



**FERTILIZER CANADA**

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July 20, 2021

Natural Resources Canada  
580 Booth Street  
Ottawa, Ontario  
K1A 0E4

Via email: [nrcan.ccus-cusc.nrcan@canada.ca](mailto:nrcan.ccus-cusc.nrcan@canada.ca)

**Re: Carbon capture, utilization, and storage strategy questions**

On behalf of our member companies, Fertilizer Canada would like to thank you for this opportunity to provide input into Canada's strategy for carbon capture, utilization, and storage (CCUS). CCUS is a promising technology with the potential to deliver real emission-reductions in the near- to medium-term. We were pleased that the Government of Canada's Budget 2021 recognized that certain sectors, including ours, face challenges in implementing emissions-reducing technologies due to our status as an energy-intensive, trade-exposed industry. We greatly appreciate Natural Resources Canada's engagement and cooperation with stakeholders on this important low-carbon technology.

Fertilizer Canada represents manufacturers, wholesalers, and retail distributors of nitrogen, phosphate, potash, and sulphur fertilizers – the backbone of Canada's agri-food economy. Fertilizer is responsible for half of the world's current food production, and our industry is a major contributor to this global supply, supporting food security in Canada and around the world. We also contribute approximately \$24 billion annually to Canada's economic activity. Our industry has facilities across Canada supporting the employment of over 76,000 individuals throughout the supply chain.

Fertilizer Canada and our member companies are committed to high standards for environmental sustainability. As part of this commitment, we have proactively conducted a Technology Roadmap for the Canadian fertilizer industry which explains current manufacturing processes, evaluates new and emerging technologies against their emission reduction potential, commercial scalability, economic viability, and regional considerations, and provides technology and policy recommendations based on this evaluation. We anticipate that this Technology Roadmap will be completed within the coming weeks and have submitted a proposal to Natural Resources Canada to review and expand this work.

The Canadian CCUS business environment will need to be competitive globally to achieve its emission reduction potential. Global companies with facilities across North America and the world can select where to invest in CCUS, and this decision is often determined by the regulatory environment of that jurisdiction in comparison to its competitors. With an unparalleled increase in carbon price and a lack of competitive tax incentives, we fear that Canada's CCUS business environment is not currently competitive in a global market. Regulatory certainty, tax incentives, and public infrastructure will allow Canada to compete



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with other jurisdictions that are moving quickly and aggressively to reduce barriers to CCUS investment.

## **Opportunities for Decarbonization through CCUS**

CCUS has been identified as a technology with emissions-reduction potential for our industry. Although CCUS has the potential to capture combustion emissions at nitrogen manufacturing facilities and potash mines, CCUS is currently most economically and technically viable as a mechanism to capture industrial process (IP) emissions at facilities that produce ammonia. There are two sources of emissions when manufacturing ammonia, concentrated process carbon dioxide (CO<sub>2</sub>) emissions and dilute CO<sub>2</sub> emissions associated with combustion of natural gas as a fuel. The incremental costs associated with capture of process CO<sub>2</sub> is mainly due to compression, whereas the capture of CO<sub>2</sub> from combustion requires extensive capital investments and ongoing operational costs to both purify and compress emissions prior to capture. Therefore, CCUS can be implemented to capture IP emissions at facilities that produce ammonia but has notably less emission reduction potential at facilities that upgrade that ammonia to urea. This is because urea, an important agricultural production in Canada, already captures and utilizes process CO<sub>2</sub> emissions as a feedstock which is required to upgrade ammonia to urea.

CCUS will be an essential technology for the fertilizer industry's transition from production of grey hydrogen / ammonia (produced with natural gas) to blue hydrogen / ammonia (produced with natural gas plus CCUS). Alberta is home to one of the largest concentrations of nitrogen production facilities in North America with seven facilities in the province, in addition to major production units in Saskatchewan, Manitoba, and Ontario. These facilities produce ammonia and its primary upgrade products (urea and ammonium sulphate), and nitric acid and its primary upgrade product (ammonium nitrate and urea ammonium nitrate).

Based on currently available information, we have outlined some initial concerns and recommendations for driving adoption of CCUS technology at our facilities. We hope to continue this dialogue as we complete the development of our Technology Roadmap which identifies the opportunities and limitations for CCUS within our sector, as well as some preliminary policy recommendations that would support development and implementation of CCUS projects. Once adequate policy and funding supports are in place, Canada's fertilizer industry is well positioned to adopt CCUS technologies and become a global leader in the production of blue hydrogen and ammonia.

## **Barriers to CCUS Adoption**

### *Infrastructure*

A key barrier to broader adoption of CCUS is the lack of public carbon storage and utilization infrastructure available to our industry. To maintain competitiveness while adopting new low-carbon technologies, carbon storage and utilization infrastructure must



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be publicly built and made widely accessible to various industry companies and sectors. Canada's fertilizer manufacturing facilities are already some of the most energy efficient facilities in the world, and fertilizer manufacturers operating in Canada face higher costs than their competitors in other jurisdictions with less rigorous environmental standards. As price-takers in the global market, Canadian fertilizer manufacturers cannot pass on increased costs to consumers. Asking an industry to fund publicly accessible infrastructure required by policy, including carbon trunk lines and carbon storage, is inefficient and will jeopardize the collective emissions reduction potential from multiple companies or sectors.

Government support is needed to implement the infrastructure required for industry to pursue CCUS on a wide scale. Government-built and industry accessible carbon trunk lines near large facilities that could benefit from CCUS, as well as regionally focused low-cost CCUS infrastructure, are steps that would enable widespread adoption. Government investment is needed so that a wider array of competitors can participate in CCUS without fear of free-riding or first-mover advantages. To date, the limited amount of CCUS infrastructure in Canada has been driven by industry. However, CCUS infrastructure, as well as the necessary infrastructure for other emissions-reducing technologies like clean electricity, must be seen as a public good and a public investment in our collective effort to lower emissions and improve environmental performance. Government has a significant role to play in making CCUS accessible to all industries and companies, which would allow widespread adoption of CCUS and significant reduction in emissions.

**Fertilizer Canada recommends that the Government of Canada work with industry and other stakeholders to identify locations and facilities best suited for CCUS and align the relevant government departments, such as Canada's Infrastructure Bank, to fast-track construction of the necessary infrastructure that would encourage widespread adoption of CCUS.**

#### *High Costs – Capital and Operational Expenses*

For combustion emissions, a key barrier hindering adoption of CCUS is the high projected costs for both capital and operating expenditures. While the technology is promising in terms of emissions-reduction potential, the high initial and ongoing costs associated with purification and compression of combustion emissions prohibit adoption of CCUS by many industries. In addition to enabling new carbon storage and utilization infrastructure development, we recommend that the Government of Canada develop funding programs and tax incentives that encourage low-carbon capital investments to capture combustion emissions at Canadian facilities. Funding programs should be consistent, reliable sources of funding that are accessible to industry based on clear and streamlined application processes which target both capital and operational costs. Implementing CCUS technology at a facility is a major investment, and funding programs must provide enough certainty to secure such investments.

To encourage adoption of CCUS to capture process emissions at our facilities, a broad approach towards storage and utilization should be taken in the short to medium term.



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Enhanced oil recovery (EOR) should be considered a viable carbon storage option as economies and technologies transition over the next decade. **Fertilizer Canada recommends that the upcoming CCUS Investment Tax Credit (ITC) fund projects that use EOR as a storage mechanism as to not jeopardize some important project proposals with significant emission reduction potential.**

An example of the type of funding program that has been positively received by EITE industries is the Alberta Petrochemicals Incentive Program, which creates a strong framework to follow. Specifically, this program has been appealing to nitrogen producers because there are clear criteria and sufficient grant windows (ten years), which aligns well with commercial and capital investment timelines. In the United States, the 45Q tax incentive for CCUS is an innovative policy solution that has broad support and considerable potential to drive new CCUS development in that country.

**Fertilizer Canada strongly recommends that policies, tax incentives, and funding programs align with realistic timelines required to implement CCUS at an industrial facility. These projects often require multiple years to secure investment funding, process permit applications, and implement the technology on site. Fertilizer Canada asks that the Government of Canada work with industry to determine appropriate timelines and to ensure that the process for implementing CCUS is as clear and streamlined as possible.**

### *Technical Barriers*

Although we can sufficiently capture carbon at our facilities, mechanisms for storage or use are not easily or readily available. Lack of accessible carbon storage or utilization locations are the limiting factor for use of this technology in our sector. Additionally, the Government of Canada could support research and development to determine the most efficient way to implement CCUS technologies at potash mines in Saskatchewan.

**Fertilizer Canada recommends that the Government of Canada invest in solutions, such as research and development or policies that de-risk investment, to ensure efficient implementation of CCUS technologies at potash mines and work with provincial governments to create carbon storage and utilization infrastructure that will be accessible and cost-effective for our industry.**

### **Driving Adoption of CCUS**

A key policy barrier for industry considering investments in CCUS is regulatory uncertainty. Climate priorities and targets are developing rapidly which has resulted in frequent policy and regulatory changes in recent years. Our industry supports evidence-based policy that achieves both economic and environmental sustainability. However, frequent changes in these policies, combined with the varying regulations across federal and provincial jurisdictions, creates regulatory uncertainty that can discourage companies from making significant investments. The fertilizer industry is science-driven and involves extensive



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industrial processes that are complex and costly to change. Decisions to adopt any technology with significant emissions-reduction potential, including CCUS, are based on a range of considerations, including the regulatory environment and projected return on investment. Regulatory uncertainty makes it difficult for industry members to secure major capital investments in a global market, and simply drives low-carbon investments to other jurisdictions.

**Fertilizer Canada recommends that the Government of Canada seek longer-term agreements with provincial governments (e.g., > 10 years) that set a clear climate policy framework for the near future.**

**Fertilizer Canada also recommends that the Government of Canada work with each province to create CCUS opportunities for our industry across Canada. This will ensure that industry members interested in pursuing CCUS are able to adopt the technology at facilities where it is most beneficial and cost-effective.**

#### *CCUS “Hubs”*

Fertilizer Canada supports the development of CCUS hubs as CCUS is adopted more broadly by industry. In Alberta, for example, where there is a concentration of nitrogen production facilities, developing CCUS hubs where infrastructure like carbon trunk lines and carbon storage is accessible to industry could allow for a broader adoption of carbon capture technologies at our facilities. This approach capitalizes on economies of scale and brings together multiple stakeholders in a region to achieve meaningful emission reductions. However, to achieve this potential, carbon storage and utilization infrastructure must also be available for remote facilities. At this point, the required costs and lack of accessible infrastructure for remote facilities is an identified barrier hindering adoption of CCUS technology.

#### *Public Confidence Gap*

As CCUS captures emissions before they are released to the environment rather than eliminating emissions altogether, Fertilizer Canada perceives a public confidence gap with this technology. However, we believe that CCUS is a short- and medium-term solution that can support emission reduction goals without jeopardizing Canadian natural resource sectors. For our industry, CCUS is a crucial step in the process toward a low-carbon future and this technology can support our transition to net-zero by 2050. This public confidence gap must be addressed in order to ensure that government can provide adequate support for adoption of CCUS, and so that industry is recognized for its reduction in carbon intensity.

Thank you again for this opportunity to submit comments on CCUS policy and implementation. This is an important topic for the fertilizer industry, and we look forward to working with the Government of Canada to explore this promising technology. With the necessary policy and funding supports in place, we believe that the fertilizer industry is



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well-suited to help lead adoption of CCUS technology in the coming years. We welcome the opportunity to discuss our comments further and review the results of our Technology Roadmap. Please do not hesitate to contact us should there be any questions related to these comments.

Sincerely,

McKenzie Smith  
Director, Stewardship & Regulatory Affairs

CC: Christine Hogan, Deputy Minister, Environment and Climate Change Canada  
Jean-Francois Tremblay, Deputy Minister, Natural Resources Canada  
Hon. Jason Nixon, Minister of Environment and Parks, Alberta  
Hon. Sarah Guillemard, Minister of Conservation and Climate, Manitoba  
Hon. David Piccini, Minister of Environment, Conservation, and Parks, Ontario  
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