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PALOS

Weekly Commentary

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By Charles Marleau CIM® and William Mitchell CIM®

Climate Change: Putting Captured Carbon to Work!

In our previous three reports, we discussed the potential for CCUS to help Canada achieve its lofty carbon reduction objectives, ways in which CO2 is being captured before its emitted into the atmosphere, and the compression and transportation of CO2 for either sequestration underground or for use as an industrial feedstock. In this edition, we take a look at the latter.

By far, the most common industrial use of captured CO2 is in **Enhanced Oil Recovery (EOR)**. EOR is best described as the practice of injecting external agents into mature oil reservoirs with the objective of extracting oil that otherwise (i.e., by conventional methods) would be deemed unrecoverable. CO2 that is injected into a reservoir acts as a catalyst by reducing viscosity which in turn allows oil or gas to flow to the surface more freely. Contemporary EOR techniques include the injection of steam (requires significant amounts of energy), chemicals (risky, can be harmful to water reservoirs), polymers (think sand and water, also costly) and gas (CO2). When CO2 is used, typically two-thirds to one-half of the CO2 will return to the surface with the oil and then separated and re-injected back into the reservoir. The benefits are twofold; improved well economics and the permanent underground sequestration of CO2.

While CO2 is often viewed as a pollutant and a significant contributor to global warming, we should not forget that CO2 also has real economic value. CO2 serves as a feedstock to a variety of important industries including cement manufacturing, chemicals, fuels, plastics, high performance materials, fertilizers, food and hydrogen. In the case of hydrogen, it is believed that high emissions producing industries like steel, chemicals, fertilizers, and transportation could use hydrogen as a means of reducing their carbon footprint. While still in the early stages of development, hydrogen cell technology has the potential to replace fossil fuels in the trucking and public transportation sectors. Hydrogen that is produced from captured carbon and renewable energy sources is referred to as “green hydrogen” due to its reduced carbon footprint.

On the cutting edge of technology, CO2 is attracting interest from the high-performance materials (e.g. carbon fiber, graphene) and products with specialized conductive and superior strength-related properties. For example, by injecting carbon-based materials into concrete, steel or copper, a stronger, lighter weight material can be used in a multitude of industrial or manufacturing applications including consumer products, electric vehicles, and building materials.

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The fact remains that the current market for captured CO2 is small. Prospects for building out the marketability and demand for CO2 is closely tied to the development of adequate infrastructure, lower costs, technology, and scale. For this to happen, government support in the form of incentives, tax credits, and a credible carbon pricing system must be realized, but real progress is being made.

The **Oil Sands Pathways to Net Zero** (Pathways) is an alliance of five major Canadian Energy Companies (Canadian Natural Resources, Cenovus Energy, Imperial Oil, MEG Energy, and Suncor Energy) that have partnered to advance Canada's Carbon Capture and utilization (CCUS) industry with the bold objective of achieving net-zero emissions by 2050. Announced on June 9, the program includes a commitment to carbon capture initiatives, research and development, infrastructure buildouts (pipelines and hubs), clean hydrogen and a collaborative approach to end user tie-ins.

The importance of the Pathways project is clear. Canada has the third largest oil reserves in the world and our energy industry is expected to contribute over $3 trillion in GDP by 2050. While development of the renewable energy sector plays a huge role in harnessing climate change, the reality is that it will take decades for infrastructure and technological advances to replace hydrocarbons as our primary source of energy. In the meantime, CCUS projects will play an important role in helping Canada achieve its net zero objectives and there is no doubt in our minds that given the amount of capital, investor interest, the need for decarbonization, they will drive the industry forward for decades to come.

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Chart 1: Palos Domestic Funds versus Benchmarks (Total Returns) [1]	FundServ	NAVPS	YTD Returns
Palos Income Fund L.P.	PAL100	$10.07	19.96%
Palos Equity Income Fund - RRSP	PAL101	$7.63	20.32%
Palos Merchant Fund L.P. (Dec 31, 2020) [2]	PAL500	$1.35	-21.15%
Palos WP Growth Fund - RRSP	PAL210	$22.67	42.03%
Palos-Mitchell Alpha Fund [3]	PAL300	$11.03	18.26%
S&P TSX Composite (Total Return with dividends reinvested)			20.48%
S&P 500 (Total Return with dividends reinvested)			21.19%
S&P TSX Venture (Total Return with dividends reinvested)			1.90%
Chart 2: Market Data [1]			**Value**
US Government 10-Year			1.31%
Canadian Government 10-Year			1.20%
Crude Oil Spot			US $68.74
Gold Spot			US $1817.20
US Gov't10-Year/Moody BAA Corp. Spread			191 bps
USD/CAD Exchange Rate Spot			US $0.7925

[1] *Period ending August 27, 2021. Data extracted from Bloomberg*

[2] *Fund is priced annually*

[3] *Fund is priced weekly on Tuesdays*

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