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Message from the Executive Director

Al Shpyth – Executive Director, IMII

As I prepare to step down as Executive Director in mid-2025, I've found myself reflecting not just on the past year, but on the journey IMII has taken since I joined nearly a decade ago. I am proud of what we've built together—a collaborative, forward-thinking organization that continues to make a meaningful impact on Saskatchewan's minerals industry.

In 2024, IMII stayed focused on our core purpose: enabling innovation, supporting skills development, and enhancing collaboration. We advanced three clean energy technology development projects aimed at scaling low-carbon solutions for industry, and we continued to demonstrate new technologies through DEMOday, where ten promising innovations were pitched, and two received Innovation Awards. These efforts speak to our role as a trusted connector between solution providers and industry needs.

Supporting a diverse and capable workforce remains central to IMII's mission. We marked the sixth year of the iMpowered Scholarship, awarding 13 scholarships to deserving students and bringing our six-year total to 46 awards worth more than \$650,000. We also convened our members to identify seven new pathways to address critical skill gaps—work that is now shaping our 2025 workforce development plans.

Research and development collaboration grew as well, with our second IDEATE event bringing together Saskatchewan's post-secondary institutions and research organizations to explore real-world challenges identified by the minerals industry. In 2025, we'll expand IDEATE's reach across the Prairie region, tapping into an even broader network of applied research talent.

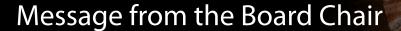
As the industry evolves—driven by digital transformation, ESG imperatives, and global demand for sustainable mineral production—IMII is positioned to help lead the way. With our members and partners, we are building the innovation ecosystem needed to ensure Saskatchewan remains competitive, resilient, and inclusive.

I'm deeply grateful to our Board, our partners, and to the many individuals who have supported IMII's work. A special thank you to Marylou Langridge, whose dedication and collaboration have been invaluable throughout my tenure.

It has been an honour to serve this organization and contribute to an industry that plays such a vital role in Saskatchewan's future.

Sincerely,

Al Shpyth, Executive Director



Steve McLellan - Chair of the Board, IMII

As we reflect on 2024, it is with deep appreciation and optimism that I share this message on behalf of IMII's Board of Directors.

This past year has been one of both progress and transition. Under Al Shpyth's leadership, IMII continued to deliver high-impact innovation, research, and workforce development programs. From advancing clean energy technologies and digital training initiatives to supporting equity-focused scholarships and fostering applied research collaborations, the organization's commitment to its mission has never been stronger.

We are especially grateful to Al as he prepares to retire in 2025. His leadership has been instrumental in positioning IMII as a trusted convener and catalyst for innovation in Saskatchewan's minerals industry. The Board will be working closely to ensure a smooth leadership transition and to support the next chapter in IMII's evolution.

Looking ahead, we are excited by the opportunities that lie before us. With the growing global demand for sustainable and responsibly sourced minerals, Saskatchewan is well-positioned to lead. IMII will continue to play a vital role in enabling innovation and building the workforce of tomorrow.

Thank you to our members, partners, and supporters. Your engagement and contributions continue to shape a vibrant future for mining and minerals in Saskatchewan.

Sincerely,

Steve McLellan, Board Chair





The International Minerals Innovation Institute (IMII) was established in January 2012 with a clear and lasting purpose: to enhance the competitiveness of Saskatchewan's minerals industry through innovation, education, and collaboration.

Since its inception, IMII has worked in partnership with minerals companies, post-secondary institutions, and government to support:

- The attraction and retention of skilled people
- The development and delivery of relevant education and training programs
- Collaborative research and development for real-world mining challenges
- Leadership in building a more inclusive, sustainable, and innovative industry

While the language and presentation of these objectives have evolved over the years, their essence remains unchanged—and central to IMII's mission.

"These objectives remain core to IMII's purpose."

— Al Shpyth, Executive Director

Today, IMII continues to be a unique and trusted platform—bringing together industry leaders, educators, researchers, and innovators to advance technologies, talent, and sustainability in Saskatchewan's vital minerals sector.



In 2024, IMII continued to drive innovation, support emerging talent, and foster industry-academic collaboration. Here's a snapshot of what we accomplished together:

Innovation & Technology

- 10 technologies pitched at DEMOday
- 2 Innovation Award winners:
 - Polycontrols Technologies (cold spray additive manufacturing)
 - Metraspectral Ores (ore resource evaluation system)
- 3 new clean energy technology development projects launched (Partners: Acceleware, SolarSteam, March Consulting)

Education & Workforce Development

- 13 scholarships awarded through the iMpowered Scholarship program in 2024 (Total value: \$125,000)
- 46 scholarships awarded over six years (Total awarded since 2019: \$656,250)
- 7 new workforce pathways identified through member-led planning workshop (Focused on youth engagement and high-demand occupations)



Research & Collaboration

- 2nd annual IDEATE event hosted (Featuring Sask Polytech, U of R, U of S, Canadian Light Source)
- 12 innovation-focused blog posts published
- 3-part Minerals Innovation Series released on carbon capture and storage hubs

Membership & Engagement

- 5 minerals company members
- 7+ academic and innovation partners
- 100+ stakeholders engaged through events, projects, and outreach

Innovation & Technology Development

Advancing the future of mining through collaboration and demonstration

Innovation is at the heart of IMII's work. In 2024, we continued to support and showcase new technologies with the potential to enhance safety, sustainability, and competitiveness in Saskatchewan's minerals industry. Through technology demonstration events, strategic partnerships, and direct investment in promising projects, IMII remains a catalyst for applied innovation.



2024 Innovation Award Winners

Following DEMOday, two standout solutions were recognized with Innovation Awards for their potential to transform operations:

- Polycontrols Technologies for a cold spray hybrid additive manufacturing process that could significantly reduce maintenance costs.
- Metraspectral Ores for a machine vision-based ore resource evaluation system designed to improve operational efficiency and decision-making.

These awards underscore the growing role of AI, automation, and advanced materials in reshaping the minerals sector.

"Applicants who have been the most successful may well have taken advice from Thomas Edison: 'focus on how the end-user customers perceive the impact of your innovation."

— Al Shpyth



DEMOday 2024

Our flagship innovation event made a successful return in May, providing solution providers with a unique platform to present cutting-edge technologies to key industry decision-makers. This year, 10 technologies were selected to showcase their potential across various sectors, from automation and resource evaluation to sustainable manufacturing.

Presenters this year highlighted innovations in advanced chemicals, emission reduction, energy efficiency, and water solutions.

Notable presentations included:

- Polycontrols Technologies Inc. Cold Spray Hybrid Additive Manufacturing
- We-Stop (USask Hackathon Team) Wireless Electronic Stop
- HimSai HiResMSI Imaging (High Resolution MicroSeismic Imaging)
- Spero Analytics LoRA Mesh Networks for Remote Asset Monitoring in Mining with Limited Telecom Infrastructure
- Ambitonner Al Solutions AmbDrift
- Spartan Controls Limited Solvent Extraction Real-Time
 Optimization for SX-DeBottlenecking and Efficient Recovery of Uranium
- Continental Mine & Industrial Supply Ltd. Surface Fine Tailings System Optimization
- Continental Mine & Industrial Supply Ltd. Underground Conveyor Installation Optimization System
- Metaspectral ORES: Ore Resource Evaluation System
- Xtended Hydraulic & Machine Inc. Conveyance Installation System

Clean Energy Innovation Projects

Piloting sustainable technologies to power the future of mining

In 2024, IMII advanced three promising clean energy technology development projects focused on reducing greenhouse gas emissions and increasing energy efficiency in Saskatchewan's minerals industry. These projects exemplify IMII's commitment to supporting innovations that are both environmentally and economically viable.

SolarSteam – Harnessing Renewable Heat

Through a collaborative project with SolarSteam, IMII supported the development of a modular concentrated solar thermal system designed to deliver high-temperature steam for potash mining processes such as shaft heating, brine crystallization, and product drying.

- Phase II scaled the concept to a 25 MW thermal system with thermal energy storage
- Demonstrated potential to operate in Saskatchewan's winter conditions, producing steam at 279°C
- Estimated to offset several thousand tonnes of CO₂ annually

While current economics favor other renewable sources like wind or solar PV with storage, the project laid critical



groundwork for future innovation in renewable industrial heat—a bold step toward decarbonizing mining operations.

"SolarSteam's work demonstrates what's possible when we challenge assumptions, explore bold solutions, and collaborate across sectors to build a cleaner energy future."

Acceleware – Radio Frequency Drying for Mineral Processing

Acceleware's clean-tech project explored the use of radio frequency (RF) energy as an alternative to conventional thermal drying methods in potash and uranium processing.



- Built on earlier proof-of-concept work (Phase I) confirming the feasibility of RF energy for ore drying
- Phase II developed and tested a 100 kg/hr RF drying prototype, powered by a 10 kW Clean Tech Inverter
- Achieved a dramatic moisture reduction in potash from 5.5% to below 0.2%
- Addressed operational issues including electrical insulation, arcing, and electrostatic dust effects

The results validate RF drying as a scalable, emissions-reducing approach to mineral processing, helping to move clean energy innovation closer to industrial application.

Together, these projects reflect IMII's ongoing leadership in advancing technologies that meet the industry's energy transition goals without compromising economic performance. By funding bold, early-stage innovations, IMII helps derisk emerging technologies and accelerate their path to commercialization.



Enhancing safety and efficiency through smart, scalable solutions

Ionic Mechatronics – SafeBox Lockout/ Tagout System

Through IMII's Demonstrating Innovations program, Ionic Mechatronics deployed its award-winning SafeBox System in a Saskatchewan potash pilot facility—the largest installation of its kind to date.

SafeBox is a centralized lockout/tagout (LOTO) system that enables safe and rapid isolation of multiple energy sources from a single location. The pilot installation included one Master Control Unit and eleven Field Isolation Devices (FIDs), integrated into a safety-rated digital network.

Key outcomes:

- Achieved full isolation of 11 circuits in under 30 seconds
- Reduced maintenance time and improved equipment availability
- · Performed reliably in high-dust industrial conditions
- Validated system scalability and configurability for complex operations

SafeBox's modular architecture allows up to 50 energy sources to be isolated in a single operation, with up to 10 Master Units supporting different isolation profiles—from full-process shutdowns to targeted equipment control.

This successful deployment not only validated the system's performance in a real-world setting, but also positioned it as a scalable safety innovation with strong potential for broader adoption across Saskatchewan's minerals sector and beyond.

With the addition of SafeBox, IMII's 2024 innovation portfolio now reflects a balanced approach—supporting technologies that address energy transition, process efficiency, and operational safety.



Research Collaboration

Bridging industry challenges with research-driven solutions

IMII plays a vital role in connecting Saskatchewan's minerals industry with research institutions and engineering experts to co-develop actionable, applied solutions. In 2024, our collaborative research efforts focused on identifying opportunities for innovation that align with the industry's sustainability goals and operational realities.

IDEATE 2024: Connecting Ideas with Impact

Held in June, the second annual IDEATE event brought together researchers from:

- Saskatchewan Polytechnic
- University of Saskatchewan
- University of Regina
- Canadian Light Source

Alongside IMII's minerals company members, these institutions explored priority industry problems suitable for applied research. IDEATE sessions helped shape future research directions by fostering dialogue on practical solutions—from materials handling to process automation. Looking ahead, IDEATE 2025 will expand to include polytechnics from across the Prairie provinces, broadening access to applied research capacity and deepening regional innovation collaboration.





March Consulting – Clean Power Integration Study

In a separate 2024 initiative, March Consulting Associates Ltd. partnered with IMII to explore small modular reactors (SMRs) could be integrated into Saskatchewan's minerals processing infrastructure.

The project assessed:

- System-level requirements for power reliability and load balancing
- Engineering and economic considerations for integrating renewables at scale
- Pathways to reduce greenhouse gas emissions while maintaining industrial productivity

While the project was conceptual in nature, it delivered important frameworks for decision-making and helped outline what an electrified, lower-emission future could look like for the mining sector.

This study represents IMII's commitment to early-stage innovation planning, ensuring the minerals industry is equipped with the technical and strategic insights needed to make confident, future-focused energy investments.



In 2025, IMII is expanding its research collaboration platform through a major new initiative: a pilot partnership with the Prairie Polytechnic Innovation Network Accelerating Commercialization for Local Ecosystems (P2INACLE), led by Saskatchewan Polytechnic.

With nearly \$900,000 in federal funding from PrairiesCan, P2INACLE unites leading polytechnic institutions from across the Prairies—including:

- Saskatchewan Polytechnic (lead)
- NAIT, SAIT, Northwestern Polytechnic, Red Deer Polytechnic, and RRC Polytech

This new network will connect industry with the applied research expertise, facilities, and equipment of Prairie polytechnics to accelerate innovation in key sectors—starting with mining and minerals.

IMII will host the first pilot of the P2INACLE initiative, which will kick off with a collaborative launch event in Saskatoon in March, followed by the participation of P2INACLE researchers in IDEATE 2025 in May.



"This initiative will address key industry challenges and harness the collective expertise of polytechnics and industry partners across the Prairies, driving both economic growth and technological advancements."

— Al Shpyth, Executive Director, IMII

At IDEATE 2025, P2INACLE members will engage directly with IMII's industry partners to co-develop applied research proposals focused on the sector's most pressing challenges — from decarbonization and automation to workforce development and equipment reliability.

This collaboration sets a new standard for industry-academic partnerships and will help establish repeatable, scalable best practices for future innovation across Western Canada's resource sectors.

Workforce Development & Education

Building new, flexible pathways into Saskatchewan's minerals sector

In 2024, IMII made significant progress in addressing one of the minerals industry's most urgent needs: ensuring the availability of a skilled, diverse, and future-ready workforce. By combining inclusive talent development, innovative education delivery, and strategic partnerships, IMII is helping shape the next generation of professionals for Saskatchewan's growing mining economy.

New and Emerging Workforce Pathways

Working with its industry and education members, IMII identified and began developing seven new workforce development pathways to better engage youth—especially those outside traditional educational systems—and support entry into high-need occupations. These include:

- FlexPath: Competency-based, non-linear educationto-work models
- Pre-Pre-Employment Training: Immersive industry exposure before formal training
- AI-Supported Remote Learning: Tech-enabled training for rural and remote youth
- Digitally Transformed Apprenticeships: Modernized, accelerated trades certification
- NextGen Ready Trades Training: Earn-while-you-learn, employer-integrated Red Seal pathways
- Entry-Level Instrumentation Interns: "Work first, education second" model for in-demand roles
- Mining-Like Engineers: Laddered and flexible degree pathways for engineering careers

Several of these pathways are moving toward pilot phase in 2025.



2024 Project Highlights STEM+ – Building Indigenous STEM Career Capacity



Led by the University of Saskatchewan, STEM+ supported Indigenous undergraduate students in STEM fields through mentorship, career development, and culturally responsive programming. In 2024:

- NSERC undergraduate research applicants grew from 4 to 16
- 93% of participants said STEM+ helped clarify their academic/career goals
- Program retention improved, especially for Indigenous women and student parents
- Expanded partnerships with industry for internships and research placements
- Initiated a new "Opportunities Coach" role to sustain mentoring impact

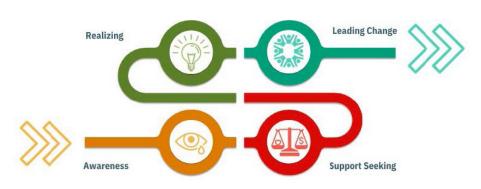
The program has led to institutional commitments that will support Indigenous student success well beyond the project's end.

Activating Allies – Advancing Inclusive Workplaces

Part of a doctoral research project led by Jocelyn Peltier-Huntley, this interdisciplinary study defined a scalable model for workplace allyship—the practice of actively supporting historically marginalized groups.

- Engaged over 120 participants in developing the Ally Activation Model
- Piloted at USask Engineering and later applied within the minerals industry
- Developed structured training that improves EDI engagement and cultural safety
- Highlighted the importance of organizational commitment and cross-sector collaboration

The Activating Allies course is now being delivered by Prairie Catalyst Consulting, supporting long-term cultural change in the workplace.



Ally Activation Model



This immersive VR lab provides hands-on simulations of mining environments, enhancing safety training and accessibility.

- Used by Sask Polytech's Mining Engineering Technology program and beyond
- Improves comprehension of mining conditions, survey work, and geological mapping
- Supports high school, post-secondary, First Nations, and workforce development programs
- Upcoming modules: Daily Safety and Emergency Preparedness simulations

By blending cutting-edge tech with curriculum-aligned training, this lab ensures students are ready for the modern mining workforce.





Looking Ahead

From innovative training models to inclusive learning environments, IMII's 2024 efforts set the stage for expanded program delivery, broader youth engagement, and deeper partnerships with industry and education in 2025.

"We're not just preparing people for jobs—we're building meaningful, adaptable careers in one of the province's most essential industries."

Al Shpyth, Executive Director

Thought Leadership & Communication

Elevating innovation, collaboration, and the Saskatchewan minerals story

In 2024, IMII advanced its role as a trusted voice in mining innovation—not only through funding and partnerships but also by shaping the conversation around the future of the industry. Through targeted storytelling, public engagement, and new knowledge products, IMII built awareness of Saskatchewan's minerals advantage and the people and technologies driving its evolution.

12-Part Innovation Blog Series

Launched in early 2024, IMII published a monthly blog series highlighting the critical role of innovation in the minerals sector. The series explored topics such as:

- The role of clean technology in mining decarbonization
- Why talent and diversity are essential to innovation
- · How collaboration accelerates problem-solving
- What innovation means to Saskatchewan's economic future

Did you miss the series? All 12 blogs are available on IMII's website under the "News" section.

These accessible, insight-rich articles helped spark dialogue and attract attention to both IMII's initiatives and the broader innovation ecosystem in which it operates.



Minerals Innovation Series: Carbon Capture and Storage Hubs

IMII also published the first edition of its Minerals Innovation Series—a three-part thought leadership report exploring the potential for carbon capture and storage (CCS) hubs in Saskatchewan. Developed in collaboration with members and partners, the series addressed:

- Opportunities for the minerals industry to anchor CCS projects
- Synergies between mining and power generation infrastructure
- The policy, investment, and technology enablers needed to move from concept to deployment

This work laid the groundwork for further exploration of lowcarbon industrial strategies and will inform future innovation investment discussions.

Speaking Engagements & Outreach

Throughout 2024, IMII team members and partners were active at industry conferences, education forums, and public events—sharing learnings from DEMOday, workforce initiatives, and technology pilots. These efforts helped amplify Saskatchewan's role in the global shift toward responsible, innovation-driven resource development.

Positioning Saskatchewan as a Leader in Sustainable Mining

From blogs to CCS briefings to community engagement, IMII's communication strategy is rooted in a simple idea: telling the stories that matter. By linking innovation to people, performance, and sustainability, IMII is helping to redefine what mining leadership looks like in the 21st century.

2024 FINANCIAL SUMMARY

Revenues and Expenses

	2024	2023
Revenues	1,147,987	875,752
Operations	293,319	261,919
Programs	281,235	297,491
E&T Projects	300,650	322,796
R&D Projects	686,535	492,988
Special Projects	40,556	10,470

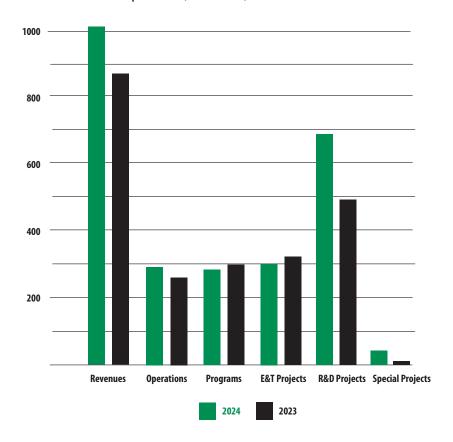
IMII's mainstream of revenues comes from industry members, industry R&D participation, and the Government of Saskatchewan through Innovation Saskatchewan.

IMII awarded \$125,000 in scholarships.

IMII funded three education & training and diversity & inclusion projects.

IMII funded ten research, development, and demonstration projects.

Revenues and Expences (in 1000's)



Financial Position

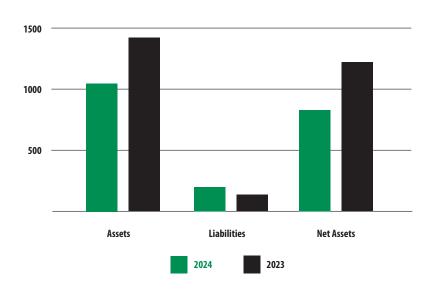
	2024	2023
Assets	1,034,380	1,422,486
Liabilities	200,626	134,423
Net Assets	833,754	1,288,063

As of December 31, 2024, \$736,833 was committed to fund approved projects and initiatives for 2025 to 2027.

- \$327,436 for research, development, and demonstration commitments
- \$9,397 for special projects
- \$90,000 for future initiatives
- \$310,000 held as a windup reserve

In 2024, IMII drew down its cash and net reserves by approximately \$454,000.

Statement of Financial Position (in 1000's)



Membership



Why IMII? IMII strengthens Saskatchewan's minerals industry by fostering sustainability, driving provincial growth, and providing access to cutting-edge resources. Members can contribute to the development of tailored solutions that address industry challenges.

How IMII Supports Innovation IMII facilitates collaboration among stakeholders to drive technological advancements and talent development. We influence post-secondary curriculums, research programs, and funding, empowering the industry to adopt new technologies and best practices.

Join IMII and Shape the Future Membership offers the opportunity to collaborate with industry leaders, influence the development of emerging technologies, and access exclusive resources and funding to unlock new opportunities.

Minerals Companies – "Company A" Category

- BHP
- Cameco Corporation
- The Mosaic Company
- Nutrien Ltd.

Minerals Companies - "Company C" Category

- Fission Uranium Corp.
- Uranium Energy Corp.

Solution Providers – "Company B" Category

Saskatchewan Research Council

Solution Providers – "Company C" Category

Hatley Engineering

Government

- Innovation Saskatchewan
- Ministry of Advanced Education Institutions and

Capacity Builders

- Canadian Light Source
- Carlton Trail College
- North West College
- Northlands College
- Saskatchewan Indian Institute of Technologies (SIIT)
- Saskatchewan Apprenticeship and Trade Certification Commission
- Saskatchewan Polytechnic
- Suncrest College
- University of Regina
- University of Saskatchewan

Board Members

As of December 31, 2024, the following served on IMII's Board of Directors:

Tanya Smith, BHP
Mike Tomtene, Cameco Corporation
Murray Schultz, The Mosaic Company
Craig Funk, Nutrien Inc.
Richard Elkington, Fission Uranium
Rashid Bashir, Hatley Engineering
Kevin Chung, Innovation Saskatchewan

David Boehm, SK Advanced Education
Terry Fonstad, University of Saskatchewan
Christopher Yost, University of Regina
Larry Rosia, Saskatchewan Polytechnic
Justin Lasnier, Saskatchewan Indian Institute of Technologies
Robert Jackson, Saskatchewan Mining Association



As IMII looks toward 2025, it does so with the guidance of a new strategic plan for 2025–2027, reflecting a sharpened focus on innovation, sustainability, and workforce inclusivity. This plan positions IMII to deliver even greater value to Saskatchewan's minerals sector through collaborative investment in ideas that are practical, scalable, and aligned with industry needs.

IMII's 2025-2027 Strategic Plan

External Vision

Saskatchewan people are proud of and benefit economically, environmentally, and socially from our world-class, sustainable, and trusted minerals industry.

Mission

IMII is a member-based organization advancing the collective success of the minerals industry in Saskatchewan. Governed by industry, post-secondary education, and government entities, we collaborate to accelerate innovation in technology, representative workforce development, and thought leadership.

Vision

IMII is a known and trusted innovation hub pivotal in the development of a sustainable, globally respected, and competitive minerals industry in Saskatchewan. We are a comprehensive network of industry members and partners.

Values

- Collaboration We are a unique network that accomplishes more by working together.
- Trust The network shares non-competitive information openly for collective success.
- Impact We invest to generate positive outcomes for industry and society.
- Sustainability We acknowledge that all things are connected, and our decisions support a more sustainable world.



Workforce Development: Pathways in Action

In 2025, IMII will focus on launching pilot projects aligned with four key workforce pathways:

- FlexPath Flexible, non-linear career models for youth outside formal systems
- Al-Supported Remote Learning Bringing skills training to rural, remote, and reserve communities
- Entry-Level Instrumentation Interns Work-first pathways into in-demand technical roles
- Mining-Like Engineers Alternative and accelerated routes into mining-relevant engineering careers

These pathways are being developed in collaboration with industry, education, and training partners, with a focus on practical results, community reach, and diversity in talent pipelines.

Technology Focus: Innovation That Matters

Looking ahead, IMII will prioritize technologies with strong potential for real-world adoption and broad impact across the minerals value chain. Key focus areas include:

- Carbon Capture, Utilization, and Storage (CCUS)
- Emissions Reduction & Energy Efficiency
- Heat Recovery & Microgeneration
- Machine Learning, Remote Sensing, and Spatial Data
- · Geological Mapping and Tailings Management

- Mobile Equipment, Safety Solutions, and Corrosion Prevention
- Water Management, LIDAR, and Electrical Load Smoothing

These areas reflect both operational priorities and long-term sustainability goals for IMII members.

Research Priorities for 2025

In collaboration with post-secondary and industry partners, IMII will support applied research in areas such as:

- Non-petroleum-based anti-caking and dedusting agents
- Novel uses for potash tailings
- · Mine planning innovations
- · Heat recovery and emissions control technologies

These priorities ensure IMII's investments remain at the forefront of science-backed, industry-ready innovation.

Strengthening the Innovation Network

Through platforms like IDEATE 2025 and the newly launched P2INACLE pilot, IMII will continue to build bridges between Prairie polytechnics, applied researchers, and industry members. These efforts will:

- Broaden access to applied R&D capabilities
- Accelerate the development of innovation pilots
- Support economic diversification across Western Canada





