

HICKEYGLOBAL
ECONOMIC DEVELOPMENT CONSULTING



Targeted Industry
Cluster Analysis
Executive Summary
Aug 9, 2021

INTRODUCTION

Building Bridges to Opportunity

Powerful mega trends in de-carbonization, technology and geo-political policy shifts are redefining markets and behavior. The Federal Government has introduced policies around innovation, revitalizing manufacturing, workforce development, and infrastructure. Itasca County is part of a state that is receptive to technology adoption and has witnessed a recent surge in venture capital activity. IEDC has support from a diverse range of significant actors in the economic ecosystem. All of which aligns with the County's economic base and presents transformative opportunities through sector reconfiguration.

Objectives and Scope

The overarching goal of the Economic Industry Cluster and Business Assistance Targeting Strategy is to guide IEDC in its long-term strategies for efforts in business recruitment and business retention to assist its mandate to advance the creation and retention of quality jobs working with the regional business community. To support this, an analysis of the clusters was completed to understand their dynamics and opportunities and set recommendations on how the County can position itself to capitalize on them.

Methodology

A mix of primary and secondary research determined that forestry, mining, manufacturing, and energy (renewables) were the most likely sectors to spearhead the region's future prosperity. In addition, enabling sectors were identified as construction, professional and technical services, and administrative and support services. The research and analysis were compiled as follows in the technical report:

- Interviews and focus groups with IEDC stakeholders to gather insights on the main study topics
- An economic base analysis and a labor market analysis in relation to Itasca County, the Northeast Minnesota Planning Region, the State and the Nation
- FDI and trade flows in Minnesota
- External trends analysis in each focus sector
- Itasca County's economic ecosystem in each focus sector

The key findings identified changing and growing clusters, emerging sectors, supply chain gaps, external trends, the impact of Covid on the focus sectors, and transformative technologies.

INDUSTRY and EMPLOYMENT

ITASCA COUNTY

Economic Base Analysis

- **Itasca County's core industries must be evolved into the future** by leveraging technologies and aligning with sector trends. Between 2015 and 2019, forestry, mining, utilities, and construction saw declining employment and concentration
- **There are nascent sectors in important support sectors and knowledge industries, but concentration is very low.** Administrative and Support and Waste Management and Remediation Services experienced the strongest growth. Professional and Technical Services, and Information were identified at a fledgling stage that could be a starting point for growth
- **Itasca County is a community of small businesses** 87% of businesses are non-employers (self-employed) or have under 4 employees
- **Small businesses are not concentrated in some focus sectors.** Employment in mining and utilities is dominated by a small number of MNE firms with less than 1% of self-employment and less than 5% in Agriculture, forestry, fishing and hunting, and manufacturing. self employment is most prevalent in the forestry value chain with 215 businesses
- **Business formations are not occurring in the core sectors.** The rate of business formations is miniscule or non-existent in the core sectors, with little activity in the support sectors, except construction and professional, scientific and technical services

- **Low economic activity in knowledge industries is a major concern.** There is a low concentration of companies and skills in knowledge industries. IT activities have low representation among the self employed, often a source of entrepreneurship amounting to just under 1% of self-employment

Labor Market Analysis

- **Itasca County offers a very low-cost, affordable market.** Wage rates are 33-34% below the U.S. and Minnesota averages, across all positions, with projections suggesting this is likely to continue
- **A larger mature workforce** that will continue to age with the combined younger generations Alpha, Z, and Millennials 11% lower than the U.S. and Minnesota averages
- Itasca County's low labor force participation rate is systemic, being well below the Minnesota state and U.S. national averages and in decline over the last five years
- Employment density in Professional, Scientific, & Technical Services and information services is only about half the U.S. average, indicating a thin supply of these skills

RESEARCH & KEY FINDINGS

ITASCA COUNTY

Trends in the focus sectors align with County's assets and highlight areas for opportunity exploration.

Energy

- **Shift toward renewable energy:** In late 2020, the share of renewables exceeded that of coal in generation for 153 days compared with 39 days in 2019
- **FDI trends:** With FDI into the State between 2015-2020, Industrial Equipment was the leading sector by number of projects (13). Renewable Energy created ¼ the number of projects as the Industrial Equipment sector, however, it managed to contribute nearly \$750M in CapEx, roughly 340% more
- **Increasing demand:** The U.S Energy Information Administration (EIA) forecasts that electricity consumption in the U.S. will increase by 2.2% in 2021 and electricity sales in the industrial sector specifically will grow by 3.3% in 2021; sales to the commercial sector will increase by 1.4% in 2021
- **Policy support:** Renewable growth could accelerate in 2021 as the new administration starts to execute on investing \$2 trillion in clean energy, fully decarbonizing the power sector by 2035, and net-zero carbon emissions by 2050

Forestry

- **Demand resurgence:** Paper and Paperboard; Articles of Paper Pulp, Paper or Paperboard saw a resurgence in 2020, leading all exports with 134.9% growth; from \$640K in 2019 to \$1.5M in 2020

- **Growth in CLT:** Cross Laminated Timber (CLT) global market is projected to reach \$982.1 million USD by 2026, from \$562.6 million in 2020, at a CAGR of 9.7% during 2021-2026
- **Green building growth:** non-residential green buildings market reached approximately \$80 billion in 2020 and is expected to hit \$103 billion by 2023
- **Increasing demand for by-products:** The global Biomaterials Market is projected to reach USD 47.5 billion by 2025 from USD 35.5 billion in 2020, at a CAGR of 6.0% during the forecast period

Mining

- **A key export:** Ores, Slag and Ash is the leading export valued at approximately \$266 million and representing half of all exports, which in part, account for almost 90% of all commodities
- **Increasing demand for downstream products:** Demand in the USMCA region is forecast to increase by 7.6% in 2021 to 4.6% in 2022; technology and moves to a green recovery are driving for demand for rare earths, copper, lithium, and cobalt with battery-grade nickel demand expected to rise 10-to-20-fold by 2030, and a possible faster recovery of international mining projects investment
- **\$1.7 trillion investment** is required by mining companies in the next 15 years to help supply enough copper, cobalt, nickel, and other metals needed for the shift to a low carbon world
- **Critical need for rare earths:** The United States does not produce enough to satisfy existing and future demand with domestic concerns over supply

RESEARCH & KEY FINDINGS

ITASCA COUNTY

Manufacturing

- **Revitalizing manufacturing, and ensuring products are made in America** in the **American Jobs Plan** will have direct and indirect benefits to mining, forestry, and energy sectors
- **Improved productivity and economic growth** expected from basic metals, fabricated metals, precision tools, and special-purpose machinery **Increase in U.S. manufacturing output** of 3.5% for 2021 projected based on the Oxford Economic Model (OEM)
- **Move to 'Glocalization' in supply chains.** There is room to increase domestic sourcing. Peer countries (OECD/Asia) are meeting 80 to 90 percent of domestic demand with regional production, but only 70 percent of US domestic demand is from local production
- **FDI Trends:** In terms of FDI business activities from 2015-2020, Manufacturing accounted for nearly 30% of projects into the state while also producing the highest number of jobs (1,356), more than twice as much as the next leading job creator i.e. Sales, Marketing & Support (620)

DISRUPTION

COVID & TECHNOLOGY

The impact of Covid on sectors and the outlook has a symbiotic relationship with transformative technologies, as such, we combined both topics to provide a perspective in terms of sector disruption. The stakeholder consultations provided the best source for direct impacts of Covid in the County.

Covid Issues

The strongest issues resulting from Covid were primarily a reduction in business, which accounted for nearly a third of all responses from stakeholders. The next leading issues included regulatory at 14% of all responses and essential service/safety at 11%. It's worth noting that just over one-fifth of respondents cited they had no net new issues resulting from Covid. Regulatory issues specific to Covid were centered on regulatory certainty, unnecessary temporary measures, and state mandates. Note: regard to essential service/safety included being in an essential industry and workplace safety.

Covid Opportunities

The strongest Covid opportunity lies with technology adoption, which accounted for a quarter of the responses from stakeholders. The next largest opportunity areas included increased business demand, which accounted for one-fifth of the responses, followed by an increased demand/awareness for metals. Lastly, an increased personal adaption and cultural adaption were tied to represent 10%, respectively, of all responses. Increased business demand centered around sales or product/service

delivery. Increased demand/awareness for metals included higher steel prices and increased awareness of the need for essential metals. While not leading responses, other noteworthy potential opportunities include buy local, commercial interest in rural areas, and government & private sector cooperation.

Transformative Technology

Technology can be leveraged to boost operational and cost efficiencies, driving reductions in labor costs, improve data collection, and unlock opportunities.

Energy

- **IoE (Internet of Energy)** provides intelligent distributed control on energy transactions among users
- **Blockchain** seeks to unite all energy stakeholders under a single decentralized network
- **Energy-as-a-Service (EaaS)** is a delivery model that combines hardware, software, and services. Enables the transition from selling electricity to selling services such as consumption management, optimizing production, and tracking consumption
- Other transformative technologies include **Energy Storage** and **Distributed Energy Resources (DERs)**

DISRUPTION

COVID & TECHNOLOGY

Forestry

- **IoT (Internet of Things) Sensors** enables the monitoring of forests to predict threats in a timely fashion and mitigate the impact of disasters, e.g. soil erosion, pests infestation, forest fires, etc.
- **Artificial Intelligence/Machine Learning & Data Science** supports data analysis and predictions, e.g. Yield prediction; Crop sustainability analytics; detection of tree/crop diseases and pest infestations
- Other transformative technologies include Automation and Robotics as well as Biomass

Mining

- **Artificial Intelligence (AI)** helps mining companies make optimal decisions at the prospecting and exploration stage, aid deposits discovery reducing initial investment costs by increasing strike rates, optimize blasting via projected fragmentation models, ore tracking systems and environmental data
- **Drones** carry out aerial surveying work once undertaken by helicopters. Uses include underground mine scouts searching unfamiliar areas, data collection, and aiding mapping
- **Virtual and simulated reality and digital twins** are used by mining companies to run advanced simulations, enabling enhanced monitoring of equipment and operations

- **Automation** is being blended with AI improvements for autonomous vehicles, drillers and haulage systems resulting in increased productivity gains and safety
- **Mines are looking to reduce emissions** through deploying renewable energy, electrification and use of hydrogen for materials handling and optimizing processing operations

Manufacturing

- **Industry 4.0 technologies** can raise productivity by up to 40 percent and transform scale-based activity into flexible production
- **3D Printing** can temporarily alleviate the strain on supply chains during demand surges and shortages, as with medical equipment
- **IoT (Internet of Things)** revolutionizes machinery to communicate with each other cost-effectively
- **Cobots or collaborative robots** make real-time, complex decisions while working with humans
- **Human-centered AI** understands user needs and values that are reflected in AI designs and models, which will in turn, improves adoption
- **Digital twinning** is a virtual replica that can be used as predictive testing grounds for monitoring, simulating, and optimizing production, quality and operational performance

OPPORTUNITIES & INITIATIVES

Strategic Pillars

FOUNDATIONAL CLUSTER STRATEGIC PILLARS

Given the forward-looking nature of the recommendations, the sector/subsector opportunities are underpinned by a set of foundational cluster strategic pillars to support the opportunity areas:

- **Business retention and expansion:** Retention Program and Key Account Program
- **Investment attraction:** FDI and Domestic Attraction Plan and Implementation
- **Infrastructure Development:** Infrastructure Analysis –a comprehensive demand analysis
- **Talent Attraction & Development:** Talent Attraction Campaign and Workforce Development
- **Entrepreneurship & Partnerships:** Entrepreneurial Ecosystem Upgrades and Partnership Development
- **Key Partners:** Itasca Community College, Northland Foundation, APEX, DEED, Community EDOs, Blandin Foundation

CLUSTER STRATEGIES

Forestry

Timber and NextGen Timber will likely grow in popularity and adoption, especially CLT in the Construction/Real Estate industry. Biomass and Biofuels will continue to be an area of particular interest given increasing energy demands and the global emphasis on renewable/clean. Key themes: Green Economy, the Real Estate Wave, and Packaging and Tourism. Sample initiatives to help capture opportunities locally include:

- **Biomass Campaign** – promote biomass opportunity to local companies and facilitate collaboration with regional partners to develop more biomass projects for local use and export
- **CLT Campaign** - promote CLT opportunity to local companies and facilitate collaboration with regional partners to develop Real Estate/Construction projects for local use and export
- **Containerboard Campaign** - promote containerboard/paperboard opportunity to local companies and facilitate collaboration with regional partners to develop projects for export and to assist with local import substitution
- **Key partners:** UPM Blandin, IRRRB, NRRI, Nelson Wood Shims, MFI, Great River Energy

CLUSTER ACTIVATION

Natural Resource Technology Force

Create a collaborative ecosystem that brings together business, academia, government, and non-profits to drive economic growth in natural resource supported communities across North America. Develop a shared vision for the future of natural resource development and create a nexus of technologies in mining, timber, manufacturing, and energy.



THE WATER COUNCIL

<https://thewatercouncil.com/>

TALENT INITIATIVE



Itasca Homecoming

Host a 2-day homecoming to encourage the women and men who grew up in Itasca, but now live outside the area, to use their individual success for the collective benefit of their hometown. Expat attendees are able to travel to the county from their new cities and be immersed in the inner-workings of local economic development efforts, reconnect with their hometown, be surrounded by current and fellow former residents and become inspired to make a difference.

<https://detroithomecoming.com/>

ENTREPRENEURIAL ECOSYSTEM

Itasca Entrepreneur Connection

Itasca is a county of small businesses. Therefore, economic development strategies for economic growth require a strong small business and entrepreneurial community. Bringing entrepreneurial resources together and making them more accessible is key to stimulating small business growth. This is often done by developing an entrepreneur connection point via network or facility or both.

CENTER FOR
INNOVATION &
ENTREPRENEURSHIP

COLLEGE OF BUSINESS
MINNESOTA STATE UNIVERSITY MANKATO

<https://cob.mnsu.edu/center-for-innovation-and-entrepreneurship/>

OPPORTUNITIES & INITIATIVES

Opportunity Areas

Manufacturing

Manufacturing is ripe for strategic diversification or transformation. Fostering manufacturing culture from the ground up is a fundamental to sector development. Sample initiatives to help capture opportunities locally include:

- **Maker/Entrepreneur Culture:** Build from the ground up with children's, youth, family programming; collaborate with local schools. Ensure inclusive access (e.g. Cohasset Manufacturing facility) to encourage the public to take on projects. Validate library equipment provision e.g. 3D printers
- **Manufacturing Technology Makerspace Incubator:** Develop focused facility to build knowledge-based skills capacity with a comprehensive range of tools/technologies for product prototyping. Work with manufacturing companies to identify possibilities for in-house makerspaces/prototyping
- **Maker Movement 'Meet your Maker':** Identify local makers via Etsy and distributed manufacturing platforms such as 3D Hubs, Additively, Maker's Row; create local manufacturing interest groups
- **Distributed Short-run Manufacturing:** Investigate local prototyping and short-run manufacturing capabilities to build manufacturing capacity for product customization
- **Key partners:** Lonza, Grand Rapids Chamber, Minnesota Business Finance Corporation, Northland Foundation, Great River Energy

Mining

Opportunities in the mining sector are connected to the low carbon economy, technology deployment, improved metal materials, process improvements, existing deposits, and supply chain gaps. The Duluth Complex hosts one of the world's largest untouched deposits of copper, nickel, and valuable rare earths, that are critical to de-carbonization and technology. Improved iron ore production processes such as Electric Arc Furnace and 'mustang pellets' improve efficiency and recyclability. Sample initiatives to help capture opportunities locally include

- **A Transformative Mining Cluster:** build knowledge-based business concentration and employment. Consider a Prospect Mining Studio model that brings together start-ups, entrepreneurs, mining industry experts, funding partners, and academics to define challenges, prototype, and implement pilots at mining sites. Work with regional partners to investigate a mining hub for demonstration projects and improve **advanced technology adoption** with local mining companies such as Mesabi Metallics, and Prairie River Metals, and research institutions and academia
- **Iron Ore Innovation:** Build on U.S. Steel initiatives in mustang pellets to pilot new processing innovations; - hydrogen uses, carbon capture, use and storage (CCUS), bioenergy and direct electrification with local energy partners; utilize results for demonstration projects.

IN-HOUSE MAKERSPACES/ PROTOTYPING FACILITIES

Itasca County is home to several large manufacturers, some of which are IEDC partners, presenting possibilities for in-house makerspaces and prototyping facilities and distributed short-run manufacturing capabilities. This model enables existing employees to harness their creativity and facilitates local manufacturing capacity through skills development and spin-offs.



<https://firstbuild.com>

CHILDREN'S PROGRAMMING IN MAKERSPACES

Exposure to manufacturing technology concepts should begin from an early age with family involvement. Provide a combination of children's, youth, family programming in makerspaces to learn the processes of making through hands-on experiences in digital and physical materials. Reinforce this process through collaboration with local schools on makerspace provision.

MAKESHOP®

<https://pittsburghkids.org/exhibit/makeshop/>

CO-OPS BEHIND RURAL MAKERSPACES



IEDC benefits from support from a diverse range of significant actors in the economic ecosystem, including foundations and energy co-ops. Such organizations can have a pivotal role in driving community-driven initiatives, which creates buy-in and enables building a maker/entrepreneur culture from the ground up.

<https://idea.coop/>

OPPORTUNITIES & INITIATIVES

Opportunity Areas

Mining (continued)

- **Existing Resources:** Maximize potential through working with mining exploration companies to determine potential of existing deposits; catalogue viable opportunities for prospecting/ surveying, exploration; attract prospectors/developers and laboratory services to build the small business base
- **Closing the Loop/Remediation:** Develop specialization through building on Prairie River Metals scam mining demonstration project; investigating bioremediation opportunities in tailings to advance industry sustainability and build innovation capacity
- **Key partners:** Hawkinson Construction, Prairie River Metals, Mesabi Metallics, IRRRB, NRRI, DNR

Energy

*The majority of the energy opportunities lie in Renewable and clean energy. Opportunities emerged around key themes including the **Green Economy**, the **Real Estate Wave**, and **Energy Technology**. Suggested initiatives to help capture those opportunities locally include:*

- **Biomass Campaign** – promote biomass opportunity to local companies and facilitate collaboration with regional partners to develop more biomass projects for local use and export
- **Energy Efficient Building Support** – Consider making certain levels of energy efficiency a requirement for some new builds and promote the funding and subsidies available for constructing and/or retrofitting buildings to be energy efficient
- **Technology Adoption** – pilot new technologies e.g., Internet of Energy (IoE), Blockchain, Energy-as-a-Service (EaaS) etc with local energy providers, and/or partner with research institutions and academia, invite local companies to participate and/or share the results to foster adoption.
- **Key partners:** Enbridge, Lake Country Power, Minnesota Power, Great River Energy

INNOVATION DRIVE

Build knowledge-based business concentration and employment

Develop a support system for startups of all stages, forward-thinking innovators, and prominent researchers to build, pilot, and scale frontier technologies that advance the natural resource and mining industries, focusing on sustainable and socially responsible solutions.



<https://prospectminingstudio.com/>

WEB-BASED MINING SUPPLY CHAIN DIRECTORY

A web-based supply chain directory with mining sector information, suppliers, companies, and employment opportunities is a tool to promote mining supply and services offerings, collaboration, talent attraction, and sector development. Cross-sector linkages can be enhanced between clusters and identify opportunities for suppliers and potential diversification.



<https://miningdirectory.thunderbay.ca/>