

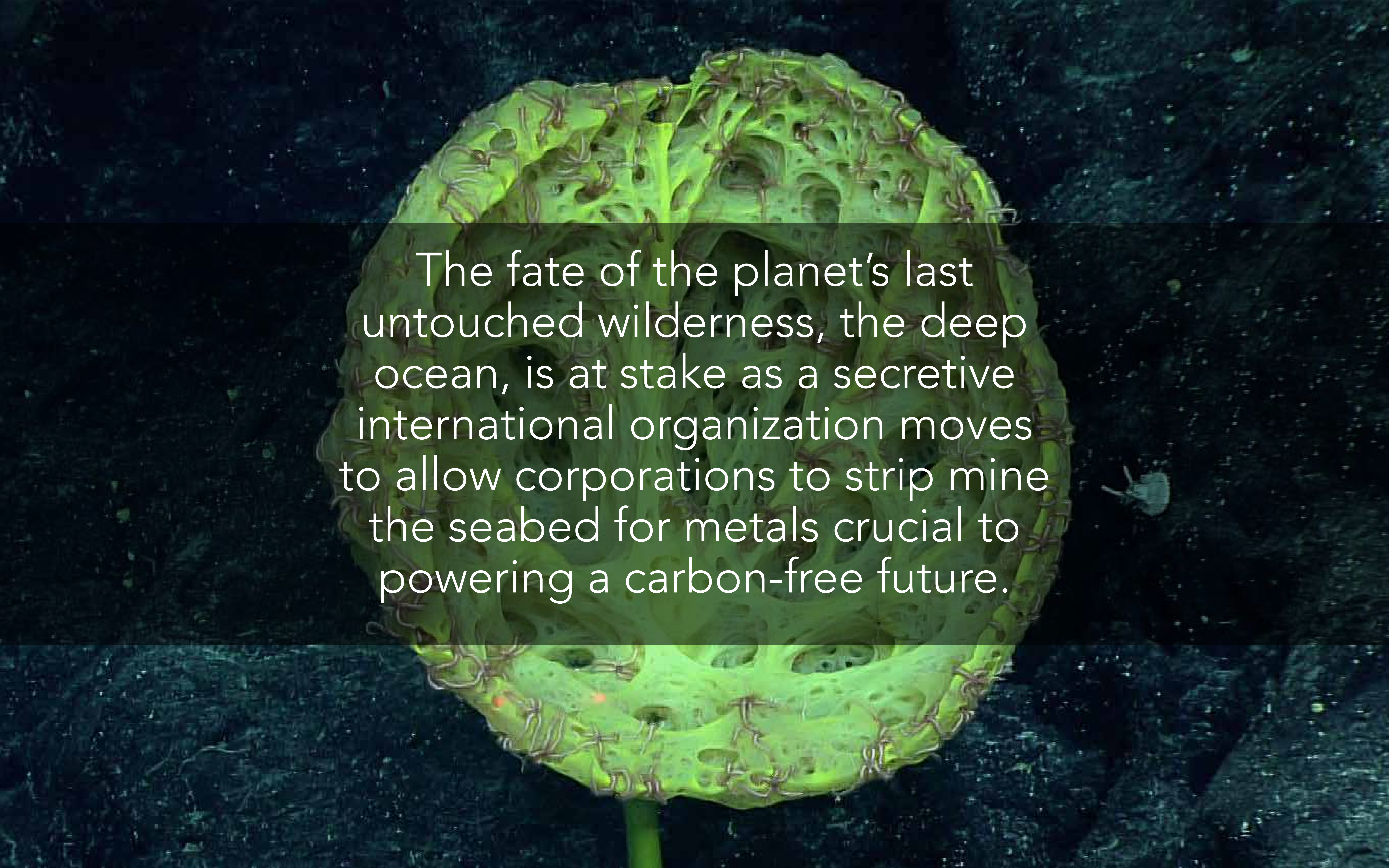


# DEEP RISING

A MATTHIEU RYTZ FILM

NARRATED BY DR. SYLVIA EARLE





The fate of the planet's last untouched wilderness, the deep ocean, is at stake as a secretive international organization moves to allow corporations to strip mine the seabed for metals crucial to powering a carbon-free future.



# THE STORY

Here's an inconvenient truth: Saving the world from global warming could mean the destruction of another, still pristine world - the deep ocean. The coming industrialization of Earth's final frontier is being justified by the need to mine the seabed for metals used to make electric car batteries, solar panels, wind turbines and other green technologies key to weaning the world from fossil fuels. But will we have to destroy the village to save it? Will this unseen wealth be monopolized by a small coterie of powerful corporations and countries? And in our collective effort to end our dependency on fossil fuels, how much are we willing to risk to achieve a so-called green energy revolution? Is there another way?

*Deep Rising* reveals what is perhaps the most important untold environmental story of our time. It is a tale of geopolitical and corporate intrigue, with stakes that could not be higher or choices more wrenching. And time is running out. Over the next few years, the fate of the deep ocean will be decided by a handful of people behind closed doors. *Deep Rising's* award-winning director in collaboration with an investigative journalist journeys to the otherworldly deep ocean and chronicles in real time the behind-the-scenes struggles over seabed mining, with access to key players and decision-makers as the drama unfolds from Kingston to London to Beijing.

The documentary will take viewers inside the companies and technologies seeking to mine the ocean floor and expose the inner workings of the international organization that is writing the rules for seabed mining, scrutinizing the case for and against that exploitation while exploring innovative solutions to both combat climate change and conserve the deep ocean. The film delves into the hidden environmental costs of a decarbonized economy as cobalt and nickel become the new oil, and China and other nations fight to secure supplies of the minerals as they invest hundreds of billions of dollars in battery and metallurgical plants.

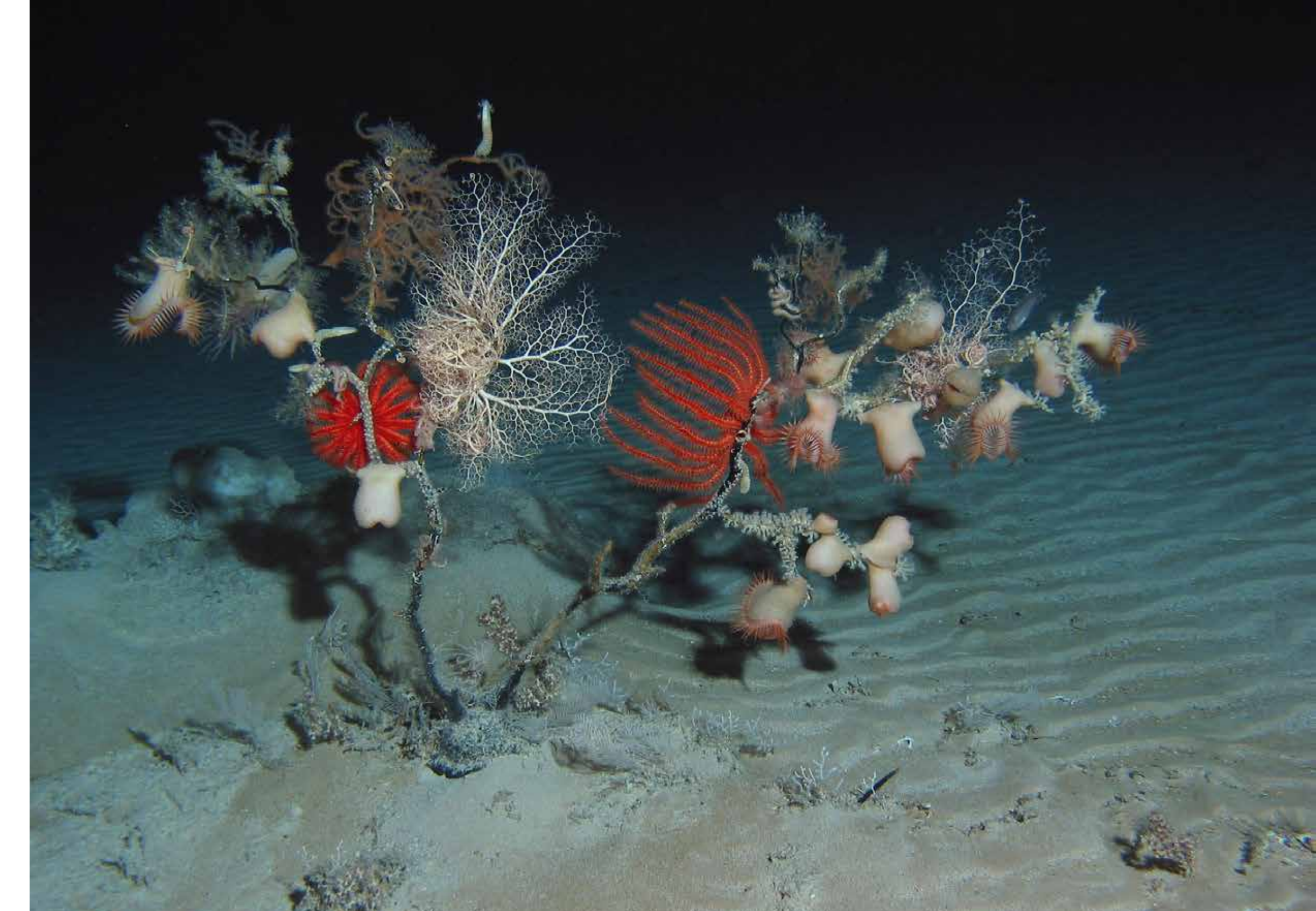


*Deep Rising* will inspire and empower audiences to make a fundamental shift in the consumer culture that drives demand for metals and the resulting environmental destruction from mining.

A social action campaign will amplify the movie's message and the *Deep Rising* team will continue to cover deep sea mining developments for major media outlets post premiere. The film is the beginning, not the end, of the story.

Once thought to be a barren abyss inhospitable to life as we know it, scientists now believe the seabed rivals the Amazon as one of the most biodiverse places on the planet, where unique and previously unknown creatures thrive in frigid darkness, surviving on infinitesimal scraps of food that slowly fall two-and-a-half miles to the ocean floor. Those extreme conditions have spawned organisms whose lifespans are measured in centuries - 4,000-year-old corals, microbes that live for tens of thousands of years in seabed sediment. Every expedition to these little explored and uncharted depths finds dozens of new species and makes startling discoveries, underscoring how little we know about the deep ocean and how much might be lost to mining before we know it even exists. Just months ago, scientists made the astonishing announcement that they had found evidence that elusive beaked whales have dived nearly three miles to areas of the seabed targeted for mining.

Scientists believe these undisturbed depths hold the key to the origins of life on Earth as well as a trove of genetic treasures that could lead to the development of new life-saving drugs and technologies. And on a rapidly warming planet, the deep ocean and the vast communities of microbes that cover the seabed also play an important, though not entirely understood, role as a thermostat that regulates the global climate.





These deep sea habitats hold another kind of treasure – what is thought to be the world’s largest deposits of gold, copper, cobalt, nickel and other metals in high demand to make electric car batteries, wind turbines and solar panels needed to end our dependence on fossil fuels.

With a dozen years left to decarbonize the global economy, battery manufacturing expansion in China and elsewhere is expected to quintuple, leading to the further destruction of rainforests and other sensitive habitats as miners search for new supplies of cobalt, nickel and copper. Those metals also power billions of smartphones and other electronic gadgets that have become indispensable to modern life.

According to international law, the deep sea and its biological and mineral wealth belong to all the world’s people and its bounty must be shared now and with future generations. The United Nations enshrined the principle that the seabed is “the common heritage of mankind” to ensure that the history of colonial and corporate exploitation of developing countries’ terrestrial mineral resources – which left a legacy of environmental and social destruction and impoverishment - does not repeat itself in the deep ocean.

But will it?

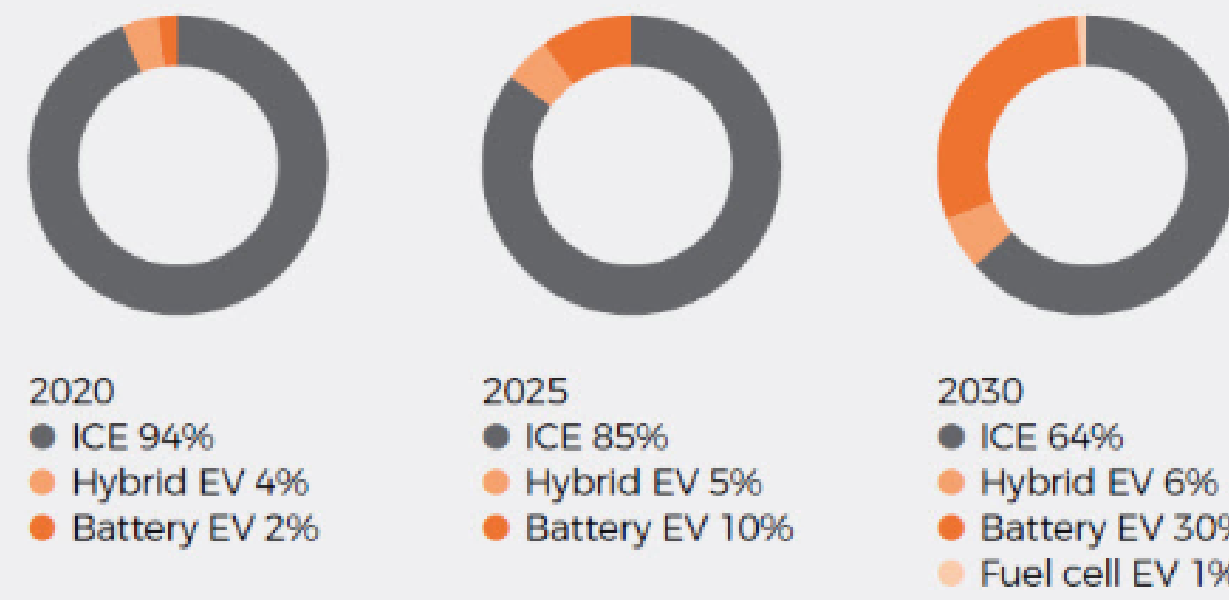
With billions of dollars potentially to be made, fears are growing that powerful nations and corporations will reap the spoils of deep sea mining, leaving a barren seabed and little else for developing nations, particularly South Pacific island states still coping with devastation from 20th century terrestrial mining and whose people depend on a healthy ocean.





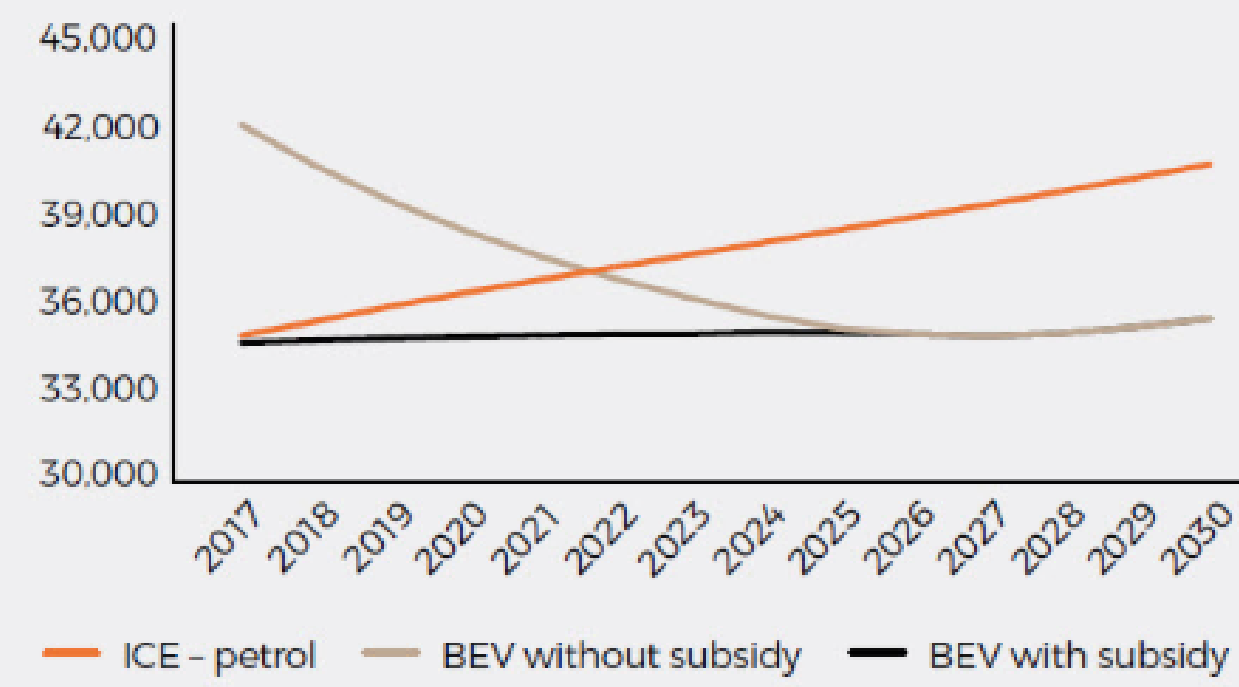
**Predicted growth in EV sales**

**30%**  
EV by 2030

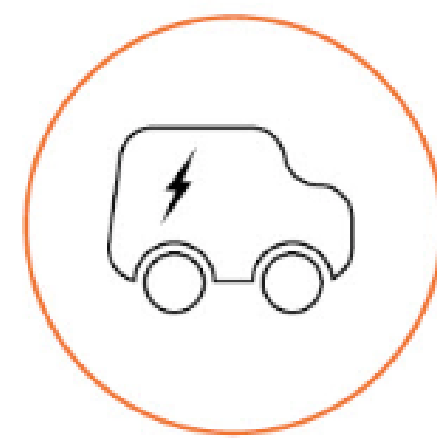


Source: CRU 'Green Scenario'

**Total cost of ownership - closing the economic gap with conventional vehicles**



Source: CRU



**>30% CAGR in battery electric vehicle sales to 2030 leads to an increase in demand for metals**

Estimated average metal use per vehicle:



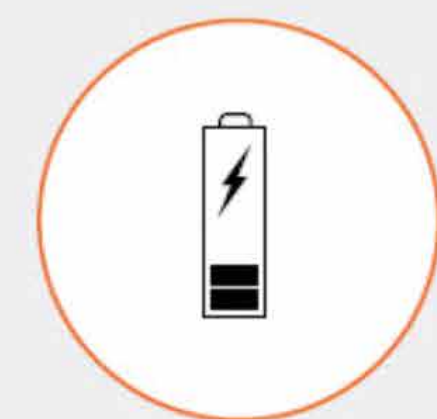
Based on estimated 53kWh global average battery pack size.

**The impact of this growth in demand for metals has implications across the value chain**



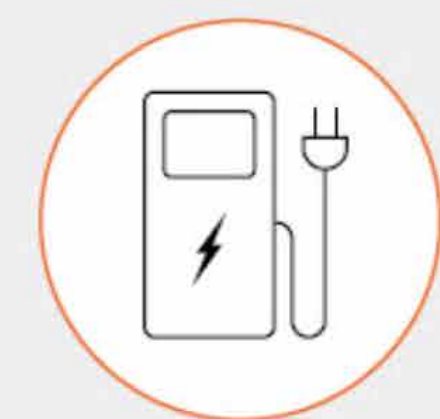
**Generation and grid infrastructure (kt)**

	2020	2025	2030
<b>Cu</b>	40	170	536



**Grid storage (kt)**

	2020	2025	2030
<b>Cu</b>	24	86	180
<b>Ni</b>	20	71	150
<b>Co</b>	7	26	55



**Charging infrastructure (kt)**

	2020	2025	2030
<b>Cu</b>	23	115	392



**Non-ICE vehicles (kt)**

	2020	2025	2030
<b>Cu</b>	304	1,068	2,972
<b>Ni</b>	66	299	985
<b>Co</b>	17	80	259

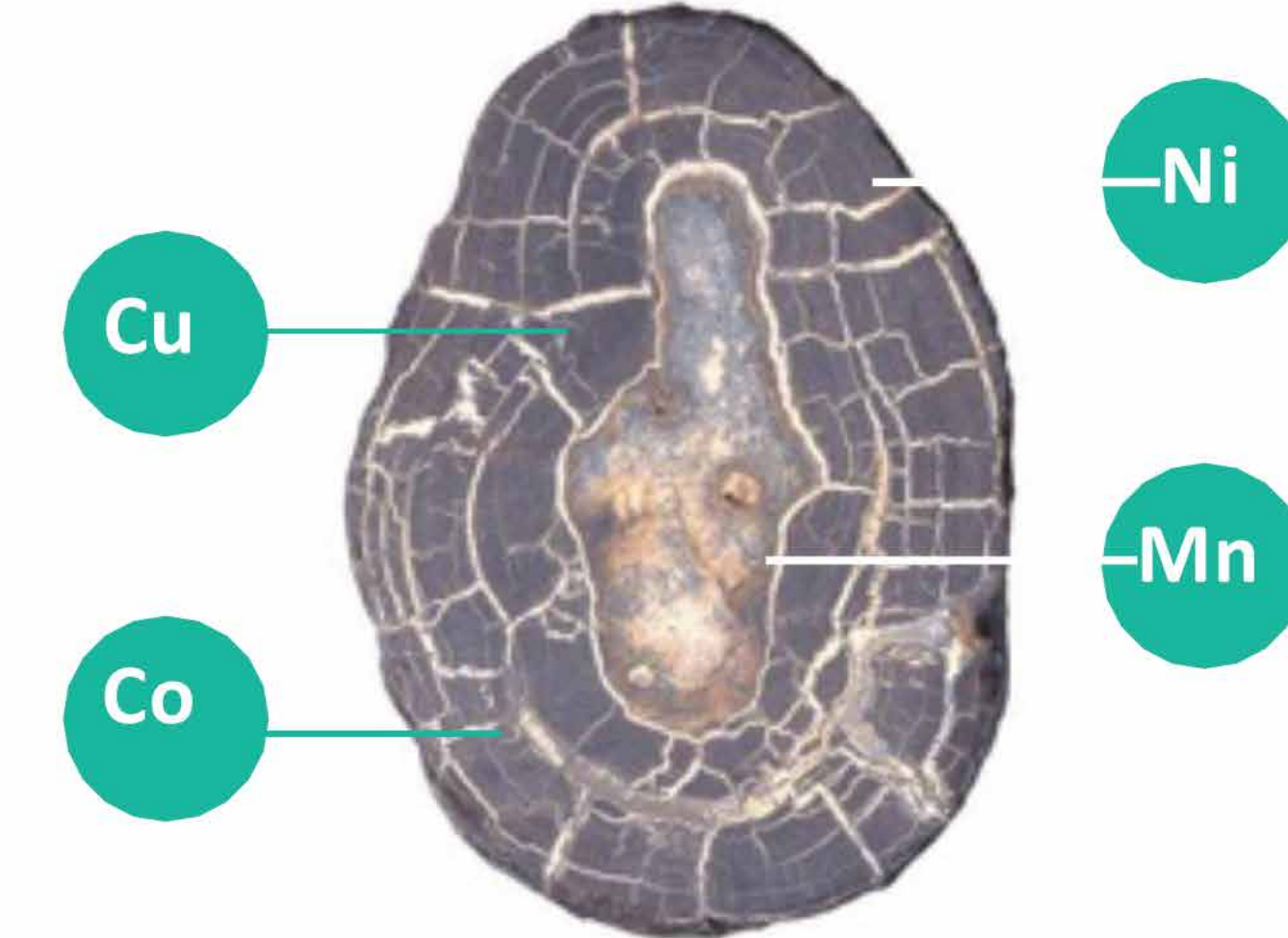
**Leading to additional metal demand by 2030**

**Copper**  
4.1 Mtpa  
18% of 2017 global supply

**Nickel**  
c.1.1 Mtpa  
55% of 2017 global supply

**Cobalt**  
314ktpa  
332% of 2017 global supply

**Seafloor Polymetallic Nodule**



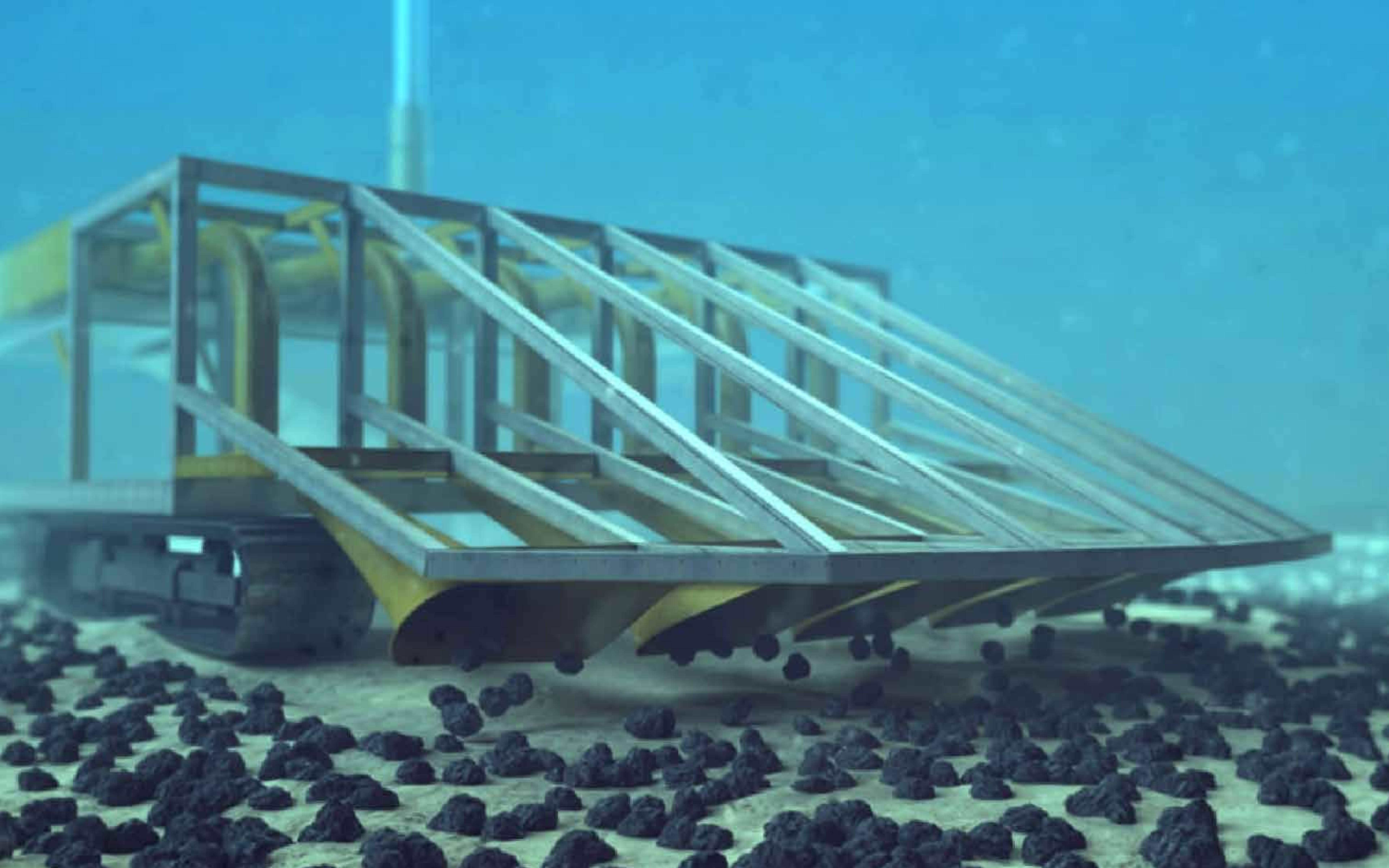


Multinational corporations like Lockheed Martin have long coveted those riches, first discovered nearly 150 years ago when explorers aboard the HMS Challenger dredged up from the depths polymetallic nodules, potato-size chunks of rock that contain manganese, cobalt, nickel and other minerals that slowly accumulated on the ocean floor over tens of millions of years.

Long out of reach, the technology to commercially mine the seabed is fast becoming a reality as skyrocketing prices for cobalt and other metals unleash a gold rush to the bottom of the ocean. That demand is expected to intensify in the coming decades as the transition to electric cars and renewable energy accelerates.

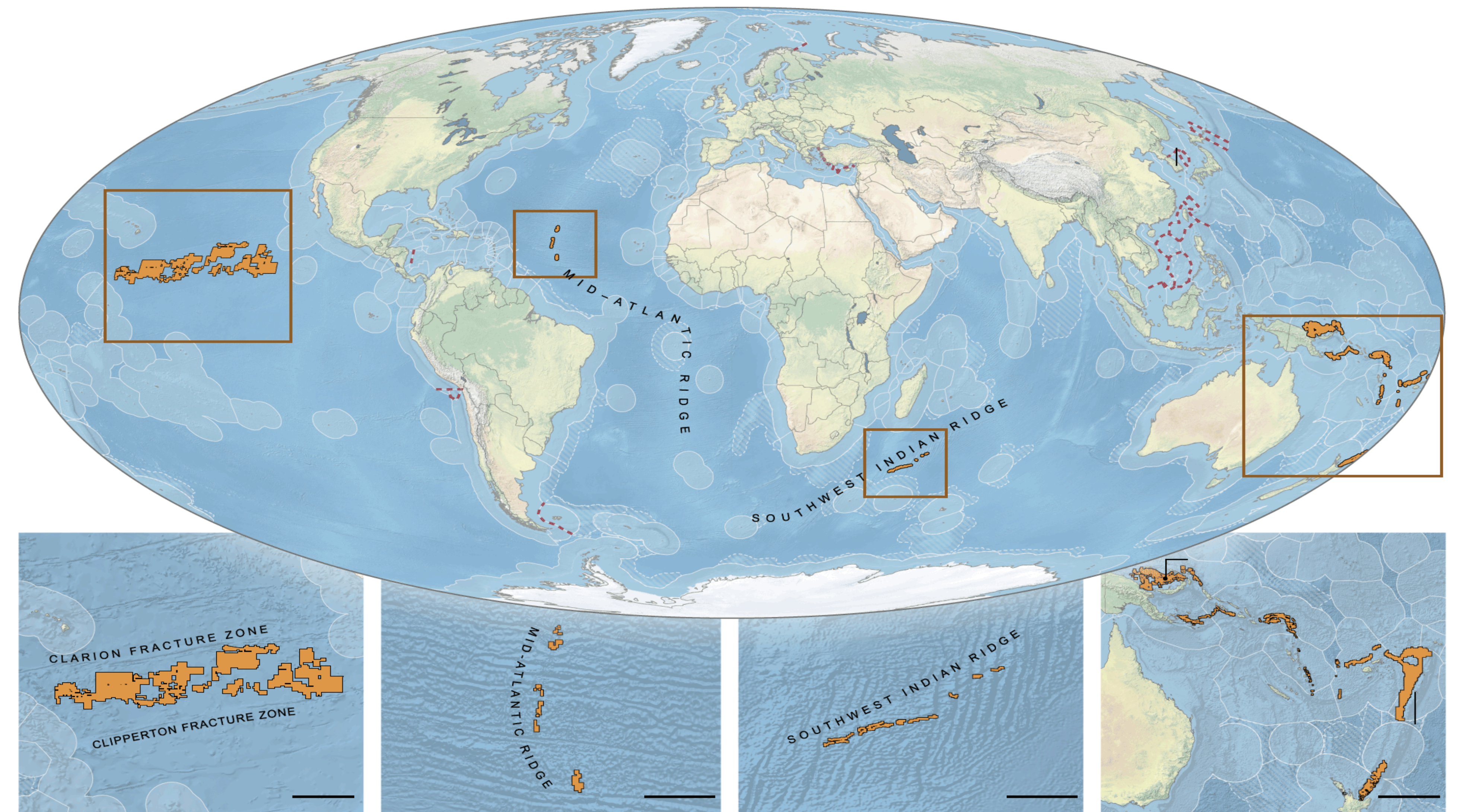
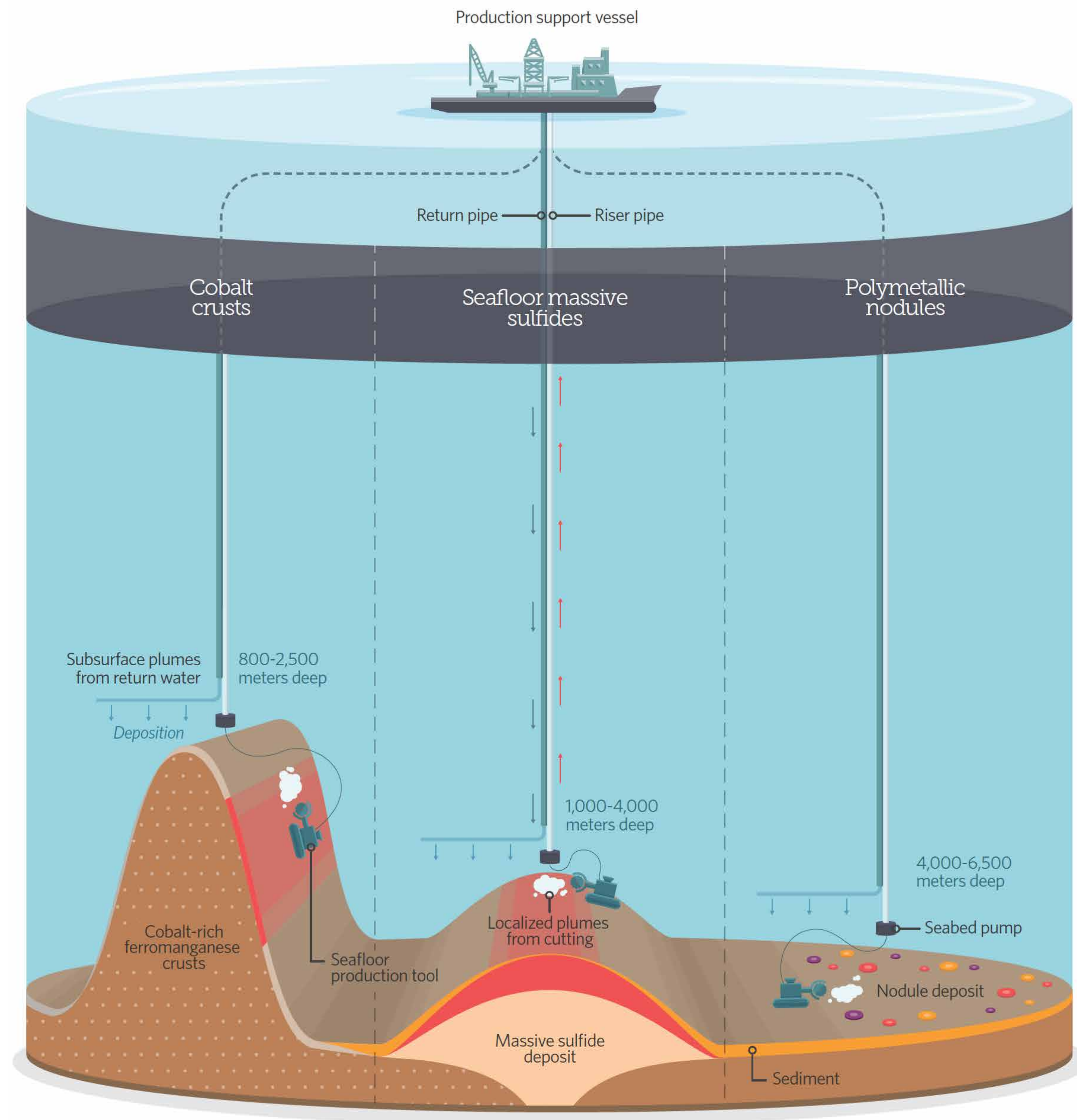
The International Seabed Authority (ISA), an obscure UN-chartered organization headquartered in Kingston, Jamaica, is charged with protecting the deep sea while, contradictorily, promoting its exploitation. The ISA has issued licenses to mining companies to explore more than 1.3 million square kilometers of the seabed for mineral deposits. Now it's on the cusp of finalizing regulations that would allow giant robotic machines to begin chewing up the seafloor and strip-mining underwater mountains within a decade.

The short and long term impacts of deep sea mining remain unknown, as does its commercial viability. But scientists believe that seabed mining will irreversibly damage ecosystems that have been barely explored with uncertain consequences for life in the ocean and on land. Even the strictest environmental regulations, marine biologists argue, will not prevent the loss of unique life forms and ecosystems. The prospect of mining the deep sea, environmentalists say, should force a reckoning with an economic system and a throwaway consumer culture that is both driving and being used to rationalize the destruction of rare marine habitats. It is time to accelerate green tech innovation, they say, and to rethink how society manufactures, uses and reuses products, taking a hard look at the economic feasibility and assumptions underlying the push for deep sea mining.





# Types of Deep Sea Mining



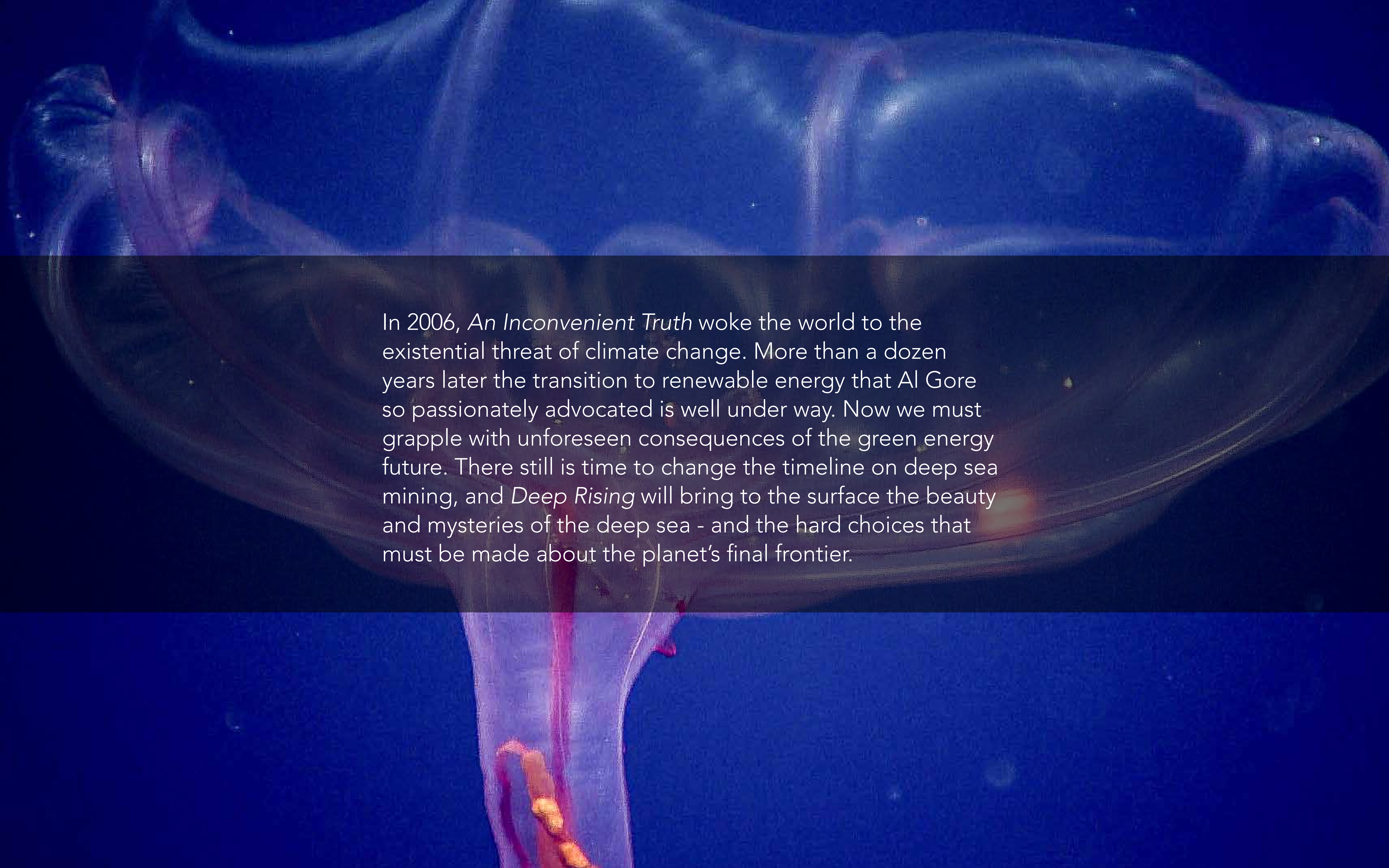


For mining advocates, exploiting the deep sea for minerals to generate clean energy will be far less destructive than mining on land, as demand for cobalt and other metals pushes the industry into rainforests where tens of thousands of children are forced to labor in mines. The bottom line: Terrestrial mines simply cannot provide enough metal to a global population expected to grow to nearly 10 billion people in the coming decades, they say. With time running out to forestall catastrophic climate change, advocates argue that deep sea mining offers the best of limited options and a way to produce enough minerals to create a closed-loop economy where a sufficient volume of metals exists so demand can be met through recycling and reuse.

Whether the seabed can be sustainably mined depends on the International Seabed Authority. Not only is the ISA writing the “Mining Code” that will govern the extraction of minerals from the ocean floor and determine how the monetary bounty is shared among nations, it is set to go into the mining business itself, as allowed by its charter. For the first time, a UN organization would in effect become a global multinational corporation by establishing what is called “the Enterprise,” a spinoff body that would mine the seabed and share the profits and its technology with the ISA’s member states. In other words, the ISA will regulate its own potential multibillion-dollar business while ensuring other mining companies comply with environmental regulations.

*Deep Rising’s* investigation into the ISA raises troubling questions about the organization’s ability to effectively regulate seabed mining and protect the marine environment, uncovering financial mismanagement, internal turmoil, conflicts of interest and lax oversight of mining companies – all before mining even begins.



A large whale breaching the surface of the ocean, with its massive body and tail visible above the water. The whale's back and tail are dark and wet, glistening with water. The water is a deep blue, and the sky is a lighter blue. The whale's tail is visible at the bottom of the frame, with a small orange object attached to it.

In 2006, *An Inconvenient Truth* woke the world to the existential threat of climate change. More than a dozen years later the transition to renewable energy that Al Gore so passionately advocated is well under way. Now we must grapple with unforeseen consequences of the green energy future. There still is time to change the timeline on deep sea mining, and *Deep Rising* will bring to the surface the beauty and mysteries of the deep sea - and the hard choices that must be made about the planet's final frontier.



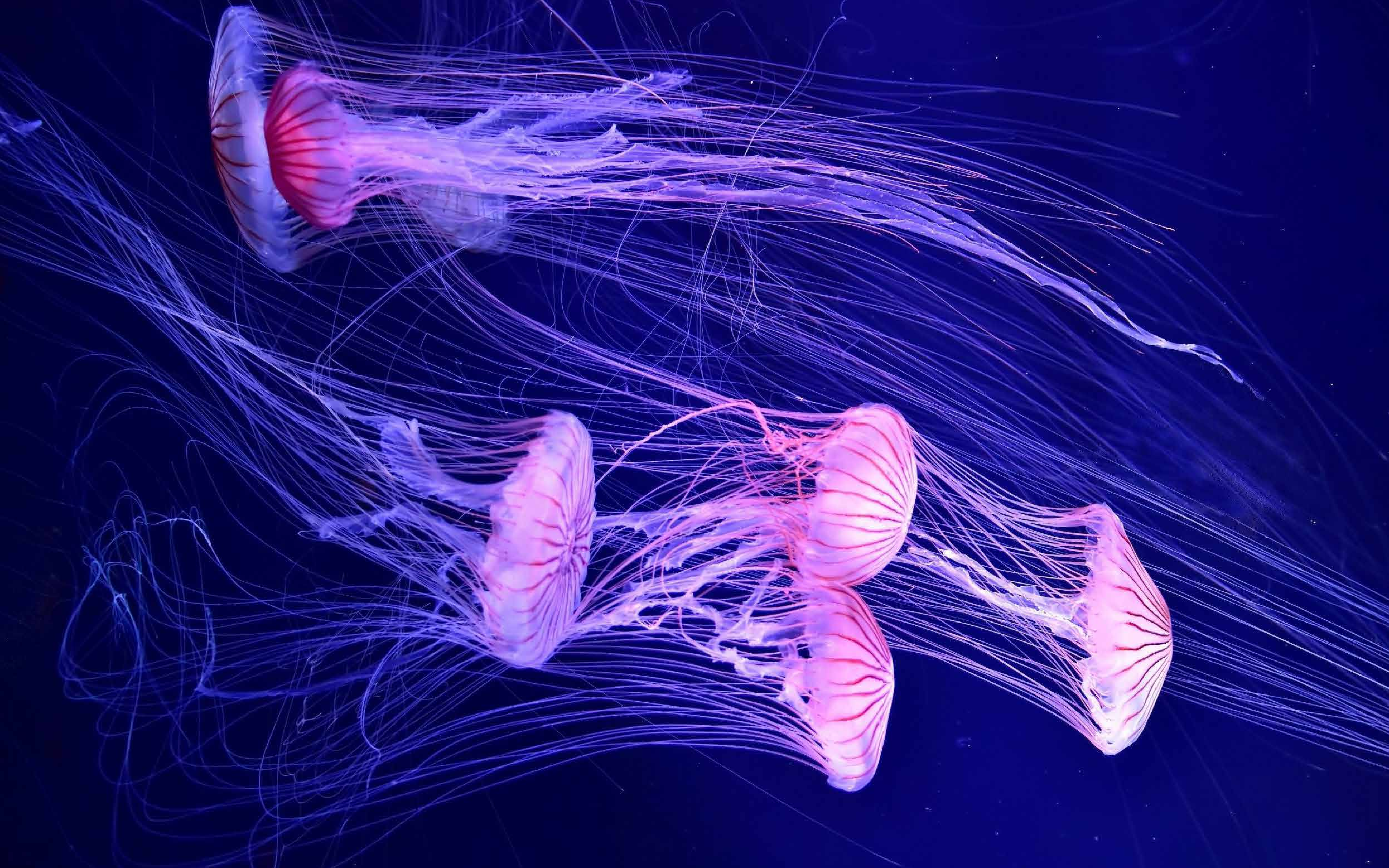
# THE FILM

*Deep Rising* brings a balanced perspective to the complex issues surrounding deep sea mining and explores the ecological, ethical, legal and geopolitical challenges posed by this nascent industry. The economic and environmental consequences of deep sea mining will be enormous, particularly for the people of developing nations, yet little attention has been paid to the coming industrialization of the deep ocean. *Deep Rising* investigates and informs the public of these critical issues by shadowing mining company executives scrambling to stake their claim to this underwater gold rush; following the scientists racing the clock to explore deep sea ecosystems before they're lost; and exposing the geopolitical intrigue unfolding at the International Seabed Authority as it moves to green light mining by the end of 2020.

Our impact on the ocean is increasingly and heartbreakingly visible: plastic pollution choking sea turtles and dolphins; vibrant coral reefs left lifeless from rising temperatures due to the burning of fossil fuels; and endangered whales strangled by trawling gear as industrial fishing decimates marine life. There is, however one last aquatic frontier that remains virtually untouched and unseen: the deep sea.

*Deep Rising* opens with a dive, a deep, deep dive. We see a boat on the ocean's surface fade away as our personal submarine slowly descends to the depths. Then we hear a voice. It's Dr. Sylvia Earle, the legendary marine biologist and the most renowned ocean explorer since Jacques Cousteau, affectionately known as "Her Deepness." As our vessel continues its descent, we are immersed in a cloud of glowing jellyfish. "My dear friends, forget who you are, forget what you think you know, you were once a jellyfish," intones Dr. Earle. "These strange creatures are our common ancestors. In you is the memory of this origin."







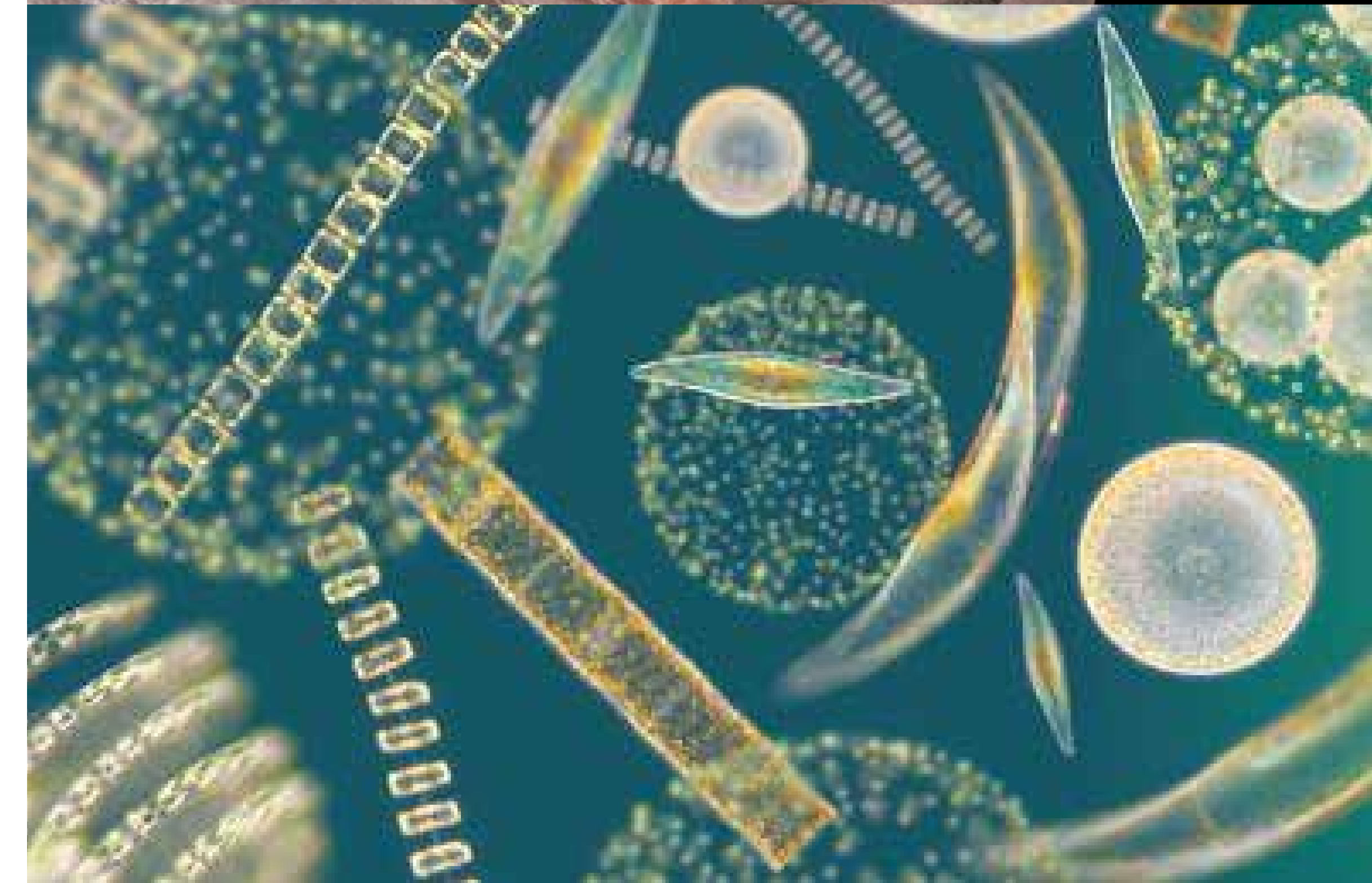
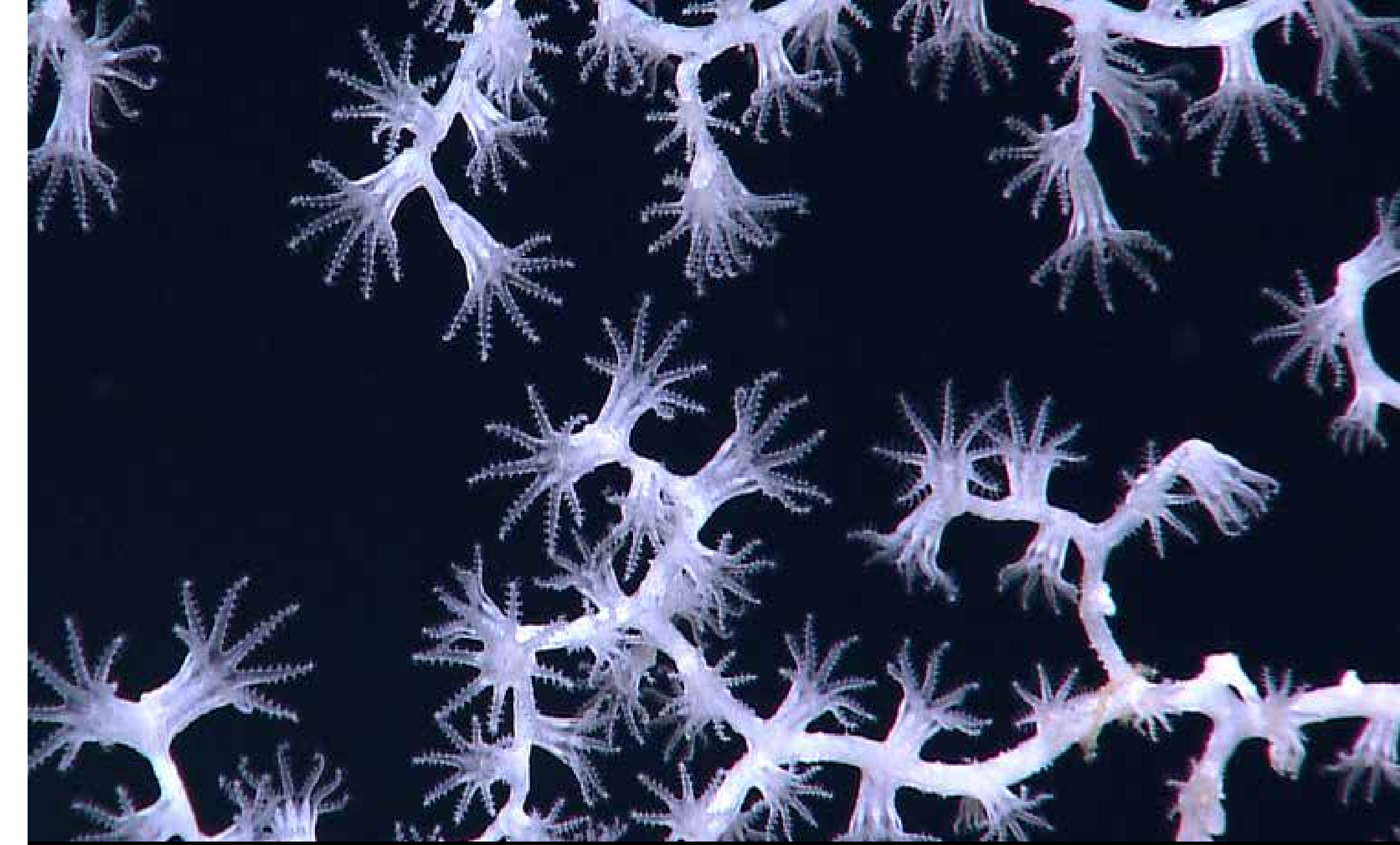
Soon we cross the “twilight zone” where sunlight fades into darkness and we enter another realm, another world. Dr. Earle: “We think of life in the sea in terms of fish and whales and coral reefs and the like, but most of the action is very small, microscopic and submicroscopic.”

We are now surrounded by tiny particles of life that are slowly supersized by an electron microscope. “Phytoplankton are unicellular organisms that produce up to 85 percent of the Earth’s oxygen,” says Dr. Earle. “They form the lungs of the planet and produce the air we breathe. You are made of the ocean. Dive my friend. Dive deeper into the abyss, dive into your deepest self.”

As the story unfolds, we will discover this captivating alien world, which serves as the film’s symbolic main character, the object of desire by those who want to exploit its mineral riches and the subject of intense passion by those fighting for its preservation.

In recent years, prices for cobalt, a key ingredient in electric vehicle batteries, have skyrocketed as demand has risen and investors have become nervous about the security of supplies in the politically unstable Democratic Republic of Congo. That country provides two-thirds of the world’s cobalt and its mining industry is notorious for widespread deforestation and use of child labor. China alone is building battery “megafactories” at breakneck speed and is expected to quintuple capacity by 2021. Globally, demand could begin to outstrip cobalt supply by 2030.

A compelling animated data visualization will bring those statistics to life. Coupled with satellite imagery that will allow us to travel back in time, we will witness how a province bordering Tibet has been rapidly industrialized to build batteries. Using time-lapse aerial imagery of rainforests, a disturbing truth will emerge: As we substitute batteries and renewable energy for fossil fuels, those forests are being razed to mine minerals for an urbanizing global population expected to reach 9.8 billion people by 2050.









Demand for nickel is forecast to jump 19 times by 2030, threatening the biodiversity of rainforests from Congo to Indonesia as miners push into those habitats in search of metals.

On the Indonesian island of Sulawesi, rainforests home to dozens of biologically unique wildlife species are being destroyed to mine shallow deposits of cobalt and nickel destined for Chinese battery factories.

It's February 5, 2019, and we are in Washington D.C. as the U.S. Senate holds a hearing. Senator Lisa Murkowski, chairman of the Senate Committee on Energy and Natural Resources, is making opening remarks. She looks worried. "Whether we realize it or not, energy and minerals fuel our 21st century economy and standard of living," she says. "Access to energy and minerals – or perhaps lack thereof – can impact everything from health care, to poverty levels, to defense readiness, to the strength of our manufacturing sector. And the markets for energy and minerals are rapidly changing. This is a dangerous trend – it's really our Achilles heel – that serves to empower and enrich other nations." Murkowski then asks Simon Moores, one of the world's leading experts on lithium-ion battery and energy storage supply chains, to testify. "We are in the midst of a global battery arms race in which the U.S. is presently a bystander," he says, detailing China's dominance of the battery industry and access to cobalt, nickel, lithium and graphite. "Those who control these critical raw materials and those who possess the manufacturing and processing know-how, will hold the balance of industrial power in the 21st century."

Gerard Barron, an Australian entrepreneur who made his fortune in internet advertising technology, sees a huge opportunity to sell deep sea mining to the public, policymakers and scientists as a clean, green "sustainable" solution to both the ills of terrestrial mining and the climate crisis.



He founded a Canadian-registered mining company, DeepGreen, and partnered with the tiny South Pacific island nation of Nauru to secure a license from the International Seabed Authority to explore 75,000 square kilometers of the Pacific Ocean for polymetallic nodules. (Nauru, population 13,600, itself has been ravaged from decades of phosphate mining by Australian and British corporations that laid waste to much of the island.) Nauru and other small island states lack the financial resources and technological expertise to mine the seabed themselves so they are giving Western mining companies access to their lease areas in exchange for fees and royalties.

Barron has granted the film crew exclusive access to DeepGreen, and we're in the room and behind the scenes as he travels the world making deals and trying to sway global opinion on seabed mining.

On a sparkling September evening, 120 investors crowd a 56th floor penthouse with floor-to-ceiling views of San Francisco Bay to hear Barron's pitch in a room plastered with posters echoing his message: "We're on a Quest for a Sustainable Planet," "Metals for Our Future: It's a Better Solution. Be a Part of It," "Clean Metals: No Deforestation. No Explosives. No Child Labor." Barron appears to seduce most of the attendees with his rugged charisma and a persuasive presentation that investors can do exceedingly well by doing good for the planet.

After countless bottles of Champagne, the event slowly draws to a close late into the night. But as the first rays of the morning sun strike the Bay, Barron is back at work, phoning one of the founders of Nvidia, the computing graphic card maker and a potential big buyer of seabed metals.

After a few rings, a voice answers and Barron springs into his well-honed sales pitch. "Hey, too bad you couldn't make it to the event Friday," he says. "It was quite the success and we raised over \$10 million in a few hours. You should really join us and be part of this incredible journey."





A voice at the other end of the line counsels, “You should try to meet with Don Valentine. As you know, he’s one of the first Apple investors who then took the company public. And then, he took Oracle public, and then Cisco, and then Nvidia and then Google.” Barron responds, “Wow, that’s amazing. We’re indeed trying to secure funding and we have a team working hard to make sure all the legislation will be in place at the right time. We want to create the most respected metals company in the world and we want to make sure we have the social license to launch that industry.”

A few months later, we’re with Barron and his entourage as they jet to China to meet with battery and electric vehicle giant BYD, which expects to quadruple its capacity over the next few years. That means the company, which counts Warren Buffett as a major investor, will need more cobalt, nickel and other metals. Much, much more.

DeepGreen is confident it can deliver. In the middle of the Pacific Ocean, we’re onboard a ship owned by the company’s partner, the shipping giant Maersk. The destination is the Clarion-Clipperton Zone (CCZ), a vast stretch of the seabed between Hawaii and Mexico that is carpeted with mineral-rich polymetallic nodules.

Over the two-month excursion, DeepGreen marine geologists send remotely operated vehicles and collector grids to depths of 4,000 meters to retrieve nodules and evaluate the concentration and distribution of minerals in Nauru’s lease area. An analysis of the samples collected will show the area contains significant mineral deposits.

DeepGreen has yet to develop or acquire the advanced technology that would allow it to commercially collect those nodules on the seabed. But at the other end of the world, in the small Belgium town of Zwijndrecht, a corporation called Global Sea Mineral Resources (GSR) has already built a prototype of a nodule mining machine called the Patania II that will be deployed on the seabed in March 2019.







PATANIA II

TEC SOLUTIONS

BMS K



A subsidiary of dredging giant Deme, GSR has granted us exclusive access and we'll be aboard its ship when Patania II descends to the ocean floor in a key test of deep sea mining technologies and their environmental impact.

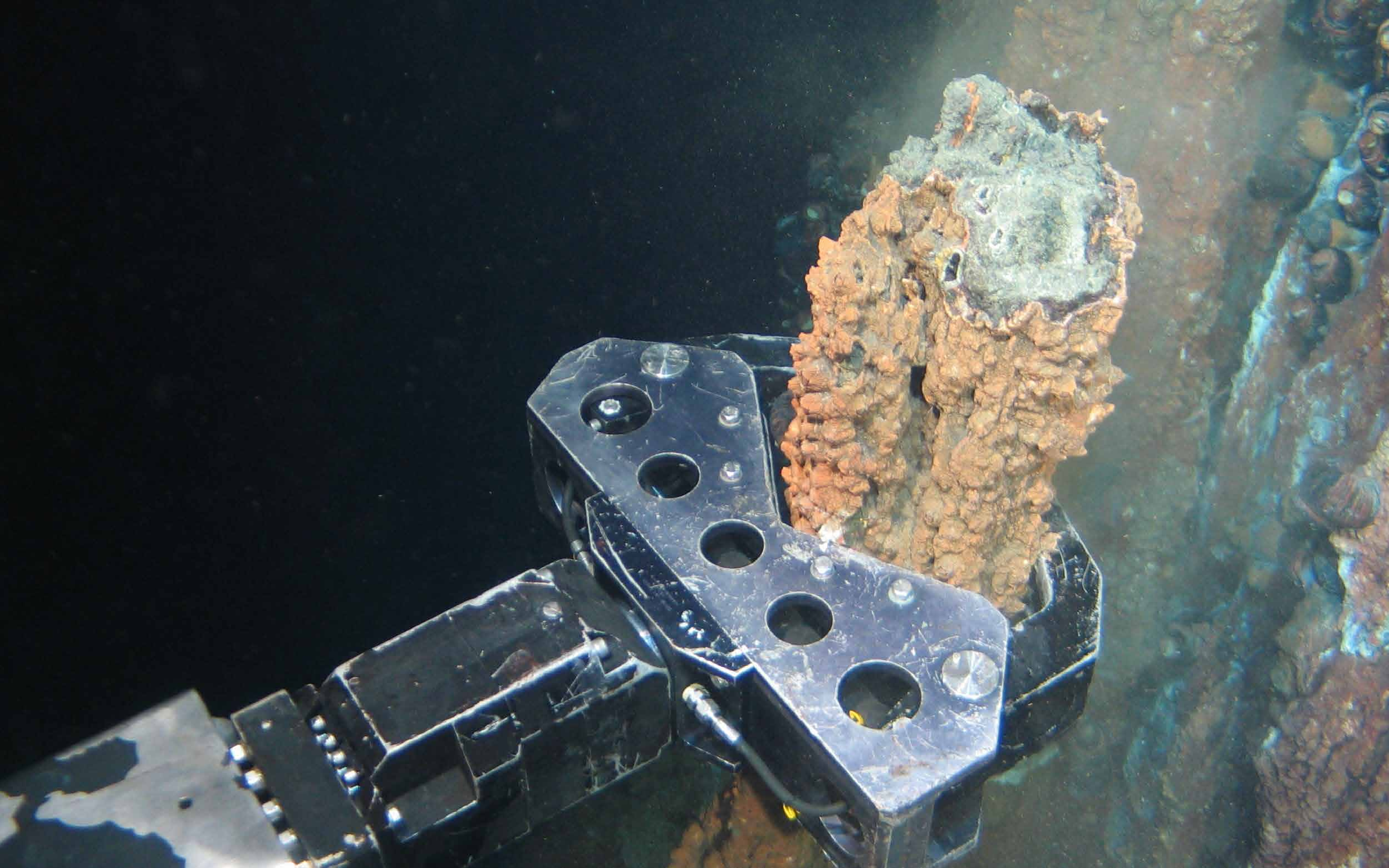
As DeepGreen, GSR and other companies promote seabed mining as sustainable, they tend to avoid mentioning an inconvenient fact: the polymetallic nodules that they will vacuum up are living habitat for a menagerie of deep sea life, such as anemones and sponges that in turn host tube worms, corals and other bottom-dwelling critters.

In 2016, the discovery of a new species of ghost-white octopus – nicknamed Casper – on the seabed off Hawaii created a media sensation. Months later, researchers published a paper revealing that nodules are octopus nurseries – the cephalopods lay their eggs on the stalks of dead sponges attached to the Easter egg-shaped rocks.

When hundreds of deep sea biologists gather in Monterey, California, in September 2018 to share their latest research, one topic dominates: seabed mining. Scientist after scientist takes the stage to detail new discoveries that confirm the rich biodiversity of polymetallic nodules - and to stress the impossibility of establishing environmental standards for deep sea mining when there is still so little known about seabed ecosystems or the impact of proprietary technology that will be used to scoop up the nodules.

For many scientists, it's essential to fully implement the "precautionary principle" of refraining from seabed mining until its potential consequences on deep sea ecosystems are fully understood.







As our personal submarine continues its journey, we reach the deep ocean some 13,000 feet below the surface of the sea. A vast expanse covering half the planet, the seabed is home to a universe of unique fantastical creatures that seem to have sprung from the imagination of Dr. Seuss – giant red and yellow tube worms feasting on chemicals spewed by underwater geysers; ghostly white octopuses scuttling along a frigid, pitch-black seabed under crushing pressure; and technicolored jellyfish that pulsate like the spaceship in *Close Encounters of the Third Kind*. Dr Earle, who was the first person to walk untethered on the seafloor, resumes her narration: “You have now reached the source of life. Slow down and hear Mother Earth’s story. Deep sea ecosystems are living libraries, sites where the sciences, arts, and humanities gain new knowledge and understanding at the intersection of life and Earth processes. It’s like diving into the history of life on Earth, not just over the last 50 or 1,000, but the last million, 10 million, 100 million years, because creatures are there that have been there for several hundred million years.”

From the otherworldly realm of the deep sea, the scene cuts abruptly to the city of London. We are at the Mine and Money Conference, the world largest gathering of mining executives, bankers and investors. Gerard Barron is there trying to convince the industry that the seabed not land offers the most sustainable and profitable path for mining. During the conference, MIT battery expert Donald R. Sadoway gives a keynote address about a groundbreaking technology that can replace cobalt, lithium and nickel in batteries. Dr. Sadoway’s liquid metal battery technology has been backed by Bill Gates, prominent Silicon Valley venture capitalists and French energy giant Total. It’s by far a greener solution, but the industry has invested billions of dollars in existing lithium-ion technology and 90 percent of new battery capacity in the pipeline plans to use nickel cobalt manganese chemistries.

As the film shows, technological innovation could be the key to protecting the deep sea from mining.







But time is short.

International Seabed Authority Secretary-General Michael Lodge has set a 2020 deadline to adopt the Mining Code – coincidentally or not, that’s the year he’s up for re-election. Mining companies are hesitant to seek the billions of dollars in investment needed to start commercial operations until they know what the rules – and cost – of the game will be. The stakes are extremely high and the pressure on the ISA is intensifying.

Once a year, delegates from the ISA’s 168 members states, mining contractors, scientists and environmental advocates gather at the organization’s seaside headquarters in Kingston, Jamaica, for an annual meeting. Long a sleepy affair, the conference has taken on a more momentous and contentious air over the past two years as delegates work to meet the 2020 deadline, unleashing simmering geopolitical conflicts. The ISA has long operated outside the media glare and its meetings have been free of journalistic oversight – until *Deep Rising’s* reporter started attending the event two years ago. That has given the film unique insight – and footage.

Much of the ISA’s crucial decision-making happens behind closed doors guarded by security agents. There, the organization’s 30-person Legal and Technical Commission (LTC) – which is dominated by members with ties to the mining industry - reviews mining applications, drafts regulations and ensures mining companies comply with environmental rules. Its deliberations are mostly confidential and the LTC does not disclose what mining companies from China, Japan, Russia and other countries are finding on the seabed or identify the ones failing to comply with environmental regulations. That information – including environmental impact assessments of mining – is withheld even from the Council, the ISA’s policymaking body.







There is one person, though, who sees all the cards – Michael Lodge. A debonair British attorney (think Daniel Craig’s older brother) whose diplomatic demeanor occasionally betrays a hard-edged arrogance, Lodge has forged close ties to mining companies and pro-mining nations since his election to lead the ISA in 2016. The sole point of direct contact with mining companies, Lodge over his long career at the ISA – he joined the organization as a legal officer at its founding in 1994 – has become a bureaucratic jiu-jitsu master, manipulating the ever-changing cast of delegates, LTC members and staffers to achieve his aims. And thanks to the complete authority invested in the secretary-general by the ISA charter, Lodge can run the organization as he sees fit. with little if any oversight or check on his power.

But the drive to complete the Mining Code is testing Lodge as tensions flare. Nations like China, Japan, South Korea, Poland and Russia are pushing to minimize environmental restrictions and ISA monitoring of mining. China, which processes 80 percent of the world’s cobalt chemicals and owns half of the biggest cobalt mines in Congo, appears most interested in locking up a geopolitical resource.

Developing countries, including small Pacific Island states, are supporting seabed mining as way to secure a share in the monetary spoils and gain access to technology. Countries like Belgium and the Netherlands are most interested in supplying mining technology and equipment to the nascent industry.

But nations whose economies depend on terrestrial mining that could be threatened by seabed mining – Chile, Australia, Canada, African states – are advocating for strong environmental protections and questioning the lack of environmental standards and guidelines in the current draft of the Mining Code. European nations have joined that chorus.



Lodge faces other challenges to his agenda. “I have pushed very hard to keep the balance between the environment and mining, which is a very difficult balance in an organization like this one,” declares Sandor Mulsow, a former chairman of the LTC who served as director of the ISA’s Office of Environmental Management and Mineral Resources for five years until forced to retire in early 2019. “They want to facilitate deep sea mining with little regard for the precautionary principal and the common heritage of mankind.”

A passionate, bespectacled 62-year-old Chilean marine geologist, Muslow fears the Mining Code will lead to the devastation of deep ocean ecosystems and he has emerged as a potent insider critic of the secretive ISA and its secretary-general.

He’s not alone. At last July’s meeting, two senior ISA officials motion to a reporter and direct him to a darkened conference room. Speaking in hushed tones and clearly uncomfortable, they express their concerns that Lodge is collaborating with mining companies to push through the regulations without sufficient environmental safeguards, which is especially worrisome as the staffers say many companies have failed to collect and report baseline ecosystem data on the areas to be mined as required by the ISA. In the coming months, they and other ISA staffers will risk their careers to meet the reporter at a Kingston hotel, bringing documentation of financial mismanagement, conflicts of interest and lax oversight of mining companies. (The whistleblowers are willing to appear on camera.)

The revelations are sure to fuel a growing movement to impose a moratorium on deep sea mining until the biology of seabed ecosystems and their relationship to the global climate are more fully understood and strong environmental protections can be put in place. *Deep Rising* will inform and ignite the dialog over seabed mining and force a reckoning of our relationship with the deep sea.



# STORY STRUCTURE AND ARTISTIC APPROACH

*Deep Rising* is a character-driven film that will follow the journey of DeepGreen chief executive Gerald Barron and Sandor Mulsow. The dramatic tension between both characters will be the basis of the story structure. Gerald Barron is convinced that polymetallic nodules are a clear pathway to a sustainable future. As his business tagline says, "DeepGreen: Metals for Our Future". Barron strongly believes that nature created those nodules as a solution to tackle climate change and to move away from fossil fuels without jeopardizing the existence of some of the last remaining rainforests. On the other hand, Mulsow is fighting against all odds to protect the deep sea, hoping to mobilize the international community to act before it's too late to save the planet's last untouched ecosystem. Given the climate crisis, humanity cannot afford, he says, to roll the dice and put profit before preservation when it comes to the unknown and potentially catastrophic consequences of disturbing seabed ecosystems.

As Barron and Mulsow's personal journeys intertwine, the global and complex story of deep sea mining will surface, with varying voices and view points that will bring into light the ecological, ethical, legal, geopolitical and industrial challenges that will spark a fundamental debate about the future of the ocean.

A dramatic curve will arise from *Deep Rising's* investigation of the International Seabed Authority that reveals conflicts of interest and questionable management practices. As the film unfolds, tensions grow as the secretary-general pushes the mining industry's agenda to meet his self-imposed 2020 deadline and he faces resistance from within the ISA, from member nations and from scientists and environmental advocates pushing for a moratorium on deep sea mining.



But there is another character to be taken into account, and certainly the most important one: The deep sea itself. With its own notion of reality and time, the deep sea will prompt a metaphorical conversation with us, humans, who are mostly pursuing self-serving agendas, conservationist or industrial, rather than humble ourselves by listening to the voice of the deep. With the narration of Dr. Sylvia Earle, the deep sea itself will have a central voice thereby sparking much-needed conversations about its future and raising the fundamental question of who we are as a species and how the choices we are currently making will massively impact our planet. In that regard, *Deep Rising* will be built around a mosaic structure.

As the film unfolds, multiple perspectives intertwine as the drama intensifies, from closed door meetings at the secretive ISA to offshore missions with the first deep sea robotic mining machine prototype, from exclusive access to the world's biggest battery manufacturer to an Indonesian rainforest being razed to mine valuable minerals. Filmed in a *vérité* style, *Deep Rising* won't rely on talking-head interviews, but rather focuses on real life interaction between the different protagonists. To capture those vignettes, we will take full advantage of the technological breakthroughs that make the use of much more sophisticated and discreet equipment, hence enabling both intimate access and aesthetic cinematography.

Virtual reality cameras will be used to record the full sphere of each scene. For example, if the device is placed in the middle of a table, everyone around will be filmed as the ultra-wide-angle 6K camera will cover a 360/180 field of view. The technique will also be very unobtrusive, thereby allowing the filmmaker to remain at a distance from the scene and ensure his presence and heavy gear do not disturb conversations. Once the sphere has been captured, it can be flattened out to use only part of the image as a traditional film frame. A 360 camera will also be given to the film's main characters so they can self-film key moments of their journeys as well as create video diaries wherein they share moments of hope and despair, successes and disappointments.



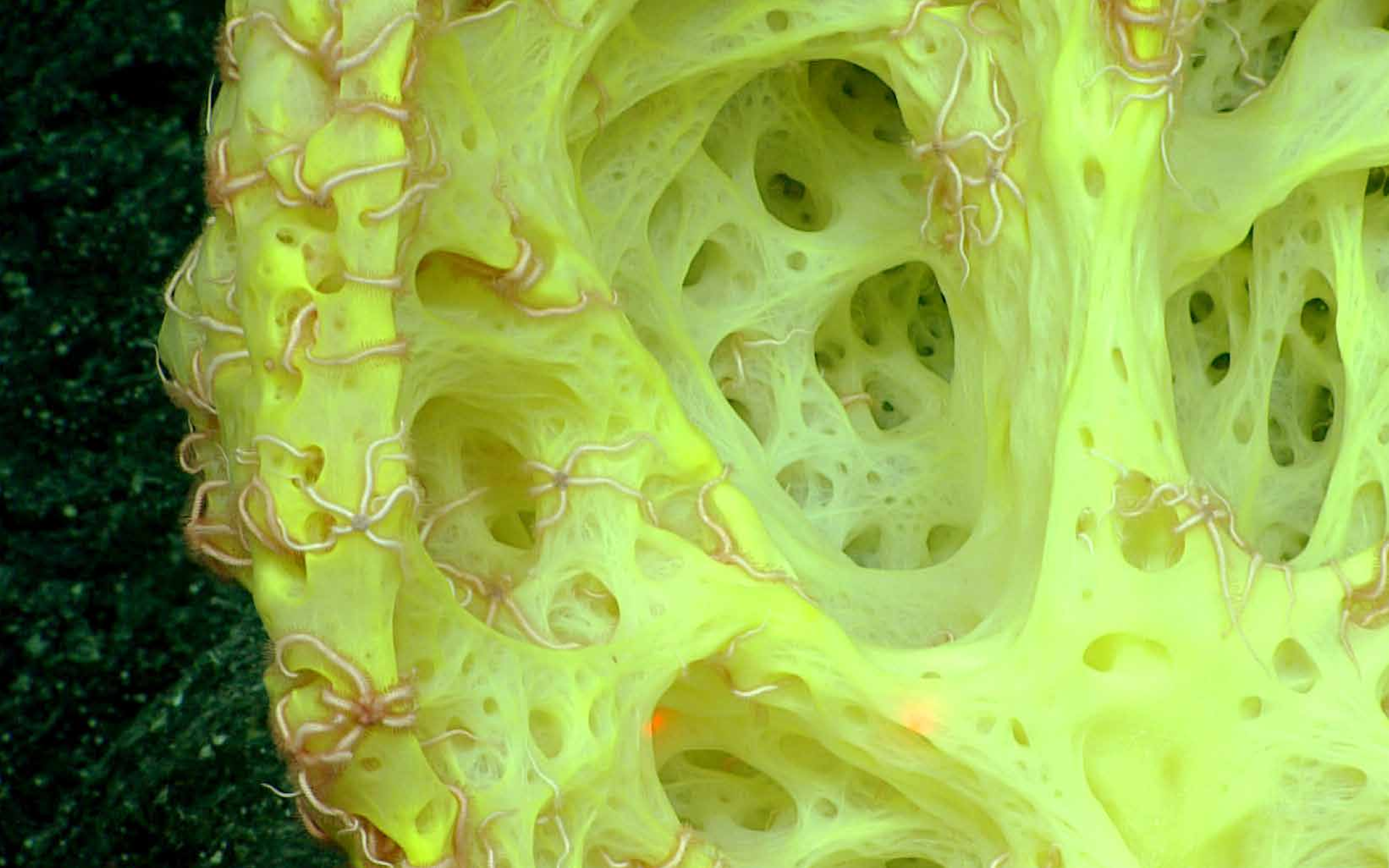
This 360/180 method will be coupled to high-quality Zeiss fixed 18mm lens to bring a truly immersive feeling to the movie. Cropped in classical anamorphic format, *Deep Rising* will have a real feeling of “being there.” The fly-on-the-wall technique proved effective while filming Kiribati President Tong during the production of Matthieu Rytz’s documentary, *Anote’s Ark*. By being extremely discrete and working without a crew, Rytz was able to capture unique moments so we can expect *Deep Rising* to follow this path.

Filming in the deep sea is obviously expensive, but we are fortunate to have relationships with leading scientific organizations that are now collecting state of the art high-resolution deep ocean footage. Schmidt Ocean Institute, the Monterey Bay Aquarium Research Institute, the National Oceanic and Atmospheric Administration and GeoMar already been approached and are willing to collaborate on the film.

For the sound design, I take inspiration from the work of Ernst Karel from the Sensory Ethnography Lab at Harvard University. His approach suggests there is no such thing as “bad sounds,” that the aural universe is above all sensory and that it must be imagined as a narrative thread that works in tandem with the image. Recording and designing a soundscape of the deep sea will present a significant challenge full of creative possibilities.

Academy Award-winner Sylvain Bellemare will serve as the sound design mastermind who will be entrusted with this mission. With his incredible track record, having notably created an alien soundscape for Denis Villeneuve’s *Arrival*, Sylvain will put his expertise to use to give the deep sea a subtle but powerful voice.







# DIRECTOR'S STATEMENT

Over the past few years, I have been working on documenting the devastating fate that is befalling the Republic of Kiribati as sea levels rise due to climate change. This island nation is at the brink of disappearing and being swallowed up by the sea. While covering the story as a photojournalist during my first trip to Kiribati, I met with then-President Aote Tong, at which point I decided to make a feature film, *Aote's Ark*, that would celebrate and speak to Aote's extraordinary but tragic responsibility to save an entire nation from annihilation.

While traveling across the globe with President Tong, I spent a substantial amount of time with Dr. Gregory Stone, a prominent marine biologist who served as Tong's scientific adviser. As I was on my way to Park City, Utah, to premiere *Aote's Ark* at the Sundance Film Festival, I met with Stone at his Los Angeles apartment. He was very enthusiastic about his new job as chief scientist for a mining company called DeepGreen.

He handed me a potato-sized chunk of ore and said, "Look at this treasure. It's a manganese polymetallic nodule. It's the metal we need in order to build a sustainable future." Such a statement intrigued me, and I quickly realized that the piece of rock that Greg was holding in his hand was hiding a much bigger story: the hidden cost of our so-called green revolution.

As a storyteller, hearing this left me feeling the responsibility and duty to dig deeper. And what I discovered stopped me in my tracks, so I decided to dedicate the next few years to telling the world about the deep sea and the future of our energy needs.



My main focus will be to give equal space to all the voices in this complex story that should be a wake-up call to the global community to make bold decisions in favour of conservation and resource management. But beyond that, I hope the film will provoke a paradigm shift in people's minds so they can ask themselves the right questions: Should I get a new Tesla and the latest iPhone or should I reduce my consumption to protect our planet last undisturbed ecosystem?

I have assembled a team with deep knowledge of deep sea mining and extensive experience making ocean documentaries, including legendary oceanographer and explorer Dr. Sylvia Earle, investigative environmental journalist Todd Woody, sound designer Sylvain Bellemare and executive producers Shannon O'Leary Joy, Shari Sant Plummer and Annie Roney, the founder and chief executive of ro\*co films.

My hope is to raise sufficient funds to make the best movie I possibly can and ultimately make a positive contribution that can impact the fate of our blue planet. I humbly wish that *Deep Rising* could have the same impact as what *An Inconvenient Truth* achieved more than a decade ago: an undeniable, no-holds-barred wake-up call.





# THE CREW

## DR. SYLVIA EARLE NARRATOR

National Geographic Society Explorer in Residence Dr. Sylvia A. Earle, called Her Deepness by The New Yorker and the New York Times, Living Legend by the Library of Congress, and first Hero for the Planet by Time Magazine, is an oceanographer, explorer, author and lecturer with experience as a field research scientist, government official. Formerly Chief Scientist of NOAA, Dr. Earle is the Founder of Deep Ocean Exploration and Research, Inc. (DOER), Founder of the Sylvia Earle Alliance (S.E.A.) / Mission Blue, Chair of the Advisory Council of the Harte Research Institute, inspiration for the ocean in Google Earth, leader of the NGS Sustainable Seas Expeditions, and the subject of the 2014 Netflix film, *Mission Blue*. She has led more than 100 expeditions and logged more than 7,000 hours underwater.





DOUBLE ISSUE

SEPTEMBER 18, 2017

Sylvia Earle is the first woman to have been appointed chief scientist of the U.S. National Oceanic and Atmospheric Administration

# TIME



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**MATTHIEU RYTZ**  
**WRITER, DIRECTOR AND PRODUCER**

Matthieu is an award-winning filmmaker, producer, curator and photographer. A visual anthropologist by training, for 10 years his passion for photography and ethnology has led him across the globe to photograph cultural and human diversity. His first documentary, *Anote's Ark*, premiered at the 2018 Sundance Film Festival and tells the story of Kiribati President Anote Tong's race to protect his South Pacific island nation from rising seas and maintain his people's dignity as many of them seek safe harbor in exile.

**SYLVAIN BELLEMARE**  
**SOUND DESIGNER**

Sylvain Bellemare is a Canadian sound editor and sound designer, best known as the supervising sound editor of *Arrival* (2016), for which he won the BAFTA Award for Best Sound and the Academy Award for Best Sound Editing. He frequently works with Quebec filmmakers Philippe Falardeau and Denis Villeneuve and recently collaborated with Matthieu Rytz on his first film.

**TODD WOODY**  
**REPORTER AND WRITER**

Todd is a veteran investigative environmental reporter for national U.S. newspapers and magazines and his work has appeared in the New York Times, the Los Angeles Times, The Atlantic, Fortune and other publications. He also served as editorial director for environment at Participant Media's Takepart digital magazine, where he traveled the world reporting on climate change, deforestation, the ocean and other issues. For the past two years, Todd has been investigating the environmental, economic and political ramifications of deep sea mining.



## **SHANNON O'LEARY JOY**

### **EXECUTIVE PRODUCER**

President of the EarthSense Foundation and an ocean and environmental philanthropist, Shannon serves on the boards of Sylvia Earle's Mission Blue, WildAid, Oceans5 and Compassion for Addiction. Shannon served as an executive producer of the documentaries *Chasing Coral*, *Mission Blue*, *Anote's Ark*, *Sharkwater Extinction* and other movies.

## **SHARI SANT PLUMMER**

### **EXECUTIVE PRODUCER**

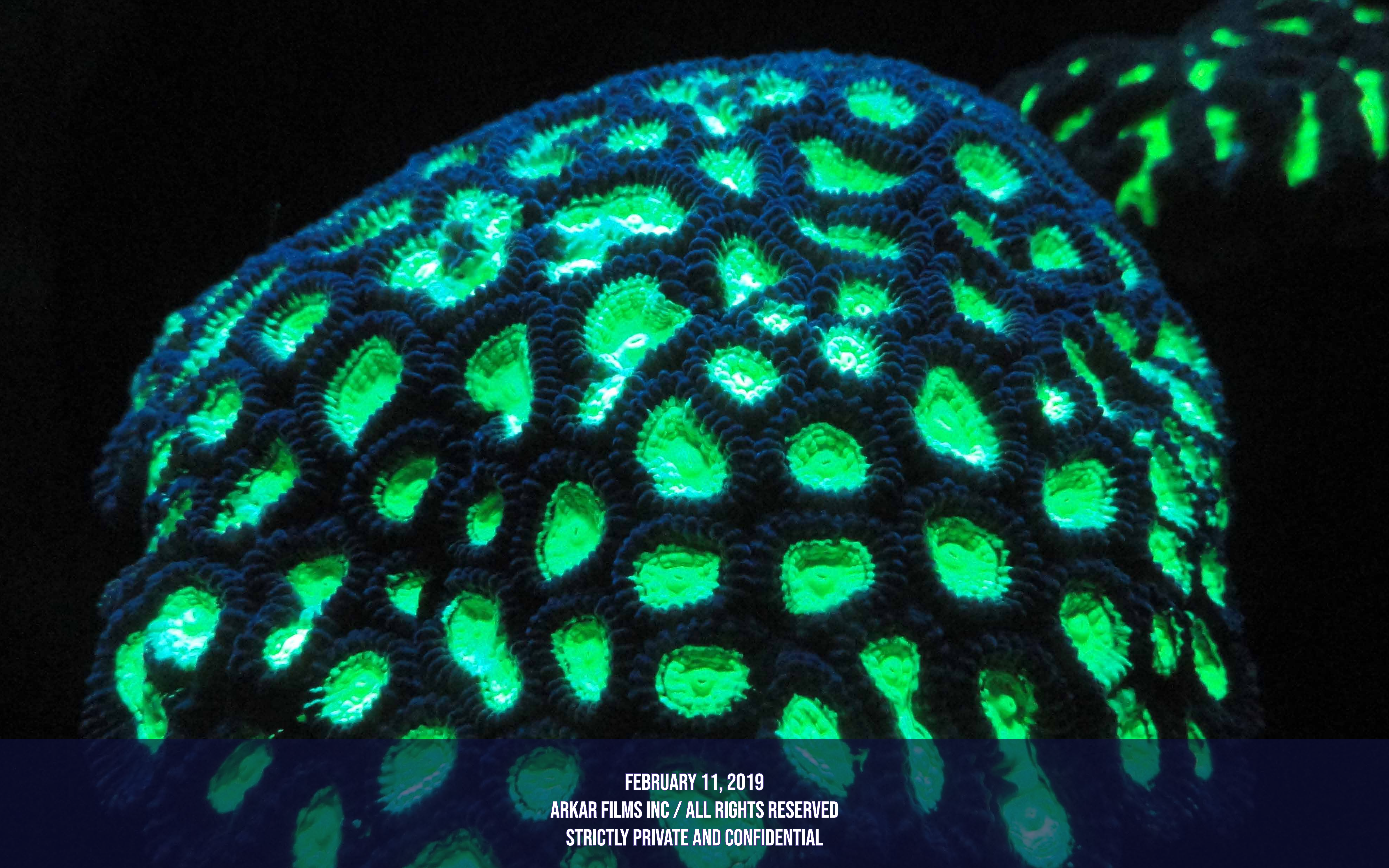
An environmental philanthropist and ocean activist, Shari is president and founder of Code Blue Charitable Foundation, secretary/trustee of the Summit Charitable Foundation, board member of the Sylvia Earle Alliance and vice president of Seacology. Shari was an executive producer of *Chasing Coral*, *Mission Blue*, *Anote's Ark* and *Sharkwater Extinction*.

## **ANNIE RONEY**

### **EXECUTIVE PRODUCER**

Annie has been called "a straight-up Samurai Love Warrior who cuts through all the industry bullshit with incisive and honest guidance" by filmmaker Peter Bratt. After nine years working with a top industry distributor, Annie founded ro\*co films in 2000 with two complimentary ideas: the belief that a well-told, well-researched and emotionally-driven documentary can challenge the way people think about issues in every corner of the globe; and, to be entrusted with the distribution of these stories, ro\*co needed to be in service to the filmmaker first and foremost. ro\*co has distributed award-winning docs including 18 Oscar-nominated feature documentaries, such as *Born Into Brothels*, *The Invisible War*, *Cartel Land*, *Life Animated*, *Knife Skills*, *Human Flow*, *An Inconvenient Sequel*, *RBG* and *Virunga*.





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