



Pass NetZero Research Progress Report

Reporting Period: July-August 2025

Report Date: September 9, 2025

Executive Summary

Pass NetZero has achieved significant milestones during this reporting period, marked by successful regional expansion and strategic team enhancement. Our participation in COP15 Victoria Falls opened new partnership opportunities with universities in Zimbabwe and Zambia, while the Angola expansion was suspended due to high transportation costs. Five student researchers across three institutions are advancing their carbon sequestration studies, with LUANAR students scheduled for proposal defenses in September. The University of Botswana partnership received crucial approval from the Office of Research and Development, pending final contract formalization. A successful recruitment campaign yielded 20+ applications for fundraising and operational support roles, addressing our most critical organizational need.

Key Metrics:

- Active researchers: 5 students
 - Countries operational: 3 (Namibia, Malawi, Botswana pending)
 - New partnership discussions: 3 universities (Zimbabwe and Zambia)
 - Recruitment applications received: 20+
 - Budget status: On track with strategic reserve maintained
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Operational Status

Research Progress

- **NUST (Namibia):** Phase 2 implementation advancing; three students conducting active experiments with material procurement underway
- **LUANAR (Malawi):** Phase 1 nearing completion; two students presenting proposals September 2025
- **University of Botswana:** Office of Research and Development approval received; contract signing pending for Phase 1 initiation

Note: Phase 1 encompasses proposal development, literature review, and methodology refinement. Phase 2 involves active experimentation, data collection, and analysis.

Budget Overview

Current allocations remain within projected parameters with strategic reserves maintained. NUST Phase 2 payments are pending procurement completion, LUANAR has transitioned to Phase 2 preparation, and Botswana funding awaits contract formalization. The suspended Angola project allows for resource reallocation to more accessible regional partnerships.

Strategic Developments

COP15 Participation and Regional Expansion

Our participation at the Ramsar Convention COP15 in Victoria Falls (July 23-31, 2025) catalyzed significant network expansion. Direct engagement with the National University of Science and Technology (Zimbabwe), University of Zimbabwe, and University of Zambia has opened cost-effective expansion opportunities with established research infrastructure. These partnerships offer more accessible geographic locations compared to the Angola initiative, which was suspended due to prohibitive transportation costs to research regions.

Capacity Building Initiative

The launch of our internship and volunteering program has exceeded expectations with 20+ applications in the first week. Recruitment focuses primarily on fundraising expertise—our most critical organizational need—with commission-based compensation up to €8,000. Interview processes are underway with completion targeted by end-September 2025.

Key Challenges and Solutions

Procurement Delays: NUST operations face institutional procurement bottlenecks. We are exploring alternative supplier networks and streamlined approval pathways.

Regional Access: The Angola expansion suspension has prompted a strategic pivot to Zimbabwe and Zambia, offering better cost-efficiency and infrastructure compatibility.

COP30 Registration: Having missed the NGO registration deadline for Brazil, we are pursuing alternative attendance mechanisms through partner organizations.

September-October 2025 Priorities

1. Complete LUANAR proposal defenses and transition to experimental phase
 2. Finalize University of Botswana contract and initiate Phase 1 operations
 3. Complete recruitment process and onboard fundraising intern(s)
 4. Formalize Zimbabwe and Zambia partnership discussions
 5. Resolve COP30 participation strategy
 6. Advance NUST material procurement for active experimentation
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Conclusion

This period represents a pivotal transition for Pass NetZero, characterized by successful regional engagement, strategic expansion adjustments, and enhanced organizational capacity. The shift from proposal development to active experimentation across multiple countries, combined with strengthened fundraising capabilities, positions the organization for accelerated impact in Southern African aquatic carbon sequestration research.

Contact Information

Pass NetZero | www.passnetzero.org | info@passnetzero.org

Annex: Student Advancement Reports

Institution:	Namibia University of Science and Technology (NUST)
Name(s):	Hilia N. Hatutale
Date:	03 September 2025

Current Progress

- Ordering seedlings of *Cyperus papyrus*
- Compiled a list of materials needed for the experimental procedure
- Narrowing down possible suppliers of apparatus needed for experimental procedure
- Compiled a list of by-products for biomass
- Coordinating with contacts from COP15 regarding possible by products for *Cyperus papyrus* biomass

Challenges

- Acquiring *Cyperus papyrus* seedlings
- Companies not following through with sending quotations
- Inability for companies to provide certain apparatus needed for the experimental procedure

Next Steps	
• Finalize quotes for materials, chemicals and instruments required for this experimental phase • Employ a method for production of by-products • Get approval for quotations	

Institution:	Namibia University of Science and Technology (NUST)
Name(s):	Dumeni, Veruschka
Date:	28/08/2025

Current Progress
- Plant material payments complete. - Import permits obtained, after needing detailed correction (suppliers' names per invoices) and thus reapplication. - Phytosanitary certificates obtained by plant suppliers - Waiting on key clearance and cross-boarder importation documentation (i.e SARS revenue registration certificates) from suppliers to acquire proforma invoices from courier. - Courier proforma invoices (a requirement by NUST) still needing to go through NUST procurement procedures. - Other materials (i.e COD/BOD Analysis standards) still undergoing procurement approval.

Challenges

- Lengthy institutional procurement processes.
- Slow response from materials suppliers, despite constant follow ups
- Some sole material suppliers (i.e HDPE Plastic drums) do not meet the requirements for the institution's procurement process.

Next Steps

- Completion of procurement process for the transport of plant material from South Africa.
- Figuring out quicker avenues for payment processes for research materials (i.e drums, labor costs etc).

Other Notes

- Faster, easier avenues for payment and procurement processes for research costs of this project are needed. Otherwise the normal institutional routes and criteria will continue to cause delays.
- Outside of these major delays, the research focus, objectives and significance are increasingly substantiated. This is from continuous literature review, which validates and strengthens the research's potentials, as well as by a recent local incident at the dam of interest - a sewage spillage into the dam which led fish die-offs due to heavy nutrient loads, strengthening the need for remediation interventions.

Institution:	Namibia University of Science and Technology (NUST)
Name(s):	Fenni Magano Amadhila
Research Topic:	Evaluating the potential of <i>Ulva rigida</i> for carbon capture and the development of bio-bricks
Date:	05 September 2025

Current Progress
• Collected <i>Ulva</i> biomass from three Walvis Bay sites (Langstrand, Lagoon, Wambo Beach) • Conducted seawater quality analysis (temperature, pH, dissolved oxygen, conductivity, salinity) at each site to correlate environmental conditions with biomass yield and morphology. • Engaged with Kelp Blue and Hangana Abalone (Lüderitz) to arrange visits for practical exposure to controlled cultivation of seaweeds.

Challenges

NA

Next Steps

- Continue sampling in Walvis Bay and include Lüderitz
- Visit Lüderitz facilities (Kelp Blue & Hangana Abalone) for exposure to seaweed farming practices (18 Sept)
- Carbon quantification of biomass and shells
- Characterization of the biomass (Morphology, moisture and ash content, UV Vis, FTIR, ICP)
- Start production of the bio-bricks

Other Notes

- Investigate potential species that can change pH of seawater to more Alkaline

Institution:	LILONGWE UNIVERSITY OF AGRICULTURE AND NATURAL RESOURCES (LUANAR)
Name(s):	ELLEN KACHULU
Research Topic:	EFFICACY OF <i>ARTHROSPIRA PLATENSIS</i> (SPIRULINA) IN CARBON SEQUESTRATION AND OREOCHROMIS SHIRANUS FISH GROWTH PERFORMANCE IN AQUACULTURE SYSTEMS
Date:	9 September, 2025

Current Progress
Current progress summary The proposal on the <i>Efficacy of Arthrospira platensis (Spirulina) in Carbon Sequestration and Oreochromis shiranus Fish Growth Performance in Aquaculture Systems</i> is at an advanced stage and almost fully developed. Most of the critical sections including the background, problem statement, objectives, and literature review have been completed with clear scientific justification. The draft methodology is in place, detailing the study site, experimental design, and parameters to be measured Presentation Readiness The research proposal is now almost complete but has not yet undergone internal review. At this stage, I am finalizing the remaining sections and preparing the supporting documents required for submission. Once the internal review process is conducted, I will then be able to make the necessary adjustments and proceed towards readiness for presentation to the academic committee at LUANAR during the upcoming academic months of September 2025

Challenges
The proposal submission process has experienced some delays, mainly because the internal review stage has not yet been conducted as planned. This has slowed down

progress since internal feedback is an important requirement before moving forward to the formal defense. Limited availability of time for consultation with supervisors and the need to refine certain methodological details have also contributed to the delay. As a result, although the proposal is nearly complete, the absence of internal review has prevented timely submission and has slightly shifted the planned schedule for presentation.

Next Steps

Upon approval by LUANAR, the next phase will be experimental setup in selected study area and field data collection. The goal is to begin implementation immediately after the proposal is approved to remain on schedule with the research timeline.

Other Notes

Student Advancement Report

Institution:	LILONGWE UNIVERSITY OF AGRICULTURE AND NATURAL RESOURCES (LUANAR)
Name(s):	STEVEN CHIRWA
Research Topic:	THE ROLE OF <i>PHRAGMITES AUSTRALIS</i> AND <i>TYPHA LATIFOLIA</i> IN PHYTOREMEDIATION AND CARBON SEQUESTRATION IN AQUATIC ECOSYSTEMS
Date:	9 September, 2025

Current Progress

Current progress summary

As of September 2025, the research proposal is almost 90% developed. The proposal includes detailed Introduction, objectives, literature review, methodology, expected outcomes, and a precise work plan and budget. It critically outlines how each and a combination of both plant species will be evaluated to determine its contribution to phytoremediation and carbon sequestration.in aquatic ecosystems.

Presentation Readiness

The research proposal is now almost complete and has undergone thorough internal review. I am almost fully prepared to present the proposal to the appropriate academic committee at LUANAR during the upcoming academic months of **September 2025**. All necessary supporting documents and presentation materials have been prepared in anticipation of the formal proposal defense.

Challenges

One of the key challenges faced during this phase was managing time effectively. Balancing proposal development with academic timelines requires careful planning to ensure that each of them is completed on schedule.

Another challenge was logistical planning, especially in identifying appropriate study sites for the research. Selecting locations that meet both scientific relevance and accessibility has taken considerable effort.

Additionally, anticipating the types of tools and apparatus and resources required for the fieldwork phase posed some difficulty. Proper planning is essential to ensure smooth implementation once the research begins. Despite these challenges, the proposal is now complete and ready for presentation.

Adding to the challenges is the issue of finances. With the rising cost of chemicals, it is a concern whether there will be enough financial resources to support the data collection and laboratory analyses of the collected samples.

Next Steps

Upon approval by LUANAR, the next phase will be experimental setup in selected study area and field data collection. The goal is to begin implementation immediately after the proposal is approved to remain on schedule with the research timeline.

Other Notes

A comprehensive review of relevant literature is on-going, with particular focus on the application of *Phragmites australis* and *Typha latifolia* in phytoremediation and carbon sequestration. Special attention is being given to

studies conducted in sub-Saharan Africa and Malawi, which provided valuable insights into local wetland dynamics, species behaviour, and environmental conditions. This foundational knowledge has guided the development of context-specific objectives and methodologies.

In preparation for the next research phase, plans for field site reconnaissance and a list of required equipment is being undertaken. A tentative list of field equipment is being compiled, including water quality testing kits, biomass measurement tools. Implementation of these plans will commence immediately upon receiving LUANAR's formal approval of the proposal.

Response to Research Questions

Steven: Do you aim to test the 2 selected plants together or separately? Do these species are forming a symbiotic relationship? Would be interesting to know if there is any others species that could also present synergies/symbiotic relationship with these species, that could be tested.

The research investigates the role of *Phragmites australis* and *Typha latifolia* in phytoremediation and carbon sequestration within aquatic ecosystems. These plants will be tested in combination. This is because the efficiency of the individual plants in abstracting nutrients and heavy metals in wastewater has never been tested. However, their combined (synergetic relationship) has not been assessed yet.

These combinations could enhance phytoremediation efficiency and carbon sequestration, particularly in degraded or constructed wetland systems. Overall, the study not only evaluates individual plant performance but also lays a foundation for future research on functional plant pairings that support sustainable wetland management in Malawi.

Next Reporting Period: September-October 2025