



Carbon Upcycling Technologies is demonstrating a commercial-scale carbon sequestration and utilization technology for the cement and concrete sector.



Circular Rubber Technologies is reclaiming rubber from end-of-life, high-grade tires from industrial activities and selling the end product back to manufacturers for use in new tires.

ERA INVESTING OVER \$58 MILLION IN 10 CIRCULAR ECONOMY PROJECTS

In February, ERA announced the funding recipients selected in the Circular Economy Challenge. More than \$58 million will go toward 10 projects that will accelerate development of new technologies valued at \$528 million.

Located across the province, each project is designed to advance Alberta's global leadership in the circular economy. All funding for this investment is sourced from the province's Technology Innovation and Emissions Reduction (TIER) fund.

Producing high-quality fertilizer for farmers, recycling asphalt from roof shingles, sequestering carbon in concrete, and novel plastics recycling are some examples of the technology solutions receiving funding.

If successful, these projects will result in cumulative greenhouse gas (GHG) reductions of up to 4 million tonnes by 2050—equal to offsetting the GHG footprint of 1 million homes.

"A more sustainable, diversified provincial economy requires using our resources more wisely, we need to think about waste as a resource rather than a cost. This investment in converting waste into other uses is going to make a real difference," said Justin Riemer, CEO, Emissions Reduction Alberta.

Circular Economy Challenge projects support waste reduction, material and feedstock substitution, value recovery, and reduction of the lifecycle environmental footprint of materials and products.

These technology solutions can reduce the impacts of material production, processing, and disposal.

The new technologies are being developed by companies including Carbon Upcycling Technologies, Circular Rubber Technologies, Hydrovac Waste Solutions, INCA Renewtech, Northstar Clean Technologies, Phyto Organix Foods, RBW Waste Management, Rimrock Renewables, Sparks Eggs, and Suncor.

The innovations will support industry competitiveness, new venture creation, and economic diversification. Funding is expected to create 1835 person-year jobs in Alberta and have a \$350 million GDP impact in the province by 2025.

"Advancing technology solutions that support a circular economy makes good environmental and economic sense. Circular Economy Challenge projects supported by the TIER fund will help keep valuable materials in the economy and out of landfills, which drives investment, bolsters economic activity, cuts emissions, and creates jobs. It's a win across the board," said Sonya Savage, Minister of Environment and Protected Areas.

This Challenge was designed to align with provincial initiatives including the proposed Extended Producer Responsibility (EPR) approach, the agricultural plastics recycling initiative, and the Natural Gas Vision and Strategy's goal to establish Alberta as a centre of excellence for plastics diversion and recycling.

RECLAIMING MINING TIRES COULD LEAD TO \$45 BILLION MARKET OPPORTUNITY FOR ERA-FUNDED COMPANY

Each year, the tire manufacturing sector uses 20 million tonnes of rubber to produce new tires. Due to rigorous and intense use, about one million tonnes of end-of-life industrial tires are then buried on mine sites, creating environmental and operational challenges for operators.

Circular Rubber Technologies (CRT) has developed a chemical-free devulcanization process that transforms one of the mining industry's largest waste streams into a new valuable material. Their Rubber Reclaim product will be used to create new tires, significantly reducing the amount of virgin rubber demand and rubber ending up in landfills.

Because CRT's process does not require the use of additives, chemicals, or high-pressure gases, it is sustainable, cost effective, and scalable and an exemplary example of the circular economy in action.

"There are lots of end-of-life mining tires across the globe," said Maartje van der Sande, CEO, CRT. "Our long-term vision is to build facilities close to where the feedstock is and serve a local market and not ship tires around the world. We want to provide a circular solution at a local scale--and also be global at a local scale."

With an investment of \$3.2 million from ERA's Circular Economy Challenge, CRT is building a first-of-kind facility in Red Deer, Alberta. The \$14 million processing plant will allow CRT to reclaim rubber at a commercial scale while minimizing impacts on Alberta landfills.

"Our state-of-the-art facility in Alberta will begin production in Fall 2023. The investment from ERA will accelerate bringing our product—the world's cleanest, highest quality rubber reclaim—to a \$45 billion global market," said van der Sande.

Roughly 20 million tonnes of virgin rubber is used every year to make new tires. CRT works with both multi-national mining companies for feedstock of the Rubber Reclaim product and global tire manufacturers who are looking to lower their carbon footprint.

"There is a huge disconnect between tire waste and the need for raw materials to make new tires. That sparked the idea and became one of our biggest drivers: closing the circle. We solve two problems in one go," said van der Sande. "We see a strong growing demand for more sustainable materials and products, and tires are no different."

COMMITTED TO ACTION

ERA was created in 2009 to help deliver on the province's environmental and economic goals. ERA invests revenues from the carbon price paid by large industrial emitters in the pilot, demonstration and deployment of clean technology solutions that reduce GHGs, lower costs, attract investment, and create jobs in Alberta.

FUNDING OPPORTUNITY	WHAT'S IT ABOUT?	ERA FUNDING	HIGHLIGHTS
GRAND CHALLENGE	Technologies to transform CO ₂ from waste to value-added	\$26M	2 projects awarded \$5M each in the final round
METHANE CHALLENGE	New methane detection and reduction technologies	\$23M	12 projects funded worth \$60M in total project value
OIL SANDS INNOVATION CHALLENGE	Late-stage, GHG-reducing technologies to help Alberta's oil sands industry remain competitive	\$36M	6 projects funded worth \$377M in total project value
INDUSTRIAL EFFICIENCY CHALLENGE	Technologies to increase efficiencies for LFE industrial facilities	\$56M*	9 projects funded worth \$199M in total project value
BEST CHALLENGE	GHG-reducing technologies in biotechnology, electricity, and sustainable transportation	\$66M	12 projects funded worth \$238M in total project value
NATURAL GAS CHALLENGE	Unlocking innovation across Alberta's natural gas value chain	\$58M	20 projects funded worth \$168M in total project value
FOOD, FARMING, AND FORESTRY CHALLENGE	Accelerating innovation for sustainable growth	\$28M	16 projects funded worth \$137M in total project value
SHOVEL-READY CHALLENGE	Support for companies ready to implement leading-edge technologies in applications for both greenfield and brownfield operations	\$166M*	16 projects funded worth over \$2B in total project value
CARBON CAPTURE KICKSTART	Advancing the province's global leadership in CCUS-related technologies	\$41M	11 projects that could lead to over \$20 billion in capital expenditures
CIRCULAR ECONOMY CHALLENGE	Reducing the impacts of material production, processing, and disposal	\$58M	11 projects funded worth over \$528M
PARTNERSHIP INTAKE PROGRAM	Evaluating promising GHG-reducing projects referred to ERA by Trusted Partners	\$69M*	18 projects funded to date worth over \$1.2B in total project value
ENERGY SAVINGS FOR BUSINESS	Support for small- and medium-scale industrial and commercial businesses for cost-saving and emissions reducing projects	\$40.5M*	1,812 pre-approved projects worth \$177M in total project value

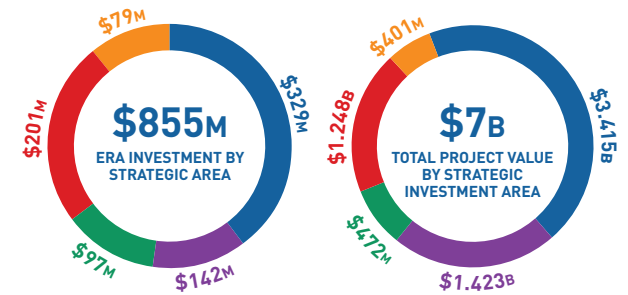
*This program is funded in part by the Government of Canada's Low Carbon Economy Leadership Fund.

TECHNOLOGY INNOVATION

Investing in a Diverse Portfolio

245 Projects*

- ▶ **Future Fuels** (53 Projects)
- ▶ **Circular Economy** (55 Projects)
- ▶ **Energy Efficiency** (35 Projects)
- ▶ **Industrial Transformation** (63 Projects)
- ▶ **Carbon Sequestration** (36 Projects)



*In 2012, ERA provided \$7 million in funding for three adaptation projects worth \$7 million in consultation with Alberta Environment and Parks.



Cumulative Project Emission Reductions

41 Mt CO₂e Total by 2030



105 Mt CO₂e Total by 2050



Note: We have estimated emission reductions for all projects with approved funding commitments and executed funding agreements and assumed the projects will continue successfully and as planned. Should circumstances change for these projects, emission reduction estimates may change materially.

COMMERCIAL ADOPTION

ENERGY SAVINGS FOR BUSINESS PROGRAM

- PROJECTS 1812
- INVESTED \$40.5 MILLION
- JOBS CREATED 1,123
- AB GDP CONTRIBUTION \$138 MILLION
- EMISSIONS REDUCED 3MT OF LIFETIME EMISSIONS

ALL PROJECTS



**A person-year is equal to one-year of employment for one individual. Please note: economic impact is reported on a calendar year basis, not fiscal year.