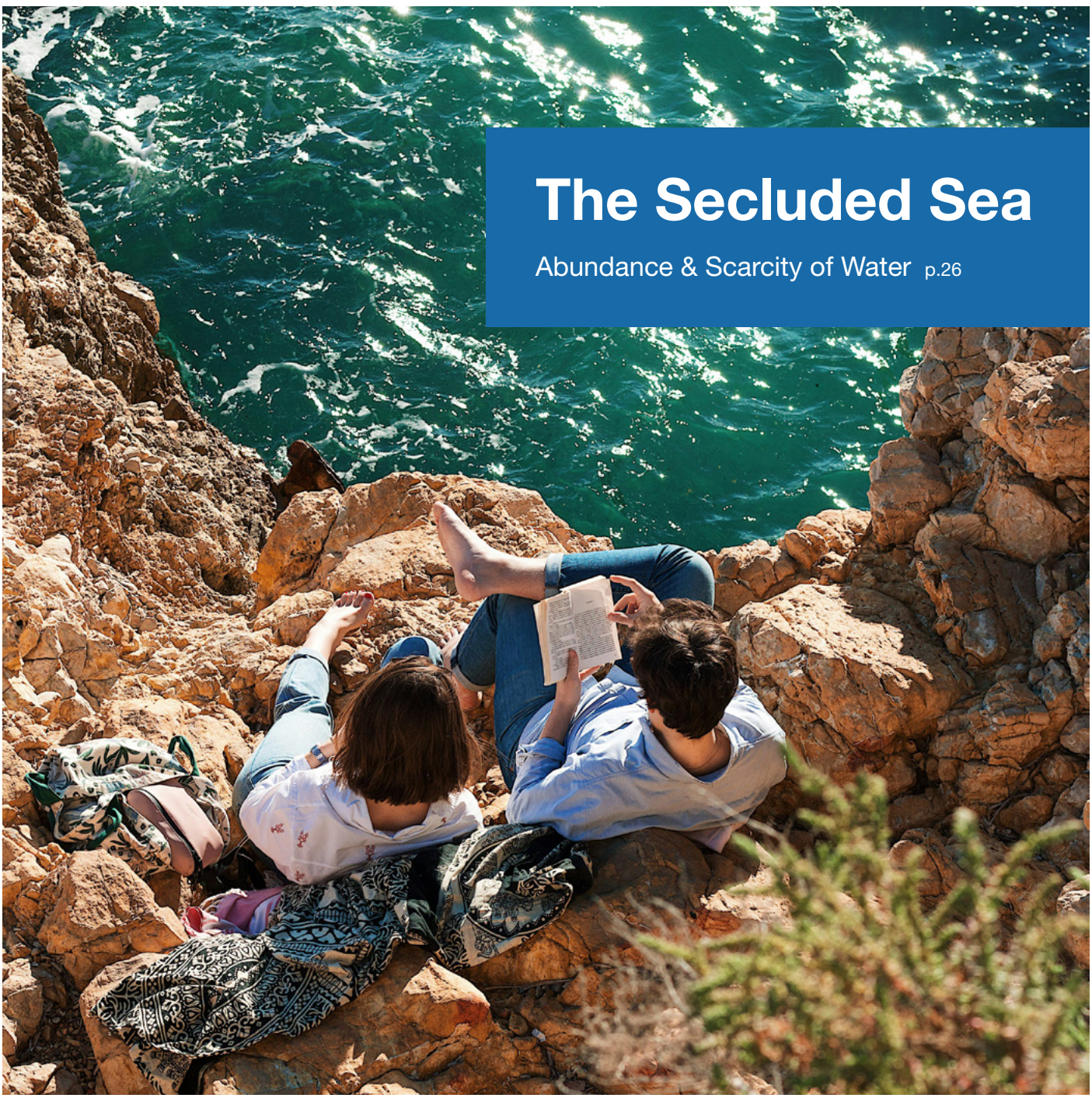
# REVOLVE

QUARTERLY INSIGHTS INTO A CHANGING WORLD

N°54 | Winter 2024/25



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# Welcome to the Mediterranean

The Mediterranean has some stories to tell. Its shores have borne witness to the rise and fall of civilizations, to war and peace, and to the exchange of goods and cultures that have shaped its rich tapestry of peoples from the shores of southern Europe to westernmost Asia and across North Africa. For some, it conjures up images of idyllic beaches, for others the burden of overtourism. It sustains life; and takes it.

The Mediterranean is warming 20% faster than the rest of the world. Already, some 180 million people in the region are considered water poor and 20 million lack access to clean drinking water.

This issue highlights the need for international collaboration towards climate solutions, starting off with a Special Guest Editorial from European Commission Director-General for Environment Florika Fink-Hoijer, who reflects on the role of desalination in building Europe's Water Resilience Strategy.

We have stories of two geographical extremes: starting with climate change realities in the Himalayas with input from David Molden, before plunging into the contentious issue of deep-sea mining in Norway with award-winning journalist Boštjan Videmšek.

REVOLVE's own Nazih Toubal takes us back to the Mediterranean to examine the cross-border cooperation required to address shared water and energy challenges. This issue's VIEWS offers a visual tour of human interactions with the Mediterranean, before Global Renewables Alliance CEO Bruce Douglas makes a case for tripling renewables by 2030.

We then shift our gaze to Bangladesh for Summer Felson's biting critique on fly ash shipping through the Sundarbans natural reserves followed by a more optimistic look at the potential of ridesharing by Emma Finnamore. We conclude with a closer look at circular design in Brazil's favelas from Ester Carro, architect, activist, and president of the Fazendinhando Institute.

Enjoy reading REVOLVE and send us your comments and reviews to: editors@revolve.media



Jake Threadgould

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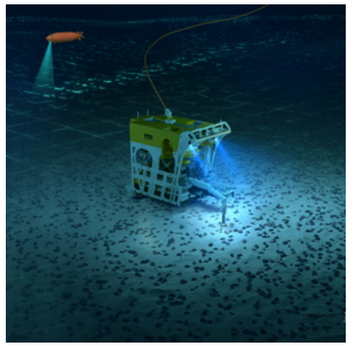
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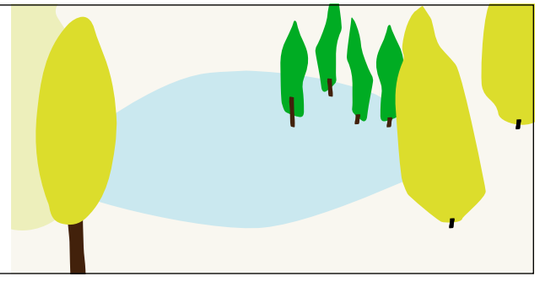
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**REVOLVE** is committed to climate-conscious reforestation and tree-planting initiatives as part of our company's sustainability policy to mitigate the impact from our business and project travel activities.

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**Cover image:**

Couple sitting on a cliff overlooking the sea, France.
Photo: Maël Balland / Unsplash






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### Editor-at-Large

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# Towards Clean and Competitive Water Desalination Technologies

WRITER: **DR. FLORIKA FINK-HOIIJER**
DIRECTOR-GENERAL OF THE ENVIRONMENT DEPARTMENT
OF THE EUROPEAN COMMISSION




**Desalination is a part of the solution to addressing water scarcity in the European Union.**

As the world faces strong water scarcity, there is an urgent need to find innovative solutions that could secure clean and affordable water for all. According to the 2024 European Environment Agency (EEA)'s state of water report, water stress affects 20% of Europe's territory and 30% of the population every year. These figures are likely to increase in the future as climate change aggravates man-made pressures on the quantity and quality of clean freshwater for human consumption and for vital ecosystem services.

Unless swift and decisive action is taken, this makes it unlikely that water scarcity can significantly be reduced by 2030. Furthermore, water stress today affects all regions of the European Union (EU), not only Mediterranean river basins. Thus, in addition to increasing water efficiency and circularity, and reducing consumption, desalination can be part of the solution to secure water supply in systems affected by prolonged droughts or continued water stress.

Desalination is an industrial process for converting sea water into clean freshwater through thermal processes or reverse osmosis. Desalination technologies are already crucial for maintaining supplies of freshwater in several parts of the EU, particularly in places like the Canary Islands or Malta. About 1,200 desalination plants provide a capacity of 2.37 billion $m^3$ a year in Mediterranean EU Member States. Regional EU funds, and more recently Resilience and Recovery Funds, have already contributed to either constructing new desalination plans or retrofitting desalination plants with renewable energy sources.

However, desalination technologies face important challenges that will be crucial to address for the development of a clean and competitive EU desalination industry. Desalination entails high energy consumption, leading to significant greenhouse gas emissions and high costs. In addition, brine discharges can harm marine life and seafloor ecosystems in the area where they are released, due to their high salinity and dissolved minerals.

Desalination is an area with significant innovation potential. EU funds, including LIFE, Horizon 2020 and Horizon Europe are currently seeking to increase the resource efficiency of desalination, decrease the harmful brine or its most harmful elements, but also the intake and discharge impacts and even to recuperate the salt and specific metals and minerals from the brine.

In her political guidelines for the next European Commission, President Ursula von der Leyen reasserted the need to guarantee water security through the launch of a European Water Resilience Strategy. The strategy will enhance the competitiveness of the EU water industry, looking at both water demand and supply. Efforts will be made to better coordinate EU funding programs to modernize EU's water infrastructure to reduce acute leakage rates, improve energy efficiency, and build new infrastructure such as water reuse plants, water storage systems, precision irrigation tools, and desalination plants.

The development of clean and competitive EU desalination technologies in the years to come will provide climate independent supplies of water and will reinforce EU water leadership globally. Thus, the EU will be able to support third countries facing water scarcity challenges through an integrated offer under the Global Gateway: First, by supporting the development of all means to increase water demand and water efficiency with good practices, standards and policies; and second, by mobilizing the EU water industry at the forefront of sustainable desalination technologies, which will facilitate capacity building and technology transfer. This evolution in water production and consumption must reconsider the use of water resources according to its value, allowing to advance the use of water as a circular resource rather than as a consumable resource and a waste.

# Lessons in Climate Resilience from the Hindu Kush Himalaya

WRITER: **DR. DAVID JAMES MOLDEN**

1

**What mountainous communities can teach us about resilience and adaptation to climate change.**

Spanning eight countries - Afghanistan, Bangladesh, Bhutan, China, India, Nepal, Myanmar, and Pakistan - the Hindu Kush Himalaya (HKH) is unique not only for its ecosystems but also the vast and varied knowledge held by the local communities who call it home. However, climate change is threatening the region at a previously unknown scale and pace, making adaptation and resilience-building more imperative than ever.

Records kept since 1950 show that mountains have been warming about 25 to 50% faster than the global average. Shifts in other phenomena, such as precipitation and water patterns, are also intensifying, creating additional challenges for the mountain communities that rely on these ecosystems for their survival. While these communities have a long history of adapting to harsh environments, they are now at a crossroads. Natural resources, ecosystems, and traditional ways of life are all at risk. This raises pressing questions: how can communities adapt quickly enough to survive in an ever-changing climate? How can they bounce back from the increasing frequency of environmental shocks?

**Dr. David James Molden**, who served as Director General of the International Centre for Integrated Mountain Development (ICIMOD) from 2011 to 2020, has spent decades developing sustainable solutions for mountainous regions. In an interview with REVOLVE, Molden discussed the impacts of climate change on mountainous regions and explained why **the key to building resilience lies within the strength, knowledge, and adaptive capacity of the local communities themselves.**

## The main challenges faced by mountain communities

The challenges faced by mountainous communities are interconnected, altering their natural resources, ecosystems, ways of living, and social systems. Three prevalent issues emerged in REVOLVE's interview with Molden: changing water patterns, the conversion of ecosystems and biodiversity loss, and the urgent need for these communities to adapt swiftly to shifting environmental conditions.

Molden emphasized the deep understanding that local communities have of these changes. Through the ICIMOD, communities have developed flood early warning systems, revived ponds and springs, and created new agricultural practices to adapt to changing water patterns. The future, however, depends on these communities being able to scale up these solutions while preparing for even greater challenges.



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"The real key in resilience building are the communities themselves," Molden emphasized. "I'm thinking about rural communities. It's important to recognise that these people have been tackling these problems for a long time and have developed their solutions. Sometimes that engagement is to understand how they see the problem and what are the potential solutions. So, it's kind of co-developing solutions with communities."

**The real key in resilience building is the communities themselves.**

## Water security

Water is essential for human health, agriculture, and the sustainable socio-economic development of communities.

In 2010, the UN General Assembly recognized the human right to water and sanitation, and the UN SDG 6 calls for "ensuring availability and sustainable management of water and sanitation for all". In the HKH region, changing water patterns pose one of the greatest threats to both upstream and downstream communities.

Glacier melt, floods, droughts, and mountain erosion are among the most significant hydrological changes. The HKH region, often referred to as the "Third Pole" due to its massive ice reserves, has seen faster glacier melt than other mountain ranges. This has both direct and indirect consequences for the over 1 billion people who depend on the Indus, Ganges, and Brahmaputra river systems. In the summer months, when other sources of water are scarce, snow and glacial runoff help sustain water supplies, but they also increase the risk of floods and landslides.

## Conversion of ecosystems and biodiversity loss

The conversion of ecosystems – the change of one ecosystem to the other, often driven by human inputs and management based on societal needs and desires – is another pressing issue in the Himalayas. The expansion of plantations, deforestation and other external interventions have resulted in the loss of biodiversity and essential resources for local communities and poses a direct threat to the cultures, traditions and provision of essential goods and services to them.

The implementation of nature-based solutions is critical for protecting mountain ecosystems. Molden stressed that external actors must be mindful of how they engage with these communities. “You can do bad, and you can do good,” he summarized. As an external actor, you can help communities in their business activities, but the challenge is to do it in a way that builds the local capabilities, local knowledge that builds on the social network. For Molden, external actors can’t “just throw money or infrastructure at the problem.” Rather than imposing outside solutions that may exacerbate underlying issues, the key lies in collaboratively crafting solutions with local people and governments, building on existing knowledge and social networks.

## Can these communities adapt fast enough?

A central question remains: can these communities adapt fast enough to these environmental threats?

Climate change brings not only direct environmental challenges but also more indirect social disruptions. For instance, dengue fever appeared in recent years in the Kathmandu region, threatening the social systems. In the Khumbu region in Nepal, the bursting of lakes due to the melting of glaciers destroyed the dams, causing a big flood that destroyed villages. To tap into this glacier water, local communities will have to dig their canals higher and higher.





Another social disruption linked to climate change is the increase of male-out-migration. This migration has reshaped gender roles, affecting women’s work and, on a wider level, household’s food security. In many instances, women have become the main caretakers of natural resources and agricultural systems. Molden emphasized the strong knowledge of natural resources management that women possess in the HKH region, as well as their strong involvement and collaboration with other communities. Women, in their role as household providers, know better than anyone the urgency of the situation.

## Resilience from within

Building long-term sustainable climate resilience requires solutions that are co-developed using the knowledge, tools, and traditions of local communities. As Molden noted, “the real key in resilience building is the communities themselves.”

One successful cooperation initiative is ICIMOD’s Transboundary Landscapes Programme, which works to enhance socio-ecological resilience to climate change through the adoption of landscape approach across boundaries to manage biodiversity and ecosystems. The program avoids administrative pushbacks and protects shared ecosystems and wildlife habitats such as those of tigers and elephants, ensuring free movement between countries such as Bangladesh, India and China. Through regional policies and strategic partnerships, the program serves as a bridge for the peoples of the HKH and their individual histories, cultures, environments, and conservation practices.

Tourism can also serve as a tool for generating income, preserving traditional practices, and encouraging the conservation of natural resources and ecosystems. The promotion of traditional crafts and artisanal goods, as well as the protection of small local businesses, are essential for building a sustainable tourism strategy. Ensuring local communities have the necessary tools to be economically self-sufficient is key to protecting and enhancing their resilience.



4

Preserving the cultural diversity of mountain communities is as important as protecting their ecosystems. For many mountainous peoples, spiritual connections to nature are integral to their way of life. As Molden observed, “among different cultures, you get different solutions for how to interact with the environment.” Supporting traditional cultural practices and values is vital for crafting solutions that are both sustainable and respectful of the region’s diverse communities.

## No one-size-fits-all

The Hindu Kush Himalaya is yet another example that the solutions to building climate resilience are not a one-size-fits-all approach. Building sustainable, long-term resilience, requires a deep understanding of local environments, knowledge systems, and social structures. While the challenges faced by mountain peoples are immense, these communities have long histories of adaptation and survival. By working together with scientists, governments, and external actors, they can continue to thrive even in the face of climate change. As Molden aptly put it, “if we could just do more of that—more cooperation, more understanding—the world would be a better place.”



5

1. Gokyo Lakes, one of the highest glacial fed freshwater lakes, locked in ice during the winter months. Photo: Shuvabi Pradhan
2. A yak grazing on the Himalayan terrain. Yaks are a key source of dairy, wool, and transportation in the HKH communities. Photo: Shuvabi Pradhan
3. A suspension bridge stretches over the waters of the Dudh Koshi River, meaning “milky river” in Nepali, relating to the milky-white appearance of the water, caused by the high content of glacial silt. Photo: Shuvabi Pradhan
4. Panoramic view of Gokyo Lakes. Photo: Raju Gurung / Unsplash
5. A yak grazing on the Himalayan terrain. Yaks are a key source of dairy, wool, and transportation in the HKH communities. Photo: Shuvabi Pradhan




# Regions 4Climate

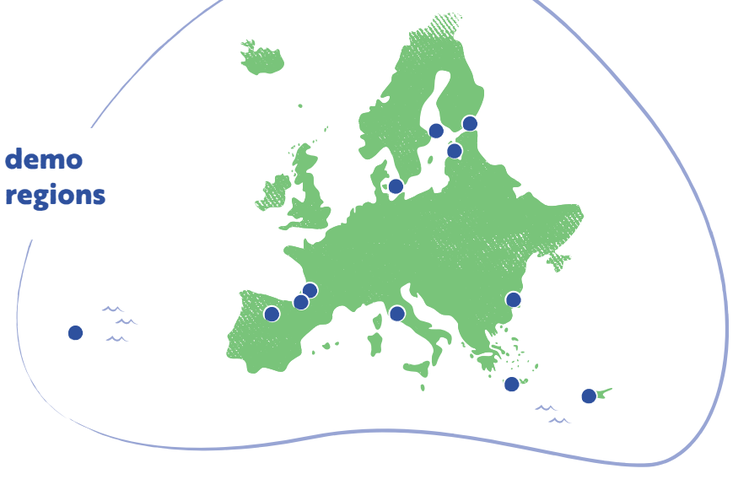
## Building resilient communities

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# Cold War at the Bottom of the Sea

WRITER: **BOŠTJAN VIDEMŠEK**



1

**Norway, considering itself one of the world's most eco-friendly countries, is well on its way to becoming the first country to welcome deep-sea industrial mining.**

On 9 January 2024, the Norwegian parliament's vote to approve deep-sea mining passed by an overwhelming majority – 80 votes in favor, 20 against. Norway, considering itself one of the world's most eco-friendly countries, is thus well on its way to becoming the first country to open part of its seabed to industrial mining.

The intended Norwegian 'exclusive economic zone' comprises 281,000 square kilometers. The mining will occur between 1500–4000 meters deep, in perfect darkness illuminated only by creatures producing bioluminescent light.

The ocean depths – including the floor – are home to some of the least explored ecosystems on the planet and on many counts, the most delicate. The area designated by the Norwegian government is the natural habitat of a myriad of animal species, including several types of whales. According to scientific estimates, the zone could also be home to thousands of undiscovered species, which means we have no idea what might be at risk.

The mostly unexplored sea depths are already heavily affected by climate change, pollution, and excessive fishing. In the opinion of oceanologists and marine scientists, the extraction of metals and minerals in the name of tackling the climate crisis could further imperil deep-sea ecosystems.

Part of the area marked for mining lies within the Norwegian continental shelf, while another part lies in neighboring international waters, whose floor falls within Norwegian jurisdiction. One part of the mining zone is the Arctic Archipelago Svalbard – seen by Norway as its exclusive economic area, despite a 1920 international treaty stipulating shared use with Russia, Great Britain, and Iceland, along with 48 other countries.

Norwegian companies plan to utilize the seabed for the extraction of cobalt, copper, zinc, magnesium, nickel, and several rare metals. The rare metals are located in the manganese crust of underwater mountains and the vicinity of active or extinguished hydrothermal vents.

The key argument of the deep-sea mining industry to win over politicians and investors is that seabed mining is vital for the green transition. According to this view, the production of renewable-source and electrical mobility technologies will require almost limitless quantities of choice metals and minerals.



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The brutal tampering of the planet's least explored, yet extremely sensitive ecosystem is thus presented as the only viable path to decarbonization.

## A day of shame

Norwegian officials argue that seabed mining could be done sustainably.

"We need to cut 55% of our emissions by 2030...The reason for us to look into seabed minerals is the large amount of critical minerals that will be needed for many years," explained Astrid Bergmål, Norway's State Secretary of Petroleum and Energy.

Many scientists disagree, including Peter Haugan of Norway's Institute of Marine Research. "Seabed mining could endanger some of the globe's most sensitive and vulnerable areas," he warned, noting that deep-sea environments are fragile and largely unknown. Haugan insists that 10 years are needed to understand these ecosystems before mining can begin safely. He believes Norway's decision could set a dangerous precedent and spark a global race for seabed resources.

WWF-Norway CEO Karoline Andaur denounced the decision, calling it "an unprecedented governance scandal." According to Andaur, the government disregarded warnings from scientists and the ocean research community. "Never before have we seen a Norwegian government so blatantly disregard scientific advice," she said, adding that this decision sets "a dangerous precedent."

## A global race to mine the ocean floor

Norway is of course far from the sole example. The Cook Islands, Japan, New Zealand, and Namibia are only a few of the countries also updating their deep-sea legislation.

The Japanese government has already built the first ship for harvesting underwater metals. The venture is set to kick off by the end of the decade. Last November, the Japanese authorities declared that the designated area contained enough cobalt for 88 years and enough nickel for 12 years of Japanese needs.

China, on the other hand, owns the greatest number of licenses for the exploration and mining of the Pacific seabed. Russia and South Korea own many licenses as well – like India, which intends to set up its own exclusive area for deep-sea mining.



4

Environmental advocates believe Norway rushed the process to issue licenses before public opposition could mobilize. Greenpeace Nordic's Haldis Tjeldflaat Helle highlighted that Norway allowed just an 11-day application period for mining licenses, compared to a typical two-month window in the oil industry. "The government seems to be in a great hurry," she observed. This expedited process has raised questions about transparency and the government's commitment to environmental protection.

**Deep-sea mining poses a tremendous risk to biotic diversity. It is also a huge risk from the climate change perspective since the ocean serves as a carbon sink.**

## The environmental cost of a green transition

Many argue that metals from the ocean floor are unnecessary for the green transition. A report from the Environmental Justice Foundation contends that a combination of new technologies, recycling, and a circular economy could meet current climate goals, reducing demand for these metals by 58%. Greenpeace also called the parliamentary vote a "Norwegian day of shame," with Project Manager Frode Pleym criticizing Norway for "positioning itself as an ocean leader while giving the green light to ocean destruction in Arctic waters."

WWF's Kaja Lønne Fjærtoft emphasized the lack of environmental consideration, noting that Norway's analysis of seabed risks is too limited. The Norwegian Environment Agency (NEA) also criticized the government's risk assessment, finding it "impossible" to complete a "holistic risk estimation" due to a lack of data. The NEA declared that this failure violates Norway's biodiversity laws and the Sea Mineral Act.

## Geopolitical stakes in the Arctic

Some analysts believe Norway's mining ambitions are partly motivated by geopolitical interests, especially as its Arctic claims overlap with Russia's. Norwegian companies with ties to defense, like Kongsberg, are key players in the mining push. Kongsberg partners with Canada's Metals Company, a major force in seabed mining technology.

Norwegian officials are reportedly concerned about maintaining influence in the Arctic amid rising global tensions. This urgency is reflected in Norway's efforts to prevent the International Seabed Authority (ISA) from imposing an international ban on seabed mining. The ISA, an entity under the United Nations, is expected to finalize regulations for deep-sea mining by 2025, which could limit Norway's plans.

## Voices of concern from civil society

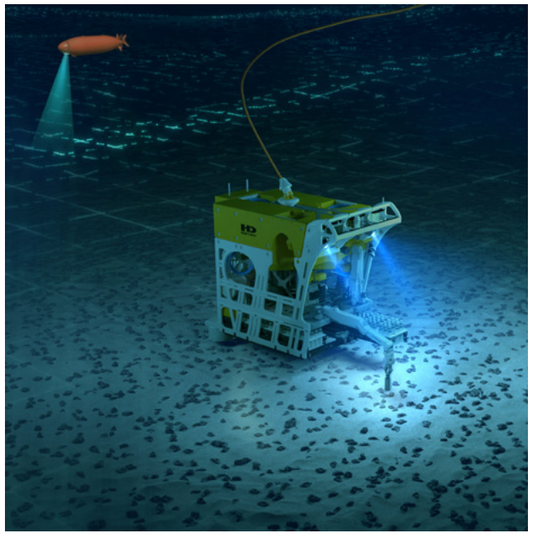
Norway's rapid push toward seabed mining has stirred opposition among environmental groups, yet the public has shown limited resistance. Gytis Blaževičius, who runs the Norwegian NGO *Natur og Ungdom* (Young Friends of the Earth), attributes this to the public's reliance on NGOs to handle environmental matters. "In Norway, every citizen is a member of almost five different NGOs," he observed, explaining that NGOs often address environmental issues on behalf of society.

Public awareness of deep-sea mining remains low, but environmental groups are planning campaigns to raise consciousness. Greenpeace aims to send a ship to the designated Arctic mining area with scientists onboard to conduct independent research, marking the beginning of a broader campaign against deep-sea mining.

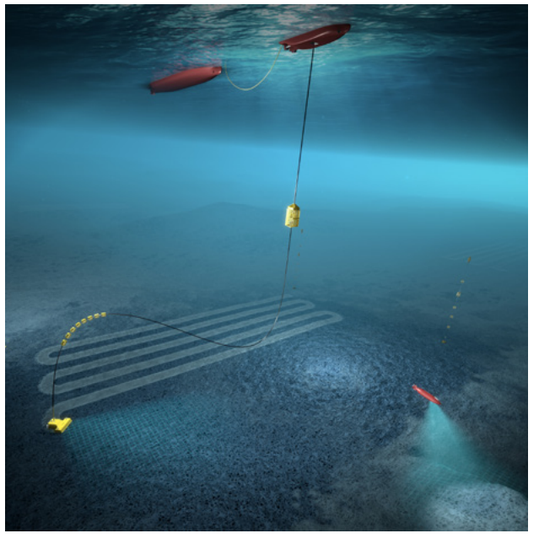
## The future of deep-sea mining in Norway

With licenses expected to be issued in 2025, exploration could begin later that year, potentially leading to large-scale mining by the end of the decade. Environmentalists argue that Norway's mining rush lacks the research necessary to prevent severe ecological damage. Fjærtoft emphasized that seabed ecosystems are "completely unexplored," making Norway's actions highly risky. She warned that such actions could embolden other countries to adopt similarly aggressive mining strategies.

Critics within Norway, including scientists and activists, have also questioned the economic feasibility of deep-sea mining, as exploration and extraction



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at such depths are costly and technically challenging. Blaževičius notes that exploration costs alone could be astronomical, casting doubt on whether mining will prove profitable.

## The industry's perspective

Walter Sognnes, CEO of the Norwegian mining startup Loke, defends the industry, claiming that "the green transition will only be possible if sufficient resources for its technologies can be secured." He argues that Norway's mining sector is prepared to conduct environmentally responsible exploration.

The Norwegian entrepreneur understands the project's success would stimulate development in competing countries like China, India, and Russia, where he believes the authorities will have little sympathy for environmentalist concerns. "The green transition doesn't only mean 'unplugging' us from fossil energy sources. It means replacing the fossil industry with the mining industry. This is a sort of a paradox."

However, critics maintain that Norway's approach is too fast-paced for a fragile ecosystem that scientists barely understand. Fjærtoft summed up the environmentalists' stance: "The entire environmentalist community is extremely worried...Such a momentous project should be based on transparency and responsibility."

Environmental advocates are concerned that if Norway's mining program proceeds unchecked, it may lead to irreversible damage to biodiversity. Scientists warn that mining the seabed could disrupt ecosystems critical to ocean health, where species like bacteria, algae, and sponges play a role in absorbing carbon. Fjærtoft argues that "deep-sea mining poses a tremendous risk to biotic diversity," adding that the impact on the Arctic ecosystem could be devastating.

## An uncertain path forward

While pushing for seabed mining, the Norwegian government is also issuing new permits for oil and gas projects in the North Sea and Barents Sea. For a few years, this was seen as controversial even in Norway – a country fuelling its green transition with the export profits of the fossil industry.

As of August 2024, the public hasn't reacted with any force to the government's plans to launch the deep-sea mining industry. The common man and woman know virtually nothing about the seabed mining project. Blaževičius explained this was not merely due to the non-transparent methods of the government, but also the fact that the Norwegian public prefers to leave environmental issues to NGOs. Norway boasts five million inhabitants and 24 million members of NGOs. This means that, on average, every citizen is a member of almost five different NGOs. In many ways, these organizations have replaced civil society.

In Blaževičius' opinion, the response of the Norwegian public has been rather weak because of the project's far-off nature, both geographically and temporally: "Norway made a lot of money off the Ukrainian war and the resulting spikes in oil prices. So, we started marketing ourselves as Europe's safe and reliable source of gas. And all of a sudden, fossil energy is no longer as controversial as it was! This brought fresh wind to the sails of the oil and gas lobby, and many new permits for rigs are being handed out." ●



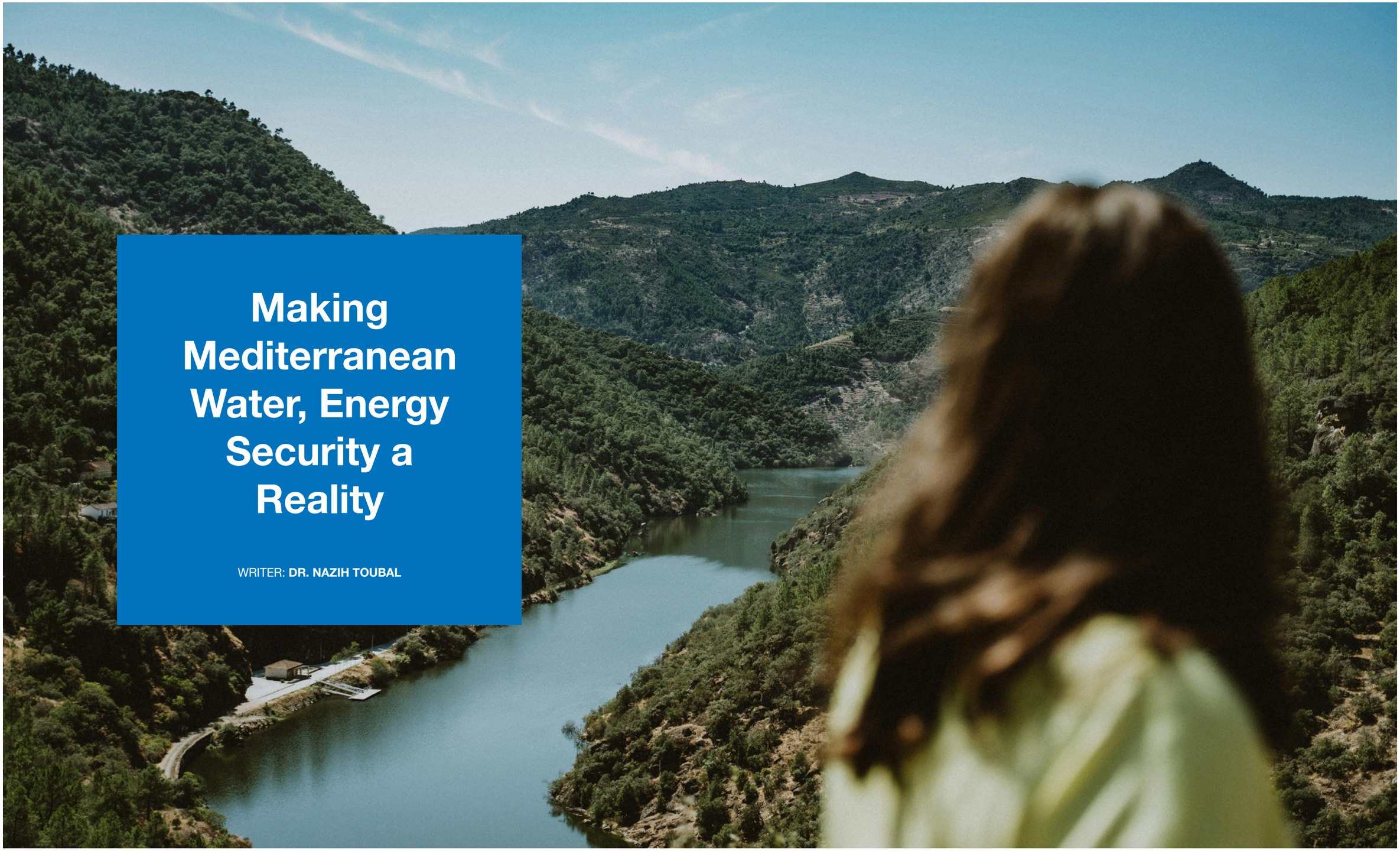


7

1. Landscape in Lofoton, Norway, which could feel the consequences of deep-sea mining. Photo: Felix Bacher / Unsplash
2. Norwegian Coastline. Festvågtind, Henningsvær, Norway. Photo: Martine Jacobsen / Unsplash
3. Lighthouse on the coast of Norway. Photo: Sébastien Goldberg / Unsplash
4. Fishing harbor in Norway. Photo: Anna-Philine Lübbke / Unsplash
5. The traditional Box Corer, a marine geological sampling tool for soft sediments in lakes or oceans, will be replaced by a Digital Box Coring system. Image: Loke
6. Technology in development for "minimum sediment disturbance." Image: Loke
7. Norwegian economy and welfare has been built on oil and gas. Photo: Oliver Cole / Unsplash
8. Værlandet, Norway. Photo: Kjell-Jostein Sivertsen / Unsplash

# Making Mediterranean Water, Energy Security a Reality

WRITER: **DR. NAZIH TOUBAL**



1

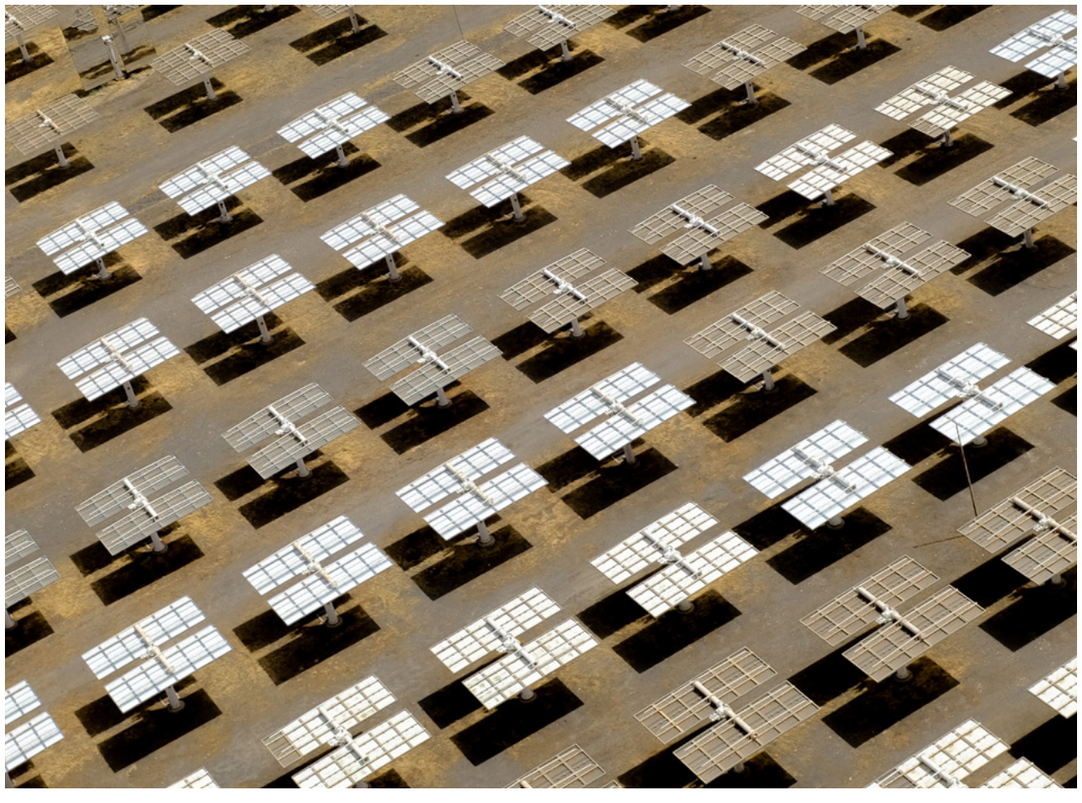
**The road to water security and renewables in the Mediterranean requires cooperation.**

Water and energy are fundamentally interdependent, shaping the socio-economic and environmental landscape of the Mediterranean. According to the International Renewable Energy Agency, the region has immense potential to develop renewable energy sources (RES), including solar, wind, and green hydrogen production. With its sunny coastlines and steady sea breezes, the region can meet its energy needs while reducing its dependence on fossil fuels and mitigating the impacts of climate change.

Yet, achieving this requires overcoming numerous technical, economic, and political challenges, as well as steering the complex interplay of interests and priorities over water usage among Mediterranean countries. Countries in the region vary widely in their access to water and energy, and there are often competing priorities between agriculture, industry, and residential use, which raises essential questions about resource equity and cooperation.

Approximately 20 million people in the Mediterranean lack access to drinking water, highlighting the urgency of this issue, which is exacerbated by increasing demand for energy due to population growth and industrial use. To overcome this challenge, it is important to understand how to distribute water through effective planning, along with key decisions made by energy companies in the region. There needs to be a circular approach on how to manage water in the Mediterranean and at the same time, clean energy should be favored in the solution.

Renewable energy systems, especially green hydrogen production, require large amounts of fresh water for electrolysis and cooling methods. With the growing number of renewable energy projects in the region, water needs are often neglected in energy planning, with companies focusing on production goals without fully assessing long-term impacts of excessive water usage. A circular approach, where resources are continuously recycled and reused within a closed-loop system, could offer a more sustainable solution, creating synergy between water management and renewable energy goals. In this circular framework, water conservation, recycling, and efficient allocation would be central to clean energy planning. Instead of relying on a one-way flow of resources, Mediterranean countries could adopt common integrated water management practices that prioritize reuse and minimize wastage.



2

## The growing challenge of water scarcity

Water scarcity is a defining feature of the Mediterranean, with the region facing chronic shortages exacerbated by climate change and population growth. Agriculture accounts for a significant portion of freshwater usage, putting pressure on already strained resources. Furthermore, pollution from industrial and domestic sources threatens both surface and groundwater quality, compromising ecosystems and human health. Conflicts over shared water resources, such as the Jordan River and the Tigris-Euphrates basin, add another layer of complexity to the challenge of water security in the region with a dramatic effect on geopolitics that have been shaped by issues around access to water.

According to the World Resources Institute, water stress will reach its peak in regions such as the Middle East and North Africa (MENA) by 2050. However, this issue is not confined solely to the MENA region; southern European countries like Spain and Malta are also experiencing significant challenges due to dwindling water supplies.

In the Mediterranean, the reliance on energy-intensive industries, coupled with limited freshwater availability, accentuates the correlation of water security and clean energy objectives.

> Mediterranean countries need to establish transnational agreements that coordinate water and energy initiatives, prioritizing projects that reduce competition for these critical resources and enhance climate resilience.

Therefore, strategies aimed at mitigating water stress must also consider the implications for energy systems, promoting synergies between water and energy management efforts to achieve sustainability goals.

Desalination, which involves removing salt from seawater and filtering it to produce quality freshwater, is often considered by water experts as a promising solution to the growing water scarcity in the Mediterranean, especially for coastal areas where freshwater resources are increasingly limited. Spain has been a pioneer in the process of water desalination since the 1960s and is currently fifth in the world in terms of installed desalination plants. Across the sea, Algeria is also advancing in its comprehensive water security strategy by planning to build new seawater desalination plants in the next five years.

Throughout the history of its implementation in the Mediterranean, the major limiting factor of desalination has been that it requires large amounts of energy, which in turn raises the cost of producing water. Solar-powered desalination plants, for instance, have the potential to provide freshwater in areas where traditional water resources are scarce, while avoiding the high carbon emissions associated with conventional desalination methods. This approach also opens opportunities for technological innovation and investment in energy-efficient water management systems, which can further reduce resource strain.

On the other side of the Mediterranean, Egypt is also making substantial strides to address water scarcity with a bold investment from the Egyptian Sovereign Wealth Fund. By 2025, Egypt plans to secure $2.5 billion in new financial partnerships dedicated to building 17 seawater desalination plants, all powered by solar energy, to provide a stable drinking water supply for Egyptians. Both Algeria and Egypt demonstrate a forward-thinking approach by integrating renewable energy into desalination processes, aiming to lower costs, reduce carbon emissions, and ensure sustainable water resources. Achieving these synergies, however, requires comprehensive policy reforms and collaborative frameworks that go beyond national borders.

Mediterranean countries need to establish transnational agreements that coordinate water and energy initiatives, prioritizing projects that reduce competition for these critical resources and enhance resilience against climate impacts. Additionally, regional institutions can play a crucial role in facilitating knowledge-sharing and funding opportunities for cross-sector projects that support integrated water and energy solutions.

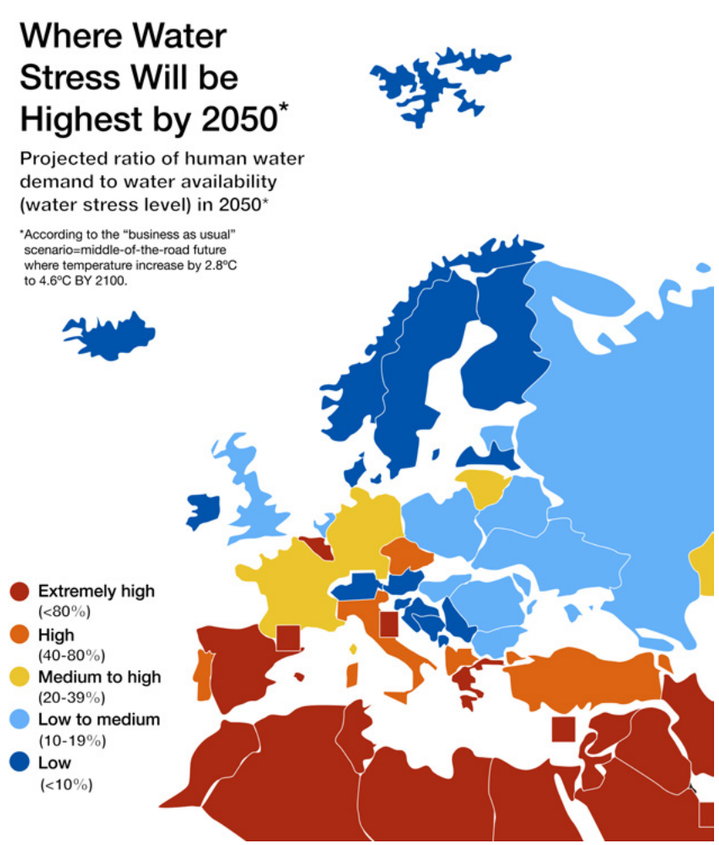
From another perspective, water scarcity can be seen as a major source of conflict in the world and particularly among Mediterranean nations. Since the 19th century, there have been over 140 documented water conflicts in the region, highlighting its critical role as a resource that can quickly heighten tensions both within and between nations. Water can be wielded as a tool of power, with hostile groups potentially seizing, damaging, or rerouting water supplies and infrastructure to achieve their goals.

The scarcity of freshwater resources is especially pronounced in the eastern Mediterranean, where disputes over access to critical rivers and aquifers have created longstanding tensions. Water insecurity in this region, compounded by erratic rainfall and over-extraction, has the potential to drive confrontations, exacerbate inequality, and even shape geopolitical alliances.

A specific example of such conflict is the long-standing tension between Turkey, Syria, and Iraq over the Tigris and Euphrates rivers. These rivers originate in Turkey, flowing downstream into Syria and Iraq, making Turkey's water policies crucial for its neighbors. Over the years, Turkey's construction of dams like the Ilisu Dam on the Tigris has drawn criticism and protests from Iraq and Syria, who depend on these rivers for drinking water, agriculture, and hydropower.

Turkey's Southeastern Anatolia Project (GAP), a large-scale irrigation and hydropower initiative, has further heightened regional strain, as it diverts significant water volumes, reducing flow downstream and impacting the agricultural and drinking water supplies of the other nations. This control over water resources provides Turkey with a powerful influence over its downstream neighbors, potentially giving it leverage in broader regional negotiations.

The Tigris-Euphrates water dispute reflects the broader challenges faced by Mediterranean countries as climate change intensifies droughts, decreases precipitation, and drives greater competition for diminishing resources. In this context, water becomes not only a necessity but a tool for political maneuvering. As water resources grow scarcer, the likelihood of similar disputes could increase, underscoring the urgent need for transboundary agreements and cooperative resource management to avoid further escalation.




3

## The imperative of clean energy integration

Concurrently, the Mediterranean faces the imperative of transitioning towards clean and renewable energy sources to mitigate climate change and reduce dependency on fossil fuels. RES deployment in the region remains uneven, constrained by regulatory barriers, grid limitations, and financing challenges. Countries like Spain and Italy have made strides in renewable energy adoption, but southern Mediterranean countries lag behind, relying heavily on imported fossil fuels.

Technology innovation plays a pivotal role in driving progress, offering solutions such as digital water management systems and hybrid renewable energy technologies that amplify the synergies between water and RES. However, a comprehensive approach to water and energy security in the Mediterranean must also consider the vital role of community involvement and public awareness. Indeed, encouraging local communities to adopt water-saving practices and renewable energy technologies can significantly enhance resource efficiency at the grassroots level. Education and awareness campaigns, incentives for sustainable practices, and local training initiatives could empower citizens, especially students, to contribute actively to water and energy conservation efforts. Additionally, involving communities in decision-making processes for resource management ensures that policies are tailored to local needs and realities, which can lead to higher rates of compliance and success in local water-related projects. Engaging civil society organizations and local governments in these initiatives can help bridge the gap between high-level policy goals and everyday actions that contribute to water and energy sustainability.



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Furthermore, financing sustainable water and energy projects will be critical for the success of this integrated approach. Public-private partnerships can be instrumental in mobilizing the resources needed to modernize infrastructure, support technological innovation, and expand access to clean energy solutions across the Mediterranean. Given the financial constraints many Mediterranean nations face, establishing partnerships with international climate funds, development banks, and private sector stakeholders will be essential to overcome budgetary limitations. These partnerships can also facilitate the transfer of expertise and technology, ensuring that Mediterranean countries have access to the latest innovations in water and energy management.

**Mediterranean countries struggle with inequitable access to water and energy, which complicates cooperation and sometimes escalates into water conflicts.**

The quest for water security and clean energy integration in the Mediterranean swings between the vision of a sustainable future and the stark reality of persistent challenges. On one hand, the Mediterranean's vast solar and wind resources, coupled with green hydrogen, promise a pathway to reduce dependence on fossil fuels; and, on the other hand, innovations like solar-powered desalination offer hope for alleviating water scarcity without exacerbating emissions.

Yet, this vision can often feel like a mirage, as political divisions, resource competition, and financial constraints delay progress. Mediterranean countries, while rich in natural resources, struggle with inequitable access to water and energy, which complicates cooperation and sometimes escalates into water conflicts as scarcity intensifies competition over limited resources.

On a deeper level, this journey toward integration serves as a critical milestone, highlighting the interdependence between water and energy—an insight essential for tackling climate resilience on a regional scale. As Mediterranean countries attempt to balance water conservation with clean energy production, they are forced to confront the underlying need for cooperation and policy alignment. Public-private investments, transnational agreements, and community engagement are the pillars needed to elevate this vision from a distant dream to a concrete milestone, allowing the Mediterranean to lead by example.



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1. Miradouro de São Lorenço, Portugal. Photo: Bruno Yamazaky / Unsplash
2. Solar panels in Almería, Spain. Photo: Jake Threadgould / REVOLVE
3. Map of projected ratio of human water demand to water availability in 2050.
4. Windmills in Cádiz, Spain. Photo: Luca Bravo / Unsplash
5. A boat on the Nile, Egypt. Photo: Ahmad Ajmi / Unsplash
6. Agricultural land in southern Spain. Photo: Gary Leleu / REVOLVE




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# VIEWS



## The Mediterraneans

A person jumps from a boat into the Mediterranean Sea, Fethiye, Turkey.
Photo: Dylan Alcock / Unsplash

Around 20 million people lack access to drinking water around the Mediterranean, comprising 60% of the world's water-poor population, according to the World Economic Forum.

The Mediterranean is the fastest warming region in the world (heating at a rate 20% faster than the global average) with climate projections of reaching +4 degrees Celsius above pre-industrial levels by 2100. The Mediterranean is also home to some of the most water-scarce regions in the world with 180 million people who are considered water poor and another 60 million experiencing water stress, per the Union for the Mediterranean.

Factors such as population growth, increasing living standards, constant tourism, economic development, and the use of water-intensive technologies are straining water supplies in the region.  Agriculture remains a primary industry around the basin which also demands massive amounts of water. This demand for quantity is matched by decreasing quality.

The degradation of the groundwater quality is a common problem around the Mediterranean due to pressures on aquifers, such as from excessive pumping in relation to average natural recharge, the return flow from irrigation water with the intense use of agrochemicals, plus leakages from urban areas, seepage from landfills, septic tanks, sewers, and mine-tailings. The situation is dire.

And yet this sea remains a beautiful space of shared cultural identity – it is the quintessential crossroads of civilizations, witnessing the ebb and flow of history, the sedimentation of centuries of people traversing and trading, communicating and conversing, moving and making life happen. This VIEWS gives snapshots of the countries adjacent to and connecting these magical waters.





Seaside view of Tripoli, Libya.
Photo: Ahmed Almakhzanji / Unsplash

A person fishes with a net in the Mediterranean Sea in Lebanon.
Photo: Nabih El Boustani / Unsplash

**Above:** Beachgoers in Cassis, France. Photo: Freddie Marriage / Unsplash
**Below:** A paddle boarder, backlit by the setting sun, paddles through the Algerian waters. Photo: Mounir Abdi / Unsplash





**Below:** Fishing boat, Nabeul, Tunisia. Photo: Anastasia Palagutina / Unsplash



Kefalonia, Greece.
Photo: Rafael Hoyos Weht / Unsplash

Neum, Bosnia and Herzegovina.
Photo: Mujo Hasanovic / Unsplash

Cliffs on the coast of Cyprus.
Photo: Andria Loannidou / Unsplash



**Above:** Taghazout Beach, Morocco. Photo: Louis Hansel / Unsplash

**Below:** Port of Barcelona, Barcelona, Spain. Photo: Kristijan Arsov / Unsplash



**Above:** Beach in Syria. Photo: Hosein Charbaghi / Unsplash

**Below:** Stella Maris, Haifa, Israel. Photo: Alex Ringer / Unsplash

Split, Croatia. Photo: Ferran Feixas / Unsplash

Two men fishing, Alanya, Turkey.
Photo: Igor Sporynin / Unsplash



AMWAJ أمـــواج

# Valuing Water Ecosystems

The Mediterranean's 'water-poor' population is projected to increase by 50% within 15 years, reaching 250 million people by 2033.

AMWAJ is committed to developing water content and communication tools for high-impact activities in order to empower the next generation of leaders in the Mediterranean, and safeguard our water-future.

Join us in our commitment to protect and restore water-related ecosystems and promote sustainable water management.

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an initiave by
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# The World Needs to Triple Renewable Energy by 2030

INTERVIEW WITH **BRUCE DOUGLAS**



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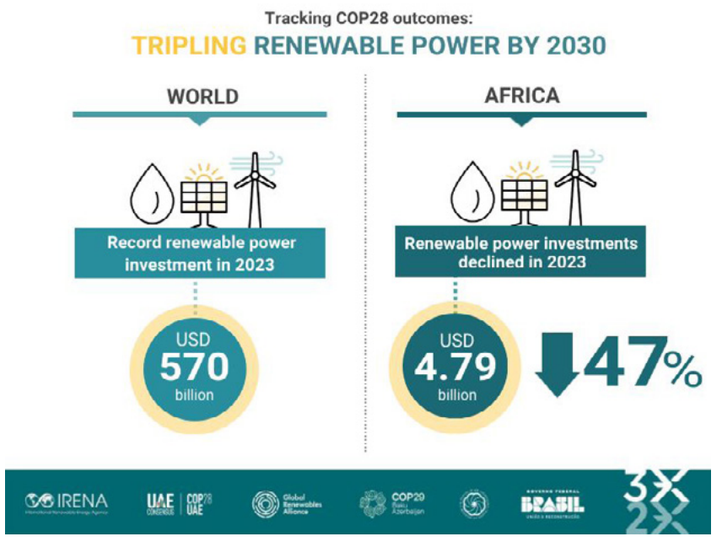
**Bruce Douglas discusses the Global Renewables Alliance's commitment to amplify the private sector's role in accelerating the energy transition to meet the global tripling renewables target.**

## How does the Global Renewables Alliance (GRA) ensure that diverse voices, including those of smaller players in the renewable energy sector, are heard? Specifically, how are the interests of smaller players represented and balanced within the organization, and what role does the GRA play in amplifying their voices?

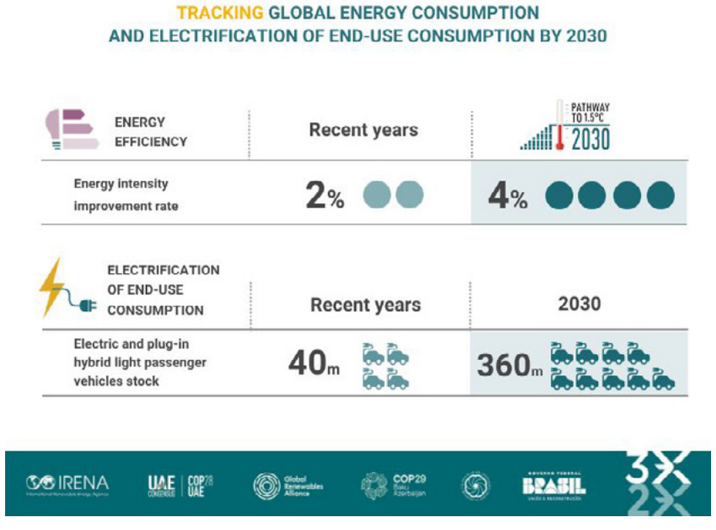
The Global Renewables Alliance serves as a comprehensive umbrella organization representing the global renewable energy sector, bringing together a wide range of stakeholders. We represent tens of thousands of private sector companies, not just renewable energy industry players and large multinational energy buyers like Amazon, Google, and PepsiCo, but also players throughout the value chain—from mining companies that supply the minerals for renewable technologies, to developers and SMEs involved in the energy transition.

Our approach ensures that diverse voices are heard by working through a network of organizations, including the Global Wind Energy Council, the Global Solar Council, and numerous regional and national associations. These groups represent stakeholders at every level, from large buyers to local communities, ensuring that the interests of both large and small players are balanced and represented.

Geographically, we focus primarily on emerging markets and developing economies, where much of the renewable energy action is needed. While regions like China, Europe, and the U.S. have historically attracted a large portion of investment, only 15% of renewable energy investment has reached the Global South. This imbalance highlights the urgent need to focus on developing regions, which have vast energy needs and growing populations. To address this, the GRA has expanded its presence, with offices now being set up in Kenya, Latin America, and Asia, ensuring that voices from these regions are amplified in the global dialogue and the benefits of the renewable energy boom are shared equally.




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## The GRA has set ambitious targets to triple global renewable energy capacity by 2030. What key strategies do you believe will be most effective in achieving this goal? How do you plan to engage both governments and industries to make this happen?



4

It's important to clarify that the target to triple global renewable energy capacity by 2030 was set by countries, not the renewable energy industry itself. This commitment, which was initially made in a pledge by 130 countries leading up to COP28, was formally endorsed in the final Global Stocktake decision by all countries at COP28. While this is a critical target, we view it as a baseline, not a ceiling, and believe there's potential to exceed this goal. However, we are currently off track to meet it, and several factors are contributing to this challenge. To address it, we believe the key to success lies in a combination of immediate actions and long-term planning.

The GRA focuses on five core pillars to drive renewable energy deployment: supply chains, demand-side (industrial decarbonization and corporate sourcing), permitting, financing, and energy system flexibility (including grids and storage). For the short-term actions, there are several critical areas where progress can be made quickly:

**Grid Connection:** Over 3,000 gigawatts of renewable energy projects are currently stuck in grid connection queues, waiting for access to the grid. This backlog represents a capacity roughly equivalent to the entire electricity system of China. If these projects could be fast-tracked through grid connection reforms, it would significantly accelerate progress toward the 2030 target. Streamlining and improving grid connection processes will help unlock this potential.

**Permitting:** Many renewable projects are delayed because of lengthy permitting processes, with wind farm approval taking longer than construction in some areas. With the urgency of the climate crisis and the economic and environmental benefits of renewables, adjustments to permitting timelines could drive rapid deployment. For example, the European Commission's emergency measures, now being implemented in Germany, have demonstrated how accelerating permitting can lead to a dramatic increase in renewable projects.

By combining these short-term actions to address bottlenecks with robust long-term planning, we believe we can make significant strides toward achieving and even surpassing the 2030 renewable energy target. Engaging both governments and industries in this effort is essential, and we are committed to facilitating collaboration across all sectors to drive this global transition.

## GRA has recently launched the *Now Deliver Change* (NDC) campaign. Can you tell us more about the campaign's goals and some of the specific actions you're encouraging governments to take? How will you measure the success of this initiative?

The *Now Deliver Change* campaign was launched at New York Climate Week, with the first-ever Global Renewable Summit, where we hosted heads of state like European Commission President Ursula von der Leyen, Kenyan President William Ruto, and Barbadian Prime Minister Mia Mottley. The campaign is designed to drive the urgent need for action to triple global renewable energy capacity by 2030. The message is clear: **Now** because time is running out, **deliver** because action is needed, and **change** because the status quo

simply won't get us to where we need to be. The campaign calls on governments to include ambition in their updated Nationally Determined Contributions (NDCs) and emphasizes the need for real, concrete steps to translate these global commitments into action.

The core of the campaign focuses on three key areas for government action:

**Ambition:** We are asking governments to align their renewable energy ambitions with the goal of tripling renewable energy capacity. This ambition must also align with the 1.5°C climate target outlined in the Paris Agreement, which is critical for limiting global warming.

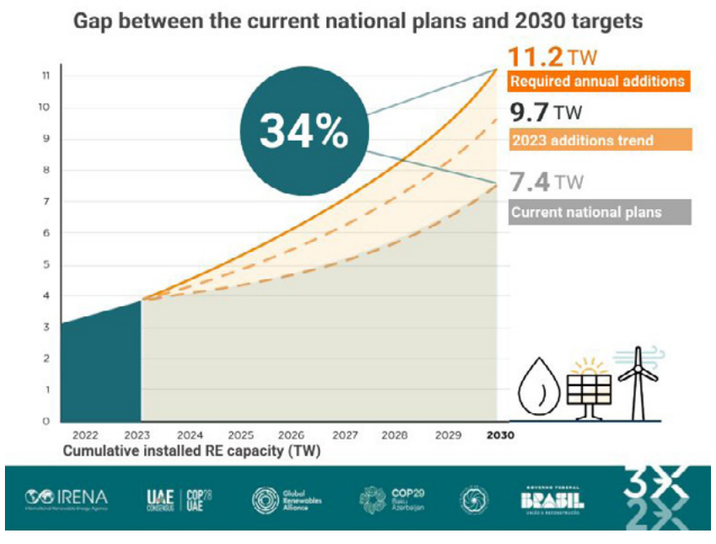
**Specific Renewable Energy Targets:** While many countries have general climate goals, fewer have set specific, measurable renewable energy targets. These targets are essential for ensuring that the transition to renewable energy is not only ambitious but also trackable. Countries should be setting clear and quantifiable goals for renewable energy capacity by 2030, and these targets must be integrated into their broader climate plans.

**Action Plans:** Governments must move beyond lofty ambitions and outline detailed, actionable long-term energy plans. These plans need to include budgeting, spatial planning, and clear timelines—knowing where, when, and how much renewable energy will be developed, and who will build it. For these plans to be investable, they must be robust and provide the confidence necessary for private sector investment. If governments make their plans clear and investable, companies like ours can commit to funding projects and accelerating the energy transition.

One of the challenges we're currently facing is that, out of 194 NDCs submitted, only 14 include specific renewable energy targets, and only one country—Namibia—has updated its renewable energy targets to align with the tripling goal since COP28. This is a stark reminder that while there is ambition, it hasn't yet translated into the actions needed to achieve these goals.

We are calling on governments to **deliver change** by updating their NDCs with clear, actionable plans for renewable energy. The global targets must be reflected in national plans and, most importantly, in local projects. For the energy transition to succeed, the real work must happen at the local level—transforming national strategies into tangible, on-the-ground projects.

As for measuring success, we are closely monitoring the NDCs as they are updated ahead of the 2025 deadline. We will track whether countries incorporate specific renewable energy targets, whether their energy plans are sufficiently detailed, and whether they set ambitious but achievable goals. The real measure of success will be whether these plans are translated into actual projects on the ground. The numbers from our shared report with IRENA indicate that the world is still on a "business-as-usual" track, which falls far short of the tripling target. That's why we need governments to step up, turn their ambitions into concrete actions, and align their plans with the global renewable energy targets.




5

**The GRA has emphasized that renewable energy should be seen as an investment, not a cost. What specific strategies is the GRA proposing to attract the significant investment needed to drive the renewable sector forward? How do you plan to address the current financial barriers that hinder investment in renewables?**

We are aiming to mobilize $10 trillion in cumulative investment by 2030, which, while a substantial figure, is relatively modest when you consider the scale of the global energy system. The capital to achieve this goal already exists, but the challenge lies in shifting the flow of investment into the renewable sector. Currently, fossil fuel projects tend to attract more capital because they offer higher returns on investment, making them more appealing to investors. Our primary task is to address the perceived risks associated with renewables and make them more attractive in terms of return on investment.

A key part of this effort is improving investor confidence. Renewables, with their high capital expenditures (capex) and reliance on upfront investment rather than ongoing fuel costs, face challenges in accessing low-cost capital. To address this, we need to reduce the perceived risks and interest rates, particularly in developing countries, where many renewable projects are located. While investors often perceive these regions as risky, the reality is that default rates are often lower than perceived. By providing greater transparency on these risks and emphasizing the actual stability of renewable investments, we can encourage more competitive pricing for capital. This, in turn, would lower financing costs for renewable projects.

Ultimately, it's about leveling the playing field. If we can make renewables as financially attractive as fossil fuel projects—by addressing financing costs, subsidy imbalance, interest rates, and perceived risks—we will unlock the flow of investment into the sector. It sounds simple, but it's a challenge due to the deeply entrenched financial systems that have historically favored fossil fuels. However, once we create the right conditions, the capital will flow into renewables, and we'll be able to mobilize the necessary investment to meet our climate goals. The money is there—it's just a matter of shifting it from one sector to another.







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**Has your *Now Deliver Change* campaign, particularly the focus on the triple ambition for renewables, gained traction and media attention? Have you seen other energy and like-minded associations or stakeholders engaging with your message? Additionally, how is the GRA addressing the critical role of community engagement in accelerating the adoption of renewable energy?**

Yes, the *Now Deliver Change* campaign has garnered significant attention, particularly during Climate Week in New York, where it resonated strongly with a wide range of stakeholders—NGOs, financiers, governments, and, of course, our industry members. We were thrilled to have nearly 200 signatories supporting the campaign, all calling for urgent action from governments to scale up renewables. This campaign is not only about policy advocacy but also about engaging communities directly, especially as we move forward with large-scale renewable energy projects.

One of the key challenges with scaling renewables is that the more projects we build, the harder it becomes to build them. As wind farms, solar fields, and other infrastructure begin to dot the landscape, local communities can become concerned about the impact on their environment. That's why it's crucial to engage communities early in the process—not just to inform them but to make sure they share in the benefits of renewable energy projects. Early engagement helps communities understand why these projects are important and how they will benefit directly from them.

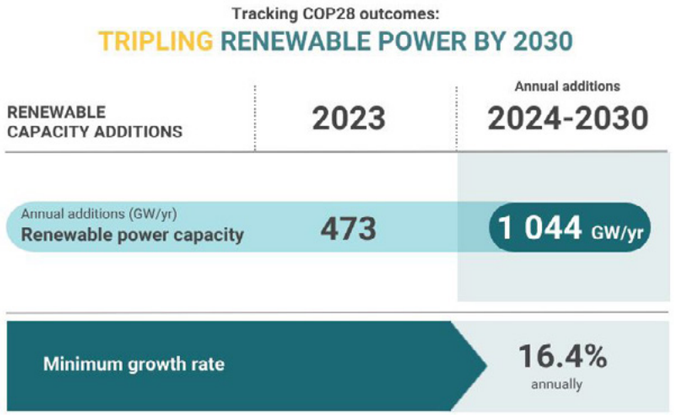
For example, we can ensure that a portion of the profits from these projects stays in the local community. In many cases, this could mean funding for schools, infrastructure, or even helping to lower electricity bills. In developing countries, renewable projects can provide much-needed low-cost electricity and improve local infrastructure, directly benefiting the community.

We believe that the fossil fuel industry, despite its many shortcomings, understood that community buy-in was critical to the success and longevity of their projects. Renewables must take a similar approach, but we need to be proactive, especially as we scale up. It's about earning the 'social license' to operate, ensuring that communities not only accept but actively support these projects because they see tangible benefits for themselves. This is key to large-scale deployment and long-term sustainability.

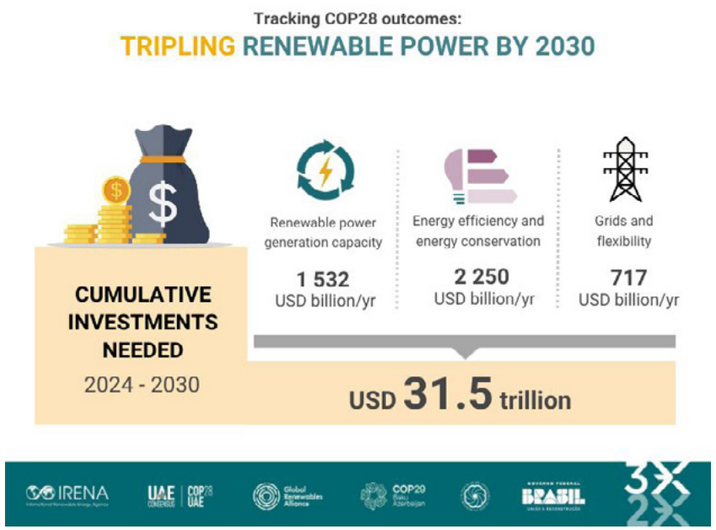
To support this, we've developed a nine-point plan for permitting through our *Planning for Climate Coalition*. This plan lays out a series of recommendations, including early consultation with communities, ensuring they share in the benefits of renewables, accelerating permitting timelines, and ensuring that renewable projects are developed in a "nature-positive" way. We cannot afford to develop renewables at the expense of nature—this is a lesson we must learn from the past. We need to develop in harmony with nature and, where possible, leave a positive environmental legacy. It's crucial that our renewable projects do not repeat the mistakes of the fossil fuel industry, where large-scale infrastructure projects were often developed with little regard for the surrounding ecosystems.

By promoting these principles and encouraging our industry partners to follow suit, we believe we can accelerate the adoption of renewables while fostering strong, supportive relationships with the communities that will benefit from them. This is a long-term strategy, but it's essential if we're to achieve the kind of rapid, large-scale deployment needed to meet global climate goals. ●

**This is an abridged version of REVOLVE's interview with Bruce Douglas, find the full version online: revolve.media/energy**




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8

1. An offshore windfarm.
   Photo: Nicholas Doherty / Unsplash
2. Tripling Renewable Power by 2030, World and Africa. Photo: Global Renewables Alliance
3. Energy efficiency.
   Photo: Global Renewables Alliance
4. Geothermal green energy in Iceland.
   Photo: Federica Bisso / Unsplash
5. Gap between the current national plans and 2030 targets.
   Photo: Global Renewables Alliance
6. Giant solar panel.
   Photo: Biel Morro / Unsplash
7. A hydropower plant in Kajaani (Finland).
   Photo: Timon Reinhard / Unsplash
8. Renewable Capacity Additions.
   Photo: Global Renewables Alliance
9. Tripling Renewable Power by 2030.
   Photo: Global Renewables Alliance



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# A Modest Proposal for Fly Ash Disposal

WRITER: **SUMMER FELSEN**

1

**The most inspiring life cycle of fly ash production, transportation, and transformation for commercial use in Bangladesh**

With a large portion of Bangladesh's population having no access to electricity, the pressure to generate power is immense. Some environmentalists argue that renewable energy such as hydropower dams or solar and wind energy could be viable solutions, while others, perhaps those with qualms about blue skies and the sound of chirping birds, rejoice in the global rise of coal demand.

In a fascinating move that only a coalition of visionary thinkers could conjure, the Bangladesh-India Friendship Power Company Limited (BIFPCL) decided to build the Maitree Super Thermal Power Project in Rampal, a colossal coal-fired power plant merely 14 kilometers away from the Sundarbans.

Although building an industrial coal-power plant so proximate to an endangered UNESCO World Heritage site might seem irrational, BIFPCL used only logic in their decision-making.



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**In typical coal power plants, coal is pulverized and blown into the boiler's combustion chamber where it immediately ignites, generating heat and producing a molten mineral residue.**

In this current epoch in history when the world's leading scientists, environmental activists, and aquatic species with plastic-lined stomachs beseech for sustainable climate solutions, companies like BIFPCL work tirelessly towards solutions as well. BIFPCL signed the ingenious agreement to build this plant with Bharat Heavy Electricals Limited (BHEL) on 29 February 2016.

It's comforting to know that the delicate balance of the Sundarbans is in the hands of a company whose name resembles the headquarters of a fictional, villainous laboratory that evokes images of high-voltage machinery.





In typical coal power plants, coal is pulverized and blown into the boiler's combustion chamber where it immediately ignites, generating heat and producing a molten mineral residue. In obvious rationale, if coal is going to be burned anyway, then the best thing to do is collect the residue ash from coal combustion, transport it across fragile ecosystems, and repurpose said ash into cement, bricks, and other construction products.

At a time when coal power in Bangladesh is on the rise, one is left to wonder if these fly ash bricks are being used to construct more power plants. Perhaps this is what they meant by 'circular economy.' These versatile ashes are known as 'fly ash,' consisting of the non-combustible matter in coal and a small amount of carbon that remains from incomplete combustion.

The proactive leaders of the Rampal Power Station don't just sit around and watch their coal emit into the atmosphere; instead, they practice environmental stewardship and trade one form of pollution for another!

BIFPCL awarded a contract for the evacuation and purchase of fly ash to the illustrious RNPG Alliance, in which the fly ash will be transported through the mangrove ecosystem and used as raw material for cement factories in Bangladesh. This exciting partnership promises to be nothing short of a boon for the delicate ecosystem of the Sundarbans.

Traditionally seen as an environmental hazard containing organic pollutants and toxic metals, fly ash disposal now consists of its relocation to cement factories in Bangladesh on open-air barges sailing through the narrow mangrove passages. According to the Federation of Indian Export Organization (FIEO), about 97% of waterway traffic from India and Bangladesh is for fly ash transportation. Since 2017–2020, there has been a 27% increase in water route cargo traffic.

Rest assured, BIFPCL promises that the fly ash will be transported in an "environment-friendly way," though specifics are suspiciously absent.

## Persistent perpetual progress…

In the face of adversity, BIFPCL deserves to be recognized for its tenacity. Originally planned to start in early 2014 and finish by 2017, the project faced delays due to the pesky concerns of environmentalists. Norway's Government Pension Fund Global, set to invest a hefty 4.3 million Bangladeshi taka ($55 million), pulled out after their Council on Ethics recognized the threat to the Sundarbans. But BIFPCL did not give up! They persisted, proving that no fragile ecosystem or ethical council could stand in the way of progress.

But do extensive dredging and waterflow alterations allowing the large coal-bearing vessels to navigate to and from Rampal cause erosion and damage to the surrounding ecosystems? Perhaps. And yeah, maybe the toxins in fly ash contaminate water and groundwater with deadly pollutants and poisons like arsenic and radiation, threatening aquatic diversity and the livelihoods of fishermen.




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But before we get carried away, it should be noted that it is not every day that fly ash open-container barges catastrophically capsize into the mangrove ecosystem. They only capsize in the Sundarbans waterways on average 7-10 times a year! Furthermore, with cyclones intensifying due to climate change, blaming these transportation failures on unpredictable weather phenomena is unfair. These events are simply beyond our control.

Sheikh Rokon, the secretary general of Riverine People, a Dhaka-based NGO, acknowledges that there seems to be “no clean-up or recovery effort” and “the vessels are abandoned because rescue operations cost more than the vessel itself.” In other words, we should commend those in the fly ash disposal business for their financial savviness and cost-cutting abilities.

Through persistent efforts and a commitment to local cement production, BIFPCL and its partners are leading us into a new era where the boundaries between nature and industry are beautifully blurred.

Transporting fly ash through the Sundarbans is a testament to human ingenuity. It’s a bold statement that nothing, not even the world’s largest mangrove forest or the endangered Bengal tiger, can stand in the way of progress.

**These versatile ashes are known as 'fly ash,' consisting of the non-combustible matter in coal and a small amount of carbon that remains from incomplete combustion.**





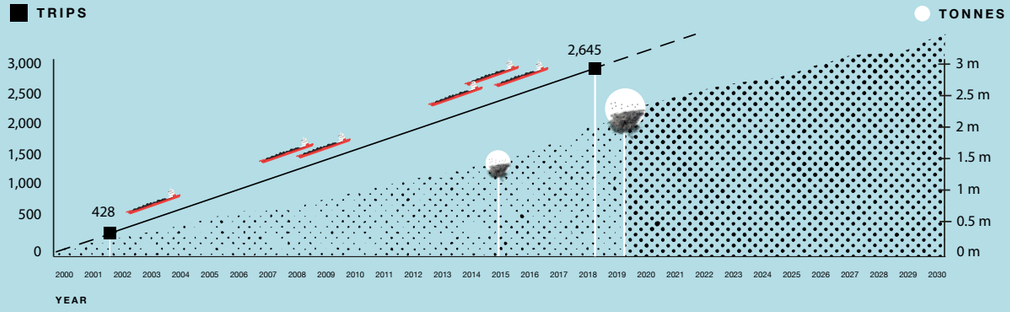
# Fly Ash Traffic

The ash from coal plants in India is a big ‘circular economy’ business for making bricks in Bangladesh. However, the alarming increase of traffic since 2000 means more capsizing accidents and more pollution from shipping which is causing incremental environmental damage to the Sundarbans.




**“On average, 7-10 capsizes have occured every year along the protocol route in the past five years [2015-2020].”**

**Sheikh Rokon**, Secretary General of Riverine People, a Dhaka-based NGO.




Sources: Macawber Beekay, Dialogue Earth, The Business Standard.

Infographic by Samia Singh and Dariana Guevara / REVOLVE

## Facts about Fly Ash in Sundarbans

**1.** Up to March in the 2019-20 fiscal year, Bangladeshi and Indian vessels made 2,645 trips through the route. The number was 428 in the 2001-02 fiscal year, BIWTA data show's. Source: Is fly ash more valuable than the Sundarbans?

**The Business Standard (tbsnews.net)**

**2.** Nearly all of the boats carrying fly ash through the Sundarbans are Bangladeshi, and they are poorly made, maintained, and environmentally unsustainable. When they capsize, it costs more to recover the vessel than to leave it. Source: Is fly ash more valuable than the Sundarbans?

**The Business Standard (tbsnews.net)**

**3.** India's National Green Tribunal in 2016 set up a committee that assessed the environmental impacts of fly ash pollution on Ennore creek and areas surrounding the North Chennai Thermal Power Station. The study found presence of heavy metals like lead, mercury, and copper at levels above the safe limit in samples of fish, crab, prawn, oyster, and mussels. It also said that fly ash deposition also caused habitat loss, including reduction of mangroves.

**The Business Standard (tbsnews.net)**

**4.** Barges going to the neighbouring Bangladesh through the vulnerable Sundarbans islands are triggering erosion in the riverbanks, claimed West Bengal Disaster Management Minister Javed Khan.

**Down To Earth (downtoearth.org.in)**

## Author's Note

The title of this article reflects that of Jonathan Swift's essay "A Modest Proposal" in which he urges the poor in Ireland to address their economic problems by selling their babies as food to the elite. This outlandish recommendation emphasizes the farcical conditions that the Irish poor in the 18th century faced.

Similarly, this article intends to draw attention to the preposterous decision of constructing a coal power plant in close proximity to the fragile Sundarbans ecosystem. This article is satirical and highlights the severe environmental and socio-economic consequences of fly ash disposal practices and calls for urgent action and sustainable solutions.

1. Fly ash brick making at Chandrapur, India. Photo: Ganesh Dhamodkar / Wikimedia
2. Rampal Power Plant, Bangladesh. Photo: কুপবাত / Wikimedia
3. Fly ash bricks. Photo: Praveen Vatsa / Wikimedia
4. Fly ash barge going with the current, Sundarbans, Bangladesh. Photo: Stuart Reigeluth / REVOLVE
5. Workers carrying what looks like coal off a boat, Bangladesh. Photo: Shourav Sheikh / Pixabay





# The Untapped Potential of Ridesharing

WRITER: **EMMA FINNAMORE**

1

**Ride-hailing and Europe's transition to more sustainable mobility services.**

Ride-hailing. Shared mobility. Carsharing, ridesharing. Mobility-as-a-Service (MaaS). Taxicabs. Transportation network services (TNCs) which have become genericized brands like Uber, Lyft, Bolt, or Yandex. New ideas like Poppy or Blablacar. Whatever you call it, you know it when you need it; at the airport, to catch a Flixbus, at the end of a late night, or on a day trip from the city to the country. This type of mobility is integral to the urban landscape, and as our cities grow, so will our transport systems.

Shared mobility will only become more apparent in the lives of city dwellers. Today, the value of the European shared-mobility market is estimated to be about 70 billion euros, with growth projections estimating 150 billion euros by 2030. In the same time frame, the number of urban trips made by rideshares will double to 7%, with an increase in public transit use and a decrease in private cars. With this evolution of our mobility system in mind, how can ridesharing grow in a sustainable way?

## The inherent eco-friendly nature of ridesharing services

Ridesharing most often functions as a more sustainable alternative to the personal ownership of vehicles. It achieves this in multiple ways.

Shifting away from car-centric communities could improve the quality of life of city living. The Instagram account, "Cars Destroyed our Cities" has been created to highlight "historical, modern and statistical comparisons about why highways, parking lots and stroads ruined our cities for cars" (sic), making transport politics engaging for the internet generation. The account shows side-by-side images of car-centric construction in the 20th century, revealing how communities were pushed aside to make way for traffic. The images, however, also give hope: they reveal that cities were not always this way and, with a bit of shared effort and strategic political mobilization, things could be different in the future too.

According to "Unparking", a project by the MIT Senseable City Lab, a private car spends 95% of its active life parked. It sits and rusts, taking up space at home, at work, and on the street. The project's study showed that today, 2.2% of Singapore is covered in parking lots, rendering that space effectively unusable and unliveable.



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A greater presence of shared mobility in urban centers could mean a significant jump in the utility factor of the automobile: fewer cars being more productive. On-demand mobility would pick up and drop off passengers exactly where they need to be, and searching for nearby parking spaces would become a non-issue. "The transition to shared mobility models will bring tangible reductions in parking infrastructure...As much as 86% of current parking spaces are freed up or repurposed if a complete switch occurs from private cars to shared mobility," concludes the Unparking project. In a model, they estimate that a transit model centered on ride-hailing and similar services would result in only 3% of Singapore reserved for parking. This, in turn, would free up premium space for real estate, green areas like parks, or wider, safer lanes for pedestrians and cyclists.

Fewer cars denote a decrease in pollutants and greenhouse gas (GHG) emissions too. In a 2023 report by the European Environmental Agency (EEA), the decrease of pollutants emitted in the EU since 1990 has been largely attributed to progress made in the road transport sector, spearheaded by carbon emissions standards and ambient air quality directive policies.

The EEA calls air pollution "Europe's largest environmental health risk", linking pollutants to health issues such as

A greater presence of shared mobility in urban centers could mean a significant jump in the utility factor of the automobile: fewer cars being more productive.

cardiovascular and respiratory diseases. While progress has already been substantial, and the trajectory is positive, the ideal standards are still not met across the EU, and the rate of change could be accelerated. Ridesharing could play a role in this. As stated in a report from the Dutch Ministry of Infrastructure and Water Management, one shared car replaces four to eight private cars. The study also mentions that the average distance traveled by a carsharing subscriber is reduced by around 18% in comparison to a private car owner, with a reduction of up to 2265 kilograms of $CO_2$ per year per household, based on 2015 data. Fewer cars and cuts in emissions of GHGs improve the atmosphere in congested cities and alleviate pressure on national healthcare systems by preventing illnesses.

## The eco-friendly potential of ridesharing services

Electrification of mobility is the future. 18 out of the 20 biggest car companies, or original equipment manufacturers (OEMs), have committed to increase the offer and sales of EVs, and despite controversy, the EU continues to stand by their pledge to ban internalcombustion engine manufacturing by 2035. A report from the McKinsey Center on Future Mobility suggests that ridesharing "could gain market share in urban areas by acknowledging (...) the need for more electric vehicles that help cities meet their guidelines for reducing emissions."

Additionally, shared mobility services are collaborative. Ride-hailing company Bolt's founder and CEO, Markus Villig, reports that over 40% of user rides begin or end at public transport. A significant part of their service then functions as a single ride within a multimodal journey and relies on a robust public transport system to be of use. Upward substitution, where a low-emission trip is replaced by a less environmentally conscious mode of transport, could potentially happen, but any risks of this could be softened by an approach conscious of the consumer's habits and needs, with additional incentives implemented if necessary.




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A study on Berlin's mobility future revealed that an aligned multimodal approach, incorporating shared mobility offerings with a low emission output, such as walking or cycling with ridesharing, could enhance public transport use (especially as first and last mile options) and save Berliners 20% of their car trips, or about 2 million tons of $CO_2$, by 2030. Thanks to ridesharing and its emergence through digital technology, multimodality is accessible to anyone with a smartphone.

**A significant part of MaaS functions as a single ride within a multimodal journey and relies on a robust public transport system to be of use.**

## Roadblock at the EU level to sustainable growth in the ridesharing sector

An obstacle to effective change across the industry is a lack of united advocacy on a Member State level. There are virtually no ride-sharing regulations coming from the EU, so operators must navigate each EU country's individual legislation. The latest Urban Mobility Package, published in 2021, while representing a strengthened framework in comparison to previous legislation (even mentioning car-sharing as an emerging form of transport) still leaves this gap in policy open.

Change in ride shares could be mobilized through Sustainable Urban Mobility Plans to maximize benefits. Still, other policies to increase the uptake in electric car sharing, such as fiscal incentives, could be more effective at the EU level.

## Policies assisting in the uptake of eco-friendly mobility practices

With every think piece related to sustainability and automobiles comes the unfortunate necessity to preface anything with a lengthy disclaimer that there is no silver bullet for the perfect eco-conscious transport. Here it comes: Passenger vehicles might be a very convenient form of transport today, but they are not the most efficient, flexible, or the most eco-friendly. Any self-respecting environmentalist knows that the daily use of a private car for every individual is not sustainable.

However, it is also clear that cars will not simply disappear.

A transition signifies action and movement, referring to the process of it all. This process, striving towards a beautiful utopian clean-energy-powered transportation system accessible to every EU citizen, stopping just short of learning to teleport, requires many shifts across many policies in order for each lone scrap of legislation for the goal of transit paradise to be fully realized. The transition itself depends on a united effort, policies working in congruence with civil society and industry participating enthusiastically, to achieve meaningful climate crisis mitigation. The EU is aware of this, their "Sustainable and Smart Mobility Strategy" alone has over 80 initiatives. Policies that support sustainable mobility and maximize the potential of carsharing include, but are not limited to, alternative fuels infrastructure (AFIR), decarbonization of the grid, as well as general protection of auto worker's rights, and subsidizing education in green skills.

## Where we can go from here

The sector has professed to embrace innovation, and especially with the right support, new forms of ridesharing can emerge. Ideas are abundant. A policy brief from the Horizon2020-funded EU project Stars reports that, "In Belgium, recent research shows that most local government cars do not travel more than 10,000 kilometers per year. During weekends and outside office hours, these vehicles are not used at all. Why not replace them with shared cars and optimize fleet costs?" At this point, why stop at government cars, why not corporate fleets in general?

Ridesharing has so much potential, and the policy and business opportunities are numerous. Creating an avenue for ridesharing regulation at the EU level would take advantage of this momentum and invite the benefits of a society committed to sustainability: greater electrification and cleaner mobility overall.

Support for ridesharing could push for a shift in our culture, where cars become the transportation equivalent of a delicacy, and traffic and air pollution are things of the past. With a sustainable transition in urban mobility systems, it will be the people back in the driver's seat, even if the cars themselves end up autonomous.

The transition itself depends on a united effort, policies working in congruence with civil society and industry participating enthusiastically, to achieve meaningful climate crisis mitigation.

1. A car from a carsharing service, belonging to both no one and everyone, is parked among private cars.
   Photo: Annie George / REVOLVE
2. Cars in motion in Brussels' city center.
   Photo: Annie George / REVOLVE
3. A red stoplight glows in the traffic of the Belgian capital. Photo: Annie George / REVOLVE
4. Shared car in London.
   Photo: Crown / Unsplash
5. A carsharing company prides itself on minimizing traffic. Photo: Annie George / REVOLVE
6. Shared electric car being driven in Madrid.
   Photo: StreetMadrid / Flickr



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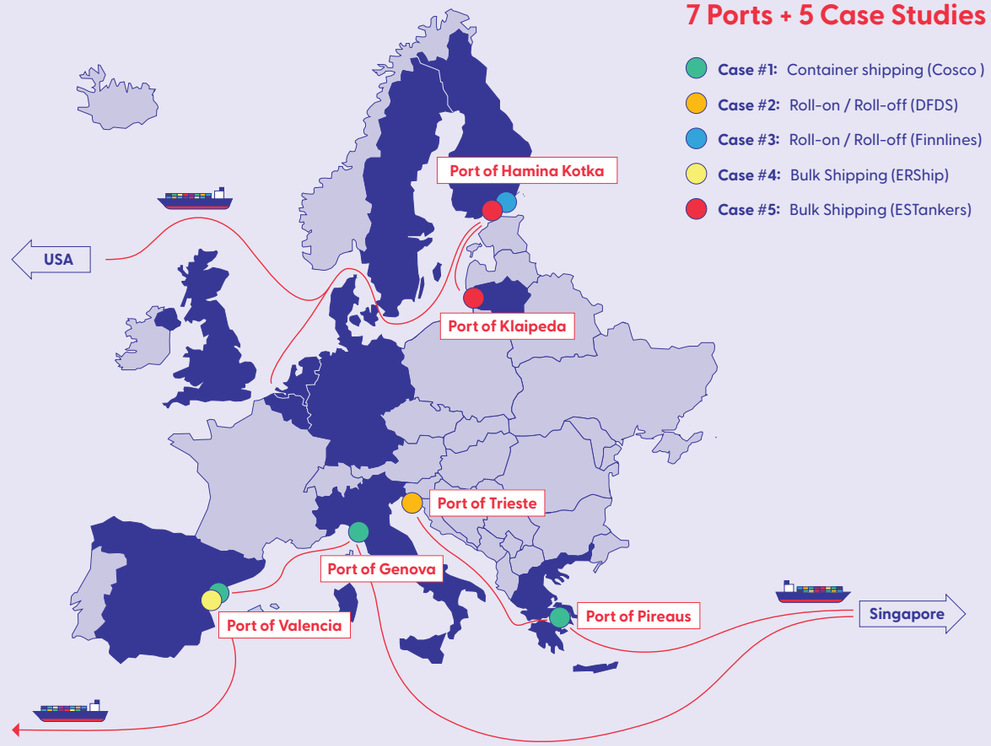
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SDU

# From Construction Waste to Valuable Resource

WRITER: **ESTER CARRO**



1

**Taking a look at the importance of circular design in the transformation of favelas.**

The availability of open spaces in urban areas is becoming increasingly limited. Land is considered a scarce and valuable resource, especially in favelas, where the maintenance and management of these few spaces face various challenges. The lack of financial resources and government support hinders the implementation of ongoing initiatives, making these spaces dependent on the community's mobilization to maintain the necessary cleanliness, safety, and infrastructure. The improper use of these areas, such as turning them into dumping grounds, compromises their potential as recreational and communal spaces, exacerbated by a lack of adequate regulation and oversight.

This is the case of Jardim Colombo in São Paulo, a favela in an enclave surrounded by well-established middle-to-upper-class neighborhoods. Originally part of a large estate owned by Dr. Antônio Bueno and Joaquim Manuel da Fonseca, the land has been occupied since the 1970s by citizens in need seeking housing. It is now the home of approximately 20,000 residents in a 14.9-hectare area, virtually none of whom legally own the property. Jardim Colombo is part of the Paraisópolis Complex, a region experiencing significant real estate expansion.

Located in the West Zone of São Paulo, the area is part of the Vila Sônia district, managed by the Butantã Subprefecture.

Throughout the occupation of Jardim Colombo, a 1,000 square-meter area with a steep 18-meter slope remained undeveloped. Known as Fazendinha, this area was used for growing food and raising domestic animals until 2007, after which it was turned into a large waste dump. The surrounding neighborhoods suffered from the accumulation of trash and debris, necessitating intervention. At the end of 2017, a collective process transformed the area into a community space for socializing and recreation, involving active participation from residents, volunteers, and the local community center. Following a series of meetings, debates, and discussions, it was announced in November of that year that an initiative would take place at Fazendinha to transform the area into a green space.

In parallel with the physical transformation of the former rubbish dump, the space hosts monthly programs with socio-educational, cultural, and environmental activities, carefully designed to engage children of all ages, fostering care for the space among them and their families to create a sense of belonging.



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One of the ideas incorporated into the landscape design was the creation of retaining walls using discarded tires, originally proposed by landscape designer Mauro Quintanilha. These walls reinforce the steep terrain and serve as bleachers, improving the space's usability. The abandoned tires, filled with water, posed a health risk to residents. The solution found by Quintanilha both mitigated this problem and added color to the environment as the tires could be painted, adding a bright new place to rest and socialize in the former dump.

The construction industry is one of the sectors that most impacts the environment, whether through the massive consumption of natural resources, waste generation, or greenhouse gas emissions. The construction industry is responsible for a significant share of global $CO_2$ emissions, primarily due to cement production. Even after construction is completed, maintenance, demolition, and renovation waste continue to contribute to environmental pollution.

The construction industry is one of the sectors that most impacts the environment, whether through the massive consumption of natural resources, waste generation, or greenhouse gas emissions.

In favelas, residents have been practicing material reuse for decades, a technique that predates what we now know as circular design. Even amidst precarious conditions and daily challenges, they find creative solutions for their needs. Materials that would typically be discarded, such as construction remnants, old furniture, appliance parts, and objects found in the trash, are transformed into valuable resources.

These materials are reused to build and renovate homes, create furniture, or even improvise household and decorative items. This reuse is a response to scarcity and an expression of the residents' resilience and ability to innovate, turning what is considered waste into something useful and functional.

The area's transformation process had the support and guidance of Fazendinhando, an institute dedicated to the territorial, cultural, and socio-environmental transformation of São Paulo›s favelas. Its activities include the recovery of degraded public spaces, renovation of precarious housing, sustainability initiatives, training of women in gastronomy, crafts, and construction, and the promotion of art and culture.

In favelas, residents have been practicing material reuse for decades, a technique that anticipates what we now know as circular design.





4

In this sense, the initiatives developed by the Fazendinhando Institute in the renovation of precarious housing directly contribute to reducing environmental impact by reusing donated materials that would otherwise be discarded. These materials, such as coverings, paints, wood, ceramics, sanitary fixtures, and window frames, were donated by architecture and engineering offices CASACOR SP (the largest design, architecture, and landscaping exhibition in the Americas), construction companies, and individuals.

The institute deals with unused materials that typically end up in dumpsters and eventually landfills, handling all the logistics involved. In some cases, donations are received; in others, we at Fazendinhando are responsible for collecting the materials on-site.

After collecting, we store the materials in a small warehouse, where we photograph each item to facilitate the next step: sorting. This sorting allows us to identify which materials will be reused in precarious housing renovations and which can be offered at our construction materials bazaar. This bazaar is open to the community and provides materials free of charge to residents who need specific items.

A significant advancement in the renovation of precarious housing by the Fazendinhando Institute is the delivery of furniture, made possible through strategic partnerships with companies like MCHECON, one of Brazil's largest set design companies. After dismantling their sets in scenic spaces, the company repurposes wooden panels that would otherwise be discarded to produce furniture. Imagine if practices like this were adopted by the entire carpentry industry. The environmental impact would be drastically reduced and families in vulnerable social situations would benefit from the process.

The institute prevents these products from ending up in landfills or being incinerated, practices that cause pollution and waste valuable resources. Reuse reduces the demand for new materials, decreasing the extraction of natural resources and greenhouse gas emissions associated with producing and transporting these materials.

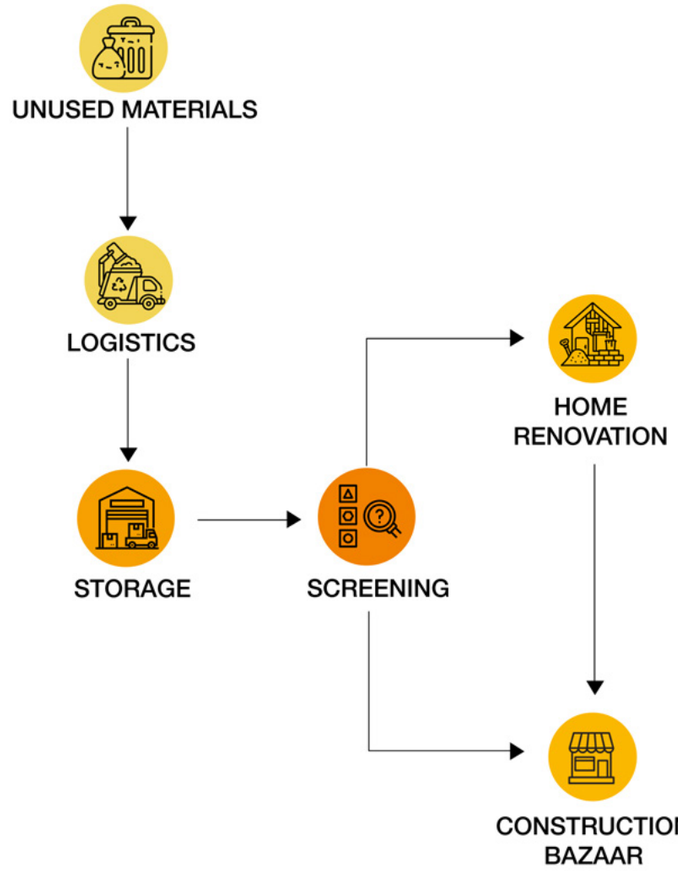
**It is not just a sustainability strategy but an urgent necessity to address global environmental challenges.**

The next step for the Fazendinhando Institute is to create a "Sustainable Technology Hub" in a space currently serving as a materials depot. This hub will be dedicated to repurposing cardboard, wood, and other materials to create furniture, decorative items, and training programs for women and young people and to develop sustainable technologies. One of the pillars of this project is the reuse of cardboard, in partnership with Papelão Jóia, a company that produces decorative objects through the environmentally conscious reuse of solid waste.

This collaboration came to fruition in 2021 when a group of women from the Fazendinha community were trained in cardboard reuse techniques. With the creation of the technology hub, these initiatives will be expanded, aiming to generate income, promote community engagement, and reduce the improper disposal of materials in the streets.

The technology hub will be equipped with machinery to produce coverings from cardboard, wood, and other waste, representing an innovation in favelas. This space will be essential for Jardim Colombo, not only for its productive function but also as a research center for technology, sustainability, and monitoring of degraded areas in the region, allowing the community to become a leader in creating environmental and economic solutions.

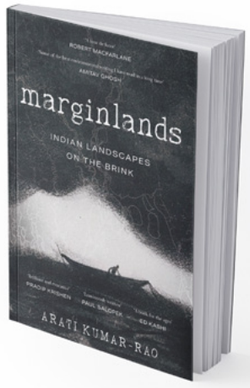
We at the Fazendinhando Institute aim to create a more sustainable construction model that values reuse and waste reduction. It is not just a sustainability strategy but an urgent necessity to address global environmental challenges.




5

1. Favela of Jardim Colombo, São Paulo, in 2021. Photo: André Del Casalle
2. Fazendinha during its rubbish dump era, located in the Jardim Colombo favela in São Paulo. Photo: Ester Carro
3. Building the second terrain platform in Fazendinha with tires, in 2023. Photo: André del Casalle
4. Children playing in Fazendinha, Jardim Colombo, in 2023. Photo: André del Casalle
5. Flowchart explaining the circular process of reusing materials. Image: Samia Singh / REVOLVE

# Reading Landscapes




REVIEWED BY **STUART REIGELUTH**

**Marginlands, Indian Landscapes on the Brink**
Arati Kumar-Rao
Picador India: New Delhi, 2023.
254 pages. $26.00
www.marginlands.com

The most memorable illustration in this beautiful book is that of a small fishing boat with a single oarsman paddling on what is most likely Dal Lake in Kashmir. The boat's angle is drawn by its shadow on the trembling surface of the water. This little boat recurs throughout the book as a separator of sub-sections that divide the chapters. Though it may seem an unimportant detail, this subtle motif reflects the slow, contemplative storytelling style at the heart of this long, award-winning work.

The book is structured in five parts, each introduced by a magical opening illustration spread, also by the author, that sets the scene for what you are about to read. You turn the page and step into a world of different landscapes, discovering along the way the destruction and alterations being wrought by relentless human activity.

Arati Kumar-Rao takes you on a veritable 'tour de force' (as the famous environmental writer Robert Macfarlane said) across and around India: from the Thar Desert in the north-west to the Sundarbans in the north-east, along the Ganges and the Himalayas, to the glaciers in Ladakh, to the shifting sands of Kerala in the south-west.

And everywhere you go, you witness the ravages of man-made disasters on the land. There is the damming of the Ganga River and other tributaries leading to the depletion of Irrawaddy river dolphins; there are the devastating effects of agricultural policies causing more intense desertification; there are the wild dogs that proliferated around military bases feeding off waste, destroying the natural balance, and threatening the survival of the grey wolf; and there are the breakwaters inhibiting the sands from moving up the coast with the currents which is causing further erosion, to the detriment of local fishing villages on the southern tip of India.

These are some of the most glaring examples created by what could be called the Department of Devastation of the Ministry of Human Encroachment on Nature. And there are many more examples, each told with tranquility and interspersed with traditional myths and stories from locals that give depth and wholeness to each journey.

Kumar-Rao's approach involves patient observation: she stays in each location long enough to experience and transmit what is really happening. She is exploring the usage of words and employing a language that connects the reader to nature. Robert Macfarlane describes this as "a language that recognizes and advances the animacy of the world" (*Underland*, p.112).

Take, for example, her description of the monsoon coming in off the coast of Thiruvananthapuram:

*The sea has turned from emerald to a mossy green now, incessant waves crashing against the beach, dissolving each time into a sulphuric ochre froth. The horizon, out to the southwest, has deepened to charcoal.* (p.139)

Then we travel to the sacred Devakota mountain of Nepal, "deep within the heart of the Buddhist belief system" where:

*Rocks are swaddled in moss mats an inch thick and dripping with moisture. I cup my hands beneath one and drink the water that drips into my palms. It is sweet and cold and life-giving.* (p.197)

This is followed by perhaps one of the best nature-writing lines of the book, full of animacy:

*Loopy, twisted, woody vines – lianas – shrouded in lichen and ferns, fungi and orchids festoon the understory of the forest.* (p.198)

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# Making That Life Change




REVIEWED BY **STUART REIGELUTH**

**La Brute et le Divin**
Léonard Chemineau
Paris: Rue de Sevres, 2023, 141 pages. 22 euros.

"This is a 'page-turner' – purposefully so," says the author on a radio talk show in Belgium. Léonard Chemineau was working as an engineer when he decided to pursue a more purposeful course in life: he now dedicates his time to drawing comics (bandes dessinées, in French) that, in his case, transmit an urgent message about contemporary issues such as the 'ecological transition' – a broad term for the move towards a more environmentally-conscious society.

Not surprisingly, the main character in Chemineau's La Brute et le Divin, Eva Lambert, is also a corporate engineer working in #TeamEcoDesign, a department making products that are less harmful to the environment. Like the author, Eva has her own "prise de conscience": that mind-shift when something goes tilt in the brain and you realize you need a change to feel more fulfilled in life. Post-COVID, this collective feeling resonates loudly within our society.

Eva turns down a salary raise to stay in her post and makes the move to join a program to restore a meteorological station on some forgotten French island in the South Pacific. The station is to be powered by solar energy and Eva is expected to connect and set everything up by herself. Her role also involves sending appealing images of the island's attractiveness in an effort to lay the ground for eco-tourism after the station is up and running (Eloping to a Pacific island for tourism, love, or work is somewhat cliché: how many island romance reality shows are there?).

Eva quickly encounters survival challenges: she gouges her hand with a chisel, breaks her portable radio, a storm blows the photovoltaic panels off the roof, she is rapidly running out of canned food, … She starts to lose her mind and sets out to sea in a makeshift raft, ending up rescued by a passing ship. When she awakens from her delirium, she is recovering in the ship that is not just passing by but rather anchored to do deep sea mining exploration and exploitation for rare earth minerals.

This is an unexpected twist that gives the most poignant critique of sustainable development: our quest for technological solutions, based on research and innovation, relies on natural resources that we continue to plunder to make new, more efficient products. The irony is not missed by Chemineau, who describes how these same technologies that we are increasingly dependent upon are causing tragic environmental damage due to the devastating effects of their extraction.

Ever stop to think about where these rare earths come from and how valuable such 'critical raw materials' are for the gadgets we use on a daily basis, such as our smartphones and plasma screens? Ever heard of other valuable metals like lithium, cobalt, nickel, cerium, titanium, or vanadium? These are just some of the 'rare earth' resources that the Chinese and others are drilling and digging for in fertile lands of Africa, the Americas, and Asia. [Read more here about China's domination in supplying around 70% of global rare earths.]

This drilling rig in La Brute et le Divin is operated by a make-believe company inspired-by-reality called ALPHAMET, which has received government approval for exploring the seabed around Eva's island. The stage is set for combative language and violent struggles between the islander and the enterprise: ultimately, nature prevails here by destroying the ship and the multi-million drilling robot in a tremendous storm. Spoiler alert: Eva rebuilds the meteorological station and it's a fairy-tale ending, without the prince.

This could be a bedtime story you read to your children. It's environmental awareness-raising in an action-driven visual-storytelling fashion that works well. It's fast, it's strong, it's beautiful. Nature is both brutish and divine, too. The wreckage is the message and metaphor for things to come.

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OÖ Energiesparverband, Linz/Austria, Tel. +43 732-7720-14386, office@esv.or.at, www.wsed.at