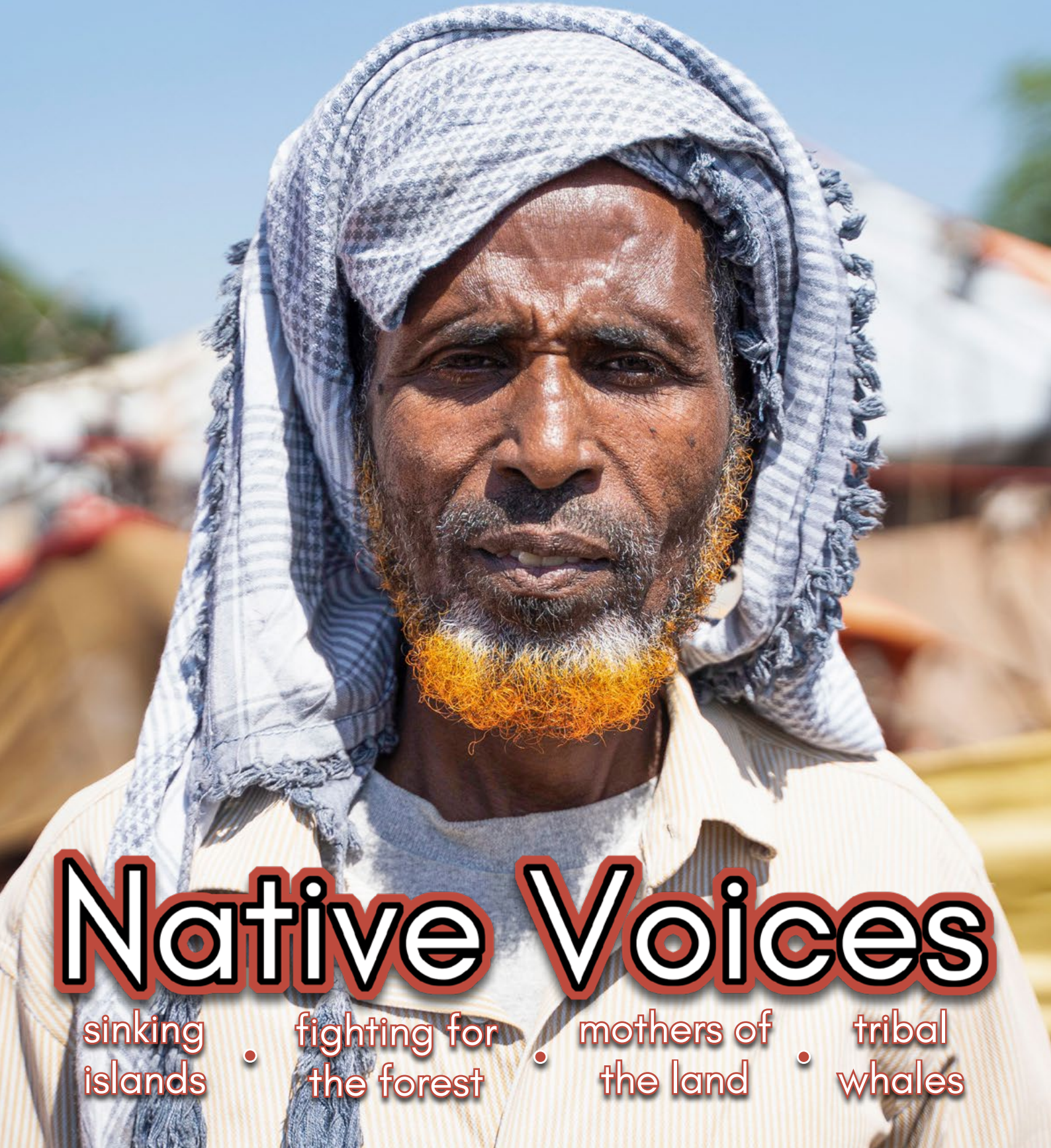


📍 baidoa, somalia

issue 1 | june 2023

earthlog^{ue}

climate voices from around the globe



Native Voices

sinking
islands

fighting for
the forest

mothers of
the land

tribal
whales



protect your wetlands.

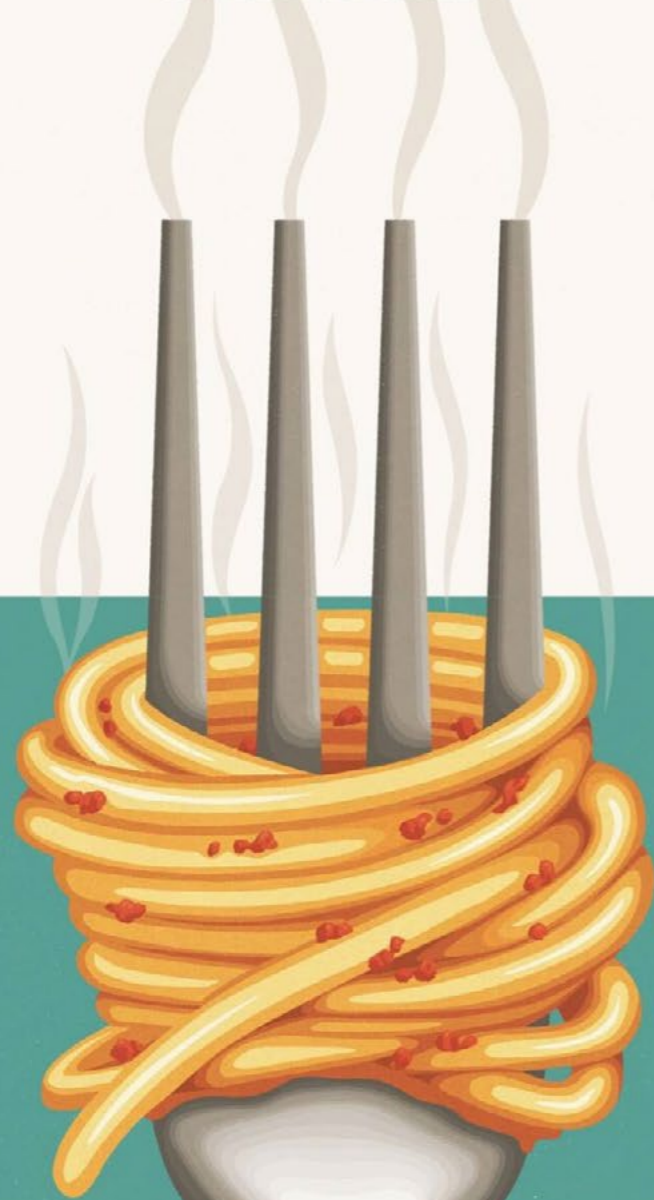
Toxic spills happen more often than you think. If you use most bathroom cleaners, you're spraying toxic chemicals that pollute not just your own environment, but the planet's as well. method's tub+tile spray is a kinder, gentler, non-toxic way to keep both your shower and your world spotless. Because cleaning shouldn't leave you feeling dirty.

methodhome.com

 **method.**
detox your home

WHO

IS THE 3RD BIGGEST
POLLUTER
IN THE WORLD?



FOOD WASTE



Too Good To Go

**Fight food waste
with Too Good To Go.**

Want to help? Save a meal on the app and make a difference.

MESSAGE FROM THE TEAM

Welcome to earthlogue.

First of all, a huge thank you for making it here. You've had to nimbly dodge climate deniers, brave the doom-laden predictions, distant statistics, and numerous 'inconvenient truths' of the crisis, and still emerge with sunlit hope - absolutely no small feat.

Here, you will find a space where you can journey to the heart of the crisis to understand how it unfolds, slowly but surely. Deep within the vast tipping point of a 1.5 degree increase in global average temperatures or the prospect of ice shelves breaking up thunderously, lies the story of a mother who cannot feed her children due to a devastating drought and has to watch them starve. Or the story of a millenia-old cultural practices linked to biodiversity

fracturing cultural identity.

How is that relevant to climate change? A 2022 study in the journal Nature found out that the displacement of Aboriginal Australians from their lands during British colonisation had exponentially increased the spread and damage of the devastating climate-aggravated 2020 'Black Summer' bushfires. This is because Aboriginal communities had historically practised cultural fire management techniques - controlled burns to prevent wildfire spread.

This means that while sometimes grappling with the trauma of destroyed cultural identity that can be witnessed in the older generations, violence, poverty and racial discrimination, Indigenous communities are hit the first and hardest by climate change as they are more likely to be living closer to natural resources too. Protecting their land is also



“How is it that in climate conversations, indigenous perspectives become a subplot to the larger discourse?”

treasured by your ancestors, set to die.

Or of a home forever lost to the inexorable rise of the sea.

Our first-ever digital magazine issue is dedicated to and centred on Indigenous peoples. Although they make up only around 6% of the global population, they conserve 80% of our world's remaining biodiversity. Indigenous-managed forestlands also store about 55 trillion metric tonnes of carbon every year - about four times the global emissions.

The UN Declaration on the rights of Indigenous people does not include a definition for Indigenous people. Self-identifying as Indigenous is the deciding criterion, so we asked some of the people we spoke to - what does the term Indigenous mean to you?

Mayalmit Lepcha, President of the Sikkim Indigenous Lepcha Association in the Himalayas says, "We are the original inhabitants of this land. As Indigenous, we are created, our stories come from the land, the forests, the mountains. There's a story and meaning behind each name, each place that we have here."

It's tempting to see climate change as an isolated issue practically fixable by calculating and offsetting carbon emissions (and report on it that way). But especially for indigenous communities, the experience of the dangers of climate change is built on a foundation of deep injustice.

Colonisation severely affected almost all indigenous people worldwide - across North America, South America, South Asia, Africa, Australia and the Pacific Islands, displacing them from the lands they had traditionally cared for, through massacre and genocide, enforcing poverty and

dangerous - of attacks against environmental activists in 2021, 40 % were against Indigenous people, according to Global Witness.

Chhaya Namchu, an Indigenous Lepcha member told us: "How is it that in climate conversations, indigenous perspectives become a subplot to the larger discourse?"

"We need to talk about what ensures the sustainability of all climate issues, and that is biodiversity conservation. It's not just plants and trees, but the rivers, the entire ecosystem of animals, birds and insects. This is what indigenous communities have been doing all over the world."

They have been taking centre stage in the fight against climate change and environmental degradation, as historical stewards of the land. On each page of our magazine issue live the personal stories of indigenous human and nonhuman communities on the brink of change worldwide, grappling with rising seas, barren lands and more.

We hope you enjoy the inspirational climate voices included in this magazine, as we sure enjoyed listening to them.

Thank you,
the earthlogue
team



CONTENTS



fighting for survival

Returning Guardians of the Great Barrier Reef.....9-13

Zimbabwe: Farming on Barren Lands.....26-29

Indigenous Eyes on the Amazon.....40-41

Vietnam: The Little Farm in Dak Som.....42-43

Indonesia: The Forest Defenders of Borneo.....54-57

rooted in tradition

Venice: The Long Goodbye.....16-17

Cherokee Nation: Plight of the Tsalagi.....18-19

Himalayas: Dammed in Disaster.....20-21

India: The Art of Indigenous Design.....22-25

climate refugees

Kiribati and Tuvalu: Going Down With The Islands.....30-33

Somalia: The Horn of Desperation.....35-38

animals on the brink

Hong Kong: Pink Dolphins in Peril.....44-45

Washington, USA: Our Tribal Whale Family.....46-47

Killamari - The Octopus Slaughterhouse.....50-51

Mexico: Axing the Axolotl.....52

earthlogue extras

Message From The Team.....5

Earthlogue's Quintessential Climate Guide.....14



depop

“FROM
MY BODY
2 URS,
WITH LUV
<3”

@UGLYWORLDWIDE

BUY.SELL.STRUT.

RETURNING GUARDIANS OF THE GREAT BARRIER REEF

Dreamtime Dive and Snorkel Team



Being an indigenous Reef Traditional Owner in 2023 means battling the remnants of colonialism while lethal heatwaves, chemical runoff, predator outbreaks threaten ancestral land and coral life connected to 60,000 years of culture. Yet, with global recognition of their role in conservation, the community are finally leading restoration efforts with a unique marriage of traditional knowledge with science, as explored by [Sradha Sabu](#).

“We call ourselves the saltwater people.”

November, 2022: Inside the pitch-black midnight sea off the coast of Yarrabah, Australia, a descendant of the ancient Yirrganydji people had come to visit a primordial birth festival. Billions of tiny flecks rose in clouds of pink, white and yellow from the coral bed – it was snowing upwards around Tarquin Singleton.

Tarquin, and the team at the Reef Cooperative were there on a rescue mission.

Vast stretches of fertile coral on the Great Barrier Reef had synchronised to release their spawn all at once, in an often-yearly mass birthday. But less than 1% of the coral babies would survive.

Millions were scooped up in buckets, captured in a net and ushered to nursery for a week of babysitting. Their new, forever home would be by the waving palm coves of Tarquin’s homeland – Yirrganydji Sea Country. Its Hastings reef, a victim of the mass coral bleaching and mortality events of 2016 and 2017, needed help.

Tess Concannon, marine biologist and a project manager on the team, says, “It wasn’t reproducing or reseeding itself very effectively after disturbances like

cyclones and coral bleaching events.”

They had joined forces for one of the first Traditional Owner-led reef restoration projects, with a new model that stitched research, conservation, community empowerment, tourism and heritage protection: the Reef Cooperative. Birthday: June 8, World Oceans Day, 2022.

For the Yirrganydji rangers team, whose ancestors lived there for more than 60,000 years and had witnessed the ice age, the surge in sea levels after and the creation of the modern Great Barrier Reef over 9000 years ago, this was a continuation of an ancient lifestyle: ‘Yurrbin Mamingal’ or ‘Caring for the Reef’ in the local dialect. Their ancestors used to live, hunt and were buried in sacred sites that are now beneath seafloor and reef.

Tarquin says, who is Cultural Officer, “Being a Traditional Owner isn’t only being native to that area, it’s an obligation to actually look after that area as well. Pretty much anywhere in my Country, I feel a sense of ownership.”

His Country is more than land – Sea Country or ‘Kulbul’, ties together the land, sea, people past and present, wildlife and ancestral lore of Creation from

Dreamtime in the Aboriginal culture in one continuum. Even today in 2023, the 2,300 km length of the Great Barrier Reef intertwines sea countries of over 70 Traditional Owner groups of Aboriginal and Torres Strait Islanders. Tarquin says, “We call ourselves the saltwater people (pama kulpul-parra). We’re passionate about managing our sea country. If the Great Barrier Reef dies, the main people that are affected are Traditional Owners because not only do we lose a world heritage, but that’s our home, that’s our food source, and that’s our connection disappearing.”

saltwater people.”

Hastings reef, a 10 km square aquamarine rainforest home to sea turtles, butterfly fish, clams and close to where an ancestral Creator-being sleeps in Dreamtime lore, is the pilot project. With consent from custodians of the Country, coral scientists from James Cook University

After historically being left out of land management after British colonisation, the consent and involvement of the Yirrganydji land and sea rangers, under the Dawul Wuru Aboriginal corporation is priority under this. They take decisions at every level, guide the rest through their sea country while safeguarding sacred sites, their generational knowledge of its ecosystems offered freely. Tarquin says, “It’s kind of funny – a lot of people say I got very good eyes, because I’m usually pointing at something that gets my

to utilize such a unique and massive ecosystem and work in harmony with it. As scientists, it’s something we’re only just starting to work out, even haven’t properly worked out yet.” Meanwhile, the rangers learnt to count coral larval density, use reef stars and more.

Tarquin says, “The ranger program is very good because it actually connects people back to their Country.”

Out on Moore reef for the spawning event, they got the local Gunggandji rangers involved and asked the Elders for consent to take coral. Tess says, “It

“If the Great Barrier Reef dies, we lose our home and food source. That’s our connection disappearing.”

raise and place coral babies over the reef beds, aiming to reseed 30 million larvae over three years.

Marine biologists join hands with reef restoration experts to install MARRS Reef Stars. These are interlocking metal grids that hold down ‘coral rubble’ – debris from when coral shatters from powerful cyclone damage, drifting and smothering other coral. Every week, the Indigenous tourism team ‘Dreamtime Dive and Snorkel’ educates more visitors about the reef’s heritage and conservation.

attention. There’s a turtle over, there’s a stingray, there’s a shark just in front of us. It’s more of an instinct.”

The community ‘Elders’, stewards of ancestral oral history and ecological knowledge passed down through millenia, were also uniquely part of the project. For Tess, whose work had spanned reefs in the Philippines, Costa Rica, and further up the Reef, this was a first. She loves listening to the Elders’ stories. She says, “I learn immense amounts. It’s the fact that they understand, appreciate and know how

was one of the first times that we had cross-country sea country consent for a project.”

Dr David Wachenfeld, Chief Scientist of the Great Barrier Reef Marine Park Authority that manages the reef, has been working for 30 years to conserve it. He says, “I think that increasingly, scientists and traditional owners are coming together to share an understanding. That’s really just beginning, and I think that’s very exciting for the future.”



CONTINUE ON NEXT PAGE



Reconnecting with Country

Eight years back, a 24-year-old Tarquin stood listening to the piercing calls on the sands of Michaelmas Cay, a crucial seabird nesting site and National Park sanctuary. His uncles had told him stories about their childhood adventures to gather seagull eggs, and now he was monitoring the bird counts as one of the first Yirrganydji Land and Sea rangers.

“We’re reconnecting and managing our lands, as our Elders did before us.”

Born to an Irish and Scottish mother and Yirrganydji father, he had grown up in Yarrabah, which housed one of Australia’s biggest Christian missions, where Indigenous children were sent after being ripped away from family in the 1900s. Yirrganydji communities too, were splintered – mostly relocated after their land was taken over for gold mining and timber extraction.

It wasn’t until his cousin, Gavin Singleton,

project manager of Dawul Wuru told him about an on-Country opportunity to cull coral predators, that his journey in conservation began. He says, “It was actually doing something positive for the reef.” His work inspired others to join as well.

The ranger program could take place as they had accredited a TUMRA – a Traditional Use of Marine Resources Agreement in 2014. It provides the

springboard and funding for each Indigenous group to manage their own Country sustainably according to the agreed rules, and their own customs. However, there are only 9 TUMRAs for 18 Traditional Owner groups across the Reef, covering less than 50 %.

Over 800 kms up the Reef on Cape York, for the Wuthathi, it’s been a lifetime of campaigning. Since their ancestors

were forcibly sent to missions over a 100 years ago, it was only on December 13th, 2016, that their lands were returned, including Shelburne Bay, home to snow-white silica dunes that represents Yaawa (Mantaray) part of the creation story from their Dreamtime. Now, four rangers live on Country.

Keron Murray, Chairman of the Wuthathi Aboriginal Corporation, says, “We’re trying our hardest to return our

people there and give our children the benefits our older people never had. Feeling being on Country, and reconnecting and managing our lands, as our Elders did before us.”

Things had changed. Global spotlight was on their Thukuruu or Raine Island on the Reef – home to the world’s largest rookery for the now endangered green sea turtle. Sea level rises were drowning their babies, and the heat meant more turtles were turning out female. Keron says, “The majority of all the turtles that have been born since I think around 1995, are predominantly females.” In the Raine Recovery project, Wuthathi and Meriam nation rangers worked together with the Department of Environment and Science (DES), GBRMPA and other partners to protect and manage the island.

Now, their ranger base work in biosecurity – sea grass monitoring, coral bleaching surveys. They await an IPA or Indigenous Protected Area application decision, and hope to hold an on-country celebration for the return of Wuthathi people soon. Keron says, “We’re working to expand tourism and infrastructure, and establish a community.”

“Country needs People, and People need Country”

2022 was the hottest ever year recorded for oceans worldwide. Six mass bleaching events have been recorded, five of them in the past 20 years, and most global reefs are expected to die past the 1.5° C tipping point.

Ryan Donnelly, CEO of the Reef Restoration foundation says, “The world has to reduce global greenhouse gas emissions – that’s number one. At the same time, we need to draw carbon and other greenhouse gases out of the atmosphere through sequestration. And the third thing is restoration, restoring the integrity of habitats – connectivity, biodiversity, functional resilience, and adaptive capacity.”

In restoration, lies the special

strength of Indigenous rangers. “We’ve always been conservationists. You’ve got people on the ground that have the ability to manage these resources without traveling miles and miles to get to specific areas,” says Keron.

The 2022 Earth Shot prize launched by Prince William and David Attenborough under the category ‘Revive our Oceans’ was given to the Queensland Indigenous Women Rangers’ Network in December last year. Early 2022, the government announced funds of over 640 million dollars to fund 88 new ranger groups, and 1000 workers over 7 years.

Although searing heatwaves pose a future threat, the baby coral recruits are growing little by little on Hastings reef. 🌿

Sraddha Sabu
Senior Features Writer

Turtle hatchlings on Raine Island



Singleton ancestors with a dugong



A GLOBAL THREAT

What is Climate Change?

The phrase refers to the long-term shifts in temperatures and weather patterns in relation to certain countries or continents. This is not as simple as weather, as that only refers to short term conditions.

Rapid change in climate began due to human activity which can be dated back to the 19th century. A big contributor to climate change is the burning of fossil fuels which release greenhouse gases such as carbon dioxide and methane. These gases trap the sun's heat in our atmosphere and increase.

The last 200 years of temperature increase has caused the earth's surface to warm up by 1.1 degrees Celsius. On

top of that the last decade was the warmest on record, after continuously breaking records for four decades in a row.

The last 70 years has seen the biggest jump in emissions. In 1950, the world emitted around 6 billion tonnes of CO2 and by the year 2000 it had almost quadrupled. Emissions globally are now over 37 billion tonnes a year.

Climate change has a multitude of consequences, and it is not all about global warming.

Repercussions involve extreme weather events such as intense droughts, heavy flooding, and catastrophic storms. All of which endanger the lives of humans and animals around the

globe. Within this issue, there we will dive into these events and how they have effected people around the world. Showcased will also be sealife and how climate change has effected the lives of all species on earth.

There are solutions to climate change which have the potential to make a huge difference in preventing and limiting its damage, but they are often costly and pushed to the side.

The issue behind most solutions - like ending the burning of fossil fuel - is that it needs to happen now, not later.

Although a growing number of countries are committing to net zero emissions by 2050, emissions need to be half of what they are today by 2030 if our planet is going to be saved.

What is Climate Justice?

It recognises the climate crisis as both a social and political problem on top of an environmental one.

It acknowledges that different communities will feel the effects differently and that some countries and will be worse off than others.

Indigenous communities around the world are facing some of the most severe climate impacts of climate change. These communities are not only reliant on their surrounding ecosystems for their livelihoods, but also their identities are deeply intertwined with land and water. As a result of this, Indigenous people are leading much of the effort to mitigate climate change and adaptations around the world.

Many of those who are the most vulnerable to climate change due to geography and economic factors are facing the brunt of all effects

globally.

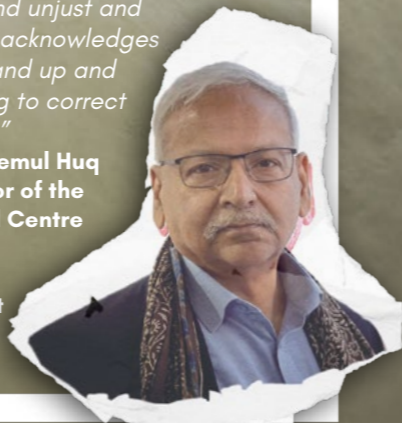
These are the countries who have by far contributed the least to climate change and global warming.

Historically, the highest rates of emissions have come from the richest countries who have the most resources and ability to adapt to the repercussions which follow.

Prof. Saleemul Huq on climate justice:

"I don't like using the term climate justice as it refers to an ideal to be achieved in the future. I prefer to use the phrase Climate Injustice as that is clearly visible and universally understandable by everyone. It is immoral and unjust and anyone who acknowledges that must stand up and do something to correct the Injustice."

Prof. Saleemul Huq is the Director of the International Centre for Climate Change & Development



VENICE'S LONG GOODBYE

Built on log piles among canals, Venice has always been at risk of flooding. A city in Italy, that was born to survive on water, is now on the verge of being killed by water. Climate change has caused the city to sink, threatening their historical heritage sites and livelihoods. Sophia Wan investigates the uncertain future of this historical city.

As one of the most popular tourist destinations in Europe, with its renowned landmarks, architecture, and artworks, Venice has been ranked many times as the world's most beautiful and romantic. But, behind every striking architecture, artistic heritage, and unique history, lies a threat unheard of - the damage from climate change to the world's historical heritage.

The European Geosciences Union found that Venice will be completely underwater by 2100 due to its geographic structure and the consequence of climate change. The sedimentary island built on marshlands, its mere existence is an illustration of maintaining a heedful balance between nature and the city. However, this balance has been disrupted year after year.

One of the worst damaged heritage sites in Venice is St Mark's Basilica. The church is located in the heart of the city, decked in gold and covered with mosaics that tell the story of Venice, with a history stretching all the way back to the 9th century.

Luciana Bruno, 33, was worried that her next generation would not be able to pass down their family tradition of getting married at St Mark's Basilica.

"Maybe my next generation will be the last generation to get married at St Mark's Basilica," said Luciana.

Just like her parents, Luciana got married to her husband at the church 6 years ago. "Not to mention its renowned beauty and architectural integrity, it is a place that carries the memories of every generation in my family," she added. Luciana's parents first met outside the St Mark's Basilica, this place witnessed the birth of their everlasting love and their wedding, as well as the wedding of Luciana herself.

"The city is not just sinking, but the historical heritage sites are dying as well," she said. The church has flooded for the sixth time in 1,200 years due to the rising sea-levels.

Luciana said: "St. Mark's Square is at the lowest part of the city, it is nothing new to see its floor partly or completely submerged in water, but it went completely out of control in November 2019." The custodians of the church never expected tides to engulf it, but to their dismay parts of the basilica were submerged in water for up to 24 hours, after water flooded the church.

"The damage was extensive, and the structure is still recovering till now," she added. The damage does not only occur when the floodwaters wash in, but it accelerates over time. "The salt penetrates the marble and causes it to fracture and flake, while higher up the walls, it burgeons between mosaic tiles causing them to fall off," she explained.

In 2022, Venice Authorities installed glass barriers around the St Mark's Basilica to keep its floors dry during

frequent high tides. It helps to keep the marble columns and precious mosaics of the church safe from seawater and induced erosion.

Another important heritage site that was damaged by the high tides was the Benedetto Marcello Conservatory of Music, which was established in 1876, as a library and archives of the Venetian Conservatory. The flooding had severely damaged manuscripts from the late 18th and early 19th centuries containing music by Luigi Boccherini and many other prominent composers.

Matteo Esposito, 27, from Venice, was a volunteer who helped dry the manuscripts in Benedetto Marcello Conservatory of Music during the storm surge in 2019.

"The loss is immeasurable. It is not just the manuscripts, but precious musical instruments, distinct carnival masks, artistic treasures, mosaics, gondolas, and many other historical architectures that have been exposed to seawater," said Matteo.

"Venice is not just sinking, not just rotting, but dying".

Matteo said he was one of the many volunteers that dried the manuscripts with blotting paper. Since the damage was great, around 3,000 documents were sent to the specialist firm in Bologna to repair. "The repairing fee was estimated at about \$200,000 in total," he added.

UNESCO (United Nations Educational, Scientific and Cultural Organization) had considered removing Venice from its World Heritage Site list and adding Venice to the List of "World Heritage in Danger".

This devastating warning gave a big push to the completion of the MOSE (Experimental Electromechanical Module) project, a system of sea-based defensive barriers aimed to protect the Lagoon and minimise major floodings, with

investments up to a billion dollars. While the project was initially assigned to be completed in 2012, corruption scandals, bureaucracy, and technical issues have delayed the process significantly. Matteo said: "It is not only the museums, galleries, palaces, and churches that make up the city. The whole of Venice is a work of art.

Everywhere in Venice is full of charm."

Since 1971, around 2000 individual artworks have

been restored by Save Venice INC., a non-profit organisation dedicated to the conservation of art and architecture. In November 2019 the mosaic floor of the Church of Santa Maria and San Donato was submerged in corrosive seawater over the course of several weeks during serious high tides.

Save Venice allocated support from the Immediate Respond Fund for emergency needed conservation. This will be used to repair damages like missing mosaic tiles, rotting wooden stairs and mortar support.

"There are too many treasures in Italy for the Italians to protect. The

cost is simply too great. The Old World must look to the New for help. If it is not forthcoming, we will all see the treasures of our heritage fade," said Randolph H. Guthrie, the chairman emeritus of Save Venice.

"If they are gone, we will remember them as they were, but our children and theirs will only see them in books." ☹



"We will see the treasures of our heritage fade. Our children will only see them in books"

PLIGHT OF THE

HOW CLIMATE CHANGE IMP

THE TSALAGI

ACTS CHEROKEE TRADITION

Sat in the baking Oklahoma sun, Native American journalist Katie Hallum reminisces about the years of going to the Cherokee National Holiday celebrations in Tahlequah – surrounded by a cascade of vivid colours that shone from the ceremonial dance outfits; which were edged with proud feathers.

“It’s huge,” Katie proclaimed, “around 20,000 people come down to Tahlequah every year. We have a big stomp dance, which is like a form of outdoor church for Native Americans. My parents’ bed and breakfast gets booked a year-and-a-half in advance because people know what that weekend signifies.”

However, the dry and

scorching central USA climate haunts the powwows and cultural celebration. “Some of my worst memories were marching in the parade with the marching band and thinking I was going to pass out,” said Katie, “it’s so humid and very, very hot. The heat is just absolutely terrible and evil.”

Oklahoma is battered by meteorology; positioned in the epicentre of the nation’s ‘Tornado Alley’, where the cold air from the north and the warm air from the south converge in the predominantly Native American state. Oklahoma’s climate revolves around everpresent droughts that

leave many towns reliant on water towers, whilst snap freezes in winter and fierce storms and tornadoes sprinkled throughout make the weather unpredictable. This is in a state where climate change is making soils drier and water resources limited, all whilst the state’s Senate Bill 943 threatens some schools with a removal of funding if they teach “climate change ideology” that could “disparage the oil and gas industry” that Oklahoma has profited from.

“The oil industry has brought earthquakes and water pollution,” affirmed Chad “Corntassel” Smith, Chief of the Cherokee Nation from 1999 to 2011. “The weather and climate impacts in Oklahoma are

hard to see on a daily basis, unlike the Native people of Alaska who see the receding glaciers.”

Oklahoma’s dry climate is only going to get more severe. The state’s crispy, tan grass crunches as you walk on it – dried out by the blistering humidity – and the Environmental Protection Agency have warned that an increase in temperature could decline agricultural yields by 50% and could even produce “dangerously hot days”. The Cherokee Nation themselves have even started an initiative to encourage people to grow more indigenous foods to combat the prolonged periods with little precipitation.

“We notice droughts causing lakes and creeks to dry up and increased tornadoes,” ‘Corntassel’ continued, “we see the impact of oil fracking with earthquakes, the pollution of rivers by animal waste, and littering.”

Climate change acutely impacts Native Americans in states like Oklahoma due to its vulnerable geography, but Chief Smith’s point of climate effects being hard to see in Oklahoma lend itself to a larger problem. According to a study by Yale University on climate change belief, the ‘Sooner State’ is the fourth worst for climate denial in the USA. In some counties in the state, such as the Cherokee area of Noble County, only half of the population believe in climate change – yet they bear the brunt of climate impacts.

“The greatest impairment to understanding climate change is the inundation of cable television climate denial and far right state elected officials who ignore the seriousness of climate change,” said Chief Smith, “I think a campaign to educate that climate change is real, with an appeal that we don’t want our children or grandchildren to live in a mess

we created, would appeal to Indians. What is good for America and the world is good for Indian

Country.”

Katie echoes the feelings of Chief Smith, whilst also harbouring a deeper cultural experience that runs through the veins of every Native. “Natives have an issue with what’s called ‘generational trauma’,” she poignantly stated, “they don’t go to college because their family didn’t go to college and so on.

“There’s just so many other issues that plague tribal nations. It means people turn a blind eye to things like soil erosion and climate change. People are definitely not raising the alarm like they should.

“To even get the conversation about climate impacts on Native land started, I think we’d have to have more footing in the government because we’re still controlled federally.

“Until the federal government starts caring, I don’t know if young people are going to necessarily start caring.”

People are definitely not raising the alarm like they should.

“To even get the conversation about climate impacts on Native land started, I think we’d have to have more footing in the government because we’re still controlled federally.

“Until the federal government starts caring, I don’t know if young people are going to necessarily start caring.”

Harry Robinson
Senior Features Writer



“The heat is just absolutely terrible and evil.”



BORN FROM THE SNOW,

Sikkim's Indigenous Lepcha community face destructive dam construction and seismic instability while living amidst the fastest melting glaciers of the Himalayas. Indigenous Lepcha members spoke to Sraddha Sabu about the dangers and the fight to protect their people.

Every morning, in the blue dawn before sunrise over the pearl-misted Himalayan mountains, Mayalmit Lepcha scoops up spring water into seven bowls to offer to the mountain and river deities worshipped by the Lepcha community. She lives amidst the high-altitude forests of Dzongu, their ancestral homeland and a protected reserve in India, home to lush jungle filled with rare butterflies, birds, black bears and the glacier-fed clear blue river that is considered tied to the lifecycle of each Lepcha person - the *Teesta*.

"Our life starts with water," says Mayalmit, 37, who is President of the Sikkim Indigenous Lepcha Tribal Association in the North-East Indian state of Sikkim. "We believe that the first female and male of Lepcha community have been created from the snow of Mount Kanchenjunga, the third highest mountain in the world. It is a deity for us. And after we die, our souls travel back to the river Teesta and slowly return to Pomzoo Lyang, the soul resting place at the foothills of the Mountain."

When a baby is born, they were traditionally taken to the Teesta's glacial lake, married couples seek blessings at the confluence of its tributaries, and

funerals also take place by the river.

She says, "We are nature-worshippers. Each clan worships its own mountain, own river, their creation stories are based on ecology so that is why it is very important for our community to save the rivers, the mountains, the lakes."

But the community's culture is under violent threat. For one, Mount Kanchenjunga's snow is melting. Sikkim is home to the fastest melting glaciers of the Himalayan region due to climate change, according to a 2020 study of glaciers from 1991 to 2015 - increasing risks of catastrophic glacial floods.

The 2,400km Himalayan range is also one of the most tectonically unstable yet densely populated regions in the world, prone to landslides, earthquakes and more - a lethal combination. Just from 2011 to 2017, Sikkim saw 1,561 landslides. "On a hill state or in a fragile ecosystem, if there's a landslide, where do you run?" says Chhaya Namchu, an Indigenous Lepcha member who has worked with multiple NGOs, including the UN on climate action, transboundary rivers and changing ecosystems.

Dr Prakash Tiwari, Professor of Geography at Kumaun University, India and global

expert in climate change adaptation in the Himalayas, says: "It is the youngest mountain range, with unstable geography as it is still rising, and its high population density, rapid unplanned urbanization and poverty makes the Himalayas the most vulnerable mountain region on the planet to the impacts of climate change."

The Lepcha community were traditionally farmers, herders of sheep, goats and hunters in the high mountains. "Everybody works in agriculture, it's not like a commercial thing that they're doing," says Chhaya Namchu. The climate-aggravated weather has hit the community hard.

Mayalmit says, "We are worried because we have been witnessing that suddenly there's very heavy rainfall on certain days, like a bucket full of water pouring. Some parts don't rain, some parts rain, it never used to happen."

"The economic viability of banking on natural resources has diminished across the Himalayas," says Chhaya, who has worked in the field across Nepal, Bhutan, Bangladesh as well.

DAMMED IN DISASTER

"The hardship related to agriculture has increased, because of unpredictability, and water shortage.

"I spoke to other women who worked in agriculture. Very simply, they said that, 'Now we feel like the sun has come closer, than what it was'."

Lepcha farmers were left in the dust by the new threats facing their 'cash' crops. Their famed juicy mandarin oranges suffered an average of 350% drop in yield, owing to increased temperatures and a devastating virus and insect outbreak. Dzongu was a significant exporter of cardamom, but not anymore. Mayalmit says, "We used to produce tons and tons,

cattle have been attacked." When she complained to her parents about the squash, her mother said, "What else will they eat? There's nothing growing in the jungle." Mayalmit says, "We really need to appreciate this thinking - not thinking just of their own consumption but also that of the plants and animals."

But most hurtful of all to the Lepcha, is that while already facing climate threats, their mountains are being blasted by dynamite to build dams that dangerously choke the flow of their 'life river'; Teesta, and degrade the environment - an issue they have been protesting for decades. In 2007, Mayalmit had dropped out of

beautiful landscape." Dams also pose huge risks due to earthquakes that can unleash millions of litres of water at once, sweeping away entire villages.

Mayalmit continues: "We fear that if more hydro dams come and the tunnelling starts, when they do blastings, it'll add more to more landslides and flash floods. The impact that I've seen after the construction of dams - we are heading towards disaster."

"We also feel that we will become marginalised in our own land, our culture will be affected and of course, our environment will be affected."

She's been raising awareness tirelessly

"We feel like the sun has come closer, than what it was."

but now we cannot even produce 5 kgs of cardamom. There was some disease which came, and it is not reviving at all."

These difficulties have destroyed traditional occupations, pushing Lepcha members to rapidly switch to other occupations like tourism, which puts even more pressure on local ecosystems if done unsustainably.

Even the behaviour of animals and birds had become strange. One winter evening last year, Mayalmit had heard some rustling outside in her garden. She shone a torch into her pasture, only to find a small Himalayan black bear and her cubs eating ripe squash from her parents' tree. Harmless if left alone.

She says, "They never used to come to the community but for the last few years we've been seeing the goats, chickens and even the

college to join a historic protest and 915-day hunger strike by the Lepchas against dams, and has since been working with the organisation, *Affected Citizens of Teesta*.

She says, "We have more than 30 dams and more than 50 pharmaceutical companies built on Teesta and its tributaries. We've been shouting, we were in jail, we were in hunger strikes. We went to every village to talk about these negative impacts."

On August 13, 2016, a horrible incident in Dzongu hit. "In our Dzongu region, almost five, six households was swept out because a whole mountain came down," Mayalmit recalls, "When I heard that, my tears came out and I was crying as if somebody had died. I was not feeling bad for the people who lost their property, or the animals, but I was crying for that mountain, that landscape. It was such a

about the plight of the Lepcha community and the fatal dangers of dams for 17 years. In the campaign for sustainable development, she has helped organise cultural festivals. The 520 MW Teesta Stage IV dam is set to be built by the Dzongu, but Mayalmit and the Dzongu-based Lepchas have stopped it so far.

She says, "Whatever the older generation has kept for us, I think it is our responsibility that we should pass this legacy to the younger generation. They should also see the Teesta river flowing, they should hear the sounds, they should see the beautiful, fresh environment."

After sunset, her morning offering has to be put back. It is evening and Mayalmit heads out to pour the sacred water in the seven bowls on her garden plants, back to the mountain where it came from. ☺

"I cried for the landscape as if someone had died."



THE ART OF INDIGENOUS DESIGN

Living harmoniously with the river, the people of Kuttanad, India, have adapted their homes and livelihoods to protect themselves against the forces of nature - using practices that have been in place in for centuries.

Water is an integral part of everyday life in Kuttanad, but with the promise of harvest and life it also harbours the risk of severe flooding without proper protection.

Systems that the people have developed over hundreds of years can be seen as pillars of design for climate adaption and working with nature instead of against it.

Landscape architect, Naeema Ali, specialises in climate adaptive design and studies indigenous cultures and how they respond to extreme weather. She spent time in Kuttanad speaking to locals and learning their ways of life.

She explains, "Kuttanad long, long before was part of the sea. The early people found a way to reclaim land from it, in a sustainable manner using locally available materials. They constructed artificial landforms where they could grow rice and other fruits."

The area is rich in water bodies and is connected to the Arabian sea, with five major

rivers flowing through the region. The challenge arises every summer when sea water flows inland to the paddies as river water-levels go down.

The harvest can be killed or spoiled by salty water and farming crops in the in this period becomes impossible.

"People adapted to that and they thought that, more than looking at it as a curse to farming, why don't you see it as a blessing because the salt is also going to bring in lots of fishes from the sea. They shifted intelligently into a fishing landscape for those periods. The dikes or canals also became breeding and nesting grounds for some species like prawns," Naeema describes.

"You see these kinds of patterns [in how indigenous communities respond to their terrain] and how people really look at nature, not as an afterthought, but as the starting point. There's so much you can learn from the perspective of design and resilience."

Not only did they adapt this cyclical farming system, where the means and production would change based on each season, they also used the structure to create more protection from the forces of nature for their homes.

Kuttanad, known as the 'rice bowl' of Kerala for its success with paddy cultivation, is prone to flooding.

Since 2018 severe floods have increased to two or three times a year.

Many people built their houses along the dikes, which were higher areas, meaning that they were less likely to be gravely impacted by the flooding.

Naeema says, "It's coastal protection, growing food, and a good habitat for all these ecological species all in one. Because it's so rich in vegetation they're nearly zero in emissions because they use sustainable and locally sourced materials."

Floods in the Kuttanad region are not always disastrous - by harnessing the power of the seasons what is generally thought to be a 'natural disaster' could actually bring about positive side-effects.

A recent study found that unprecedented floods which affected Kerala during 2018 and 2019, submerged Kuttanad and actually contributed to an increase in rice yield as nutrients were distributed to the soil.

Naeema spoke of their innate ecological knowledge and connection with their land:

"People really look at nature, not as an afterthought, but as the starting point."

"They know their landscape so well- they're like engineers who don't have any degree in engineering. They know the challenges, it's just that they don't have a platform to voice it."

CONTINUE ON NEXT PAGE 



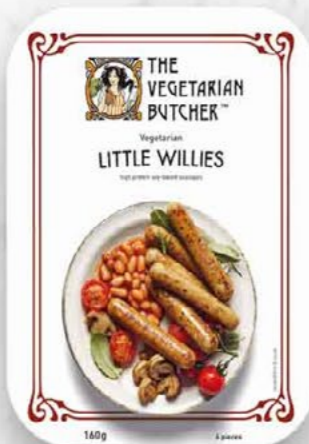
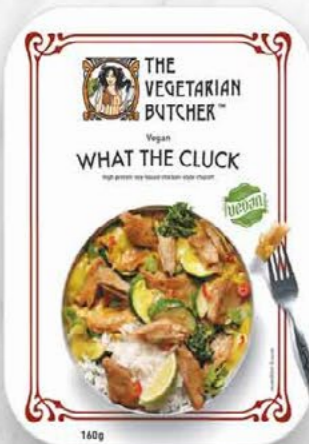


THE VEGETARIAN BUTCHER™

Great for
BBQ



TASTE THE FUTURE OF MEAT



FIND US IN THE CHILLER AISLE

Participating stores. Subject to availability. Varieties as stocked.



The dykes are repaired manually by farmers when damaged during the monsoon season.

She urges other architects to look to designs like this one for inspiration.

However, she warns against copying existing systems as indigenous design is so contextual to its own unique landscapes qualities.

"I don't advocate going back to living with tree bridges and these organic materials alone, but there is a sense of coexisting with them and making space for them; seeing them as also valuable. We don't need to control the forces of nature," she explains.

We are reaching ever-closer to the seemingly inescapable 1.5C climate

warning, with researchers cautioning that we could breach the number within the next five years.

This brings promise of increased climate catastrophe globally, with increased flooding and more intense storm surges and wildfires.

Naeema says, "If we do not do anything and if it's business as usual with climate change, we will not be able to reach our targets. We have this carbon tunnel vision to reduce emissions, but it's more how we can live symbiotically with nature."

Architects are looking for designs to protect populations from an increasing risk of natural disaster.

Just because this raises a bigger issue in our future, it doesn't mean we can't look to existing practices for inspiration.

She reflects on her time there: "I realised that whatever answers we're looking for as contemporary designers, we already have them - we're just not looking in the right places."



Nadia Lincoln
Senior Features Writer

FARMING ON BARREN LANDS.

Female farmers in Zimbabwe battle with inefficient farming practices, gender inequality and economic strains, whilst simultaneously navigating through climate change.

In Zimbabwe's driest regions of Bulilima and Gwanda, farmers have faced flooding, droughts, and food shortages caused by the climate crisis. In turn, families have been forced towards poverty and many turned to food aid. Economic battles, ineffective farming methods and gender inequality are just some of the issues faced by female farmers battling to stay alive in rural Zimbabwe.

Practical Action, an 'innovative international development group' have taken strides to aid and develop current farming in the districts. The group have a wealth of expertise in

providing ideas and expertise to help people living in poverty around the world. In Zimbabwe, they created the 'Planting for Progress' project which focused on female farming in Bulilima and Gwanda.

For many in the districts, farming has been left to the women of the households. Andrew Heath, an international content specialist who works for Practical Action, explains how many women have been left as heads of the households due to "migration of men to cities to find work, which in turn left women to run farms as well as look after children and elderly relatives".

This inequality is referred to as "The Triple Burden- where women are forced to simultaneously undertake a productive role, a reproductive role and a community managing role". Meaning that women are expected to earn an income, participate in their community, and care for children, elderly relatives, and their homes.

In rural areas such as Bulilima and Gwanda, climate change is an unwelcome

added battle which these women have no say in facing. The droughts and unpredictable rainfall are increasing the workload on every farm in the regions making it impossible to continue to farm the land in the ways which are in place. In turn, women are pushed to come up with new ways to adapt agricultural practices to the changing climate just so they can continue to produce food and earn a living for their family's well-being.

The issues faced by these women were prominent and vast until the planting for progress project began in 2019. Farmers had very little access to water and "were spending huge amounts of time collecting water for their farmland" says Andrew Heath. On top of this, the means of storing water and distributing it were inefficient and hindered any crop development.

The ineffective farming methods were also affecting the soil quality and leaving it damaged and

unlikely to grow crops with any real value. The seeds that were being harvested were poor and unhelpful government practices around agriculture were stopping farmers from acquiring different seed varieties.

The project set out to increase the amount of food produced and educate farmers on much more efficient ways of farming which will work within the constraints that climate change and the environment places. Arguably the most valuable part of the project was placing seven solar powered irrigation gardens in each of the two districts. Twelve of the irrigation gardens draw water from boreholes and two draw from a river. Farmers from these two vastly dry regions now do not have to worry about when the next rainfall will come or about spending huge amounts of time collecting water.

Practical Action also constructed two sand dams which improved the storage of the precious water. These new methods for irrigation have led the farmers to grow and sell crops such as cabbages, rape,

carrots, and onions, none of which would grow previously. Now these and many more crops can grow quicker, bigger and better, producing a more reliable income for the farmers.

The value of crops increasing is also due to the reintroduction of traditional seed varieties that are specifically suited to the local environment of the districts. These seeds differ from previous ones as they are drought and pest resistant and will make a good yield much more likely even in years where drought is prominent or unavoidable. Pest resistant seeds are vital as previously high volumes of seeds were spoiled when being stored because of pests and droughts post-harvest. Improved storage solutions and training has allowed farmers to now have better knowledge on how to use, maintain and produce seeds which is helping to keep them fresher for longer.

This sort of training is key to the development of small farms as they can adapt and become

a profitable business. Farmers are also taught basic record keeping and business skills so they can sell their more profitable crop for an income. Female farmers have never had the opportunity in these rural areas to advance their livelihood in a way that is going to create a noteworthy income and be sustainable even during issues presented by climate change. Training also took place to show how the farmers could pool their produce and sell it to buyers in bigger quantities for more profit.

Practical Action take pride in addressing gender inequalities, Andrew Heath says, and are "committed to understanding the ways in which the system can be changed to meet women's needs and support their lives and well-being". In rural areas such as Bulilima and Gwanda, women are the backbone of agricultural labour, this is amplified when men

next issue:



rainforests.
we either care about them, or we lose them.



go to cities, and do not return or send back remittances to the families left behind. When it comes to slow onset hazards caused by climate change such as changing weather patterns and droughts, Practical Action have found that not only are women more affected by these, but that those in rural areas “hold knowledge that is key to understanding and adapting.”

The Planting for Progress project which started during 2019 encountered huge problems because of the covid

pandemic. Andrew talked about how there was no choice but to change the way in which meetings were held and training sessions took place. The supply chains were held up and costs increased so in some cases, parts of the initial plan couldn't be delivered in time- “We had to be flexible, we had to alter the way in which the interaction with communities took place, which meant that training had to be done on a smaller basis and we have since had to rely on those who received the training to pass on their knowledge to other farmers and members of the community”.

The pandemic also led the project to introduce chicken rearing so that the farmers could diversify their income and reinvest into their farms. Practical Action went to the districts and taught farmers how to rear before they returned to provide them with chickens and installed 12 solar powered incubators to assist with the new project. Progress Tlou, a beneficiary of the chicken rearing project in Gwanda district said, “I am happy that now with the solar powered egg incubator, it helps us with hatching more eggs, growing our chicken numbers and earns us income”.

The project as a whole, almost four years since beginning, has benefitted

nearly 6500 people from the 1300 households that participated within Gwanda and Bulilima. After the implementation phase, Practical Action ensured that there were plans in place so that the community could run the irrigation systems and the solar powered egg incubators alone. The community felt like they had ownership of the installations to avoid being white elephants in the post project era. They had the much-needed knowledge they lacked beforehand to farm even in the face of climate change and have begun to double their food production.

This has bought many families away from food aid and helped them to become independent. Practical Action believes that through many small and thoughtful changes in communities around the world, the bigger picture will slowly change. They know people have the ability to change their world, they just need the right tools, plan, and effective partnerships to do it.

In these particular districts of Zimbabwe, Practical action are “well-embedded into the community and are always looking for new funding opportunities to build on the work they are doing” and developing the plans in place as the climate changes is “key to ensuring these projects are worthwhile for both funders and the communities and farmers at the heart of it” says Andrew. 🌱

“I now make my own money. I used to rely on my husband but now I can afford to take care of the family on my own.”



Ellie Billingham
Senior Features Writer

GOING DOWN WITH THE ISLANDS



AT A GLANCE THE MANY ISLAND NATIONS IN THE PACIFIC ARE PARADISIACAL: THE TEMPERATURES ARE WARM, THE COMMUNITIES ARE BURSTING WITH CULTURE AND THE SEA IS AT YOUR DOORSTEP. TOO CLOSE TO YOUR DOORSTEP. THE ISLANDS ARE SINKING; BEING SUBMERGED BY THE VERY WATERS THAT ARE INTEGRAL TO THEIR TRADITIONS. DESPITE THIS, THE I-KIRIBATI AND TUVALUAN PEOPLE ARE RESILIENT IN THEIR MINDSET OF STICKING WITH THEIR ATOLL HOMES AS THE SEA LEVEL RISES - AS HARRY ROBINSON DISCOVERED.

“What kind of ancestor do I want to be?” Baniti Semilota asked herself, pondering in her home overlooking the Pacific Ocean. All homes overlook the Pacific Ocean in Kiribati. “Our elders and ancestors have always said, ‘whatever happens, we’ll go with Kiribati if we sink,’” she added, “most people want to be remembered as the kind of elders who persisted for real change to try and stop that from happening.”



“WHAT KIND OF ANCESTOR DO I WANT TO BE?”

Ancestors in Kiribati, and the other Pacific nations, are more than merely ‘the people who came before’. They are the storied foundations keeping each island afloat, with their teachings and traditions etched into the minds of the I-Kiribati people. Their spirits are manifested into each grain of sand on all of the nation’s 33 picturesque islands – islands that are merely four metres from being pulled under the deep-cobalt ocean waters by climate change. The 22-year-old has become a beacon for

Kiribati’s youthful population; the generation staring the encroaching tidal abyss with anxious ruminations of the fate of the islands. Baniti attended COP27 as a guest speaker and leads the Tugaru Youth Action, a group that particularly tries to raise awareness of climate change among the remote and disconnected ‘outer islands’ of Kiribati. She claims she’s just the person who stepped up to lead, but at the heart of it she is a proud I-Kiribati who is yearning for her nation’s future. “It’s like a home that is being taken away from

CONTINUE ON NEXT PAGE 



you," she said, preemptively grieving the loss of her culture, "it's very sad to even think of those memories and traditions sinking with the islands, you feel like you have no sense of identity."

One island; Marakei, is revered around Kiribati as "women's island" and is said to be guarded by four ancient female spirits. Each new visitor must complete 'te katabenin' - a journey around the island - and leave offerings at aged shrines. Ancestral customs are embedded into each island, just as many I-Kiribati intend to embed themselves in the islands as climate change gives them reason after reason to leave.

"This is our country and we should fight to stay here longer," Baniti added, "to migrate to another country? I can just never imagine it."

The 'resilience' mindset championed by the current government, however, is a path of much resistance; and it's no wonder why many skilled young people are migrating for more auspicious pastures. Saltwater intrusion from the violating sea is even contaminating the fresh groundwater reserves used for sustenance farming and household needs - which are left unreplenished and desolate as equator-lying Kiribati is currently surviving its third-worst drought on record.

Atoll islands are devoid of all surface water like lakes and rivers, so are reliant on rainwater. Last year, the I-Kiribati people didn't experience rainfall for seven months, whilst the limited water in their humble hand-dug wells became briny.

"We shower in salty water and fetch our drinking water from far distances, just like other countries do during drought," admitted South Tarawa local Ruth Cross, "we are tightly bound by the fabric of our culture to help each other get by." The irony is piercing and deadly: rising water dominates the

landscape, yet none of it is drinkable.

Furthermore, coastal erosion whittles away at what sacred land the communities have left. Betio Island resident Anterea Bereia sombrely declared: "Driving through the island is very sad. You can literally see how much the shoreline is washed away by waves."

At high tide, invading seawater blockades the

only main road in all of Kiribati; severing the link between Betio and the capital of Tarawa. He added: "We should be afraid of climate change, we need to be scared of what's coming."

A thousand kilometres south-west in Tuvalu, Minister for Foreign Affairs Simon Kofe addressed an assembly of world leaders over video link; his shins poignantly submerged in seawater and his lectern driven into the pasty limestone sand. "We cannot wait for speeches when the sea is rising," he proclaimed, "we must take bold action today to secure tomorrow."

Simon's weighty message, given at COP26, still correlates with Tuvalu's resilient mindset on inevitable climate consequences. The country is much smaller than their former colonial partner Kiribati - with Tuvalu being

assured Minister Kofe in his friendly-yet-critical demeanour, "the Pacific region is not standing helplessly while we are impacted by climate change and sea level rise.

"We are fighting, and we will never stop fighting."

Tuvaluans and I-Kiribati are told in adolescence to grow up to be "warriors" to save their country, and

Simon is doing so by pushing through legislation that preserves Tuvalu's sovereignty as a big ocean state. He said: "My country stands against relocation as a solution to the climate crisis. Tuvalu is a sovereign country, and its population has the right to live, develop, and prosper on its own land.

"The sea is our home. Even if the land disappears, we expect the sea to remain, and to be recognized internationally, as our home.

"Protecting our statehood and maritime boundaries now is one way we can ensure our future as a nation. We would be devastated were our maritime zones and our sea to be compromised."

The devastation mentioned by Minister Kofe would also be that of dire human consequences. According to the Tuvalu Fisheries Department, a Tuvaluan consumes half-a-kilo of fish a day; with it being the only crucial food item that the country doesn't import. Coral bleaching caused by climate change, combined with the deadly partnership of human-based pollution, has made fish scarce and forced fishermen further afield to catch their haul. Tuvalu now only makes bilateral trade deals with governments that recognise these current maritime borders, as allowing these fishing zones to shrink would be akin to sitting back and watching the

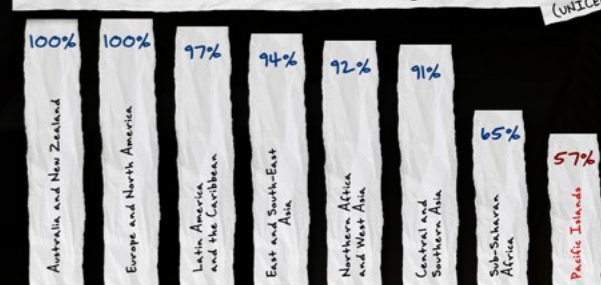
change and sea level rise become very real."

"The Pacific islands are adapting to impacts of sea level rises at the moment," responded Peter Sinclair, Water Resources Adviser at the Pacific Community; the region's principal international science and development organisation, "how they will adapt as levels increase though, no one really knows."

Peter has been working on water resources in the Pacific for over a decade and a half and has seen the brunt that the islands have had to endure. "They have it tough in Kiribati especially," he conceded. "After 18 months of low rainfall the groundwater storage starts to thin out. There's not enough water for the needs of the community, they often don't have water piped to them everyday."

Kiribati is currently looking to deploy a new desalination project in place to supplement around 3 million more litres of clean water into their system, but Peter admitted that this is a long process. Until there's a solution, people are left drinking salty water and sourcing their own resources from

Levels of access to at least basic drinking water services (UNICEF)



to likely be the biggest threat is the storm surges in the next 50 to 100 years," Peter explained.

"During a high-tide event, storm surge waves can 'overtop' the islands," he added, "where, in bigger events, people are left wading through water and the sea is just rolling in - almost like a tsunami.

"It's when it gets to that point where you can't maintain infrastructure, there will be less capacity within the community to stay and people will just go, 'this is too hard,' and leave."

As a cataclysmic fate may beckon over the ocean horizon however, many young islanders - those fighting on the frontlines of the climate crisis - are intent on rewriting the ending of their nations' ancient history books.

"It looks like we are going to be evicted because of the actions of other countries," Baniti concluded, with the prophetic sound of waves besieging the coastline near her home.

"Whatever happens to Kiribati we'll try to find ways to be resilient. As the Honourable Minister Simon Kofe says, who wants to leave their home?"

With one closing remark, the young climate champion echoed the feelings of an ocean: "The climate crisis is a human rights crisis, and this is shown across all Pacific islands." @

Harry Robinson
Senior Features Writer

"We are fighting, and we will never stop fighting."



the fourth smallest sovereign nation in the world - but the heart of the 11,000 Tuvaluans dwarfs their miniscule stature. The Pacific island nations see themselves as "big ocean states" rather than small island states, and they hold their heads as such despite struggling with the problem that their ocean homes are collapsing in on themselves.

"We do not have to be victims,"

"We should be afraid of climate change, we need to be scared of what's coming."

country down and starve.

However, Tuvaluans aren't limited to a pen when it comes to warrior-like fighting for their future; they are also wielding hi-tech, sand-dredging swords that they are using to reclaim what is rightfully theirs. Metal sand-sucking behemoths can be spotted in Funafuti, the country's atoll capital whose thin strips of land encircle the colossal Te Namu Lagoon - the machines' long arms clawing back sediment from the ocean's greedy grasp and using it to replenish the atoll. Funafuti is already so submerged that 40% of its central district is below sea level at the government's highest tide measurements.

Amidst his sober political proclamations, Minister Kofe confessed: "When you live on thin strips of islands and can see the lagoon on one side and the ocean on the other, climate

groundwater wells.

Whilst dry temperatures are causing living problems now, Pacific islanders are warned that climate change may bring more catastrophic impacts in the form of biblical weather. "What appears



A LITTLE PLANT-BASED
GOODNESS




GOOD FOR YOU!

Source of Calcium. Calcium is needed for the maintenance of normal bones. A varied, balanced diet and a healthy lifestyle is recommended for good health.

THE HORN OF DESPERATION



On the east coast of the African continent, jutting out into the Indian Ocean, lies Somalia - making up the pointed tusk of the Horn of Africa. With relentless civil war intensified by the burning, rainless climate, the Somali people are prophetically struggling. These are the stories of the climate frontline, as **Harry Robinson** found out.



In the Internally Displaced People (IDP) camps of Baidoa, Somalia, the air is dry and desiccated. Single mothers wander through the camps; their bare soles wearing the scars of the gruelling shoeless trek on Somali dirt roads in the hope of salvation.

They walk past unsanitised temporary latrines which fuel the omnipresence of dysentery and cholera among camp residents - their modest Muslim garb insulted by the prideless toilet facilities. Almost 2.6 million people call these makeshift sites "home", many of whom were evicted by the Horn of Africa's intensifying climate - with a lack of rainfall for five continuous seasons causing droughts that have left livelihoods in ruin.

"The prolonged drought decimated our livestock and locusts destroyed our farms," said Faadumo Addow Ibraahim, a single mother of seven children in the Takawal IDP camp. As the main provider for her brood, she buys and sells clothes in the local market to survive.

"We are barely able to eke out a living."

The droughts are the worst Somalia has had to put up with for 40 years, with dry winds caused by the El Niño climate phenomena - as well as the Ethiopian mountains blockading low-lying monsoon clouds from reaching the country - leading to severe droughts that are only growing in intensity. This positions the arid frontlines

of climate change in a country that has already been brought to its knees by an ongoing 32-year-long civil war.

"99% of the current issues Somalia is facing are climate related," says Daud Jiran, the Somalia Country Director for the aid charity Mercy Corps. The lack of rain - even in the 'Gu Rain' season which Somalis are reliant on - has dwindled river levels, depleted underground water resources and left subsistence farmers with wilted vegetation where their crops once lay. The UN has calculated that 75% of all displacements are due to climatic events; many of whom forced to abandon the land that once could provide them with sustenance.

This lack of food and water has caused a malnutrition epidemic in the East African nation, with 54.5% of Somali children suffering with under-nourishment and starvation according to the Integrated Food Security Phase Classification. "You really do not want to see a severely malnourished child," said Daud in a sombre tone, "they are children who have lost their body mass so extensively that they cannot walk, cannot stand, cannot sit. They can only take food through a tube."

"The tragedy sometimes is that you'll find a mother with four or five kids and she has children with different levels of malnutrition, often being separated from the rest of her children to care for her sick ones in the stabilisation centres."

"These are human beings who are at the age of death, yet they're children. There is suffering in the eyes of these mothers. You see a child and they are just bones wrapped in skin."

There were 43,000 excess deaths due to drought in Somalia in 2022, according to Imperial College London. Just under half of these were children; their feeble frames unable to cope with the trials caused by climate change.

The large families in IDP camps work only to protect their children from the same fate. Harraw Ali Borrow arrived in a Baidoa camp seven years ago with his wife and 14 children. "Life had become unbearable," he said, "the price of commodities doubled and we had no income."

He spends five hours a day walking and queuing for water - usually bottled water provided by non-profit organisations. His household are living life on the brink - oftentimes surviving on

unsold sacks of rice from Harraw's market stall - but it's safer than where they were in the town of Dinsoor; where they were staring the civil war in the face.

"Donkey carts were our only means of transport, but due to the war, the animals were often killed, and our carts burnt," he said, sitting in his family's makeshift plastic shelter that Harraw describes as 'worn'.

"We experienced shelling and artillery noise from automatic weapons. Many houses were destroyed by bombs. We had to save our children. Those who remained in Dinsoor lead a miserable life."

The IDP camps have swelled in population since Harraw first arrived, with more people willing to go hungry for days to flee a conflict that has been greatly exacerbated by the climate crisis. "Some areas in the South West region have become inaccessible for humanitarian workers," said David Nangumba; Head of Programmes for the international aid organisation Finn Church Aid, "people are running for refuge to Kenya and the IDP camps for safety."

The conflict has been severe in its intensity since the start of 2023, with increased displacements due to 'military offensive activities'. This means that Somalia has matched two-thirds of last year's conflict-based displacement total in just the first two months of the year, according to the United Nations High Commissioner for Refugees; putting a further strain on the IDP camps.

Insurgency groups like Al-Shabaab and Islamic State prey on the country's fractious reality, whilst corruption in the brittle Federal Government of Somalia means that climate refugees are left on their own and mostly reliant on humanitarian aid. For 74% of those in IDP camps in Burco in Somaliland, according to Finn Church Aid, these handouts are the only thing keeping them alive.


"These groups have deliberately destroyed water infrastructure and closed roads," added David, echoing the poisonous impacts of the civil war that puts even more of a stranglehold on those Somalis already dealing with climate issues. "People

are suffering so much that there is holistic fatigue to aid workers. The long conflict has nearly destroyed Somalia's educational system. Groups like Al-Shabaab make the situation so horrible."

Many water systems were lost to the bombing during the civil war, with the UN's attempts to piece together the shattered infrastructure proving fruitless. "After 30 years of civil war, the impact of climate change is amplified and it exacerbates the conflict," said Christophe Hodder; the United Nations Climate Advisor to Somalia.


Whilst \$2.2 billion is spent every year on the humanitarian response to the crisis, only 2% of that is on environmental restoration - despite the fact that the environmental dilapidation has forced many into the IDP camps. Christophe added: "When the land is degraded so much, because of both climate and human degradation, it means that people can't go back."

"We need to push back this tide of climate change by restoring the ecosystems," he said, "that will then contribute to the reduction of food security and water security."



"You see a child and they are just bones wrapped in skin."



CONTINUE ON NEXT PAGE 

3D printing fish? we don't get it either



Women in the IDP camp speaking with a Finn Church representative about emergency aid.



Harraw with six of his 14 children.



Faadumo Addow Ibrahim collecting emergency supplies of water for her family.



Camp leader Harraw Ali Borrow helping IDPs collect their emergency water.



Faadumo Nour Hussein sitting at her humble market stall.

On top of drought issues leaving land prosperity in tatters, climate change has caused more intense flash flooding in Somalia's coastal settlements - nature's cruel irony as it is water itself that adds to the climate-punishment

carousel. This has battered infrastructure even further, with sea water wiping away whole villages whose tenuous structures overlook the abyss of the Indian Ocean; where the vortex of El Niño puppeteers the climate strings.

However, whilst epic and almost unfathomable climate processes are at play, their impacts feel personal and piercing. "The problem is we spend all our resources on saving people's lives now," Christophe remarked; a poignant statement from a man who has seen so much funding funnel through the UN to Somalia. "We need to do that, but we also need to spend time to restore the ecosystems otherwise we're caught in this vicious cycle of short-term approaches."

Back in Baidoa, Faadumo Nour Hussein walks to her fruit and vegetable kiosk at the market; her cobalt blue hijab standing out amongst the melancholy setting. She arrived at the Takawal camp back in 2016 along with her seven children and, after a monotonous succession of minor jobs, has managed to start her grocery business after the former owner had to abandon the market stall. Using her hard-earned income and emergency cash from aid organisations, she has managed to send four of her children to school; a rarity with Somalia having one of the world's most significant out-of-school

populations. She's considered as one of the lucky ones, if you consider scraping a survival and keeping your children nourished as "lucky".

"Life at the camp is miserable," Faadumo said, "we used to live in a town, where we worked as farmers, but here we are refugees living in slums."

Her husband came to the camp with her, though he takes cattle from Kenya to the Somali capital of Mogadishu for work and is often away. Whilst very real, Faadumo's story is an allegory for the countless women who embody the survival of Somalia's climate refugees. The Somali women are bearing the brunt of the crises in the country; often being the sole foundation supporting households of ten people on average. They're the ones who have to work in the camps, or resort to begging if they can't get work. They're the ones protecting their young daughters from sinister dangers in a lawless habitat. They're the ones who have to look their malnourished children in their lifeless eyes.

"We survive by doing casual labour. I work hard for our survival."

Baidoa, however, is merely a microcosm of the climate refugee crisis in Somalia. Amidst the gunfire and death-rattles of livestock you hear the same cries right across the fractured nation; from Mogadishu to Somaliland to Puntland to Lower Shabelle to Gedo. They cry for rain to fall, and for more countries to send aid, and for the Somalians who have been claimed by the nation's climate battle.

These are the despairing cries of climate change's true victims, and it is imperative that they are heard. ©

Harry Robinson
Senior Features Writer



EYES ON THE AMAZON

The Amazon Rainforest is home to almost three million indigenous peoples and is an epicentre for biodiversity and natural life. As the world's largest tropical rainforest, it is critical for global climate stability, however continued degradation from human action is putting this beautiful ecosystem at risk. **Leila Salazar-Lopez**, the Executive Director of **Amazon Watch** who are dedicated to protecting the rainforest, reveals to us in an exclusive interview the real threats to the indigenous communities and what they are doing to protect their homes.

Q: Tell me a little bit about what Amazon Watch do and what your mission is.

A: Our mission is to protect and defend our Mother Earth and the Amazon rainforest. Indigenous peoples of the Amazon say it is the heart of the earth. It is where life is born. And they are completely right. We work in solidarity with indigenous peoples because we believe that they are the best protectors, the best stewards, the best guardians of the forest. They've been protecting their lands for thousands of years - and it is those forests that are the best protected. We defend the defenders and we campaign to put pressure on the governments, on the corporations and the financial backers who are who are financing the fossil fuel extraction or any other threat to the Amazon.

Q: When did you first visit the Amazon and meet indigenous peoples?

A: I've always had a connection with nature, whether it's the ocean or the mountains or the desert where we would visit family in Mexico. I went to Ecuador in 1995 and I had an opportunity to volunteer at a biological station. I fell in love with the forest and I met indigenous stewards who taught me about tropical ecology and ethno botany and just developed a deep appreciation for the diversity of botanical life.

Q: Was there a certain event that first inspired you to engage in climate activism?

A: I saw an oil spill that had thousands of gallons of oil just spilling out into the river. It was a trans Ecuadorian pipeline built by Texaco. It sparked this fire in me to do something about this. They entered indigenous people's territories without their consent. They drilled and dumped and caused one of the biggest environmental disasters on our planet. This is environmental racism - they didn't even care about the people that were living there. I basically committed myself to environmental justice at that time.

Q: What risk does climate change pose to the forests?

A: We're facing climate crisis and instability, a biodiversity crisis, and the sixth mass extinction event caused by humans. Within the last two years, we've seen the forest reach 20% deforestation which is when the forest begins to unravel and not function anymore. Indigenous peoples have been warning of this as long as the science itself. We're beyond the tipping point when we look at the what is truly happening to the ecosystem because of massive degradation caused by the fires, deforestation, land grabbing, industrial extraction, logging, mining, and oil drilling. What's left? What's left is indigenous peoples lands. We need to protect everything that's left.

Q: How has it affected the people living in the Amazon first hand?

A: They're living it. They're seeing floods. They're seeing their communities underwater - they're seeing their *people* underwater. Right at the time when the global pandemic began, there was a flood in Sarayaku on the Bobonaza river. The elders said that in their lifetime, they had never seen so much flooding, so much rain. It didn't use to be like that.

Q: What changes have you noticed yourself when working in the rainforests?

A: When I first started going to the Amazon, there was a dry season and there was a wet season - now it's completely unpredictable. It just rains all the time and then it'll be blazing hot. This is what it has brought to the Amazon, either drought or flooding.

Q: What is the relationship between indigenous peoples and the forest?

A: Indigenous peoples are connected to the land and connected to all life, all beings. Because of that intrinsic connection, that is what influences life, that is what influences spirituality, that is

what influences culture. They've taught me that we must walk lightly on the earth and we must respect Mother Earth. For centuries they have lived in balance with the land, with the rivers, with the trees. The trees are not just a to be cut down to be to make a house or to sell. The rivers are not just there to be damned. They're life.

Q: What are indigenous peoples doing to protect their land?

A: It's not an exaggeration that indigenous peoples have the solutions to not only protect biodiversity and their lands, but also in turn this helps protect our climate system that affects all of us. We look to indigenous peoples for their solutions, their guidance and how we can bring our planet and our people back into balance.

Q: Is there a specific example of a community working with nature to protect the forest?

A: The Sarayaku are a community in the Ecuadorian Amazon that protect 135,000 hectares of what they call the 'living forest'. Sarayaku is an example of how you can live in balance with nature without exploiting it. They have an area for their community buildings and places of ceremony. Then they have another area where they can go and fish and hunt and recreate. The majority of the of the land is a 'living forest' that is off limits. That is where only the most spiritual people go to be in contact with the most spiritual beings to bring back the messages from the forest to lead the people. This is how we should be protecting the forests. It is an example of living within our means.

Q: What is the role of individual indigenous climate activists within the fight for their land?

A: Recently I was with Mundurucu leaders from Brazil and a powerful indigenous woman leader named Alessandra Korap Mundurucu. She is a defender of her river and her ancestral territory. Alessandra



An indigenous Sarayaku woman in the Ecuadorian Amazon.

was awarded the Goldman Environmental Prize this year. When we were together in Washington, D.C., she said, *'We don't just see the trees as trees for for lumber or to sell. They're our relatives. They're people just like you and I. They all have spirits. They're all beings. And when they are cut down, we can hear them crying'*. It really spoke to me because this exactly how indigenous peoples are connected to the forests and the land.

Q: How are indigenous peoples across the Amazon unifying against climate change?

A: What gives me hope at this time is the leadership of the women and the youth. These women, such as *Mujeres Amazónicas*, are ancestral warriors of the Amazon and all of the biomes of Brazil. They have come together at really, really trying times to resist extraction and violence on their lands - both territorial and to their own bodies. Indigenous women have now mobilized together, have come together in these collectives and they've inspired young women and the youth to also come together to stop

further destruction of communities, rivers, and indigenous lands.

Q: What does the future look like in the hands of indigenous youth activists?

A: They're the next generation who are coming from the frontlines. The young people of this generation have every reason to have climate anxiety. Those of us who have been here doing this work for longer, it is our responsibility to support and uplift their voices and also guide them. We need to show them the way for the long haul because we're not going to stop Amazon destruction overnight.

Q: How important is acknowledging climate justice when tackling the issue in the Amazon?

A: We're all affected by the climate crisis, but there are definitely some that are disproportionately affected and we want to be supporting the proposals from the frontlines. We need to start distributing the funds directly to the indigenous people - the people who have not

historically caused the damage but are facing the crisis the hardest.

Q: How does destruction in the Amazon affect the global climate?

A: All the Western states every summer have massive fires because of drought and because we have not had the rainfall and the snowpack that we've needed. Where does that come from? From the atmospheric rivers that come from the Amazon. We're going to see increased climactic events. So everyone is impacted by climate change, whether they want to believe it's human caused or not.

Q: What should be done to support indigenous territorial rights and protect their land?

A: If we really believe that indigenous peoples are the best protectors of their own land we must give them their land back. We need to recognize their land and their right to exist on their land to protect it.

Words: Nadia Lincoln

THE LITTLE FARM IN DAK SOM

HOW INDIGENOUS
AGRICULTURE IS
SAVING AN
ECOSYSTEM

The ever-tightening grasp of the climate crisis sometimes feels paralyzing. Piles of negative news cast an overwhelming shadow that can leave us lost in the dark, hopeless as to what we can do to make an individual difference. This is not the case for Pham Van Hung and Tran Thi My Thuong, a couple from Vietnam who sought to take personal environmental agency into their own hands.

Far removed from the smog of Hanoi, tucked deep in the seemingly eternal landscape of Ta Dung National Park, lies Freedom Green Village, Hung and Thuong's passion project. A farm turned homestay that focuses on living in harmony with nature rather than forcing the environment to adhere to modern farming practices.

Early each morning, as the sun
dawns across

the islands scattered through Ta Dung Lake, founder Hung, his wife, Thuong, and the other enthusiastic partners at Freedom Green Village set to work. Harnessing what is naturally available to them, they produce pepper, coffee, cashews and an array of seasonal, indigenous fruits.

"The first year of farming was difficult for us; we had to leave a lot behind to start a new life. You know, going upstream isn't easy. We had thoughts of giving up. But our love for this land has maintained us until now," says Thuong.

"When deciding to come and live here, my husband and I were determined to create a safe space for our children where they can grow up living in harmony with nature. Where we can accompany them in learning together. Living a simple life with little desire, sustaining just our basic needs. Spending time gathered in the garden, making our own food for the

whole family. And above all, in the rainy season, we plant trees."

Dynamic afforestation is a significant point of focus for the farm. Planting a wide variety of indigenous trees through their land encourages the development of versatile and sustainable forest.

"Planting perennial trees is the main thing," says Thuong. "We choose to cultivate forest gardens. We have developed a multi-layered ecosystem. It is harmonious and sustainable. Many farms in Vietnam rely on monoculture, squeezing the land in a way that benefits them financially, but in turn, destroys our ecosystem."

Monocropping is a damaging agricultural system. Year after year, one type of plant is grown in the same location, eroding the earth's ability to retain soil and water. Farmers become utterly dependent on the production of a single crop, leaving them stranded in the face of a shifting environment. The practice makes the land more vulnerable to the havoc

"Our love for this land has maintained us until now."

of climate change.

"We prioritise the planting and conserving indigenous seedlings," says Thuong. "Choosing to eat seasonal foods instead of eating according to preferences. Such a life is balanced and respectful of nature."

Plant diversity at Freedom Green Village provides them with a robust ecosystem. If one crop fails, another is sure to flourish. An important strategy to combat Vietnam's environmental adversity.

Research by the United States Agency for International Development found that Vietnam is one of the world's top five most vulnerable countries to climate change. Unprecedented temperature highs of over 44 degrees were reported this summer, aggravating adverse weather. Droughts, landslides, typhoons and floods now threaten a significant proportion of Vietnam's people and economic assets.

"I feel the most obvious change each year is the temperature increase," says Thuong. "The weather no longer follows common law. For example, we don't usually get rain this season. But this year it is raining cats and dogs. Thunderstorms and whirlwinds are causing damage, uprooting trees, breaking branches in the garden and tearing the roofs off cabins. It's intense. But, the more we do, the more confident we are in our chosen path. We are

not alone; in many places, people like us quietly contribute to afforestation. Planting trees to hold the water, making sure we have shade and shelter for another day."

After a year of working the land, Freedom Green Village was opened to tourists. The farm stay offers an ecotourism experience far beyond the ordinary. A handful of bare wooden cabins are perched atop rolling hills, staring out into the lush expanse of Ta Dung Lake. However, this is not a place of rest. You will be expected to fully submerge yourself in the lifestyle the farm was built to accommodate.

"Coming to Freedom Green Village, people should not expect the facilities of other modern resorts," says Thuong. "This place has a minimalist lifestyle, relying on the roof of mother nature, free from the noise of crowds. You will garden with us, harvest vegetables to bring home and then use the wood stove for cooking. There will be meals together like a family. Talking together, drinking tea and singing around the fire."

The concept of ecotourism started developing in Vietnam in the 2000s. The word is printed all over tour pamphlets and proudly displayed in travel agency windows. But in reality, very few of these attractions align with the tenets of ecotourism. The experience at Freedom Green Village offers a lot of what is

lacking in other 'ecotourism' sites across the country.

Dr Long Hong Pham, Dean of the Faculty of Tourism Studies at Vietnam National University in Hanoi, said: "The four pillars of ecotourism are nature, local identity, benefits for local people and education. Many places marketing themselves as ecotourism sites are, in fact, mass tourism. When discussing ecotourism, we should think of small, beautiful underrepresented places."

Hung and Thuong hope not just to educate visitors but also to inspire them. The scale of the climate crisis is daunting, but it is essential to remember that we have the power to change our own habits. It doesn't have to be as radical as rejecting modernity and escaping to your nearest forest; smaller actions can make a difference.

Thuong said: "We never offer to teach a fish to swim. We simply want to share our lifestyle, making people more aware. I want to tell everyone that we cannot rely on one man's power to save the world or force people to support and protect nature. But we can choose how we live, minimising our needs and desires. Don't expect big things if you can't do the little things every day." 🌱

Charlie Martin
Feature Writer



Pham Van Hung
tending to his crops



Pham Van Hung,
the dynamic farmer.

PINK DOLPHINS IN PERIL

With their playful personalities, captivating smiles, and a hue that seems straight out of a fairytale, Chinese pink dolphins have enchanted people around the world. But beneath their delightful exterior lies the harsh reality that these beloved marine mammals are now teetering on the brink of extinction.

In the vast, shimmering waters surrounding Hong Kong, there exists a marine mammal that has captured the hearts of people around the world – the Chinese pink dolphin. This species holds a special place in Hong Kong culture, having been designated the Handover mascot of the city during the transfer of sovereignty from Britain to China in 1997.

These charismatic marine mammals face an array of challenges, with climate change being one of the most pressing. Rising sea temperatures and pollution are placing immense pressure on their already fragile existence.

"In our recent dolphin sighting tours, the opportunity to see baby dolphins has seen a substantial tenfold decrease compared to tours conducted just a few years ago," said Viena Mak, the vice-chairman of Hong Kong Dolphin Conservation Society.

Meet the Pink Dolphins

The Chinese pink dolphin, also known as the Indo-Pacific humpback dolphin, calls the coastal waters its home, particularly the Pearl River Estuary and western waters of Hong Kong.

Pink dolphins are medium-sized cetaceans, reaching lengths of up to 2.5 metres and weighing around 150 kilograms. Their most striking feature is their pinkish coloration, which is most prominent in their abdomen and back.

Their captivating bubblegum pink appearance is from blood vessels located close to the skin's surface and is more vivid in mature dolphins – the young dolphins display a grey hue at birth which gradually fades as they mature.

However, a dramatic shift has occurred, placing the dolphins in the

midst of a conservation crisis.

Recent data from the Agricultural, Fisheries, and Conservation Department (AFCD) reveals a staggering decline in the abundance of Chinese white dolphins in Hong Kong waters. In just 18 years, their population has plummeted from 188 dolphins in 2003 to a mere 40 dolphins remaining in 2021.

The pink dolphins are also categorised as 'a vulnerable species' by the International Union for Conservation of Nature as being threatened with extinction unless the circumstances that are threatening its survival and reproduction improve.

Viena said: "If their threat is not eliminated within two or three generations they are about to move into the next category, from vulnerable to endangered."

The Threats to Pink Dolphins

The increase in ocean temperatures is a major consequence of climate change. This warming trend presents a significant challenge for pink dolphins, as it directly affects the delicate ecosystems they depend on for survival.

Viena said: "The rise in sea temperatures creates favourable conditions for the development of skin diseases in cetaceans.

"When a single individual is infected, these diseases can rapidly spread throughout the entire colony, it can cause a significant threat to their survival."

Rising sea temperatures can lead to the migration or depletion of fish populations, affecting the dolphins' primary food source.

Lindsay Porter, a marine biologist and senior research scientist at research organisation SEAMAR, said: "If the water temperature gets higher or lower than it normally is, it changes where the fish go.

"Dolphins basically go where the fish and feed is, so that would be one major impact to the dolphins."

Pink dolphins also face hazards from noise pollution caused by human activities. Lindsay said: "The noise from shipping disturbs every aspect of the dolphin's life."

Unlike other mammals, pink dolphins communicate through

sounds and echolocation. They rely on a range of buzzers, whistles, and chirps to communicate environment.

They emit sounds and interpret the reflections to locate fish and feed. However, the noise generated by engines, ship traffic, and ongoing construction activities interferes with their ability to hear and communicate effectively.

"Dolphins are exposed to a

"If their threat is not eliminated within two or three generations they are about to move from vulnerable to endangered."

constant rumbling noise created by engines, ship traffic, and ongoing construction activities, that's what happens with dolphins underwater,

"Without the ability to hear, dolphins face challenges in finding food and engaging in social interactions, as hearing plays a crucial role in their survival and communication." Lindsay added.

Conservation Efforts

Despite the challenges that the dolphins face, steps have been taken to protect them – including plans to create a marine sanctuary.

The AFCD has designated the habitat of dolphins in Hong Kong's western waters as a marine protected area.

This designation places restrictions

on fishing and other activities within the core habitat, providing a safer environment for pink dolphins.

However, dolphin conservation organisations express concerns that the government's efforts to protect pink dolphins are insufficient.

Viena said: "The protected areas for dolphins are little, fragmented and established too late, some of them used as a compensation measure of construction work for dolphins, but they are not effective,"

The ongoing marine

construction works in North Lantau have been causing negative impacts on habitat protection.

"Dolphins are mobile, the protected areas cover too little of dolphins' habitat and it allows other important dolphin habitats to be destroyed or disturbed by construction work and affect the usage of dolphins in protected areas," Viena added.

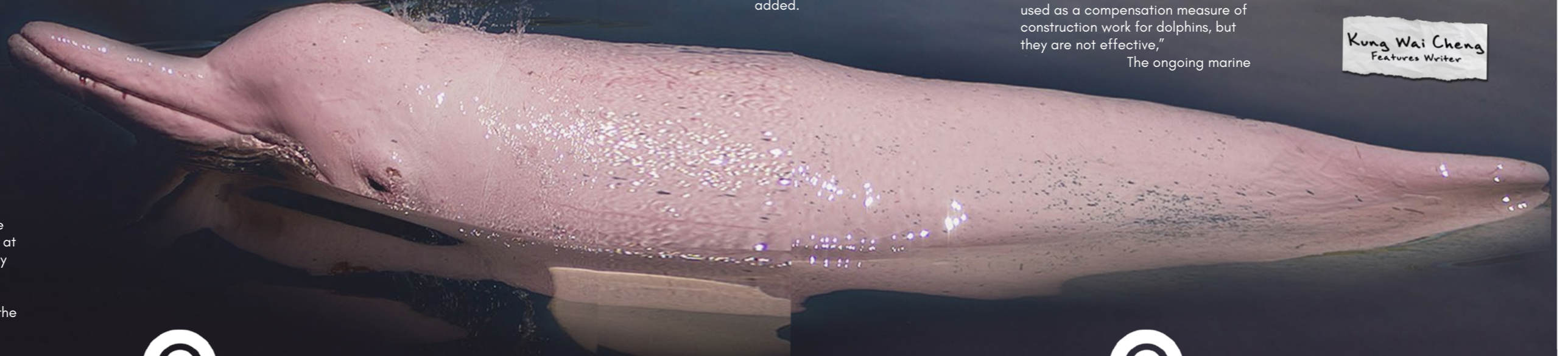
Over the past two decades, there has been a concerning decline in the encounter rate of pink dolphins, with a staggering 80% decrease.

The dwindling encounter rate serves as a stark reminder of the urgent need for conservation efforts to protect and restore the habitats that these dolphins rely on for their survival.

A comprehensive and effective approach, backed by stronger protective legislation and greater public awareness, is necessary to safeguard the dolphins and their habitat.

Lindsay says, "I am worried that future generations might miss out on the chance to see the pink dolphins, and what we have to just be careful that we don't change the environment so dramatically." ©

Kung Wai Cheng
Features Writer



OUR TRIBAL WHALE FAMILY

Orcas are relatives for the Native American people of Lummi Nation, Washington, USA - both fishing for the same salmon in the waters of the Salish Sea. However, their cultures are threatened by climate-starved salmon and harmful constructions - as **Sradzha Sabu** found out.

Whistling out in the high-pitched clicks of her family's unique dialect, Ocean Sun swims with her pod of 32 killer whales through the deep blue waters of Lummi Nation off the coast of Washington state, USA. At more than 90 years old, she is the oldest member of the endangered Southern Resident killer whales, a distinct community of just 74 remaining orcas known to frequent waters off the coast of North America, ranging from Monterey Bay in California all the way up to Alaska sometimes, and a matriarch, head of her pod.

She is unaware that watching her happily from the prow of a fishing boat, was another matriarch - Tah Mahs Ellie Kinley. An indigenous Lummi Tribal member, fisherman and President of the Sacred Sea Conservancy - an organisation dedicated to the freeing

of an orca believed to be Ocean Sun's daughter, stolen from her on August 8th, 1970 to live in the smallest orca tank in the world and perform for more than 50 years for Miami aquarium. Tokitae or 'Sk'ali Ch'elh-tenaut' in Xwelmi Chosen, the Lummi language. Ellie says, "To just know that she was right there by me, that day to me was just as magical as any day could be. I'm blessed to be in the same waters with them."

The Lummi people, the third largest Native American tribe in Washington state, with almost 6000 members, live in a self-governing reservation on Washington's North-Western coast on Puget Island, within which their ancestral rights to hunt and fish are protected. For them, orca are family - fellow fishers who also derive sustenance from salmon.

Ellie says, "It's a perfect triangle between us, salmon and qwe 'lhol mechen - which is our word for the

people that live under the waves. They're just an extension of our family, and they put on what we refer to as their regalia (cetacean), which allows them to live under the water. We literally do consider them family."

Orcas or killer whales are the apex predators of the world's waters, found in every ocean worldwide and the only mammals that can prey on even a blue whale when working in coordination. They are highly intelligent and social, known to have uniquely identifiable dialects for each pod, and distinct cultures, traditions and eating habits. "Southern residents do these greeting ceremonies that are unique to their population - where different pods line up facing each other. Killer whales also live with their moms their whole life," says Lynne Barre, recovery coordinator for the Southern Resident orcas for the US National Ocean and Atmospheric Administration.

Salmon fishing is the historical

livelihood at the heart of Lummi tradition for millenia. Ellie says, "Salmon are extremely important to us. There hasn't been a generation in my family that haven't been fishermen. We simply switched from subsistence, to commercial fishermen. My great grandfather owned a purse-seine boat, my grandfather, my father, and then my husband." Ellie also fishes commercially every season, and so does her two sons, and now, little grandson as well.

"We're always out there with them, when we're fishing in the summer, because we're both fishing for the same salmon."

But climate change threatened the very base of their societies - the salmon. The season would usually begin as the batches of large

bringing some live Chinook out to their waters, with our chief and saying a prayer, then having a ceremony to let them know, we're aware that they're starving, and we're trying to make a difference. I think they could hear him." They also produced more salmon. Julie Trimmingham, secretary of Sacred Sea Conservancy says, "They would spend a lot of their time playing, and just socializing and doing what people do. Now they're just like, working these minimum wage jobs all day just trying to find food and survive."

The salmon have been affected in other ways as well. Ellie says, "Over the last 60 years, the size of this

"So I'm sorry, what are the chances that my great grandchildren are gonna get to do what I do. So that's why I got off the deck of the boat. And I started to work at the sovereignty treaty protection office. I'm more

salmon, the Chinook, return in the summer from a four year run in the Pacific ocean, going out as far as Russia and Japan. Back in 2013, an extreme El Nino year created a hundreds of kilometres wide marine heatwave in the Pacific, that prevented the Chinook's usual food from growing.

Ellie says, "The salmon starved for four years - you think it's gonna be a good year, we're supposed to have a lot of fish back and all of a sudden, nothing. Or when they come back, they're extremely skinny." According to the NOAA fisheries report, Chinook salmon are one of the salmon stocks most vulnerable to climate change, dying from unusually warm water and changing temperatures.

Their endangered family members were also starving, developing what they called 'peanut heads' or indentations from their natural whale blubber reducing in volume. For the first time the Lummi held ceremonial feedings to save the orcas. Ellie says, "They prefer the big king salmon. So, we started


king salmon has probably gone down from say a 70 pound fish to right now is 20 pounds."

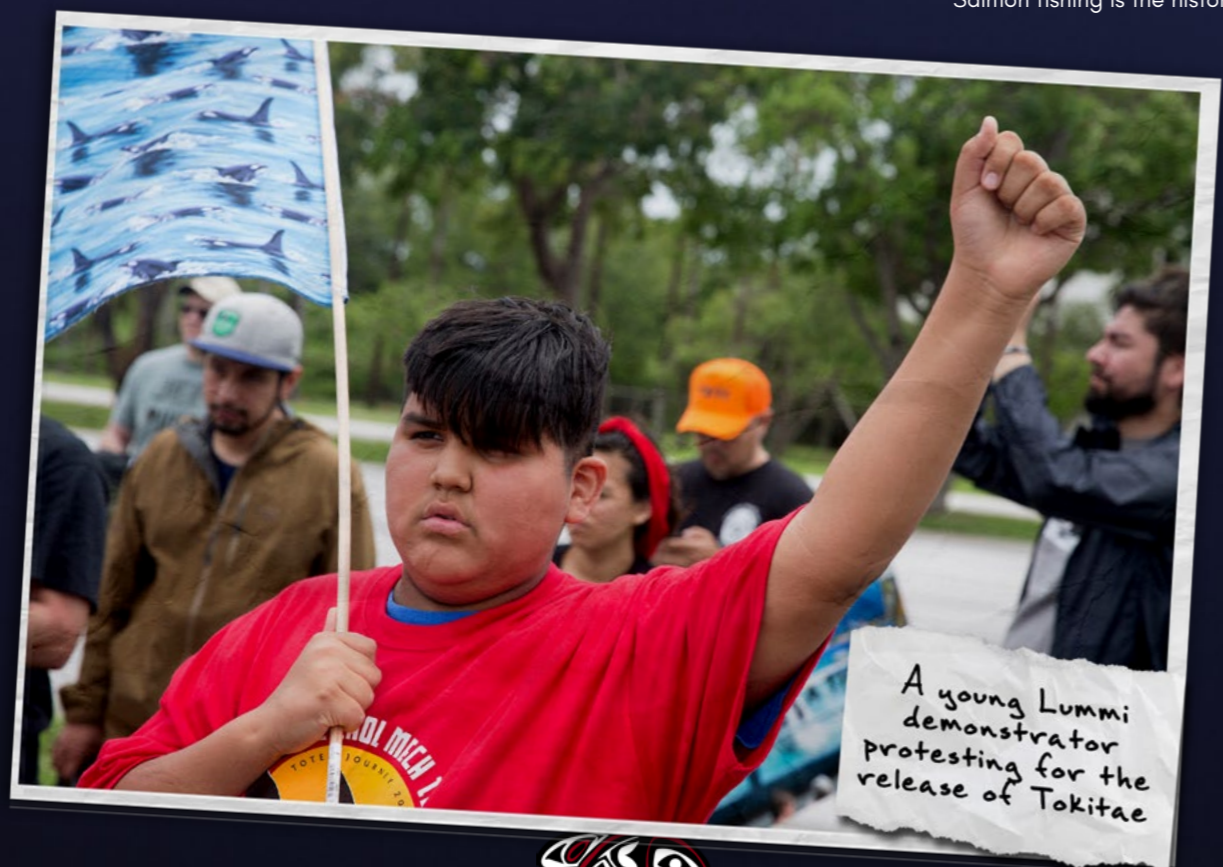
"Other potential climate risks to orcas are exposure to new diseases if there are shifts in other species distributions based on climate or higher risk from harmful algal blooms," says Lynne. Climate change is merely another danger to the innumerable ones facing the Southern Residents today, who find their home territories filled with ships in the busy docks between Washington State and the US, as well as numerous toxins in the water from pesticides, and industrial chemicals.

Ellie began commercially fishing at the age of 23, together with her father. She says, "When I was 23, I probably fished for 45 days. This year, I am going to get half a day.

comfortable just fishing. That's all I wanted to. It was always enough for me. But all of a sudden, I realised I've got to do my part to protect just so that my grandkids can stay whole and know the life that I know."

She's been working to not only protect Lummi culture, but also protect their lands, ancestral sites and undersea families from the harms from unsustainable development.

Just last two months ago, a decades long fight to release Tokitae succeeded - and she is set to return to the waters of the Salish Sea after 50 years. Ellie says, "There's still a lot of work to do. That will be quite a celebration with our relatives under the water when we get her home." 





HORRIFYING

MORE HORRIFYING

EXPLOITING THE ECOSYSTEM ALSO THREATENS HUMAN LIVES.



FOR A LIVING PLANET: WWF.ORG

KILLAMARI

THE OCTOPUS SLAUGHTERHOUSE

Octopuses around the world have recently won the hearts of many due to their curious and sentient nature. The Oscar winning documentary, *My Octopus Teacher* revealed how the blue blooded animal with 3 hearts has captivated the world with its high level of intelligence, strength and facial recognition abilities.

Yet, their intelligent fate may lead them to an icy cruel death. Spain plans to launch the world's first captive octopus farms in order to keep up with rising global demand for the delicate species.

Wild octopus is consumed all over the world as an ingredient vital to many cuisines. In the UK alone, approximately 1,300 tonnes of octopus are consumed each year.

The proposed farms created by Spanish seafood company Nueva Pescanova, based in Canary Islands, would raise over a million octopuses in tightly filled containers under constant light. The sentient creature will be placed in freezing water tanks below 0 degrees, alarming both scientists and activists.

Dr Elena Lara De La Cas, a lead researcher at Compassion for World Farming says, "We cannot eat octopus everyday, we need to adapt our consumption. When we intensively farm octopuses, we create an exploitative and an endangered environment for them."

Nueva Pescanova claims their revolutionary technology and research labs are able to grow and

nourish octopus for the first time in an aquaculture outside their habitat. The Pescanova Biomarine Center, led by 40 researchers, have successfully managed to breed over 5 generations of octopus in captivity, such as 'Lourdita', the world's first octopus to be born in an aquaculture environment.

Dr Le Cas adds, "Unlike fishes who are used to being in a social environment, solitary creatures are incredibly territorial and delicate because they are used to living alone. When you put them in a crowded tank, they develop stress and aggressive behaviour in order to defend their own territory and could even at times become cannibalistic."

Experimental trials to farm octopuses highlighted how 1 in 5 octopuses would not survive the entire production cycle, as a result of immense psychological and physical suffering in enclosed spaces. Currently, the invertebrates are not protected by any existing EU animal welfare laws, as octopuses have never been commercially farmed before.

Craig Foster, Filmmaker of *My Octopus Teacher* and founder of the Sea Change Project, says, "My team's work is guided by indigenous wisdom, which is to respect nature and to create a reciprocal relationship with the earth and the beings that surround us. We often swim and dive in the Great African Seaforest everyday and have had the privilege of regular interactions with octopuses. Because of this emotional attachment we have

formed towards the animals, we have no desire to eat octopus, but we acknowledge that octopuses are part of the traditional diet of many cultures around the world. For us, the concern lies in where the animals come from and how they are treated."

However the cruelty doesn't end here, carnivorous animals in aquaculture can eat up to 4 kg of fish feed in order to survive.

Dr Le Cas adds, "Using fish feed is a problem because of its unsustainable nature. Countries like South Africa rely largely on fish to feed its people. Instead of the fish being used to feed humans, they are used in bulk to create food for the octopuses held in captivity. Essentially the fish bought at a cheaper rate in developing countries are being used to feed the octopuses found in developed countries." Aquaculture was originally created to be an alternative in order to reduce the food pressure on the oceans, restore habitats and replenish wild stocks.

Mr Foster adds, "The proposed octopus farm in Spain plans to produce thousands of tons of octopuses. Factory farming of any animal can

hardly provide the animals with the kind of care they deserve. Additionally, factory farms usually have large negative environmental impacts from increasing pollutants to increasing waste.

Dr Le Cas says, "Aquaculture should be based on herbivorous species, where there is no need for animal protein in the feed. We should farm species that do ecological service, for example algae or mussels. Algae has the ability to capture carbon and

release oxygen, whilst mussels can clean the water.

We should ask aquaculture to stop relying on carnivorous species, now that we know how harmful it is. Why are we not moving in the right direction, we just keep going backwards instead."

The future of octopus farms are still unclear, however global sentiment and empathy for these sentient creatures have led to multiple petitions against aquafarming.

Earthlogue is still awaiting response from Nueva Pescanova. @

by Ayesha Parwani



"IN A CROWDED TANK THEY DEVELOP STRESS. THEY BECOME CANNIBALISTIC."

HOW CONSTANT DROUGHTS ARE AXING THE AXOLOTL

Commonly referred to as the 'walking-fish', you've probably come across these slightly goofy-looking but adorable creatures on social media, under a 'cute animal' hashtag.

The axolotl is exclusively native to Xochimilco lake and the waterways in Mexico City. There are thought to be only 700-1,200 left in the wild - this has sharply declined from an estimated figure of 6,000 axolotls per square kilometre only in 1998.

One of the reasons for their loss in population is water pollution from rapid development in Mexico City, making much of the lake uninhabitable for aquatic life.

Another risk is increasing droughts destroying their habitat - for the last four years Mexico has been in drought conditions. Only last month Mexico City's government announced that its reserves in its major Cutzamala reservoir fell below 50%, the lowest levels recorded in its history.

One of the axolotls' original breeding grounds, Lake Texaco, has already been eliminated due to drought and now only Xochimilco remains.

If nothing changes, the lake will not only be polluted, but could disappear by 2050 - with disastrous environmental consequences.

The vulnerability of the species in the wild has created efforts to breed them in captivity, partly due to their popularity as pets and partly because of their unique genetic abilities to regrow cell tissue.

Dr S. Randal Voss, a Professor of neuroscience at the University of Kentucky specialising in axolotl and salamander regenerative medicine, says, "Axolotls and probably all salamanders naturally regenerate whole limbs, their spinal cords, and even parts of their brains. Modern medicine would love to learn how they are able to do this and transfer this information to engineer regenerative responses in humans."

Not only are the unusual amphibians important to science, they also have cultural significance to ancient Mexican legend and symbolism.

"Axolotls regenerate whole limbs, their spinal cords, and even parts of their brains."

The myth surrounding the axolotl suggests that it is the Aztec god of fire and lightning, Xolotl, who disguised himself as a salamander to avoid being sacrificed.

They were considered as descendents of an important deity and treasured due to their capacity to regrow limbs.

Axolotls have been cross bred with the tiger salamander, a close relative, to bring in an albino phenotype into the population. These are the source of all axolotls in biomedical research.

Wild axolotls tend to be dark brown, whereas captive axolotls are now the pale pink colour that most associate them with.

Dr Randal Voss says, "The cross certainly did increase genetic variation and may have increased population fitness, although that is just speculation on my part."

Due to their cross-breeding, these little aquatic animals can spontaneously metamorphamise and change forms.

The once striking amphibians, with their feathery external gills and webbed feet, transform into a rare morph of an axolotl-salamander.

Unlike the salamander, axolotls are paedomorphic, meaning they stay in a juvenile state and retain their gills and other aquatic features into adulthood.

Studies suggest this odd genetic mutation causes them to lose a lot of their regenerative abilities.

Though there are more than one million axolotls in captivity, for the few hundred left in Mexico City the threat of extinction looms over them.

Despite being everywhere and nowhere all at once, little is being done to save the axolotl's ecosystem and the wild variation of this unique creature. ©

Nadia Lincoln
Senior Features Writer



Saving the world too big of a responsibility?



Make it bite size.



BEYOND MEAT™

DEFENDERS OF BORNEO

Indigenous people around the world protect over 80% of the world's biodiversity, yet they only make up to 5% of the global population. Two foster sisters Belai and Yessy share their community's 40 year journey towards reclaiming their customary land, winning the United Nations Equator award and Kalpataru prize, a symbol of indigenous strength against all odds.

Yessy, remembers her fondest memories in the Dayak Tribe of Borneo Island in Indonesia. The young agricultural farming student grew up in the Sungai Utik village surrounded by forests, clear water, her Nenek (grandmother's) old tales and weaving. "For us, the forest is like our father, the earth our mother and the river our blood," says Yessy as she recounts the words of Apai

Janggut, the spiritual leader of Sungai Utik.

Unlike neighbouring villages of the Sungai Utik community. Their forests show no signs of palm oil plantations, chainsaws, deforestation or contaminated waters. The deeply rich 9.500 HA of land is a gem for many large companies, but at a cost. For over 50 years, the people of Sungai Utik have been fighting against governments and companies to help preserve their territory of 130 years. "We are not poor when we don't have money, we are poor when we don't have land," says spiritual leader Apai Janggut.

In the late 1980s, deforestation in Borneo was one of the most intensive in the world. With loggings between 60-240 cubic metres of wood being harvested per hectare. Given their high levels of responsibility and love for their land, the Dayak community believes in a philosophy of planting two trees for every tree cut down. Yessy says, "When we cut the tree to build something, we make a prayer ritual for the forest so as to not disturb them.

In Indonesia in order to obtain land rights, the community must be legally recognised first by the Ministry of Environment and Forestry (Central government). Only after acquiring this recognition, the community can then apply for legal ownership of their customary land.

Laetania Belai Djandam (Belai), a 21-year-old Climate Reality Leader and Indigenous Environmental Activist from the Dayak Tribe of Borneo Island says: "Land rights particularly is something that a lot of indigenous communities need, if they want to continue being able to protect their forest and land, but it's a very bureaucratic process and the governments don't always side with communities because they have interests with businesses and bigger corporations.

She adds, "These communities have lived longer than governments. It's ridiculous the notion of us having to go ask the governments for land rights, when we have been managing and living on these lands for centuries."

On the journey towards reclaiming their land, the dayak community was halted in the process of being recognised as a community and therefore could not apply for any rights. Cornered with an end to every fleeting bit of hope, the community decided to take a leap of faith by applying for the Equator Prize award from the United Nations. This award is presented to outstanding Indigenous communities outstanding Indigenous peoples and local communities that have advanced innovative nature-based solutions for sustainable development.

Belai adds, "We went above and beyond to get these land rights, it's a very tedious and frustrating process, it's surreal to think what these communities face on a daily basis, simply to protect their homes. It's ironic that the existence of an indigenous community depends on whether the local government thinks they exist or not."

Yessy's mother, a teacher at the local cultural forestry

was one of the attendees from the tribe who went to New York alongside leader Apai Janggut to win the prize. Yessy says, "My mother has never travelled on a plane before, she can barely speak english, she would often video call me from there. Their trip there was a symbol of our hard work and I am so proud of my community for fighting against all the hardships."

The international award by the UN, ended the 40 year long battle, as later in 2020 the Indonesian government awarded the community the Kalpataru prize which led to a formal recognition by the government recognising both the indigenous community and their land.

Growing up Belai would often see her mother work with several climate organisations, advocating for change.

Although born in the city, Java away from her tribe, Belai believes her indigenous roots drive her to continue her values of caring for nature and bringing awareness to her culture. She aims to advocate the role of indigenous people, by highlighting their significance in the battle against climate

change. She adds, "How can we partner up with indigenous people to protect our incredible forests ecosystems and mangroves? How can we use land rights as a way to support that?"

Her advocacy efforts on both national and local levels, have granted her global recognition in climate conferences (COP25, COP26, COP27) and the UN SDG Action Zone. In the Dayak tribe, tattoos are a symbol of strength and wisdom. Belai received one before moving to the UK to pursue her further education in Biomedicine.

Belai says, "The climate crisis impact is disproportionate. It's not uniformed, we know that the global South is particularly more vulnerable than the North, when it comes to the immediate climate impact. Within that school indigenous peoples, particularly are even more vulnerable, because despite being a community that has very low carbon emissions they bear the brunt of the climate crisis because of how reliant their traditions and way of

"For us, the forest is like our father, the earth our mother and the river our blood."

Dayak Community Youth Programme



STAY SUSTAINABLE GREEN

IN PATAGONIA

To create a positive impact on society and the environment, Redefine fiduciary duty to require consideration of the interests of workers, community and the environment; and publicly report annually on overall social and environmental performance using a comprehensive, credible, independent, and transparent third party standard. We are a clothing company and our purpose is making our clients glad.

patagonia



Belai playing the Sapeh

living is to the nature around them. Both Yessy and Belai, work with the youth in the Sungai Utik community on initiatives such as a youth-centred regenerative agriculture programme, introducing the children as the guardians of the forest. The community relies on their own farming for food.

Belai says every year we host a *Gawai* to welcome the big harvest season. "It's the celebration of the year, we all dress up, play traditional music with our sapeh and perform dances. Recently due to unpredictable weather patterns and increased floods, the agricultural output has been affected drastically. Belai adds "During the harvest season this year we expected 100 kilograms of rice but ended up with only 50 kilograms that's half of the food that we were supposed to get and that affects food security, leading to issues like malnutrition, physical health, well-

being, creating ripple effects." Before using any land for farming, the community hosts a cultural ceremony and prayer to ask 'permission' from the ancestral elders to open farming lands for harvesting.

Yessy says the community is used to using traditional farming like slash and burn, however they are very selective in the land they use for preservation. She says, "Our farming practices are very spiritual, if a farmer does not seek permission for the land through prayee, 15 years later we have seen the farmers become sick or even die from farming on unlawful land."

Yessy is currently studying agriculture at her university. She understands both the benefits and drawbacks of traditional methods of farming. She hopes to balance traditional

practices with more sustainable farming methods. She adds, "We don't want to completely lose our culture, but we also need to transform it to be better for the environment and the community. We cannot lose the traditional farming, otherwise we gonna lose every other aspect of water protection, and forest protection."

The tribe sustainably lives off electricity from 6am till 6pm. Both the girls are currently in the process of registering three sungai utik youth to get into a forestry high school in hopes of getting better education for them, particularly about forest management and conservation. Belai concludes, "Protecting the forest is who we are, they call us stewards because of our deep connection with the land. If you take away forest, we lose our identity and a part of ourselves as well." 🌱



Ayesha Parwani
Senior Features Writer

a force of nature

100% pure fruit smoothies



GARNIER



JOIN THE SHAMPOO
REVOLUTION!



KEEP BRAZIL BEAUTIFUL.

DEFORESTATION IN BRAZIL IS BECOMING A SERIOUS ISSUE. NOT ONLY IS IT HARMING THE LOCAL WILDLIFE, BUT IS HAVING A WORLDWIDE AFFECT ON CLIMATE CHANGE. HELP US STOP IT ONCE AND FOR ALL.

JOIN THE CAMPAIGN : WWW.BEAUTIFULBRAZIL.COM

