Demand for scandium set to rise and Imperial Mining offers an early stage high grade project

written by InvestorNews | August 3, 2020

Scandium is the key to lightweight electric vehicle boom

With the electric vehicle boom set to take off this decade, expect a surge in demand for the 'lightweighting' of key materials. An essential part of reducing the weight of electric vehicles (EVs) is scandium, which mixed with aluminum creates lighter and stronger alloys for EVs. Lighter weight means extending battery range in EVs and improving fuel efficiency and reducing greenhouse gases in combustion engines.

The current scandium market size is estimated to be about 35 tonnes per year, however Bloomberg forecasts this could grow to reach 1,800 tonnes pa by 2035 – a 51 times increase in demand. However, if the sales of electric vehicles surge as some forecast and reach 30 million by 2030, the demand for scandium would jump to a staggering 5,250 tonnes pa – a 150-fold increase on today's demand based on just a 0.2% scandium oxide-aluminum alloy in each EV.

This exponential increase in demand for scandium does not include its additional consumption by key industries such as solid oxide fuel cells, aerospace & defense, aviation, electronics, sporting goods, and ceramics.

Building 30 million new electric cars a year by 2030 will require an additional 5,250 tonnes of scandium oxide every year to achieve 100% lightweighting

Source: Imperial Mining Group investor presentation

Imperial Mining Group Ltd. (TSXV: IPG) owns a diverse portfolio of high-grade assets including gold, base metals and scandium-rare earth projects. The company's focus is on development of its high-quality scandium-rare earth Crater Lake property in northeastern Quebec, Canada. The property has a large 6km diameter complex that is host to high-grade scandium and niobium deposits.

The Crater Lake scandium rare earth project

The 100% owned Crater Lake Project is located 200km northeast of Schefferville, Québec, 95 km from the end of the Trans-Labrador Highway. The property consists of 57 contiguous claims covering 27.8km^2.

Crater Lake location map

Source: Imperial Mining Group investor presentation

Imperial Mining Group is currently working to expand the resource. Previous drilling has defined a mineralised zone over 250 meters in strike and 170 meters in depth. Scandium oxide grades ranged from 0.0235% to 0.0319% (235-319g/t), which is pretty good. Scandium is not rare, however finding commercially viable grades (>200-300g/t) of scandium is very rare. More recent drill results have included 528g/t scandium oxide over 8.8 meters, showing the high grade potential of the Crater Lake

Project.

The company expects the Crater Lake Project to be a small open-pit operation with an on-site magnetic concentrator and/or sensor-based sorting. This should reject 50-60% of mined material, resulting in high scandium recoveries and lessening transportation risks and costs. It is anticipated that the project will be low CapEx, OpEx due to the higher grades and expected simple process recovery methods.

Future catalysts will include planned further metallurgical work, a PEA expected by Q1 2021, permitting, and an anticipated FS by Q3 2023, subject to financing.

Multiple market opportunities ahead as the demand for scandium increases dramatically

Source

Closing remarks

I have no doubt that the EV boom will take off, which means lightweighting will become essential for electric cars to boost performance, especially range. In the meantime there are plenty of other areas that demand scandium, so I expect the scandium sector to perform well this decade.

Imperial Mining Group has an exciting early stage high grade scandium-niobium project in northeastern Quebec. Also of interest is their 100%-owned Opawica Gold Project in the Abitibi region of northwestern Québec where recent drilling discovered 1.21 g/t gold (Au) over a 13.3 meter length.

Risks are always high with junior mining stocks at the early stages and in this case the scandium market is another risk as

it is yet to be fully developed. Of course with high risk comes the chance for high reward. Imperial Mining Group trades on a current market cap of just C$9 million. One to follow closely, especially since securing a source of North American scandium could soon be very much in demand.

Jack Lifton says the ‘best choice’ for a producing rare earths mine in North America is…

written by InvestorNews | August 3, 2020

As the electric vehicles (EV) decade begins the need for quality rare earths in top tier locations is becoming a key focus for governments, OEMs, and electric motor manufacturers. Safer supply chains that can provide critical rare earths such as Neodymium (Nd) and Praseodymium (Pr) for electric motor magnets are becoming critically important, as we saw this week with the US Senate bill on rare earths.

Appia Energy Corp. (CSE: API | OTCQB: APAAF) is currently exploring and developing uranium and rare earth deposits in its Alces Lake property, in the Athabasca Basin area of northern Saskatchewan, Canada. They also have a promising uranium-rare earths project in Ontario, Canada.

Alces Lake Rare Earth Project

What is unique about Alces Lake is that it hosts some of the

highest rare earth elements (REE) grades in the world (2nd highest average grade as shown on the chart below). At a 4 wt% total rare earth oxide cutoff, Alces Lake average grade is 16.65 wt% Total Rare Earth Oxides (TREO).

A grade comparison of global rare earth projects

Source

Alces Lake has excellent mineralogy with high value rare earths

At Alces Lake all the REEs have simple mineralogy and are hosted 100% within 'monazite', which means it can be economically extracted.

Even better is that the monazite is enriched in valuable critical rare earth elements, namely Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy), and Terbium (Tb). These 4 elements account for between 23-25% of the TREO, or ~85% of the potential value at Alces Lake.

Alces Lake has high-grade outcrops and drill hole intersections comprising an average of 27% monazite. Locally up to 85% monazite is naturally pre-concentrated

Source

Appia have access to a nearby pilot plant and extraction lab in Saskatchewan, Canada

The Alces Lake Project is located close to a pilot plant and REE extraction lab in Saskatoon, Saskatchewan, which is the same Provincial jurisdiction as the Project. It has a capacity of 2,000 tonnes of material per annum. This gives Appia a

significant advantage by having a low start up CapEx to commence some production via a fully permitted plant and extraction facilities at the Saskatchewan Research Council (SRC). Unlike competitors this means the rare earths can be produced in North America and not China.

Considering environmental regulations, especially due to safe handling and disposal radioactive materials, the Province of Saskatchewan, and SRC, are miles ahead of other global jurisdictions because they permit high-grade uranium mines in the northern parts of the province. A country like India, or USA, has policies in-place that are detrimental to processing monazite for REEs because of the presence of Uranium/Thorium. In Saskatchewan, and working with SRC, a lot of these problems are already resolved, as Saskatchewan is a global jurisdiction that continuously leads efforts in safely working with radioactive materials.

Appia's projects summary and strategy

Alces Lake Rare Earths Project

Based on mineralization discovered to date, Appia would "ideally" consider a surface and near-surface operation to start production, smaller than open pit scenario, easier to permit and manage, potentially low CapEx and OpEx. Given the nearby pilot plant and extraction facility in Saskatchewan the Project will be easier to put into small scale production of rare earth oxides.

Saskatchewan Uranium Projects

Appia also holds surface rights to exploration for about 57,048 hectares (140,968 acres) in Saskatchewan. Within this area Appia has high-grade uranium deposits in the prolific Athabasca Basin area; including Loranger, Eastside and North Wollaston

properties.

Elliot Lake Uranium-REE Project

This Project is located in northern Ontario. Elliot Lake has a NI 43-101 Mineral Resource Estimate of 8.0 million lbs contained metal U3O8 and 47.7 million lbs contained metal TREE Indicated; and 47.7 million lbs contained metal U3O8 and 133.2 million lbs contained metal TREE Inferred. Indicated TREE grades are 1,647ppm, and CRE 344ppm.

The next step for Appia is to raise additional capital to fully fund aggressive property-wide exploration on Alces Lake as well as the Saskatchewan uranium properties for the next 12 to 24 months, with a view of producing a mineral resource estimate at Alces Lake.

Experts view

Rare earths expert and host of the Technology Metals Show Jack Lifton quoted to InvestorIntel:"Appia Energy's Alces Lake deposit in Saskatchewan is probably the best choice for development into a producing rare earth magnet materials' mine in North America."

Closing remarks

The rare earths sector looks highly likely to follow in the foot-steps of uranium, which recently got a huge boost from the US Government. A rare earths funding bill has now been put to the US Senate with the intent to help revive the U.S. rare earths industry.

Investors can look to capitalize on the positive sentiment in the rare earths sector, especially those companies in safe countries with lower start-up CapEx.

Appia Energy offers a North American high grade rare earths project with a low CapEx pathway to production via a third party existing fully permitted plant and extraction facility in Saskatchewan. Plus Appia also has uranium projects.

Rare earths expert Jack Lifton and the man who coined the term "technology metals" is also very positive on Appia Energy, making them a top tier junior for investors to consider.

Note from the Publisher: To become a member of the Technology Metals Report, go to TechnologyMetals.com

---

The U.S. Rare Earths Supply Chain Challenge – Part 4

written by InvestorNews | August 3, 2020

In an ongoing series on how to solve the U.S. rare earths supply chain challenge, 3 Sr Editors from InvestorIntel and well-known Rare Earths Consultants debate on what are the skills needed to create a rare eaths supply chain in North America.

Participants include Tracy Weslosky, InvestorIntel's Sr Editor, Publisher and Rare Earths Consultant; Jack Lifton, InvestorIntel's Sr Editor, Host and Rare Earths Advisor; and Alastair Neill, InvestorIntel's Sr Editor and Rare Earths Expert.

Alastair started by saying that there is no facility in the US to convert rare earth alloys to magnets. Jack continued by saying that "the US Department of Defence doesn't want any rare earth permanent magnet from China. The only thing they will

accept from China is the raw material which the Chinese do not export. They want extraction, separation, metal making and alloy and magnet making done either in the US or in NATO or SEATO ally countries."

Alastair concluded the discussion by saying, "To achieve this goal it is going to take a couple of different skill sets. It is one set of skills to get something out of the ground and turn it into a separated oxide. That is completely different from metalization and alloy production and then getting into assembly. So you will need three special types of industries that need to be managed. That is where you have to have someone with a vision to be able to bring that type of team together to be able to manage such a diverse set of skills."

- To access the complete discussion, click here
- To access Part 1 of this rare earths series, click here
- To access Part 2 of this rare earths series, click here
- To access Part 3 of this rare earths series, click here

The U.S. Rare Earths Supply Chain Challenge – Part 3

written by InvestorNews | August 3, 2020

In an ongoing series on how to solve the U.S. rare earths supply chain challenge, 3 Sr Editors from InvestorIntel and well-known Rare Earths Consultants begin the debate on what are the challenges in creating a rare earths supply chain in North America.

Participants include Tracy Weslosky, InvestorIntel's Sr Editor, Publisher and Rare Earths Consultant; Jack Lifton, InvestorIntel's Sr Editor, Host and Rare Earths Advisor; and Alastair Neill, InvestorIntel's Sr Editor and Rare Earths Expert.

Jack starts the debate with: "When you extract rare earths from ore you get a mixture of rare earths and other things that were in the ore that came out in the extract which is usually an acid. The first thing that you have to do is make a pregnant leach solution. What that means is that you put the metal values in the minerals into the solution. Then you separate out those things that are not rare earths or rare earths that you don't really want for example cerium. Now that solution which is normally a hydrochloric acid extract goes into a separation system which in the US has only been a solvent extraction for light rare earths."

Alastair added "There are other companies looking at novel ways to separate rare earths in an environmentally friendly process to tackle this and compete with the Chinese. The benchmark is the Chinese separation cost which is about $2.50 to $3 a kilogram."

The experts panel also discussed some of the major problems in the North American rare earths supply chain. The panel discussed that the problem in the North American rare earths space is the absence of rare earth separation facility and metallization capability in North America.

- To access the complete discussion, click here
- To access Part 1 of this rare earths series, click here
- To access Part 2 of this rare earths series, click here

The U.S. Rare Earths Supply Chain Challenge – Part 2

written by InvestorNews | August 3, 2020

In an ongoing series on how to solve the U.S. rare earths supply chain challenge, 3 Sr Editors from InvestorIntel and well-known Rare Earths Consultants begin the debate on what is the actual formula to create a supply chain in North America.

Participants include Tracy Weslosky, InvestorIntel's Sr Editor, Publisher and Rare Earths Consultant; Jack Lifton, InvestorIntel's Sr Editor, Host and Rare Earths Advisor; and Alastair Neill, InvestorIntel's Sr Editor and Rare Earths Expert.

Alastair starts the debate with: "First of all the key is to find a deposit that has a reasonable cost structure and also reasonable content particularly the magnetic four – neodymium, praseodymium, terbium, and dysprosium because those will drive 85-90% of the revenue of any deposit. Then you have to be sure that you can convert that deposit into a concentrate and after that you have to be able to separate it into the oxides. When you talk about magnets you then have to go to the subsequent steps of conversion to metal and then into alloy before you can even get to the magnet manufacturing stage."

Jack added, "The first thing you do is ask the customer what he wants to buy. Then you can go upstream in the supply chain and find out what you need to do."

The experts panel also discussed the exploration and extraction

plays in North America. Tracy said that some of the exploration plays in North America include Avalon Advanced Materials Inc. (TSX: AVL | OTCQB: AVLNF), Search Minerals Inc. (TSXV: SMY), Ucore Rare Metals, Imperial Mining Group, etc.

To access the complete discussion, click here

To access Part 1 of this rare earths series, click here

The U.S. Rare Earths Supply Chain Challenge – Part 1

written by InvestorNews | August 3, 2020
In an ongoing series on how to solve the U.S. rare earths supply chain challenge, 3 Sr Editors from InvestorIntel and well-known Rare Earths Consultants begin the debate on whether or not a rare earths supply chain can be built in the US.

Participants include Tracy Weslosky, InvestorIntel's Sr Editor, Publisher and Rare Earths Consultant; Jack Lifton, InvestorIntel's Sr Editor, Host and Rare Earths Advisor; and Alastair Neill, InvestorIntel's Sr Editor and Rare Earths Expert.

Jack Lifton starts the debate with: "Yes we can if the money is put forth and all of the skills necessary are there and even deposits are there. If you want to have the total rare earths that you need, for example, rare earth permanent magnets, you will need more than what is produced in the United States. You need to have Canadian content and Australian content. This is the base issue as the anchor of any supply chain is the raw

material source. The issue here is money. No one in the United States, private or public, actually believes that the United States could produce rare earth permanent magnets competitively priced than those produced in China. I happen to believe we can.”

In this debate the experts address some of the misinformation and myths in the rare earths industry including the cost of separating rare earths and that the rare earths business is a mining business. To access the complete discussion, click here