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Incentivizing Carbon Emissions Reduction Compliance: USDA Commodity Carbon Dioxide Indexed Futures Trading Project

Industrial-grade carbon dioxide enjoys half a billion metric tonnes of export/import trade per year. At present most is manufactured in bulk by a dozen or so industrial gas suppliers. Incredibly, it is not supplied by those power plants which sequester carbon dioxide underground as part of government-sponsored climate change prevention policies.

This process mirrors the pre-FDR New Deal farm policy of burning harvested foodstuffs to unilaterally regulate wholesale market food prices whilst during which time millions of Americans were starving.

How best this situation may be rectified is to create a solution similar to that proposed and passed by the USDA in 1934 : the USDA would be the primary (not exclusive) regulator, vendor and buyer of carbon dioxide as a physical commodity (not an abstract and invisible offset) with the pricing structure based on an index derived from averaged pricing obtained independently and objectively from numerous independent traders and sellers of industrial commodity carbon dioxide.

Any untoward fluctuations & inaccuracies above and beyond the index price are offset by two useful supplemental yet necessary (and equally profitable) trading mechanisms which all farmers and the USDA understand: commodities futures trading and futures derivatives trading. Financing such purchases and sales of commodity carbon dioxide through the USDA would mean a percentage of the revenues generated revert to the USDA for each transaction. The USDA would further expand its revenues through extending loans to the buyer, the seller and the producer as with all other commodities the USDA trades.

Proceeding in this manner stabilizes market prices throughout the supply and demand chain. Why America can feed so much of the needy world owes to this process working flawlessly for 85 years.

The Market

Those not working in the hydrocarbon processing, power plant engineering and other for-profit enterprises directly impacted by the availability of industrial commodity carbon dioxide may have little notion of the extent of this active trade nor of CO₂'s manifold & essential industrial applications.

For their benefit, amongst carbon dioxide's many profitable and beneficial uses are:

1. Water purification
2. Large food distribution & warehouse refrigeration as a coolant
3. Fischer-Tropsch process feedstock in refineries for making synfuels, biofuels, lubricants, detergents, paints, plastics and pharmaceuticals
4. Precision horticulture & greenhouse plant-growing operations
5. Feedstock for manufacturing fertilizer, most notably urea and other nitrogen fertilizers

Statistics by country of the global export/import industrial carbon dioxide market for 2017



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The U.S. internal market for American-manufactured industrial carbon dioxide is easily five times the above. This ratio of export to domestic industrial consumption of industrial carbon dioxide holds true for most nations.

Creation of the commodity carbon dioxide indexed marketing, sales financing and futures trading mechanism

Fortuitously, the mechanism is already in place and has been in place for the past 85 years in the form of the USDA's Farm Service Agency Commodity Purchase program which is two-fold in nature: domestic and the Food For Peace Program administered by U.S.A.I.D.. Industrial carbon dioxide would simply take its place as yet another of dozens of USDA-listed and index-priced agricultural commodities alongside ethanol, methanol, and a variety of other chemical bulk products.

The work which remains to securities trading firms and commodity brokers is three-fold:

1. Engaging in the activity of generating the strictly mandated index database through searching out monthly and possibly daily various market pricing for commodity carbon dioxide through a process known as "Significant Price Discovery" or SPD to validate empirically the indexed average price at which the USDA would make such a bulk commodity available for sale, financing and futures & futures derivatives trading.
2. Ensuring that the transactional database of buyers and sellers of industrial carbon dioxide by clients of the USDA are conducted in accordance with USDA data security compliance, product standards compliance and transaction documentation & tracking procedures.
3. Both of the above condense to the task of filling out forms based upon data supplied for buyers and sellers of industrial carbon dioxide to the USDA.

Points of purchase, sales and forms submission within the USDA and how they work

The following documents contained in the accompanying .ZIP file describe in detail how the USDA bulk commodity procurement and distribution system works, details the various points of contacts, and also provide background in detail on the particulars of the proposed project.

1. USDACommodityOperationsChart19March2019.pdf
2. WebBasedCommodityTradingProcedureMechanics19March2019.pdf
3. TruckRailcarAndShipTrackingAndPaymentToolContactsandProcedures19March2019.pdf
4. CommodityProcurementAndShippingSystemHandbookElements19March2019.pdf
5. <https://portal.nifa.usda.gov/web/crisprojectpages/1005769-high-frequency-trading-in-agricultural-futures-markets.html>

6. <https://www.fsa.usda.gov/programs-and-services/commodity-operations/web-based-supply-chain-management/index>
7. https://www.fsa.usda.gov/Assets/USDA-FSA-Public/usdfiles/Comm-Operations/web-based-supply-chain-management/pdfs/wbscm_release_notes.pdf
8. <https://www.fsa.usda.gov/programs-and-services/energy-programs/index>
<https://www.fsa.usda.gov/programs-and-services/energy-programs/BCAP/index>
9. HowToComplyTitle17AppendixBPart38,10Mar2019.rtf
10. FertilizeruseFeb2018.xls
11. CO2UsedDirectlyToSterilizeWater.pdf
12. LindeGasesCO2Technology.pdf
13. HowCrossListingOfDiscoveryWorksInTheFuturesMarkets.pdf
14. FSADirectLoanHandbook.pdf

Conclusion

This undertaking involves the application of significant manpower, storage and transportation resources. The trade-off is that, given two to three years, this operation on a self-financing basis will sequester hundreds of megatonnes of carbon dioxide per year otherwise being injected at a negative expense into the ground. Such an undertaking also provides new opportunities to expand the market for industrial carbon dioxide without fielding an army of staff to achieve optimum sales objectives.

While the Web-based commodity trading program which the USDA operates does not indicate from their documentation available online the exact security parameters needed to comply with their cybersecurity requirements, my best guess is that this information is not for common distribution and requires a face-to-face discussion with either the USDA and/or SAR International who manage the online commodities trades.

Respectfully submitted,

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