CHEMISTRY INDUSTRY
ASSOCIATION OF CANADA

2022 Economic Outlook for Industrial Chemicals

January 27, 2022

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INDUSTRIAL CHEMICALS PERFORMANCE IN 2021

2021 was a year of uneven recovery and performance for the Industrial Chemicals industry in Canada. Several sub-sectors saw substantial over-performance in 2021 while others saw a more muted recovery as the impacts of COVID-19 on the broader economy continued to be felt. Sub-sectors that outperformed benefited from strong pricing coupled with strong demand. Winter storm Uri which hit the U.S. Gulf Coast in February played a large part in reducing product stockpiles in this vital region for Industrial Chemical production. Strong demand in downstream sectors such as materials packaging, building construction and year over year recovery in transportation fuels, natural resource extraction and processing provided a strong backdrop for Canadian chemicals demand as 2021 unfolded.

Headwinds throughout the year included supply chain disruptions, particularly in downstream manufacturing for products in the auto sector, building materials and consumer durable goods weighed on upstream Industrial Chemical output throughout much of 2021. Similarly, unexpected production outages and transportation system disruptions also led to lower production in some Industrial Chemical sub-sectors throughout the year. COVID-19 restrictions were lifted and reimposed depending on the public health situation leading to volatility in demand for in person services and travel. Shipments strengthened in the fall as the COVID-19 situation improved and Industrial Chemical production returned from maintenance.

It is estimated that year-end sales of industrial chemicals will grow by 31% compared to 2020 levels led by an exceptionally strong year for the Resin and Synthetic Fiber sub-sector. During the second half of 2021 shipments of Petrochemicals, Inorganic Chemicals and Industrial Gases improved significantly. Following the completion of an expansion project in Alberta and continued recovery in downstream markets shipments of Organic Chemicals ended 2021 at very high levels. Overall, Industrial chemical volumes ended 2021 at near pre-COVID-19 levels and are expected to increase significantly in 2022 as new capacity projects come online in Alberta and Ontario.

Exports in 2021 are projected to be 26% higher than in 2020 and are set to end the year around $22.4 billion a new single year record. Canada's industrial chemical industry is export-intensive, with 74% of production exported in 2021. The United States received 79% of those exports, followed by China (6%), and Mexico (2%).

Capital expenditures for 2021 were marginally higher than 2020 with more planned maintenance and a capital expansion in Alberta being completed. Producers had to deal with unplanned maintenance throughout 2021 and this led to an increase in capital spending over what was anticipated.

OUTLOOK FOR CANADIAN INDUSTRIAL CHEMICALS IN 2022

- Canada's chemical sector enters 2022 cautiously optimistic acknowledging headwinds.
- CIAC expects a 3%-7% increase in sales largely in line with North American economic growth projections.[1]
- Forecast is dependent on trajectory of COVID-19 pandemic and improvement of supply chain disruptions.
- Exports are forecast to increase by 3%-7%.
- Operating profits are projected to increase slightly however margin compression due to rising production costs is expected.
- The level of capital investment is expected to decrease as two major projects begin operations.
- Total employment by the industry is projected to grow by 2% along long-term trends as new investments come online.

KEY OPPORTUNITIES

ECONOMIC RECOVERY

Physical demand for resin and chemical products has materially recovered through 2021 and sectors impacted deeply by COVID-19 showing strength towards the end of the year. The first quarter of 2022 will see demand supported by low inventories in several classes of basic chemicals, specifically chlor-alkali products, and their downstream derivatives.[2] However, the synchronized impact of the Omicron wave of COVID-19 has already impacted supply chains and it is unclear how deeply economic activity is being suppressed. As we move through the traditionally busy second and third quarters of 2022 demand trends remain favorable in several downstream products including consumer packaging, residential, commercial, and industrial construction, and continued strength in durable goods orders in North America. A key catalyst in 2022 could be an improved outlook for the automotive supply chain with demand still outpacing supply. However, there is uncertainty as to whether production can increase to pre-pandemic levels this year as microprocessor demand continues to outpace supply globally.[3]

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[1] Average range of estimates from public company earnings (Oct.-Jan. 21/22), Central Bank estimates and estimates from the American Chemistry Council.

[2] Kristen Hays, " Multiple US chlor-alkali turnarounds in Q1 expected to keep supply tight: sources," S&P Global Platts, January 4, 2022

[3] Clement Choo, "Commodities 2022: Vehicle makers face challenging year amid persistent chip shortage," S&P Global Platts, January 5, 2022.

Natural resource sectors continue to recover leading to an increase in demand for chemical products. Oil and gas and metals and the ongoing recovery of oil and gas extraction should prove to be a tailwind for basic chemical demand in 2022. As COVID-19 continues to recede a rebound in fuels demand and for goods associated with a stronger "return to office," mandate including paper and packaging should be supportive to basic chemical demand. Indeed, respondents to the Bank of Canada's Fourth Quarter Business Outlook Survey noted strong demand, a broadening of demand across the economy and strong indicators of future demand to domestic and foreign customers.[4]

NEW INVESTMENT

2022 will see two major investments in Alberta (Inter-Pipeline's Heartland Petrochemical Complex) and Ontario (NOVA Chemical's Corunna expansion) begin production. These two projects will provide a material boost to Canada's Industrial Chemical manufacturing capacity. Similarly, a major expansion project by Dow at the Ft. Saskatchewan complex was completed in the fall of 2021 and added significant ethylene production capacity to the area. In the Bank of Canada's Business Outlook Survey, firms across the country noted that strong demand and increasing capacity pressures have pushed businesses to raise their investment intentions to the strongest levels in the last 10 years.[5] North America continues to have abundant low-cost feedstock for chemical production and the strength of that advantage is apparent. Alberta's Petrochemical Incentive Program (APIP), Quebec's focus on attracting low-emissions chemical investment, the continuance of accelerated capital cost allowance (ACCA) provisions and potential policies for hydrogen, energy efficiency technologies and chemical recycling are working to enhance Canada's attractiveness as an investment destination. Proximity to growing markets in Asia and integration into North American economy provide multiple outlets for increased production.

In recent public comments global chemical companies have mentioned high payback, low emissions projects are being prioritized for near term capital investment. In late 2021 Dow announced a significant expansion of its Ft. Saskatchewan operations and the goal to make the entire production process net zero. Similarly, Nauticol is looking to develop a blue hydrogen methanol facility near Grande Prairie Alberta. Both projects are looking to the future where emission performance increasingly drives investment decision making. Both facilities will require CCUS and will involve billions in capital spending. While Canada is a leader in early stage CCUS projects to further develop CCUS technology and applications CIAC is eagerly awaiting the 2022 federal Budget which will see a dedicated Carbon Capture Storage and Utilization Investment Tax Credit. Canada's chemistry sector believes that CCUS can play a valuable role in decreasing industrial emissions and in spurring new investments that use captured carbon to

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[4] Bank of Canada, "Business Outlook Survey Fourth Quarter 2021" January 17, 2022
[5] Bank of Canada, "Business Outlook Survey Fourth Quarter 2021" January 17, 2022

produce value added products. In comments submitted in September 2021, we recommended that a strong, predictable, and widely applicable CCUS ITC will be critical to seeing a viable CCUS sector emerge. As we look towards Budget 2022 a strong CCUS investment tax credit and a recommitment to the ACCA would help ensure these projects and another seven announced so far in Alberta and Quebec, move from the planning to the construction stage.

TRADE POLICY

Since the Canadian industrial chemistry industry is highly export-oriented, it is a strong supporter of free trade, particularly with the United States. Trade flows have returned to near normal for Canada's chemical sector and provide access to global prices and high demand in other jurisdictions. Globally chemical product trade has largely recovered from COVID-19 disruptions however congestion at ports and transit through major canal systems is still a headwind. As 2022 advances we expect to see a slow but steady improvement in international trade logistics, allowing for greater market access for Canada's chemistry products.

KEY CHALLENGES

ECONOMIC UNCERTAINTY AND SUPPLY CHAIN CONSTRAINTS

The recovery from COVID-19 is inherently uncertain. The trajectory of the virus can have impacts in different ways and the speed at which the Omicron variant has spread has had a negative impact on economic growth early in 2022. However, if COVID-19 recedes based on strong vaccination levels and broadening immunity, growth trends are likely to accelerate as businesses get back to regular hours and workplace operations, transportation system fluidity normalizes, and consumers shift spending into travel and services.

Underlying the economic environment in 2022 is a clear elevation in cost inflation levels compared to recent years. Indeed, respondents to both the Business Outlook Survey and the Survey of Consumer expectations highlighted rising costs as we enter 2022. For businesses the cost of materials, transportation services and wages are all rising and the Bank of Canada estimates that we may have bumped into the limit of the productive capacity of the economy.[6] Consumers meanwhile expect inflation to be elevated over the next two years due to supply chain disruptions, however, they also anticipate strong personal spending growth, indicating strength in consumer demand even in the face of rising prices.[7]

CLIMATE CHANGE POLICY AND THE NET ZERO TRANSITION

2021 saw the federal government unveil a series of new legislative and regulatory measures to strengthen Canada's commitment to combating climate change. In July of 2021 the government

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[6] Bank of Canada, "Monetary Policy Report 2022," January 26, 2022
[7] Bank of Canada, "Canadian Survey of Consumer Expectations Fourth Quarter 2021."January 17, 2022

passed the *Canadian Net-Zero Emissions Accountability Act* that enshrines in law a net-zero commitment by 2050. As part of the new Net Zero Emission Accountability Act and building upon the federal governments previous Climate Action plan a series of consultation are underway as we begin 2022. The government is proposing changes to the federal Output Based Pricing System which will see the system strengthen dramatically over the upcoming years. A ban on single use plastics continues to advance with the release of draft regulations at the end of 2021. The government is also updating its emission reduction plan for 2030 which is anticipated by March 2022 and will contain further policy measures to reduce emissions. The government has also begun consultations on a Border Carbon Adjustment (BCA) mechanism that will aim to ensure imported products into Canada face the same carbon pricing signals that domestic firms place.

Canada's chemistry industry shares Canadians concerns on the impacts of a changing climate and the urgency of reducing emissions in line with scientific evidence and Canada's international commitments. To successfully transition to a low-carbon economy and achieve net-zero emission goals, the chemistry sector requires closer collaboration and alignment between the federal and provincial governments through: recognizing the important role of the chemistry sector in research, innovation, and the implementation of climate-focused solutions; promoting active engagement and collaboration with industry, and; supporting the low carbon transition of the chemistry sector. A low carbon, net zero future will require chemistry and ensuring that chemistry products are made in Canada will require governments to focus on attracting investment to make this a reality. Canada's chemistry and plastics sectors create some of the lowest greenhouse gas-intensive products on the planet. Through the U.N. recognized sustainability initiative, Responsible Care®, CIAC's members have engaged in safe, responsible, and sustainable chemical manufacturing for 35 years. Investments in research and innovation have allowed our sector to modify processes reducing our overall greenhouse gas emissions by 67 per cent since 1992.

CIAC believes that a transparent, predictable price on carbon that provides competitiveness considerations for Canada's trade-exposed industrial sectors is the preferred approach for dealing with the challenge of climate change. CIAC also believes that plastics are an integral part of our modern way of life and are critical to the health and safety of Canadians. Bans of some single-use plastic items might make governments and consumers feel good in the short term, but do not solve the overall problem long term. Industry is committed to doing its part but investments in innovation and infrastructure will also have real and measurable impacts on keeping plastics out of the environment and in the economy.

TRADE POLICY

Ongoing trade tensions are a headwind in 2021. The Biden administration has signaled a continuation of Buy America approach to domestic spending and has so far continued with the Trump Administrations approach to trade relations with China where tariffs cover over $350 billion USD worth of goods. Buy America provisions in upcoming U.S. stimulus or infrastructure spending will require delicate diplomacy to ensure equal access for Canadian exports.

The government of Canada is currently exploring a Border Carbon Adjustment mechanism to mitigate carbon leakage and increase the coverage of imported goods subject to domestic carbon pricing. CIAC agrees that ensuring a level playing field between domestic manufacturers and imported products is necessary to prevent leakage. However, the design of a BCA for an export dependent economy such as Canada's raises several questions and care needs to be taken at every step to ensure our economy retains its competitiveness with other jurisdictions, that we are in alignment with our largest trade partners and that we aim to work through multi-lateral forums to foster broad based agreement.

The European Union is the most advanced jurisdiction on Border Carbon Adjustments having unveiled a detailed policy proposal in the late spring of 2021. Discussions within the European Parliaments and European Commission over those proposals are ongoing and we expect to see a more detailed plan, including covered sectors, in the spring or summer of 2022.

TRANSPORTATION NETWORK FLUIDITY

As we entered the final months of 2021 Rail transportation fluidity had largely recovered to pre-pandemic levels. In November a series of major rainstorms heavily impacted rail transportation through British Columbia. In late and early into 2022, the impact of the Omicron COVID variant and severe cold and major winter storms have disrupted the rail network in a number of spots across Canada. The impacts here are likely to be transitory as Omicron recedes and winter weather abates as we near spring. Major port areas, especially on the West coast, are very busy and port congestion throughout North America remains a headwind in 2022.

ECONOMIC OUTLOOK FOR 2022

In its January 2022 Monetary Policy Report, the Bank of Canada projected that full-year GDP growth in Canada will be 4% in 2022, growing by a further 3.5% in 2023. The Bank also offered three key messages as we anticipate how the economy will evolve in 2021:

- The Canadian economy had strong momentum going into the last quarter of 2022, but the Omicron variant is restraining economic activity. Growth in the first quarter of 2022 is expected to slow to 2% from 5.5% in Q4 2021 but resume strongly thereafter.

- Employment growth has been robust in recent months. The unemployment rate is only 0.3 percentage points higher than it was in February 2020. Labour force participation rates are at or above pre-pandemic levels for most age groups, and job postings are at near-record levels. In the Bank's Business Outlook Survey (BOS) for the fourth quarter of 2021, about 40% of firms reported that labour shortages are restricting their ability to meet demand—a level not seen since 2007. Moreover, most of these firms expect the shortages to persist until at least 2023.

- Economic growth is projected to be robust and more balanced, averaging 3¾% over 2022 and 2023, supported by strong domestic and foreign demand (Table 2). As supply shortages ease and COVID-19 restrictions are removed, GDP will grow faster than employment, and output per worker will rise. Together with robust business investment and higher immigration, this increase in labour productivity will increase supply growth and should support economic growth without putting additional pressure on inflation

Major Canadian bank estimates align with the Bank of Canada and expect growth to average 4.0-4.5% in 2022.[8]

In December of 2021 the Federal Reserve Board projected that U.S. GDP growth will be 5.5% in 2021 before falling to 4.0% in 2022 and 2.2% in 2023. These projections are higher than prevailing trends before the COVID-19 pandemic. However, the Omicron variant has hit the United States hard in the beginning of 2022 and early indicators are showing a short-term, transitory, negative impact to economic growth with a pickup in activity throughout the year.[9] The U.S. has seen consumer spending begin to return to a long run balance that saw a higher weighting to services over goods. However, demand for goods, including housing and durable goods such as autos, appliances and other longer-lived items continues to be stronger than pre-pandemic levels. Continued strength in demand for goods, housing and a return to normal spending levels on travel are positive tailwinds for industrial chemical demand.

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[8] Average range of estimates from RBC, TD, BMO and Scotiabank.
[9] IHS Markit, "IHS Markit Flash US Compositive PMI."

The Euro Area is predicted to grow by 4.0-4.2% 2022 and 2.0% in 2023. Euro manufacturers with export links have seen strong global demand and domestic demand has rebounded as covid concerns wane. Supply chain constraints continue to weigh on output, but these look to have eased as we entered 2022.[10] Throughout the fall of 2021 and into the winter of 2022 energy prices climbed to record highs on low renewable and nuclear power supply and low natural gas storage levels. Natural gas prices repeatedly spiked to record levels, far above any previous price spikes and led to downstream manufacturers curbing production at times. Elevated

Growth in China is projected to be between 5.0- 6.0% in 2022 with increased uncertainty due to the property sector slowdown.[11] In 2021 the central government in China began a concerted push to address imbalances in the property sector. China's economy is heavily weighted toward property development with estimates of nearly 30% of economic activity being tied to the sector. A prolonged slump in property development could presage a slowdown to economic growth, though government investment initiatives could soften the blow. In the fall of 2021, the central government issued a dual track policy to reign in energy intensive sectors and address environmental pollution, which strained China's large manufacturing sector and is estimated to have slowed growth in the fourth quarter. The dual track policy is set to become a permanent fixture to China's economy as outlined by Xi Jinping in January 2022.[12] Regulatory actions in the technology and entertainment sectors and continued supply chain disruptions in manufacturing and aggressive COVID-19 containment measures have also weighed on sentiment. To counteract these headwinds China has since lowered interest rates and allowed banks to lend more both of which should support the economy in 2022.

The major Canadian banks are forecasting that the Canadian-to-U.S. dollar exchange rate will be in the range of $0.79-0.81 for 2022. In its January Short Term Energy Outlook the Energy Information Administration in the U.S. is projecting the average price for WTI crude oil will average $71.31 USD/barrel in 2022. Henry Hub natural gas will average US $3.79 per million BTU in 2022.

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[10] IHS Markit, "IHS Markit Flash Eurozone PMI."
[11] Average range of estimates from TD, BMO and RBC.
[12] Ivy Lin, " China will establish dual control system for cutting emissions, carbon intensity: Xi," January 27, 2022