

Transitioning Toward a **CIRCULAR ECONOMY**

for Automotive Plastics and Polymer Composites

The transition toward a circular economy for industrial goods will require the automotive industry and its suppliers to rethink the ways that vehicles and their materials are designed, constructed, used, and handled at end of life. The automotive plastics and polymer composites industry stands ready to work together and with automakers, shredders, recyclers, research organizations, and governments to conduct the strategic, whole-value-chain thinking and coordination that it will take to make this transition a reality.

A circular economy is designed to **keep resources in use for as long as practicable**

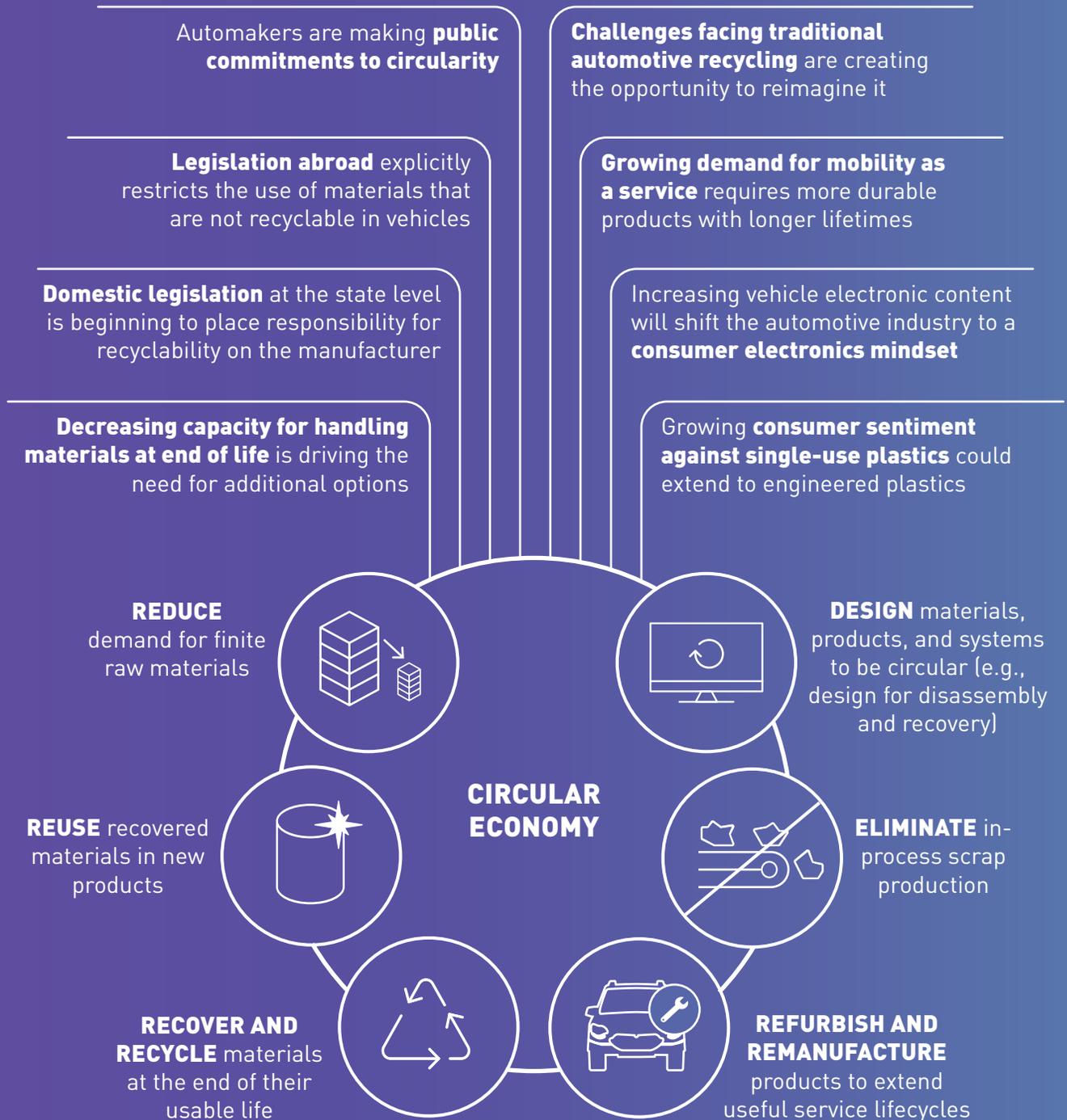
by extracting maximum value from them while in use and recovering and reusing materials at the end of each service life.



Environmental benefits
Longer product lifetimes

\$400-600 billion

business opportunity for automotive companies and their suppliers



PROGRESS TOWARD A CIRCULAR ECONOMY FOR AUTOMOTIVE PLASTICS AND POLYMER COMPOSITES

Repurposing **plastic waste and recyclates** into automotive materials and parts

- Molded engine components
- **Roofs and rear seat structure**
- **Front-end carrier** prototypes
- **Textiles**

Using **renewable feedstock** in plastics and polymer composites

- **Plant-based oils**
- **Naturally occurring fibers** (e.g., sugarcane, cellulose, soy, wheat straw, rice hulls, kenaf fiber)

Advancing **materials separation and cleaning** technologies

- Better **solvents and additives** for washing plastics
- **Tracing materials** to facilitate automated infrared sorting

Designing plastics and systems for **longevity, recyclability, and disassembly**

- **UV stabilizers**
- High-performance **resins, additives, and compatibilization** technologies

Developing **advanced recycling technologies**

- **At least 60 organizations** currently working to scale up **depolymerization, pyrolysis, and other emerging methods** for plastic processing

Optimizing manufacturing processes to improve efficiency

- **Thin wall instrument panels**
- **Blow-molded air ducts**
- **Mono-material headlamps**

Investigating the **viability of automotive plastics recovery models**

- **Recovery from bumper fascia**
- **Recovery from battery cases**
- Participating in **supply “web”**

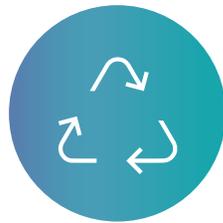
Funding R&D for circular economy solutions

- **Alliance to End Plastic Waste** targeting to invest \$1.5 billion
- **IACMI** projects on circularity
- **DOE**: \$35 million (REMADE), \$25 million (BOTTLE), others

THE PATH FORWARD



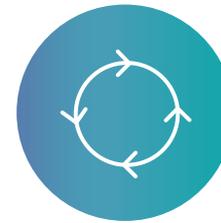
Continue to develop **ADVANCED RECYCLING AND RECOVERY** technologies



Invest in a robust and coordinated **RECYCLING INFRASTRUCTURE**



Design high-quality automotive plastics for **EASIER DISASSEMBLY, REFURBISHMENT/ REUSE, AND RECYCLING**



Conduct **RIGOROUS LIFECYCLE ASSESSMENTS** of circular plastics and polymer composites



Explore **NEW BUSINESS MODELS** that enable profitable circularity