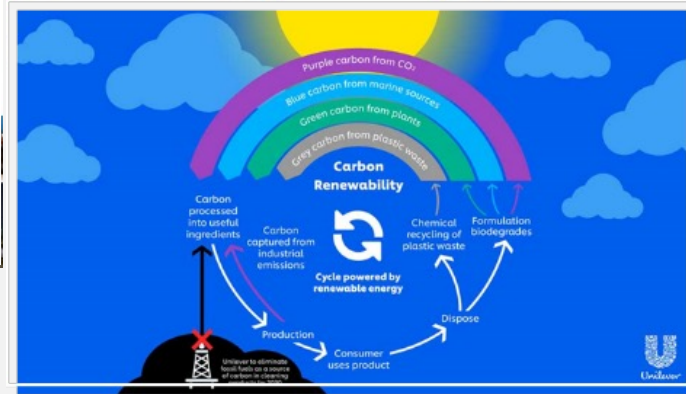
- Carbon Reduction

THE TIME IS RIGHT

Utilizing CO₂ as a renewable carbon source will add value and sustainability to the polyurethane & surfactants industries – reducing carbon footprint and cost, while improving performance & circularity



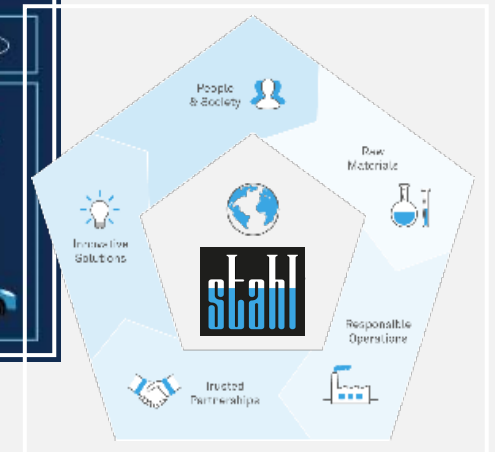
<https://about.ikea.com/en/sustainability>



www.unilever.com/planet-and-society/



corporate.ford.com/social-sustainability.html



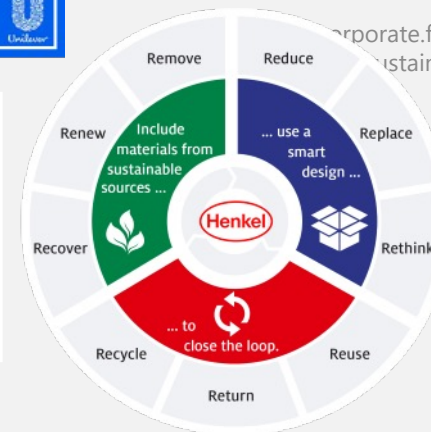
<https://www.stahl.com/strategy/sustainable-development>



<https://www.patagonia.com/our-footprint>



www.adidas.com/en/sustainability/managing-sustainability/general-approach/



www.henkel.com/sustainability



www.kao.com/global/en/sustainability/



ECONIC

TURNING CO₂ INTO ENDLESS POTENTIAL

Thank You

Keith Wiggins - CEO – k.wiggins@econic-technologies.com