Why not on the Range?
The future holds challenges, as well as opportunities

The authors of this article (listed below) are volunteers from the Citizens' Climate Lobby Northland (MN) Chapter.

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The history of the Iron Range is often told as a story of "boom then bust." Perhaps a better description is "stress then success." Iron mining on the Range is a story of stressful turning points, followed by successful adaptation. The Range tackled each of these challenges with tough determination and willingness to innovate.

By the end of World War II, high grade iron ore was becoming harder to find. At that time, taconite was considered waste—at least until E.W. Davis figured out a way to refine and pelletize it. The rest is history.

The iron mining and steel industries now face another turning point—the drive to decarbonize the iron-to-steel making process in response to climate change. This challenge will once again require determination and innovation. We think we all bring something to the table. We are not experts. We offer the following as concerned citizens hoping to spur conversation.

The road to decarbonization of the steel making process provides opportunities as well as challenges. Building a clean energy economy will require more, not less, steel. But what kind of steel? Major steel users, the auto industry for one, are asking for low-carbon intensity steel. In the transition to this clean energy economy, trillions of dollars will be invested and millions of good jobs created. The question is: Why not on the Range?

Fortunately, there is hopeful news here.

Cleveland Cliffs has announced a commitment to begin decarbonizing their steel making process, with a goal of cutting carbon dioxide emissions by 25 percent by 2030. Of note, their goal of cutting emissions from mining and pelletizing operations by 26 percent is ahead of schedule. The company proposes to do this in a number of ways, including producing high-quality iron ore feedstock needed for low-carbon intensity steel, investing in carbon capture technologies, and working to extend policy benefits and protections to domestic iron mining.

Our domestic steel and iron ore mining industries have a head start going into this transition. Steel production is a major source of global carbon dioxide emissions, accounting for approximately eight percent of all emissions. To America's credit, of the world's seven largest steel producers, our steel production, including ore processing, has the lowest carbon footprint of any.

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The Range is uniquely situated to prosper. Specifically, the Range has the natural resources (iron ore and water), skilled workers and training infrastructure, strategic positions on the transportation and energy grids, and access to renewable energy. With these assets, the steel-making process can be reimagined from start to finish.

This can start by building capacity for production of high-quality feedstock (hot briquet iron and direct reduction grade pellets), in addition to maintaining existing pellet production. It goes without saying this feedstock should be produced on the Range, not overseas.

Innovative technologies require high-quality feedstock. SSAB, a Swedish steel producer, is building a "fossil free" production plant in Iowa. This plant will utilize hydrogen direct reduction technology, rather than fossil fuels. Green hydrogen will be produced using renewable energy. Of note, there is renewable energy available for the Range from Manitoba hydro, with more electricity from wind and solar on the way. Why shouldn't the next "fossil free" steel facility be built on the Range?

A stem-to-stern reimaging of iron ore production needs to address the long-standing problem of sulfates in water discharge. Wouldn't it be great if there was a technology that could not only solve that problem, but also produces useful by-products in the process? Well, such a technology is being developed by Babbitt's own Clearwater BioLogic. Using environmentally friendly bacteria, this technology removes sulfate from ore processing runoff and converts it into iron sulfide and hydrogen.

Iron sulfide can be used as fertilizer and hydrogen as a source of energy. Importantly, early studies show the potential to lower sulfate levels below the wild rice standard and do so in a cost-effective manner. And to top it off, this technology could be manufactured on the Range.

The Range is also positioned to attract value-added businesses, diversifying the economy and providing stable good paying jobs. Renewable energy sources are now economically competitive. What is lacking are ways to store energy for when the wind is not blowing and the sun is not shining.

In other words, we need to build lots of batteries. Estimates say we will need 15 to 30 times more capacity for energy storage than we have today. Building this capacity will require a tremendous investment. Two long-term energy storage technologies seem prime for the Range.

The first of these is the iron-air battery. These batteries store electricity by turning rust back into pure iron and releasing electricity when the iron rusts. It was recently announced that an iron-air battery manufacturing plant will be built by Form Energy in West Virginia, bringing with it over $700 million in investment and over 700 jobs. It is not hard to imagine an iron-air battery manufacturing facility using Range-sourced iron being built in a local manufacturing facility.

The second "battery" is the tried-and-true energy storage technology of pumped hydro. Imagine legacy mine pits using renewable energy to pump water uphill for storage, so it can be later be released to produce electricity.

There you have it. The future holds challenges and opportunities. Now is the time to get into the game. So, what can we do?

We can advocate for policies that support innovation and decarbonization of the steel-making process. One such policy is a carbon border adjustment mechanism (CBAM). A CBAM protects domestic mining and steel production by placing a fee on foreign high-carbon intensity steel. This is one way of putting a price on carbon that benefits domestic production. This is a key to developing the domestic supply chain essential to our national security.

Another important policy is permitting reform. This is essential to bring renewable energy online in a timely and environmentally safe manner, for example transmission lines to get the electricity to where it is needed.

Second, and perhaps most important, we need to talk more and argue less. We need to talk with each other, as well as with our political and business leaders. We need to find solutions we can agree on and that capitalize on our strengths—win-win-win solutions that lower carbon emissions, create good paying jobs, and allow our kids and grandkids to inherit the northern Minnesota way of life. Together we can make this happen.

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