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Carbon Market Opportunities in Liberia

A thought piece by Silvan Ingredient Ecosystem

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Executive Summary

Liberia's ecology gives her a competitive advantage in the carbon market, representing a huge opportunity for investment and for Liberia to become a world leader in carbon innovation. The most effective ways to access the voluntary carbon credit market, the largest market, would be through tropical forest protection and rehabilitation of degraded forest/farmland. This approach would mirror investments already happening in West Africa, and could be combined with pioneering innovations in Agriculture and Agroforestry systems.

By combining tropical forest rehabilitation with the replanting of agriculturally valuable species following regenerative and smallholder intensification agricultural guidelines, Liberia would strengthen and diversify food sources, reduce reliance on imports, create new export opportunities and generate income through the sale of carbon credits.

We believe the next steps towards this vision are to identify and develop replanting pilot programs on degraded farmland, to demonstrate traction on implementation and carbon credit sales, and then expand this scheme within a countrywide carbon approach.

Context

In August of 2022, a meeting between Silvan Ingredient Ecosystem and Hon. Jeanine Milly Cooper, Minister of Agriculture for Liberia took place and this document has been produced with the intention of stimulating further discussion and exploration of practical opportunities. As a thought piece, it is not intended to be an exhaustive review of options but rather a summary of how Silvan Ingredient Ecosystem perceives the situation and available opportunities within the carbon market for Liberia. We seek to point to external resources and expertise to explain our thinking but do not attempt to produce a full literature review on the subject.

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Silvan Ingredient Ecosystem

At Silvan we've worked along every step of supply chains and seen the disconnect between the ambition of mission-driven brands in Europe and North America for impact and the ability of innovative ingredient growers to scale and reach new markets. Silvan Ingredient Ecosystem exists to bridge this disconnect by partnering with all actors in the ecosystem.

At Silvan:

- We connect the world's best brands with the world's best ingredients.
- We help sustainable and regenerative ingredient growers scale their operations and find new markets.
- We consult for mission drive brands, ingredient providers and ecosystem actors to build their impact.
- We innovative with blockchain to transform market access and transparency.

The Climate Crisis

The climate crisis is real, well understood, and urgent. Globally we need to cut greenhouse gas emissions and transition to new systems of energy, food, and waste management. However, to limit warming to ambitious 1.5° C or 2° C targets, massive amounts of carbon dioxide need to be removed from the atmosphere, transforming landscapes to store it in ecosystems and developing industrial means of storing it underground.[1]

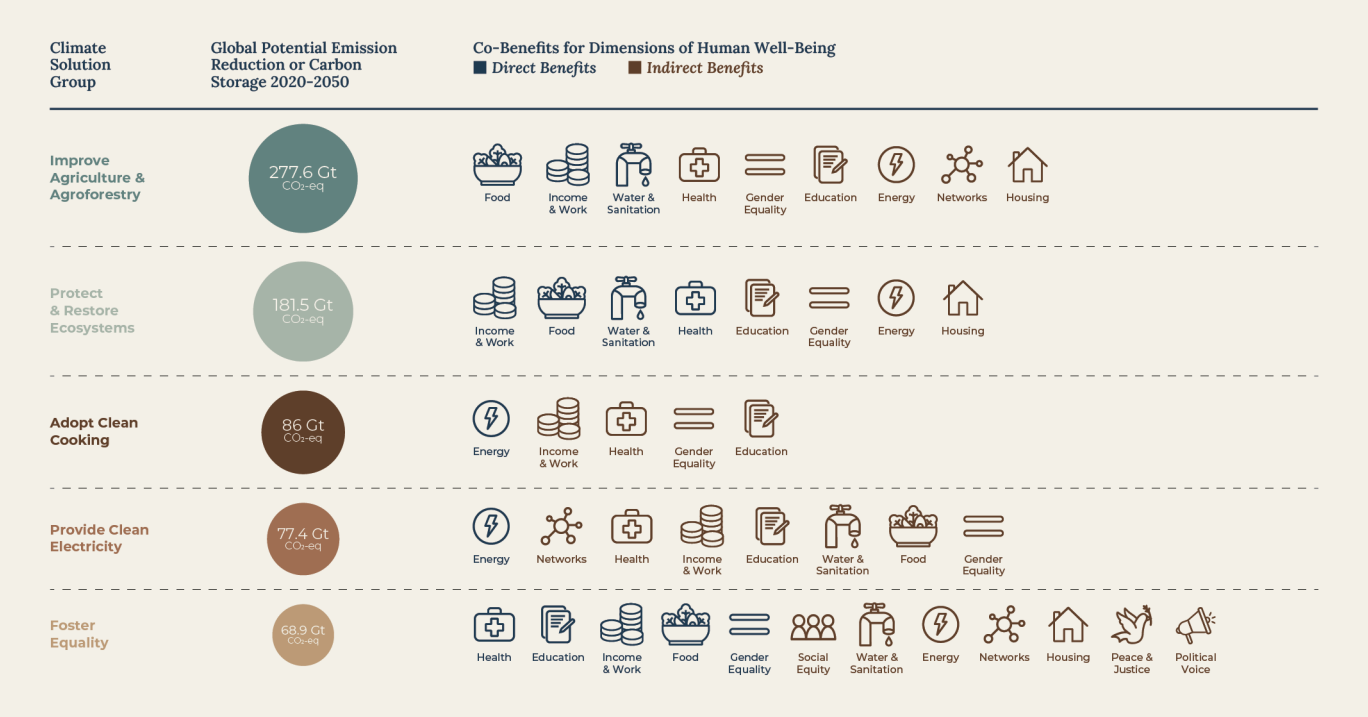
Major stakeholders are committing vast sums of money to tackling climate change; for example, Amazon has allocated $2 billion for its Climate Pledge Fund with the goal of becoming net-zero by 2040 and Microsoft has committed to invest $1 billion from 2021-2024[2] towards emissions reductions. The global surge in corporate climate action is creating significant opportunities for carbon sequestration project investment since current corporate commitments to net-zero far exceed the availability of carbon credits required to achieve these commitments.

The Carbon Opportunity for Liberia

Tropical forest reforestation is set to be one of the most effective methods for ecosystem carbon sequestration and Liberia is naturally primed to develop this critical climate solution:

"After years of overharvesting in the Upper Guinean Forest Ecosystem – a rainforest belt which once covered the whole of Liberia, plus parts of Sierra Leone, Guinea, Ivory Coast, Ghana and Togo - Liberia's forest now represents around 45 percent of the region's remaining forest. It has been identified as one of 25 threatened biodiversity 'hotspots' globally, and supports many species which are found nowhere else. This forest is home to some 9,000 species of plants and more than 1,300 species of vertebrate animals.[3]"

Moreover, an evidence-based report from Project Drawdown, a respected carbon research center, details how climate solutions can provide concrete co-benefits for human well-being in sub-Saharan Africa. A summary of their key findings is as follows:



Climate Solutions Figure by © 2022, Project Drawdown

1. https://cdrprimer.org/read
2. www.greenbiz.com/article/inside-look-pricing-forest-carbon-market
3. www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/report/2010/2/forest-destruction-fuels-regio.pdf
4. www.drawdown.org/download-drawdown-lifts-climate-poverty-connections-report?tca=XsVSmeBV-p6pVJYdkOe1C2PYrhookUpQNHUvIsTbFOI

An effective series of investments into agricultural carbon solutions could simultaneously tackle extreme poverty: the Food and Agriculture Organization (FAO) estimates that improvements in agriculture are 11 times more effective at reducing extreme poverty in SSA than investments in other sectors.

Liberia's natural forest ecology is a huge carbon asset, which can be integrated with agricultural change that both benefits Liberians and reduces carbon output while drawing carbon out of the atmosphere.

Liberia's existing forest ecosystem provides a powerful set of ecological resources that make her uniquely suited for successful carbon asset and regenerative agriculture projects. While reforestation projects in more degraded countries may struggle to establish new forests, carbon capture projects in Liberia can capitalize on the healthy soils, intact pollinator, seed disperser, and insectivore communities, and the abundance and availability of local seeds, indigenous species, and other genetic resources. These ecological assets significantly increase the likelihood of project success, and provide a cascade of other benefits for agriculture, including increased crop yields,[5] lower need for pesticides,[6] and greater resilience against pests.[7]

Important distinctions in the Carbon Market

To begin exploring how the carbon opportunity can be applied to the Liberian context, it is important to highlight some distinctions within the carbon market.

Regulatory compliance vs voluntary markets

Two types of carbon market exist; the regulatory compliance and the voluntary markets. The regulatory compliance market is used by companies and governments that by law must account for their greenhouse gas (GHG) emissions. It is regulated by mandatory national, regional or international carbon reduction regimes. The voluntary market encompasses the trade of carbon credits is on a voluntarily basis.[8] The size of the two markets differs, and the voluntary market is now the larger with a value of nearly $2bn in 2021 – a quadrupling in size in terms of value from 2020.

CO2-avoidance vs carbon dioxide removal (CDR)

CO2-avoidance means using technologies and practices, such as renewable energy, energy efficiency and land use conservation to avoid emitting carbon into the atmosphere. For example, protecting existing rainforests would be a CO2-avoidance scheme.

Carbon dioxide removal (CDR) is used to encompass a wide array of approaches that remove carbon dioxide (CO2) directly from the atmosphere and durably store it to create negative emissions. CDR technologies and approaches include but are not limited to:

- Afforestation/Reforestation schemes
- Soil Carbon Sequestration
- Biomass Carbon Removal and Storage[10]

Image sourced by © 2022, Silvan Ingredient Ecosystem

5. https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/1365-2664.14057
6. https://royalsocietypublishing.org/doi/10.1098/rspb.2006.3530
7. www.sciencedirect.com/science/article/abs/pii/S026121942030082X
8. www.fao.org/3/i1632e/i1632e02.pdf
9. https://climatetrade.com/voluntary-carbon-market-value-tops-us2b/
10. www.energy.gov/sites/default/files/2021-11/Carbon-Dioxide-Removal-FAQs.pdf

Images sourced by © 2022, Silvan Ingredient Ecosystem

Specific Carbon Opportunities for Liberia Area 1: Tropical forest protection and restoration

Tropical forest restoration in Liberia represents the first specific carbon opportunity for Liberia, and is composed of two strands:

- Tropical forest rehabilitation
- Large scale tropical forest protection

Tropical forest rehabilitation

Tropical forest trees, other vegetation, soil, and leaf litter absorb and hold carbon. Tropical forest restoration offers substantial climate change mitigation opportunities when conducted at a large scale by replacing degraded farm or degraded forest land. It also brings the myriad economic, social and ecological benefits that healthy forests bring to a country.

There are different restoration mechanisms, the simplest being to curtail the non-forest use of the degraded land, and let a young forest naturally regrow. Protective measures need to be put in place to enable this, such as adding fire barriers and stopping animals from grazing, but other than that it is simply a process of letting nature take its course. A more intensive method involves cultivating and planting native seedlings to accelerate this regrowth, which would also increase the rate of carbon sequestration, and how many carbon credits could be sold.

More intensive reforestation projects are already attracting commercial funding in West Africa, such as Sierra Leone, and by feeding into the voluntary carbon market, are faster and easier to set up. Also, as a CDR rather than CO2-avoidance strategy they are more attractive to corporate investors.[11] Intensive replanting for tropical forest rehabilitation represents a scalable, innovative model for Liberia to rapidly generate carbon credits for the voluntary market especially if integrated with economically high value species whereby local people can generate income from managing and maintaining the land whilst also generating carbon offsets

Large scale tropical forest protection

This option for carbon credit generation is through protecting the existing forests within Liberia. Liberia already has relatively strong experience in this area, including the $150m deal between Liberia and Norway to stop logging.[12] Tropical forest protection most regularly falls under the REDD+ framework, which is a performance-based incentive system for countries to reduce the rate of emissions from deforestation and forest degradation,[13] and represents a typical CO2-avoidance scheme.

This option is more complex and on a much larger scale than tropical forest rehabilitation, because the levels of compliance are significantly greater and better established. The level of investment for this option should not be underestimated and would require significant inter-department coordination across the Liberian government.

Image sourced by © 2022, Silvan Ingredient Ecosystem

11. www.newswire.ca/news-releases/klimat-x-developments-inc-formerly-earl-resources-limited-announces-reactivation-to-the-tsx-venture-exchange-819145883.html

12. www.globalwitness.org/en/archive/us150-million-partnership-between-norway-and-liberia-stop-logging-could-signal-bold-new/13. www.eci.ox.ac.uk/events/africa/downloads/session72.pdf

13. www.eci.ox.ac.uk/events/africa/downloads/session72.pdf

Specific Carbon Opportunities for Liberia Area 2: Improve Agriculture and Agroforestry systems

Climate solutions such as increasing food production while reducing climate and other environmental impacts represent a second area of opportunity for Liberia. There are a range of different schemes that improve food production and some that could be combined with tropical forest restoration:

- Regenerative Agriculture
- Sustainable Intensification for Smallholders
- Conservation Agriculture
- Improved Rice Production

All of these schemes lower the level of carbon being emitted for food production. Diversifying food production can also lead to more diverse diets and sources of income, and combining with abandoned farmland restoration will increase the amount of food that is available or can be produced on existing agricultural lands.[14] There exist today strong examples of how effective smallholder intensification schemes can lower carbon emissions and poverty as seen in projects by My Agro[15] and the One Acre Fund.[16]

A focus on regenerative agriculture would enable Liberia to be at the forefront of a global movement that creates more vibrant and productive agricultural land, using multiple species that grow dynamically together. In addition to enhancing local food production, this can also unlock investment and funding that is available particularly from the US and mission-based brands looking to innovate in their supply chains. Integrating cash crops into the agricultural system—such as timber, oil-bearing plants, coffee, cacao, aromatic and medicinal plants, etc—open opportunities to increase export revenues and develop secondary manufacturing and value added processing in Liberia

Improving agriculture and agroforestry has an advantage over other options due to the ease with which experiments and trials of different planting techniques can be conducted. This strategy also has low barriers to entry in comparison to options set out in tropical forest restoration, particularly compared with existing forest preservation. Taking degraded farmland and replanting would enable production of agricultural resources on a site that is not currently productive and could:

- lower carbon emissions against the import of similar goods
- make the area more self-sufficient
- allow replanting on a regenerative agriculture basis that could unlock external funding and markets
- create carbon credits as the agroforestry system grows

Images sourced by © 2022, Silvan Ingredient Ecosystem

14. www.drawdown.org/sites/default/files/pdfs/Drawdown%20Lift_Climate%20Poverty%20Connections%20Report_March%202022.2.pdf

15. https://www.myagro.org/

16. https://oneacrefund.org/

Wider Considerations of Carbon Markets

Countrywide carbon credibility

Liberia has the opportunity to become a market leader for carbon initiatives, but this must be accompanied by a consistent countrywide set of policies on the environment that would be catalytic to all forms of development funding. This has already begun with the work on green bonds and the national "low-carbon development strategy" for Liberia that has been published, but implementation is critical and a wider commitment to environmental safeguards is necessary. Liberia will struggle to become a credible carbon leader or hub for green development if there continues to be widespread logging or negative press on the implementation of existing projects.[18]

Environmental justice

Climate efforts to date have largely ignored legacy pollution and non-climate impacts that harm disadvantaged communities in favor of a narrow focus on mitigating greenhouse gas emissions. There's a real risk that carbon removal solutions — a necessary tool to meet climate goals — will follow a similar path of perpetuating extractive relationships with disadvantaged communities. It will be very important to identify how to scale up carbon removal in a way that aligns with environmental justice priorities and distributes its benefits, including how these schemes engage with lands rights issues in Liberia. Fortunately, the field is still in an early enough stage to integrate equity and justice into research, development, and deployment.[19] The guiding principles for just carbon removal have been outlined below:

Guiding Principles for Just Carbon Removal

Guiding Principles Figure by © 2022, Carbon189

17. www.hbs.edu/ris/Publication%20Files/Assessing%20Potential%20Carbon%20Revenues%20Liberia.pdf_8d8b931e-889d-4f87-ad6b-a23803f354c1.pdf
18. www.globalwitness.org/en/archive/global-witness-investigation-leads-uk-arrest-over-carbon-deal-liberia/
19. https://static1.squarespace.com/static/5b9362d89d5abb8c51d474f8/t/611490c15e8d44234ff39ec2/1628737918984/Carbon180+RemovingForward+ExecSummary.pdf

Carbon credit challenges/controversy

Similar to any major policy area there are detractors and critical discourse highlighting the weaknesses and issues in current policies and approaches. A major criticism has been about how effective existing schemes have been, which is partially due to the way that the initial REDD+ scheme was set up, and how carbon credit schemes are monitored or validated. Whilst these critiques have validity, it is extremely unlikely that the carbon credit market will disappear, instead there will continue to be more structure established with greater accountability, which should further embed carbon credits as a legitimate and sustainable approach to tackle the climate crisis.

Some relevant challenges for consideration have been added here for further reading:

- ProPublica: An (even more) inconvenient truth
- YaleEnvironment: Are huge tree-planting projects more hype than solutions?
- Bloomberg: How the Nature Conservancy, the world's biggest environmental group, became a dealer of meaningless carbon offsets.
- Bloomberg: Startup That Rates Carbon Offsets Finds Almost Half Fall Short
- Carbon 180: We can't just plant our way out of the climate crisis
- Vox: The surprising downsides to planting trillions of trees

Conclusion

Liberia has the possibility to contribute to and benefit from the global carbon credit market in multiple ways benefitting its people and the planet. The most time and cost effective of these would be to trial reforestation of degraded farmland that works on a regenerative agriculture basis and plants indigenous trees and plants that contribute to food or other agricultural commodity production, such as dura palm trees or cocoa. These trials could begin at a small scale, focusing as a proof of concept for how a larger scheme would work, and should include components that address lands rights and other community and environmental rights. Silvan Ingredient Ecosystem would welcome the opportunity to collaborate with the Government Of Liberia and other key stakeholders to explore how we could create practical projects within this framework.

An effective carbon strategy must be accompanied by a consistent, tangible and publicly visible set of national policies. Criticisms of carbon credit schemes and existing forestry practices in Liberia need to be addressed and this can only be done through well-worked and effective implementation at a national scale. Once addressed, the Liberian government has the opportunity to become a global leader with its existing natural resources and scope for innovation within the carbon market.

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