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SUBJECT: “Structured Public Consultation - Removal Activities”
UN FCCC Call For Public Input 2023

UNFCCC Structured Public Consultation of Carbon Removal Activities of Carbon under the Article 6.4 mechanism

UN FCCC Call for input 2023 - structured public consultation

Dear UN FCCC Supervisory Board Members:

I am on behalf of the ARCTECH USA Global Team grateful for the opportunity to provide feedback on the Article 6.4 Supervisory Body’s Information note on Removal activities under the Article 6.4 mechanism Version 04.0. ARCTECH Inc. was founded in 1987, in the USA to develop and deploy cost-competitive products and solutions with coal biotechnology for energy, environmental, and agriculture market sectors. Coals being made of plant originated, ARCTECH Team has developed and market scale of clean fuels and multiple organic humic products for agriculture, pollutants clean up, recycling wastes even including explosives into fertilizers and removing CO2 from coal power plants and from CO2 emitting systems, including SOx, NOx, and toxic metals. Recycled into a water filter product for the containment of pollutants from waste ponds including coal ash ponds to prevent leaching of toxins from these. No waste is produced. Our products are approved by USDA, USEPA, and State regulators in the USA, in several other countries as well as by trade organizations. The US EPA Director of Air Pollution Control Division, Mr. Frank Princiotta, after his team's due diligence of our solutions, stated in writing that " our approach lowers the environmental footprint from coal use and creative approach for lowering carbon emissions". Please note our solutions and real-world applications underway at our www.arctech.com

Briefly, for CDR our Team facilitates augmentation of nature's photosynthesis with the use of our coal-derived unique actosol® organic humic-fulvic fertilizer, which results in the increase of growth of plants 1.25 to 1.5X and their roots 2 to 4X, and thus, increase the capture of CO₂ from the air. actosol also enhances microbial activity in soils, which converts the crop residue, left after harvest, and roots to form humus-rich organic matter for durable storage in the soils. UNFAO reports that it remains stable for 100 years. USDA and other scientific studies with radio dating of carbon in humic matter in soils today that they report are 10,000 to 30,000 years old. It also increases crop yields by 20%+ and replenishes depleted vital organic matter in soils. Soils are the 4th largest storehouse of carbon after Sedimentary rocks, fossil fuels, and oceans. Fifth is our atmosphere. Since the mid-18th century industrial age, increasing loss of carbon in the form of humus due to excessive use of soils and erosion is as much putting us and our planet at peril to our civilization and our planet as is increasing CO₂ in the air. Reconfiguring these two storehouses is the lowest hanging fruit for speeding up the capturing from the air and becoming a major contributor to achieving net-zero CO₂ emissions by 2050.

An example of actosol use at Lawson Farm in Gordonsville, Virginia over ten years. Farmer Lawson reports results on his 360-acre farm now in the third generation, resulting in rejuvenating soil in less than two years. His farm soil had high amounts of residual salts from the excessive use of chemicals. Organic matter increased from 1 to 5% over 10 years amounting to an increase of 0.5% per year. He has increased yields by 20-50% of Soybean, , Wheat, Corn, and Sorghum while also increasing organic matter in soils by mulching in the crop residue from these crops which are low in dry solids, which means low in biodegradables as compared to from e.g., potatoes, sugar beet, clover, mustard, etc., which are used for animal feed. This mitigation produces N₂O, which is another greenhouse gas of high concern as it is 265 X greenhouse gas than CO₂.

Following are the calculations for CO₂e capture on his farm:

Based on Per Acre: 43,500 sq.ft per acre X 1 foot depth = 43,500 cubic Feet

@60 lbs soil per cu.ft = 43,500 X 60 = 2,610,000 lbs or 1186 tonnes

Organic matter increased from 1 to 5% by 4% over 10 years Organic matter dry basis = 1186 X 0.04 = 47.45 tonnes/Year 47.45/10 = 4.75 tonnes/year

@ 60% C in organic matter = 2.85 tonnes/Year CO₂e Equivalent 2.85 X 44/12 = 10.45 tonnes /Acre/Year. Averaging = 10 tonnes/Acre/year.

The above data from Lawson Farm corroborates the net removal rate given below

based on calculations considering the CO₂e intensity of 0.1 tonne CO₂e released for making actosol and its use at the farm for mulching in increased crop residue and roots. We used an average leakage of 30% during the conversion of crop residue and roots into organic matter.

Net Removed CO₂e/Acre/Year= Gross 16.09 tonnes (1-30% Leakage %) = 11.26 tonnes

In India, KVK Baramati, one of the Government of India organizations set up in every district to support farmers in adopting interventions to improve agriculture productivity. With the use of actosol only over one season, they reported organic matter increased from 0.68% to 0.91%, while sugarcane yield increased by 20%. Similar yield increases were reported for a variety of fruits and vegetables mostly grown in the region. Indian Scientists at IARI are reporting that crop response to fertilizers fell continuously from about 25 kg of grain kg⁻¹ during the 1960s to 8 kg during the 1990s. They attribute this to decreasing organic matter in soils. Presently India, with the second largest farmlands comprising 325 million acres, 60% of the land is degraded due to erosion, salinity, alkalinity, and deficient secondary and Micronutrients. A newspaper from India recently headlined “FARMERS ARE TOILING ON DECAYING SOIL”.

For our first demo project in 2005 in Sadat City in Egypt, where we recycled sewage water into actosol organic fertilizer water for planting cotton, sorghum, and Cypress trees. Trees were planted on a portion of land in compliance with the UN Kyoto Clean Development Mechanism, which requires tree crowns to cover at least 10-30% of the land. With only 1/3rd rate of irrigation than conventional, the cotton yield increased by 40% and sorghum by 35%. The survival rate was increased by 10%, an important factor in the arid high temperature of desert land in Egypt. The height of trees increased 7% more with actosol use during their first four months of growth. It was validated that trees captured 3 tons of CO₂e per acre per year.

Over the last 25 + years we have continued to provide scientific studies of actosol modes of action in collaboration with academics supported by field applications at farms in the USA, China, S. Korea, India, Egypt, Turkey, and Saudi Arabia reporting increased plant, root biomass, crop yields, and organic matter.

Primary economic incentives farmers derive from actosol are additional revenues from 20%+ increased crop yields and cost savings of 25%+ from the reduced input fertilizers and plant protection chemicals due to improved soil health. CO₂ capture offers additional revenues to the farmers. Depending on the crop and number of crop cycles per year, it offers an opportunity for farmers to increase monetization by

an average of a net \$400 per acre per year by incurring \$100 for the cost of actosol (\$200 from CO₂ capture +\$200 from increased crop yield based on two crop

cycles per year) -almost doubling their income. A game-changer economic incentive in the large agriculture sector to become engaged in mitigating climate concerns by becoming carbon farmers.

Our planet's land area is 36 billion acres. UNIPCC reports that in 2015, it comprises 2% infrastructure, 12-14% cropland, 30-47% pasturelands, 16-23% forestlands, and 24-31% minimum human-use ecosystems, deserts, and rocks. They also state that about a quarter of the Earth's ice-free land area is subject to human-induced degradation. Soil erosion from agricultural fields is almost 100X higher than the soil formation rate. So, as we stated above, soils which are one of our must-haves needed to feed us are at peril. By fixing this we believe our approach will make a major contribution to addressing climate change while increasing food production and contributing to economic growth. In 2022, Global CO2 emissions were 38.7 billion tons. The use of actosol on even 10% of the cropland out of 12-14%, as stated in the UNIPCC report, will amount to 3.8 billion acres. It will result in capturing 38 billion tonnes of CO2 per year and storing it durably for thousands of years while enabling increasing food production.

To overcome the high cost of sampling and analysis of soils for organic matter, ARCTECH has established a collaboration with Boomitra, Inc. (www.Boomitra.com) which is using rapid satellite measurement for the increase in soil carbon covering hundreds to thousands of acres of land. They also qualify the projects for carbon credits per the VERRA.ORG [Verified Carbon Standard](https://verra.org/programs/verified-carbon-standard/) (VCS) methodology established on June 1, 2023, [VM0042](https://verra.org/programs/verified-carbon-standard/) for Improved Agricultural Land Management. <https://verra.org/programs/verified-carbon-standard/>

We have attached our submission to XPRIZE-Musk Foundation \$100 Million Competition for demonstration of our technology for potential Gt scale. Our technology is one of the deemed validated technologies by XPRIZE from 1,132 received worldwide.

We have established our CDR technology shall support addressing the United Nations' 17 followings Sustainable Development Goals:



1. [no poverty](#); In our quest to address our today's the most existential threat, case is being made to fast-track stop or even ban the use of fossil fuels, especially coal, which will turn these economically viable communities into poverty as it is already happening. Our approach to the use of coal to mitigate carbon and pollution concerns from coal as well as from other fossil fuels will keep them from becoming regions of poverty. While also enabling one of the most global poverty-ridden agriculture sector to alleviate poverty. Increased food production will result in increasing income even for poor farmers and for providing food at a lower cost. Today globally marginal, subsistence farmers make up 84% or 475 million farms with <2 hectares (5 acres).
2. [zero hunger](#); With the increased supply of cheaper food, would be a major contributor towards alleviating hunger. Actosol-grown food is proving out to have increased nutrition such as 20 % average increased protein, so will also result in improved nutrition increasing also at the crux of the challenge by the poor.
3. [good health and well-being](#); Foods grown on healthy soils with fewer chemicals and improved nutrition will contribute to good health and well-being.
4. [quality education](#); addressing the climate challenge with a creative value generation approach will become an example of quality education for our young generation.
5. [gender equality](#); Worldwide women are increasingly becoming farmers , by also enabling them to increase their income will contribute to gender equality.
6. [clean water and sanitation](#); By increasing organic matter in soils and use of less chemicals will result in increased water filtration thus increasing the source of clean groundwater.
7. [affordable and clean energy](#); Our actosol is a co-product of producing super cheap clean fuels from coals with our MicGAS Coal Biotechnology. Today energy has been weaponized because of control of the majority of oil and gas by few and that too at super low costs of production as low as \$2-5 per barrel. Vast resources of coals are on all continents and our technological approach to repurposing these will overcome this weaponization and enable affordable and clean fuels including the cheapest path to green hydrogen we all are aspiring for. Please note www.arctech.com .
8. [decent work and economic growth](#); Contribute to economic growth in the chronically poor agriculture economy. Farmers, besides increasing monetization with crops from their land will get monetization from becoming carbon farmers.
9. [industry, innovation and infrastructure](#); Offers game changer innovation to drive the next industrial revolution with green solutions and foster new industries and infrastructure.
10. [reduced inequalities](#); Alleviate inequalities of increasing minority poor farmers globally. Give them opportunity to increase crop yields, and monetize land by becoming carbon farmers.
11. [sustainable cities and communities](#); Increased monetization of farmlands will make rural cities and communities sustainable.
12. [responsible consumption and production](#); Will contribute to creative and responsible ways to use coal by addressing pollution, and carbon concerns from its use as well from other sources. Note www.arctech.com
13. [climate action](#); Our is a game changer, value generation, lowest hanging solution for fast track to global climate action.
14. [life below water](#); Control of runoff from farmlands to local watersheds and to rivers will reduce the load of contaminants to waters and contribute to improving life below water.
15. [life on land](#); Improved soil fertility of lands will contribute in improving life on land
16. [peace, justice, and strong institutions](#); Ours is a unifying approach to addressing the global challenge. Instead of adopting solutions that are costly, huge divisiveness exists to the point many reject even the need for climate action.
17. [partnerships for the goals](#). This will lead to global partnerships as continuing food production is must have need of us all globally.

At Davos Switzerland Economic Forum in January 2023, Mr. John Kerry, the Climate Czar of the US Government was reported to lament, **how** to convince people of urgency to move forward to save our planet!

In an interview with TV Republika in Nov.2022, Poland's climate minister Anna Moskwa noted that there was growing "demand for coal even before the outbreak of war" in Ukraine. As a result, "we are planning to increase production wherever possible and are also planning new [mining] locations".

Low-carbon ambitions must not interfere with 'normal life', says Xi Jinping. Reported by The Guardian in January 2021.

A target set by the UN Paris Agreement urgently limit the mean global temperature rise well below 2 degrees Celsius (3.6 degrees F) above pre-industrial levels and preferably limit the increase to 1.5 degrees Celsius (2.7 degrees F). Our approach offers fast track a major contribution in achieving the above stated target while ensuring economical food production for increasing populations of 7.5 billion today and is projected to increase to 9+ billion by 2050. It sets it apart and is a step-change for increasing the rate of CO₂e capture by 2X to 5X from the air then with current approaches being advanced with increasing plantation of only trees and on farms with no-till and cover crop practices. Our actosol is also increasingly in use for planting low cost, fast planting of bare roots for tree projects, on farmlands and by NGO, s such as Rotary Club members worldwide planting trees. Actosol use results in deeper roots, increased moisture in soils and trees thus improving their survivability, which continues to be a major challenge without active management especially in arid area.

Above are just a few relevant realities which need to be addressed with balanced sustainable solutions as well as for long term view as well all charter paths to global climate action. Following is our depiction of "Balanced Sustainability" approach. The underpinning of this is to meet the must have needs of us, our planet and ecological balance for its other inhabitants. As we are now seeking to address the past human activities resulting in today adverse climate change impacts, we seeking the wisdom from Iroquois Indians 7th generation criteria (https://en.wikipedia.org/wiki/Seven_generation_sustainability). It guides us to look at the impacts of decisions today to seven generations from now on. Our systematic quantitative calculations support the fact that our approach offers a path of fostering a legacy for subsequent generations to address challenges with value generation solutions and in a "Balanced Sustainable " approach as depicted below:

Balanced Sustainable Solutions



Must Have:

Clean Air, Water, Food, Energy, Shelter

Desire:

Health, Environment

Wants:

Comfort, Entertainment,
Communication/information, Transportation

Must Maintain:

Productive Soils, Clean Water & Air

Desire :

Sustainability

Wants:

Sustain Other Inhabitants



We appreciate the opportunity afforded to us to present our CDR technology for both reducing the carbon in air and durable storing in soils for improving soil fertility , increase crop yields while complying with sustainability goals. Please let us know if we can elaborate and provide supporting documents. We trust that our response can be of use to the Supervisory Body as it moves forward with its work.”

Sincerely,

ARCTECH Inc.

Daman S. Walia, Ph.D.

President/CEO

www.arctech.com

www.humaxx.com

www.ihccs.org

Offering " Balanced Sustainable Solution

ATTACHMENT: ARCTECH USA Team Submission to XPRIZE-Musk Foundation Competition for Demo at Scale of our actosol CDR Technology for 1 Gt CDR – Updated for UNFCCC June 19,2023