

4TH QUARTER PROGRESS REPORT

2022



KELP FOREST
FOUNDATION

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Q4 HIGHLIGHTS

October



Fresh kelp samples successfully delivered to Emilia for lipid biomarker analysis

Sarah Paradis, ETH Zurich, with sediment cores taken by Bremen University in Namibia



November



Samantha & Xu presenting to the Seagriculture course students at Wageningen University

First in-person board meeting in London



December



Protasius (KFF scholar), presenting at NCRST on his work to assess the CO2 sequestration of cultivated kelp forests

KFF received a donation by FPA2 to fund a model farm in Kenya trialing kelp biostimulants to grow cotton



KFF scholar, Angelique, presenting at UNAM Sam Nujoma Campus on our use eDNA to measure biodiversity impact

Samantha presenting at Feminin Pluriel Amsterdam



3Q BOARD MEETING

In November, we held our very first in-person KFF board meeting. The KFF team and nearly all board members (except for Daniel Hooft) were able to gather in London, where Tim was giving a lecture. During this meeting, we were able to discuss many topics in depth such as:

- new focus areas for future research efforts of KFF, identifying new topics and research questions that we need answered to better quantify the ecosystem value of cultivated kelp forests, mostly focusing on kelp forest biodiversity
- how to expand and further existing research topics including carbon sequestration and the impact of kelp products
- how to foster more global collaborations with experts in the field
- the focus of KFF in the coming years regarding public awareness and capacity building
- fundraising strategies

From left to right: Caroline Slootweg, Xu Ben Zhang, Samantha Deane, Tim Flannery, Kat Bruce, Sarah Mathies





RESEARCH PROGRESS

SEDIMENTS

LIPID BIOMARKERS OF KELP

In Q4, we hand-delivered Namibian kelp samples to Emilia Heiskanen at Utrecht University, voted one of the world's best universities in Earth Sciences. Emilia will investigate the lipid composition of kelp and look to identify the possible kelp biomarkers. This is a key step in our research efforts to quantify the carbon sequestration potential of (cultivated) kelp in sediments. Emilia will be closely supervised by renowned (bio)geochemist prof.dr. Jack Middelburg and dr. Francien Peterse, a specialist in biomarkers.

Biomarkers or so-called 'molecular fossils' are organic compounds that can be linked to a specific organism. Given the right environmental conditions, they may be preserved in sediments for billions of years. As such, biomarkers can provide environmental information about the past and be used as tracers for organic matter. Lipids in particular make useful biomarkers because of their structural diversity and relatively slow degradation rates compared to other molecules such as proteins or DNA. Investigating species-specific lipid biomarkers could provide a useful tool in tracing kelp organic matter from source to sink.





In order to investigate the lipid composition and identify possible biomarkers, all lipids must be first extracted from the biomass and sediments using solvents. The different organic compounds in the extracts can then be quantified using a method called gas chromatography (GC), and can then be identified on gas chromatography–mass spectrometry (GC-MS). This will allow us to investigate whether some lipids are uniquely produced by specific kelp species and could therefore function as biomarkers.



During our visit to Utrecht University, we also met with Dr. Francien Peterse (Emilia's supervisor) as well as Dr. Jack Middelburg (the Netherlands' leading oceanographer and geochemist focused on assessing oceanic systems and carbon sequestration). Dr Peterse is a specialist in land-sea soil organic carbon transport dynamics, the reconstruction of past climate change, as well as methods development and validation. The occurrence, distribution, and isotopic composition of specific molecules derived from plants and/or (micro)organisms, or so-called lipid biomarkers, are the most important tools that she uses.



**Utrecht
University**

SEDIMENTS

SEDIMENT CORES OF NAMIBIA

As part of our carbon sequestration research, we are looking to analyse existing sediment cores taken from the Kelp Blue pilot site in Lüderitz, Namibia taken in previous years as well as take new core samples. Analysis of existing sediment cores will give us a baseline assessment that allows us to understand and track changes to the sediment, once the kelp will stimulate the accumulation of carbon in the sediment in the same areas especially from identified "depocenters" (locations where sediments often settle on the ocean floor due to its structure and ocean currents).

Matthias Zabel and his team at University of Bremen kindly collected sediment core samples from the Kelp Blue pilot site in Namibia. These cores we handed over to Sarah Paradis of ETH Zürich who will analyse them for carbon content.



Sarah Paradis of ETH Zurich with cores delivered by Bremen University



GEOCHEMISTRY NUTRIENT SENSOR

As part of our ocean geochemistry research, we aim to understand the ambient factors that determine growth, carbon sequestration, nutrient composition and water filtration capacity of the cultivated kelp. Such data would not only contribute to the world's understanding of this valuable species, but could eventually lead to the first ever offshore kelp cultivation methodology and certification standards for kelp-based blue carbon credits. This work would not be possible without marine-proof nutrient sensors that can withstand the exposure to the elements out in the ocean and that can be deployed continuously offshore.

Kelp Forest Foundation has purchased a Seabird nutrient sensor thanks to the generous funding provided by the Ocean Born Foundation. This optical UV nitrate sensor, based on the ISUS (In Situ Ultraviolet Spectroscopy) technology, will help us obtain real-time, chemical-free nitrate calculations from the marine environment.



The Seabird nutrient sensor

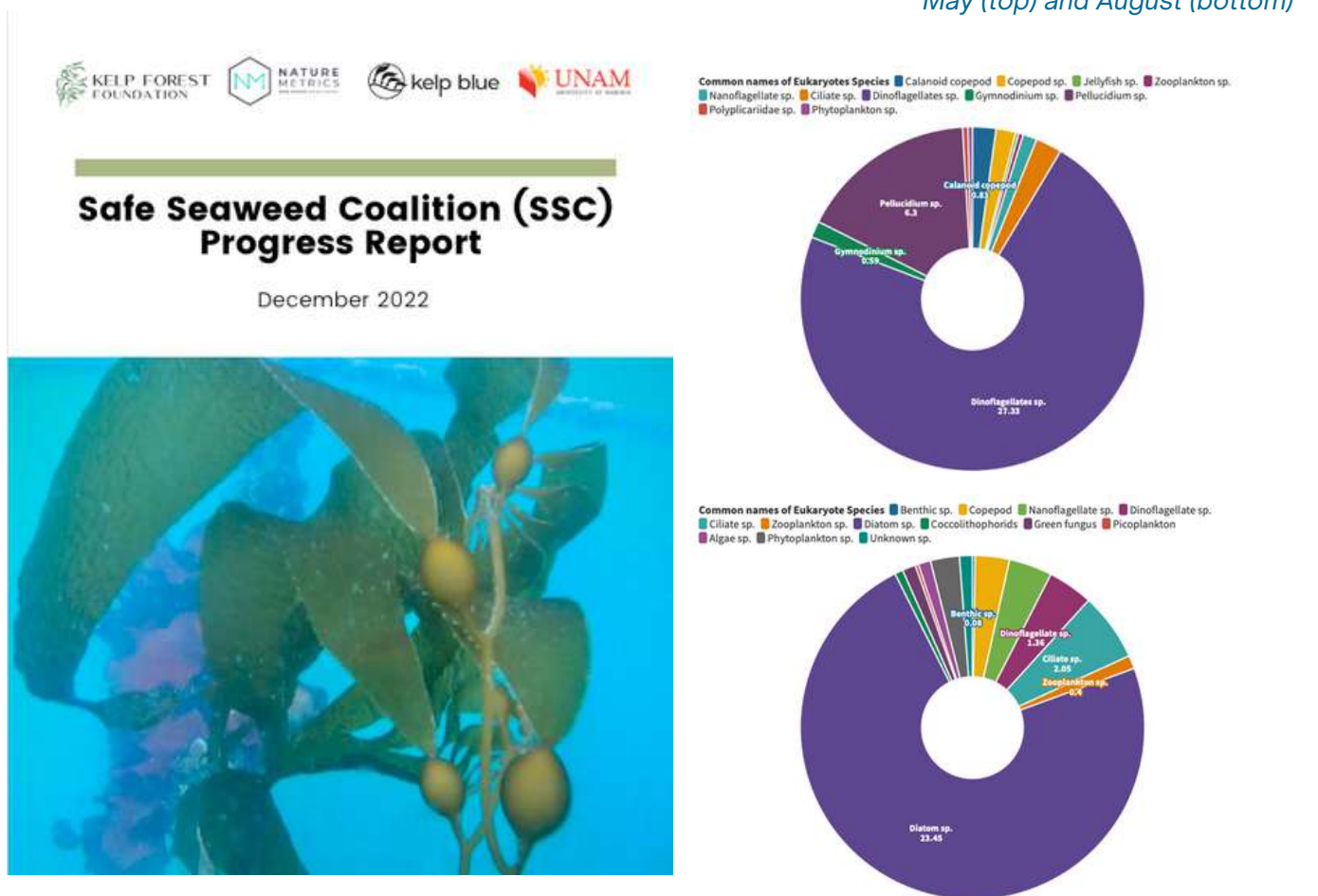


BIODIVERSITY BASELINE RESULTS

The Kelp Forest Foundation scholars performed a baseline study of the biodiversity at the Kelp Blue pilot site off the coast of Luderitz, Namibia. The students took eDNA samples from the pilot site to assess fauna, plankton, algae, and seabird diversity at several locations of the farm and control sites. The samples were taken by collecting seawater that is pressed through a filter that collects the DNA material that is left in this water - this could be skin, faeces or other parts of the species that have been in that environment. The filters with the DNA were then sent to NatureMetrics for analysis. The results provided data on species that could be found at those locations, and helped us flag important species (keystone, rare or commercially viable species).

The team collected samples every month in 2022 starting from February. On average, 5 eDNA kits were deployed per month. Once a full year has been completed, the baseline study will be concluded and the results can be used to track changes across time once giant kelp cultivation starts. This research and the eDNA kits and analyses specifically are funded by a grant from the Safe Seaweed Coalition.

Right: excerpts from the progress report, showing the Eukaryotes species found in May (top) and August (bottom)



RESEARCH NCRST PERMIT

To tap into the knowledge of global research institutions, it is important that we are authorised to collect and send samples of kelp material out of Namibia. In October, we received a formal authorisation letter of the NCRST (National Commission on Research Science & Technology) of Namibia to conduct non-commercial research using the resources requested. This will help us further our geochemistry research, as well as understanding the carbon sequestration potential of cultivated kelp.

The sample materials that are collected for this research allows us to conduct research on, for example, the lipid biomarkers of kelp (samples sent to Utrecht University) as well as analysing kelp composition and barcoding the kelp to help us identify kelp presence in the oceanic environment (samples sent to NatureMetrics).



AUTHORIZATION OF RESEARCH PROJECTS

Authorization is hereby granted in terms of Section 21 of the RST Act No. 25 of 2004, to:

Name: Uram-Kelp Blue Foundation: Geochemical Baseline Study of Giant Kelp Project

Address: Private Bag 13301, Pionierspark, Windhoek, Namibia

Covered by: Prof. Daniel S. Likins, Pristinas S. Mutjids, Prof. Rahman Azeeq, Iriya Ndeshibigibwa, Angelique Jazzevica

Certificate Number (if applicable): RCIV/0022018 **Authorization No:** 202201001

Type of Research:
Non-Commercial: research and the use of resources be limited to what is in the proposal

Title of Research Authorized:
"A geochemical baseline study of giant kelp (*Macrocystis pyrifera*) at the kelp blue farm to assess carbon sequestration potential"

Locality:
Namibia coastal line and offshore, Karas and Erongo regions

Duration: 04 October 2022 - 31 October 2023

Research/Sample Collection Conditions:
Refer to research conditions on the next page.

Yours sincerely,

Ms. Albertina Nguate
Acting Chief Executive Officer



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BIOSTIMULANT FPA2 FUNDING

Our project in collaboration with reNature and Kelp Blue that was awarded the "Solver" prize in the MIT Solve Challenge involves setting up a model farm in which regenerative agricultural practices will be tested. The project is called "Regenerating Soil with Cultivated Kelp", will focus on the application of kelp biostimulant on cotton, to test the benefits of the product on the cotton plant's health, yields, and resilience to abiotic stress.

The Fondation de Prince Albert II de Monaco has kindly donated \$20,000 to support this project.



Reimagining the fashion
value chain with
regenerative agriculture



KELP PRODUCTS

ALZHEIMER'S RESEARCH

Giant kelp (*Macrocystis pyrifera*) is an organism that contains many valuable compounds, including those that could be used in pharmaceuticals and nutraceuticals. Dr. Monique Mulder at Erasmus University (Rotterdam, Netherlands) assessed the composition of giant kelp samples to look for those compounds interesting for treating Alzheimer's disease.

In this research, dr. Mulder assessed different types of seaweeds to look for levels of saringosterol, a rare plant sterol, known to prevent cognitive declines in Alzheimer mouse models. These phytosterols are found across several types of seaweed, and this comparative study showed that these compounds were also found in giant kelp. This research will greatly contribute to understanding the many benefits of kelp and kelp products, as these promising results show another way to use kelp. We look forward to the final report.



An aerial photograph of a kelp forest. The water is a deep blue-green color. The kelp consists of numerous brown, branching stalks that rise from the seabed. Large, dark, oval-shaped blades of kelp are attached to these stalks. Many small, silver fish are swimming in the water, some near the kelp blades and others further away. The overall scene is a dense, healthy marine ecosystem.

OCEAN LITERACY

OCEAN LITERACY UNAM RESEARCH CONFERENCE



Angelique Dodds and Ukarapo Mungunda (two of our MSc students) presented at the 7th Annual Research Conference held at the Sam Nujoma Campus of University of Namibia (UNAM). They presented their work on measuring biodiversity in cultivated kelp forests of the Kelp Blue pilot farm in Luderitz, Namibia .

Angelique explained how the research team collects eDNA data in a non-invasive sampling way, using the eDNA kits of NatureMetrics. During her presentation, she showed how water is drawn up in a large syringe, pressed through a plastic filter disk, which then traps the DNA matter that was present in the water sample. This filter is then sent to the NatureMetrics for analysis.

Environmental DNA (eDNA) refers to traces of DNA that animals leave behind in the environment. You can think of it as being like fingerprints left in the water. eDNA in water breaks down over a period of a few days. This means that when a species is detected from eDNA, you know it has been present in the area recently and is not a historical detection.

Ukarapo explained how she uses bioacoustics - the use of sound production and transmission in the water - to understand what animals are attracted to the kelp forests. For example, after 40 consecutive days of underwater sound recording (passive acoustics), she learnt that that the pod of visiting Heaviside dolphins are most chirpy, chatty and active between 9 and 10am but that they hang around the entire morning.

By applying deep learning algorithms, which are trained to isolate and distinguish one species from the next, Ukarapo can quickly identify which animals are emitting sound.

OCEAN LITERACY UNAM RESEARCH CONFERENCE



Our scholar, Protasius Mutjida, presented at the **1st Multidisciplinary Research Conference** held by University of Namibia at the OHP Campus, in the northern part of Namibia. The conference invited researchers, students, and academics to submit abstracts, to share research findings and create collaborative links between academics, professional practitioners and their workplaces, aiming at long - term sharing of knowledge and discussions of highly current issues.

Protasius submitted the abstract below under the sub theme Environment and Climate Change. His spoke about the geochemical baseline study he is creating of giant kelp at the Kelp Blue farm to assess its carbon sequestration potential.

More than 50 experts in Hydrogeology, Health, Education, Business, ICT and Youth Employment joined Protasius to give their presentation over two days.



HIFIKEPUNYE POHAMBA & OSHAKATI CAMPUSES

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pschingandji@unam.na



Date: 27/09/2022

ACCEPTANCE LETTER

Re: **1st Multidisciplinary Research Conference: University of Namibia Oshakati & HP Campuses**

Dear Mutjida, P., S, Likius, D., S, Rahman, A, Turchyn, A., S & Rangers, S., D

We are pleased to inform you that abstract titled "A geochemical baseline study of giant kelp (*Macrocystis pyrifera*) at the kelp blue farm to assess carbon sequestration potential" [OHP – MRC 34 – ENERGY] has been accepted.

The Committee now needs to have confirmation from you that you will be able to submit your full abstract with the recommended effected through evaluation to us by 5th October 2022 and that you will be able to present your paper in a 15-minute time slot to be communicated to you during Multidisciplinary Research Conference 19 – 20 October 2022.

Kindly submit the following:

- a) Abstract should highlight the following:
 - i. Background, aim/ purpose
 - ii. Methodology (design, population & sample size, instrument for data collection & analysis)
 - iii. Findings
 - iv. Conclusions and recommendations
 - v. Keywords
- b) Passport photo (s)

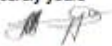
Please confirm your attendance to present your paper, by notifying us as soon as possible, and no later than 7th October 2022. If we did not hear from you by 10th October 2022, your 15-minute time slot will be allocated to a reserve speaker.

We would also like you to submit your PowerPoint presentation to us by 15th October 2022 so that we can give you feedback regarding the likelihood that your presentation will stay within the 15 minutes of allocated time.

A member of our committee will be in contact with you after we have had confirmation that you will attend the conference to present your paper.

We are looking forward to hearing from you, and our presence will be highly appreciated

Sincerely yours


Dr J. Sheehama

Campus Director: Oshakati & HP Campuses

OCEAN LITERACY NRCST PRESENTATION

Protasius Mutjida also shared with the Namibian National Commission on Research, Science and Technology his geochemistry baseline study which will look support the assessment of the carbon sequestration potential of cultivated giant kelp (*Macrocystis pyrifera*).



Protasius Mutjida presenting at the NRCST



CAPACITY BUILDING BLUE HOUSE PROGRAMME

The Blue House Programme, is a partnership between Stuchtey Daughters & Sons, Kelp Blue and the Kelp Forest Foundation which will provide rolling scholarships to Namibian students (with a bias towards women) to develop scientific talent in natural ecosystems. The aim is to build climate and social impact. Our vision is for the graduates of this programme to enrich the national and Southern African talent pool in the skillsets required for a future in which humanity and nature are in better harmony. We hope to see the graduates of this programme further their careers in government, business, entrepreneurship, and academia. The Blue House, owned by the Stuchtey family, will be rented to Kelp Blue. The rent will be used as a contribution towards scholarships of the Namibian students.

The Blue House will also be used as living accommodation for these students as well as a working office, reference library and a place to store equipment. The office will be used by the students, apprentices, international interns and their supervisors.

The Blue House Programme will initially sponsor two MSc students from Namibian universities, and provide them with scuba diving training to undertake their research; sponsor an intern from an international university and pair them with a Namibian sponsored apprentice; purchase the necessary equipment to undertake the research; cover accommodation, stipends, tuition and other costs.



THE
LANDBANKING
GROUP



kelp blue

CAPACITY BUILDING

SENSOR MAINTENANCE/CLEANING



As part of our capacity-building programme, our marine bio-acoustic specialist Ukarapo Mungunda visited the Seatech team to learn more about sensor maintenance and cleaning. This knowledge will be useful as she will be responsible for deploying the sensors at the Kelp Blue site.

These sensors will give us valuable data on the water quality and geochemistry at the location, as well as support in biodiversity measurements through acoustics.



Ukarapo Mungunda (bottom-left in the first photo) with the Seatech team.

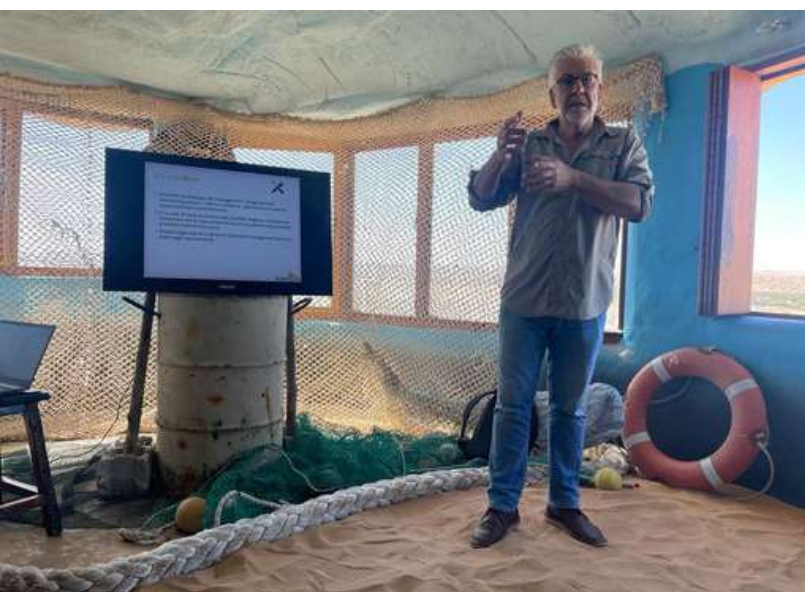


CAPACITY BUILDING EIA TRAINING

As part of our capacity-building and skills-development programme, our MSc scientists travelled to Swakopmund (Namibia) to attend a 2 1/2 day Environmental Impact Assessment (EIA) course run by Patrick Werner and Pierre Smit of NAMISUN.

The training covered why and when an EIA is needed, and which processes and steps need to be followed to complete a full EIA. It also provided knowledge on project life-cycles, mitigation measures, site visits report writing and reviewing.

In addition, our students Ukarapo Mungunda, Iriya Jona, Angelique Dodds and Caatje Hooft, learned the initial screening and scoping methods, analysed a case study where they could apply the theory and watched some inspirational videos of EIA teams at work.



EIA TRAINING

A "HANDS-ON" EXPERIENCE

... FOR A SELECTED AUDIENCE



WHAT WILL BE COVERED DURING THE TRAINING SESSIONS?

- When is an EIA needed and which processes to follow?
- Project life cycle vs the EIA process
- Developing a proposal for an EIA
- Screening / Scoping / Assessment phases
- Activity, Aspect and Impact identification
- Stakeholder engagement in the EIA
- Key environmental legislation
- Assessment methodologies
- Management Plans
- Reviewing of EIA documents
- Implementation (including Environmental Management Systems, auditing, monitoring, etc.)
- New applications / Renewals / Amendments



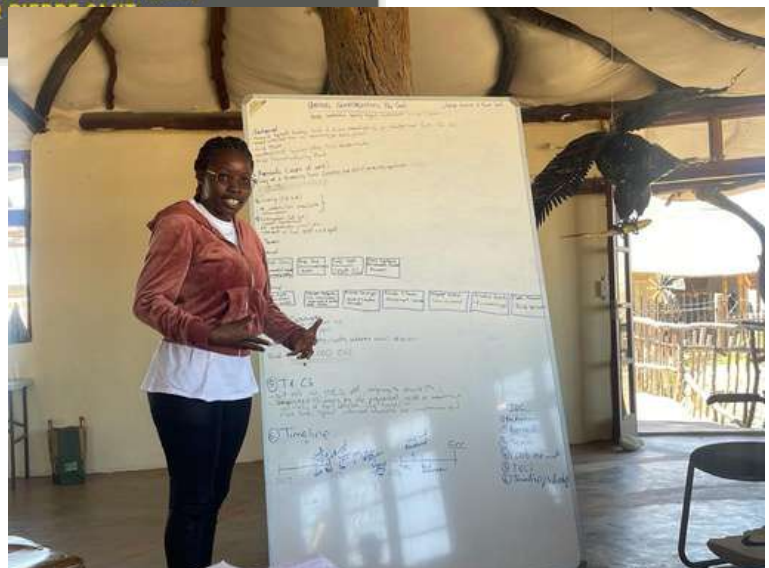
WHEN?

21 to 23 November 2022
(2 ½ day course)

WHERE?

Plot 66 (Stone Valley)
Swakop River Plots

YOUR FACILITATORS:
MR WERNER PETRICK
DR [Name]



Iriya Jona presenting

OCEAN EDUCATION LUDERITZ STRANDCUBS



Our Strandcubs celebrate Oceans day every week. As part of our ocean education programme, Strandcubs - a group of children in Lüderitz, aged from 8 to 12 - meet every week to share their passion for the ocean and protecting the natural environment and to learn the skills they need to become the marine biologists, environmental scientists and engineers of the future. From beach clean-ups to raft-building, ocean-art to species-counting, the Strandcubs are committed to becoming experts about their wonderful ocean surroundings.

In the last year, the Strandcubs have learned about the dune biomes, rock pools, visited a fish factory, learned knot-tying and rope skills, morse code and maritime signal flags, spent time doing experiments in a real laboratory and much more. Ocean's day is coordinated by the Lüderitz Blue School and is open to all children across Luderitz. The activities are sponsored by the Kelp Forest Foundation.





Strandcubs Renewable energy day

One of last year's Strandcubs activities was a field trip to the wind park next door. This trip helped explain the concept of renewable energy to children while keeping them engaged.

At the wind park, the young explorers learnt from a group of visiting Delft University of Technology engineering students, how these 80m high turbines produce 5MW of electricity by harnessing the power of the relentless Luderitz wind. Norman Nendongo, who is part of the Innosun Energy team that run the park, explained to them that the turbines were specially redesigned to suit the local environment. Strong winds cause sand storms in Luderitz; using intensified coating protects the wind turbines and improves the resistance to corrosion and increases hermeticity (airtightness/gastightness) to prevent the sand from coming into the turbines and damaging the materials. The Strandcubs also learned that this project was part of Namibia's ambition to have 70% renewable energy in their energy mix by 2030.



Strandcubs Speed Challenge

The Luderitz speed challenge is an annual speed sailing event, held since 2007 in Luderitz, Namibia. This event makes use of the consistent strong wind in this time of year, blowing from the South at the perfect angle of 140 degrees to the sailing course. This annual event attracts many pro windsurfers who take on the challenge to break the speed record. The Strandcubs, as part of Oceans Day, were taken to watch this event and to get a taste of the many forms of entertainment and sports our oceans and nature can provide.



An underwater photograph of a kelp forest. The water is a deep, clear blue. Numerous long, brownish-green kelp blades are visible, some in sharp focus and others blurred in the background. The lighting is natural, coming from above, creating a serene and slightly dim atmosphere. The overall composition is vertical, with the kelp blades extending from the bottom towards the top of the frame.

AWARENESS

LUNCH LECTURE

WAGENINGEN UNIVERSITY - SEAGRICULTURE

Kelp Blue and KFF were invited to present a lunch lecture at Wageningen University. This lunch lecture was a part of the Seagrass course, a BSc minor that focuses on this topic as one of the pillars of a biobased economy. The course includes aspects of seaweed physiology and production, the marine ecological context, biorefinery, scenarios for the value chain, combination with other ecosystem services and economic activities, and safety and governance issues. The goal of this minor is to provide students with knowledge and insights on sustainable seaweed production and value creation of seaweed biomass.

Samantha, Xu and Valentin (Kelp Blue) presented a one hour lecture on the work of Kelp Blue and KFF, sharing information on how (giant) kelp provides a unique opportunity in the biobased economy, the value chain of Kelp Blue's product, as well as the important research that needs to be done to understand the ecosystem benefits and the outstanding research questions that need to be answered for the seaweed sector to grow.



KFF PRESENTATION

OCEAN BORN FOUNDATION

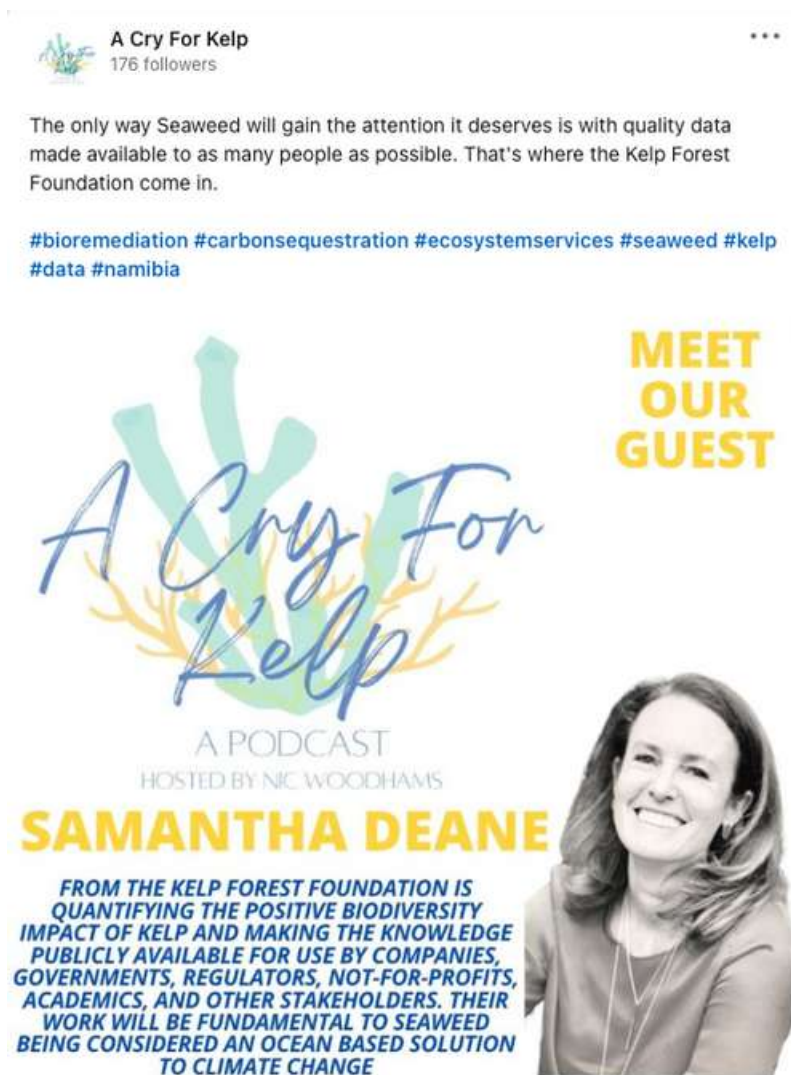
The Ocean Born Foundation offered a generous grant to support KFF's purchase of a Seabird nutrient sensor. The Ocean Born Foundation is a grant-giving foundation with the goal to create new, sustainable streams of income to combat climate change by focusing on ocean health. Samantha presented to the Ocean Born team over a video call to speak about the mission and work the Kelp Forest Foundation does, including explaining how the Seabird sensor is a key piece of equipment to understand the impact cultivated kelp forests have in the surrounding water geochemistry.



PODCAST

A CRY FOR KELP

A Cry For Kelp is a podcast series that delves deep into the seaweed industry through interviews with its movers and shakers. Hosted by Nic Woodhams, Samantha spoke during a two-part podcast about quantifying the positive biodiversity impact of growing kelp, the potential for kelp to be a genuine ocean based solution to climate change, and the role the Kelp Forest Foundation plays to achieve these goals.



A Cry For Kelp
176 followers

The only way Seaweed will gain the attention it deserves is with quality data made available to as many people as possible. That's where the Kelp Forest Foundation come in.


#bioremediation #carbonsequestration #ecosystemservices #seaweed #kelp #data #namibia

MEET OUR GUEST

A Cry For Kelp
A PODCAST
HOSTED BY NIC WOODHAMMS

SAMANTHA DEANE

FROM THE KELP FOREST FOUNDATION IS QUANTIFYING THE POSITIVE BIODIVERSITY IMPACT OF KELP AND MAKING THE KNOWLEDGE PUBLICLY AVAILABLE FOR USE BY COMPANIES, GOVERNMENTS, REGULATORS, NOT-FOR-PROFITS, ACADEMICS, AND OTHER STAKEHOLDERS. THEIR WORK WILL BE FUNDAMENTAL TO SEAWEEED BEING CONSIDERED AN OCEAN BASED SOLUTION TO CLIMATE CHANGE



PRESENTATION FEMININ PLURIEL

Dear ladies, after quite some time, we are now re-starting our non members only events.

For this next session we have invited **Samantha Deane**, from 'The Kelp Forest Foundation' to come and speak to us about the positive ecological benefits of kelp forests - hint.. see the picture to understand what Kelp is ;-) and how it is an ocean-based solution to climate change and biodiversity loss.

Samantha started her career at Merrill Lynch before establishing a successful interior design company in the Middle East. In 2021, she decided to devote her time and energy to kelp and was quickly recognised as a Top Innovator at the World Economic Forum's UpLink Blue Carbon Challenge.

Wednesday 30th November, 18:30 - 20:00

Ambassade Hotel, Herengracht 341

The Gallery room

Feminin Pluriel is an international network of non-profits aimed to connect women in high profile positions to help them grow their business, provide a resource platform for members, and to create events, meetings and conferences to support personal growth.

Samantha was invited to present herself and her journey with the Kelp Forest Foundation. She spoke about her past experiences and career, and how she started devoting her time and energy to kelp and its potential to be a solution to climate change.



AWARENESS

ARCHITECTURE MAGAZINE

Kelp Forest Foundation was picked by the Architect Magazine to be listed in their Gift Guide 2022 as a suggested foundation to give to during the holiday season.

ARCHITECT

PROJECTS **TECH & PRODUCTS** PRACTICE CULTURE AWARDS EVEN



Miljoenen foto's +
GRATIS editing tools met één klik



PRODUCTS

[Home](#) > [Technology](#) > [Products](#) > ARCHITECT Gift Guide 2022: Picks That Delight Design Lovers

Posted on: November 30, 2022



PRODUCTS

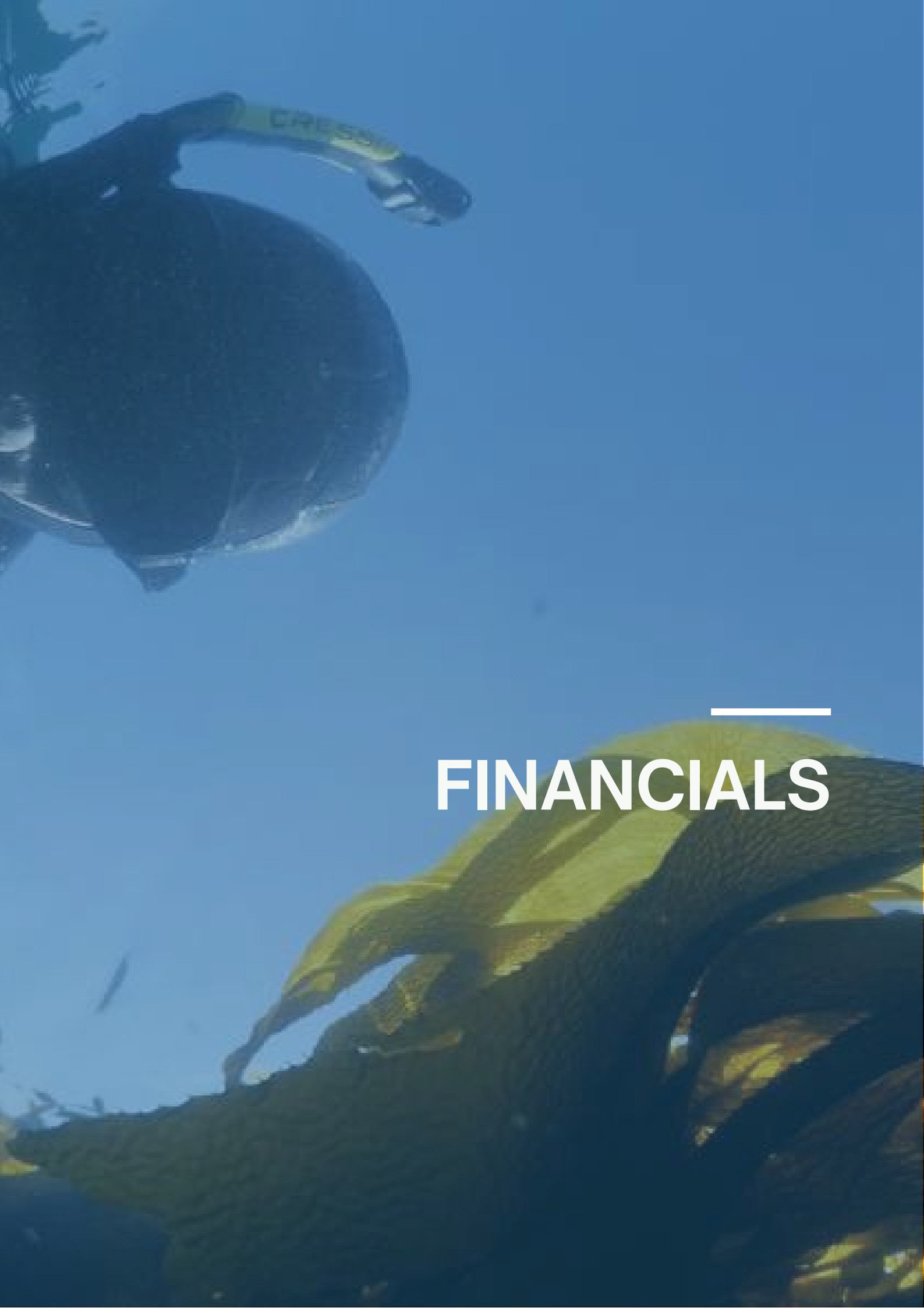
ARCHITECT Gift Guide 2022: Picks That Delight Design Lovers

Find a present for everyone on your list with gift and donation suggestions from leading designers and ARCHITECT staff.

Give to: Kelp Forest Foundation

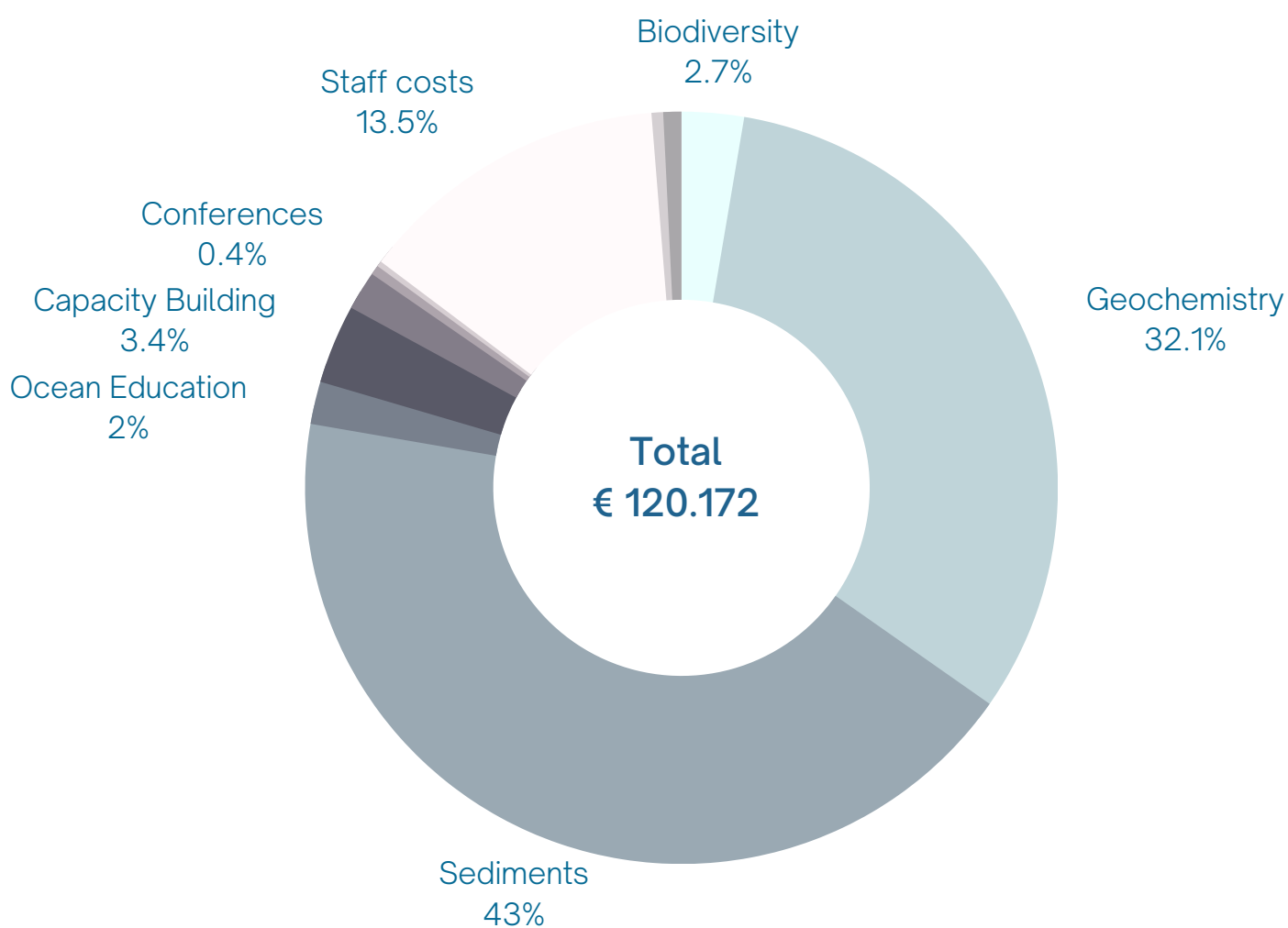
From sequestering carbon to supporting marine life, underwater kelp forests are crucial to the health of the planet. Based in the Netherlands, the Kelp Forest Foundation strives to raise awareness of these vital resources while also leading important research on the benefits of kelp-centric ecosystems.

kelpforestfoundation.org



FINANCIALS

Q4 EXPENSES



KFF'S MISSION FUNDING NEEDS

Kelp Forest Foundation exists to independently and transparently **establish the ecosystem value of cultivated kelp forests** as a powerful nature-based solution to remediate ocean health, mitigate climate change, increase marine biodiversity, and create sustainable products.

Focus areas

1. ACADEMIC RESEARCH

Kelp Forest Foundation's main focus area is filling the gaps in the science to prove and quantify the ecosystem services of giant kelp afforestation. Our research programs fund students from Namibian and international universities to complete relevant MSc and PhDs

CARBON SEQUESTRATION AND GEOCHEMISTRY

Quantifying kelp's carbon sequestration potential by using models, biogeochemistry research, etc.

BIODIVERSITY

Understanding the impact of giant kelp forests in marine environments, biodiversity, and their role as marine habitats.

IMPACT OF KELP-BASED PRODUCTS

Quantifying the greenhouse gas emissions avoided as a result of the use products made out of sustainably cultivated giant kelp.

GEOCHEMISTRY

Understanding the impact of giant kelp forest on the ocean (bio)geochemistry and surrounding waters.

2. OCEAN LITERACY

Building the next generation of ocean custodians by education, capacity building, and youth programs. We also focus on increasing public awareness of the benefits of kelp.

3. MACROCYSTIS SEED BANKS

Helping set up regional and global *Macrocystis pyrifera* seed banks by collecting and storing genetic material from wild giant kelp forests around the world

	2021	2022	2023	2024	FUNDING NEED		2021	2022	2023	2024	FUNDING NEED
Carbon sequestration/geochemistry											
• CO2 sequestration pathway model					funded						funded
• Sediments study					USD 350,000						t.b.d.
• Net Primary Production of giant kelp					USD 35,000						
• Geochemistry impact					USD 35,000 P/A						
• Kelp composition					funded						
• Ocean acidification					funded						
• qPCR and ddPCR of giant kelp					USD 500,000						
• Stable Isotopes / NMR spectroscopy					t.b.d.						
Biodiversity											
• Impact on algal ecosystems					USD 50,000 P/A						
• Impact on fauna					USD 50,000 P/A						
• Impact on benthic biodiversity					USD 35,000 P/A						
• Global eDNA study of wild kelp forests					USD 620,000 P/A						
◦ Pilot eDNA study, Falkland Islands					funded						
Avoided emissions of kelp products											
• Kelp biostimulants effects on plants/soil/carbon											funded
• Kelp in animal feed											t.b.d.
Ocean education											
• Benguela Robotics Lab											USD 25,000 P/A
• Ocean education and after-school activities											USD 65,000 P/A
• Blue House Programme/Capacity building											USD 100,000 P/A
• Tidal pool											USD 250,000
• AR/VR kelp awareness project											USD 150,000
Macrocystis seed banks											
• Setting up seed banks globally											USD 1,000,000
• Kelp spores awareness & scientific sourcing expedition											t.b.d.
Public awareness											
• Documentary											USD 550,000



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