

# INVESTMENT ZUKUNFT

 **Raiffeisen**  
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THE MARINE  
ECOSYSTEM

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DEEP SEA MINING

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OCEAN WARMING:  
CONSEQUENCES AND  
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# EDITORIAL



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## **Dieter Aigner**

Managing Director of Raiffeisen KAG,  
responsible for fund management  
and sustainability

*Dear Readers,*

Climate change cannot be denied anymore, as droughts, forest fires, floods around the world, and hail the size of tennis balls are no longer just figments of filmmakers' imagination. More and more, these are quite real events, even here in Austria. Climate change, however, is more than just a threat to land-based life around the world, as the seas are also in jeopardy.

Because the oceans are now warmer than they have been any time in the last 65 years, according to the latest climate report by the World Meteorological Organisation (WMO). In 2023, 90 per cent of ocean regions experienced heatwaves, i.e. significant temperature increases over a short period of time. Prior to this, ocean temperatures were already high-

er than the long-term average in 2020, 2021, and 2022, putting pressure on fish stocks and endangering food supplies for humans and animals. Rising sea levels are also a threat and may significantly exceed one meter by 2100. All of this has dramatic consequences for islands, and coastal regions and cities, with direct, global impacts for around 750 million people who live in low-lying coastal areas and island states.

What does all of this have to do with us as investors? A great deal. On the one hand, climate change affects many sectors and regions in which we are active as global asset managers. On the other hand, we are now called upon to make our contribution to the transformation. In the future, we must direct capital flows far

more strongly to have positive impacts on global CO<sub>2</sub> emissions. Responsible investors cannot limit themselves to just excluding things; the goal is to achieve net zero emissions over the medium-term.

The good news is that we don't have to budge one inch from our most fundamental goal of generating returns for our investors. Because there are plenty of companies and industrial enterprises that have long been striving to achieve the goal of net zero emissions by 2050 and are investing untold millions in climate-friendly, environmentally-sound innovations and technology.

And it is precisely these forward-looking firms that will do well over the long term: They represent our investment future.

# THE MARINE ECOSYSTEM

In relation to climate change and environmental destruction, the condition of the Earth's oceans is a topic that is often underappreciated and a factor that deserves more attention. At the corporate level as well, the interactions and the impact on the UN's Sustainable Development Goal 14 are also an area that is widely underestimated. Within the framework of the planetary boundaries, the status of the oceans appears in the dimension of "ocean acidification" as one of the nine ecological boundaries which jeopardise the stability of the global ecosystem if they are exceeded.

## IMPORTANT CO<sub>2</sub> SINK

The oceans play a vital role in our planet's heat balance. Oceans are capable of storing a large part of the carbon dioxide that is emitted annually. In the oceans, CO<sub>2</sub> is dissolved, distributed, and stored in the depths of the seas.

According to data from the IPCC (Intergovernmental Panel on Climate Change), which – as a United Nations institution – is often referred to as the "World Climate Council", the pace of ocean warming and thus heat uptake has more than doubled since 1993.

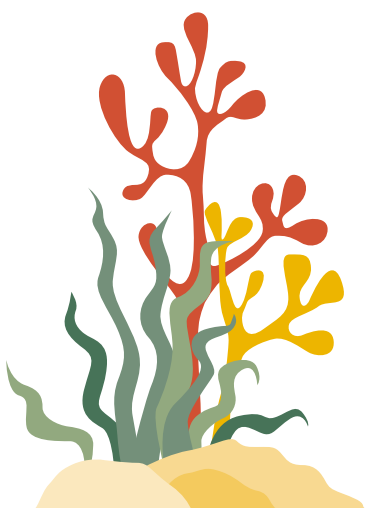
The oceans can absorb roughly 50 times more carbon than the atmosphere and 12 times more than all terrestrial plants and land together. By binding huge amounts of carbon dioxide from the atmosphere, the oceans slow down anthropogenic global warming and act as

a buffer. Some 90 billion tonnes of carbon are exchanged between the elements air and water annually.

Some ocean ecosystems are particularly efficient in absorbing and storing CO<sub>2</sub> in the ground. This so-called "blue carbon", which is accumulated in coastal and ocean ecosystems, involves coastal habitats, such as mangroves, tidal salt marshes, and seagrass meadows. According to the IPCC, over the last 100 years almost 50% of all coastal wetlands have been lost due to human interventions, rising sea levels, warming, and extreme climate events.

## ACIDIFICATION

The growing accumulation of CO<sub>2</sub> in seawaters also has negative effects however, as the seawater acidifies, i.e. the pH level declines. The average pH level of seawater is 8.2 and is thus mildly alkaline. Over >





**Wolfgang Pinner**  
Head of Corporate Responsibility  
at Raiffeisen KAG

The oceans function as a heat sink for the entire planet, evening out temperature differences in the atmosphere and stabilising the climate.

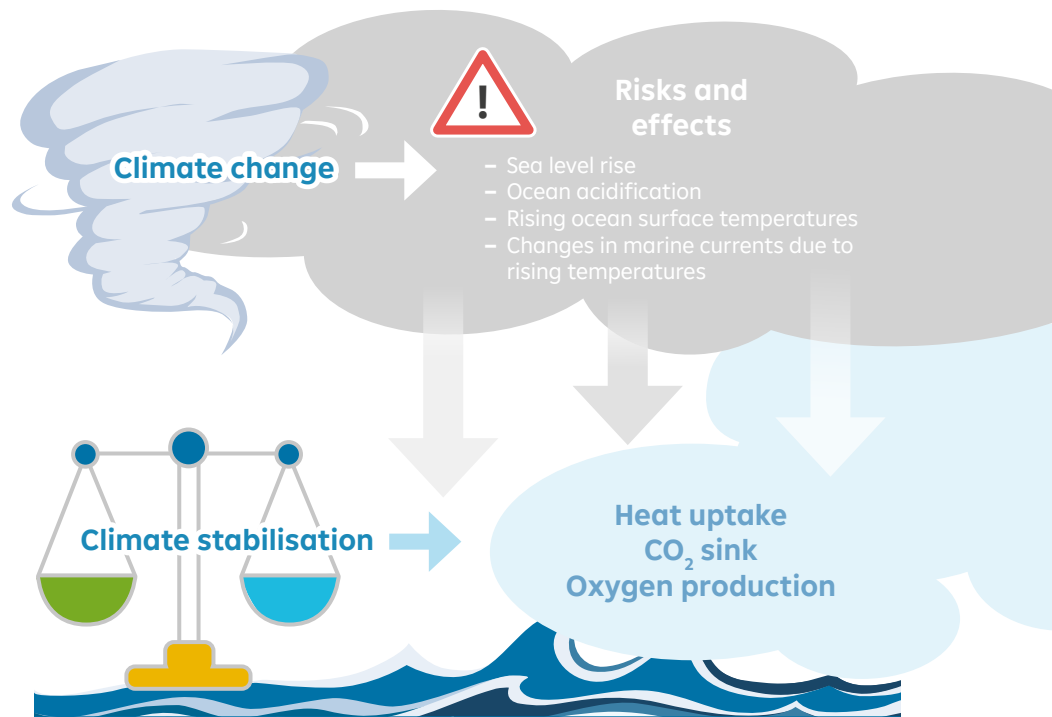
the past 200 years, this value has fallen to 8.1. Since pH is a logarithmic scale, this is equivalent to a decline of almost 30%. In the future, the pH value of the oceans may decline by another 0.3 to 0.4 units by the year 2100, as a result of which seawaters would acidify by another 100% to 150%. An increase in the pH value of seawater is especially detrimental for marine organisms, such as corals, mussels, and crabs. Furthermore, increasing acidification means that seawater can absorb less and less anthropogenic CO<sub>2</sub> emissions.

### HEAT UPTAKE

Global oceans are exposed to increasingly significant stresses due to anthropogenic changes and are less and less able to mitigate climate change. According to the IPCC, the oceans can absorb around 90% of the heat generated on the Earth by solar radiation. Thus, the oceans not only protect the planet from higher airborne CO<sub>2</sub> concentra-

tions, they also protect the Earth from higher temperatures. >

Chart: Negative effects of climate change on the oceans as climate stabilisers

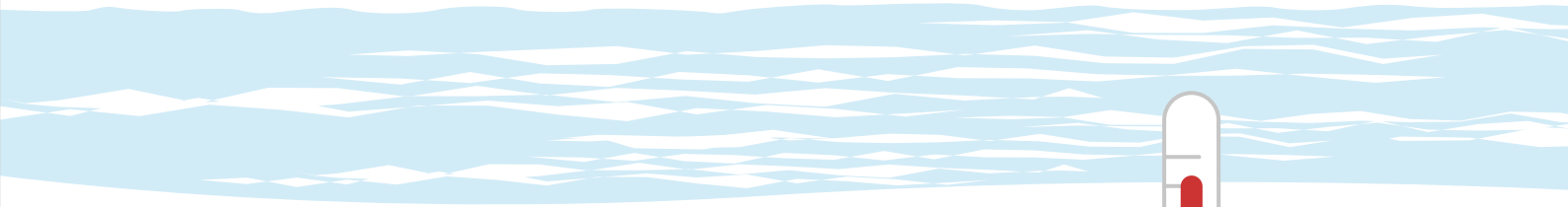


Source: Raiffeisen Kapitalanlagegesellschaft m.b.H., 2024



A close-up photograph of a woman wearing a teal rain jacket with the hood pulled up over her head. She is looking upwards and to the right with a slight smile. Her hands are visible, holding the edges of the hood. The background shows a beach with pebbles and the ocean under a cloudy sky. A solid teal vertical bar is on the left side of the image, containing the text 'THE MARINE ECOSYSTEM'. Another solid teal horizontal bar is at the bottom left, containing the text '6 LEAD ARTICLE'.

THE MARINE  
ECOSYSTEM



The oceans function as a heat sink for the entire planet, evening out temperature differences in the atmosphere and stabilising the climate.

According to the IPCC, since 1970 the oceans have absorbed more than 90% of the additional (anthropogenic) heat from the Earth's atmosphere, growing steadily warmer in the process. In the North Atlantic, surface water temperature increased from approximately 22.9 C to more than 24°C during the period 1982–2011. The IPCC also states that between 2006 and 2015 the related rise in average global sea levels amounted to 3.6 mm annually. During the period from 1997–2006 to 2007–2016, the pace of ice melting in the Greenland and Antarctic ice sheets accelerated by a factor of three, as a result of which the rise in sea levels has also sped up. However, the rise in sea levels is not uniform at the global level and varies from region to region.

The oceans are also a key factor in the global oxygen balance. Algae and many marine microorganisms produce around 70% of total atmospheric oxygen. Due to climate change, the exchange of gases and nutrients is changing. Rising temperatures mean lower oxygen solubility in seawater, and less oxygen

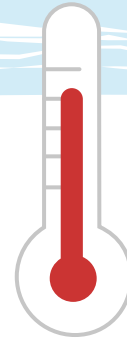
is absorbed by the upper levels of surface waters. Partially due to the inflows of freshwater in higher latitudes, warm surface waters exhibit increasingly low densities compared to the deeper parts of the ocean, leading to reduced circulation between individual seawater layers.

According to the IPCC, in a period of 40 years since 1970 the oxygen level in the upper 1,000 m of the open oceans declined by 1.9%. Parts of the ocean that are affected by a lack of oxygen are called "oxygen minimum zones". Marine organisms that need oxygen can no longer live in these areas. These zones have expanded significantly in recent years.

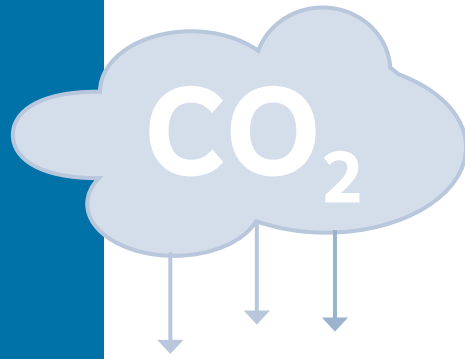
At the surface, the oceans integrate with the atmosphere, and there are strong interactions between these two "climate actors". These interactions include coupled phenomena with self-reinforcing mechanisms. One of the known phenomenon in this regard is El Niño, the El Niño–Southern Oscillation (ENSO).

## MARINE CIRCULATION

Global marine currents play a major role in the global heat and CO<sub>2</sub> balance. The circulation of ocean water moves waters enriched with heat and CO<sub>2</sub> around the planet on the one hand and to great >



## THE MARINE ECOSYSTEM



The circulation of ocean water moves waters enriched with heat and CO<sub>2</sub> around the planet on the one hand and to great ocean depths on the other.

ocean depths on the other. As a result of this, CO<sub>2</sub> dissolved in surface water is transported by marine currents and mixing processes to the depths of the ocean, where it can accumulate over time. This is referred to as a “physical carbon pump”. On the other hand, CO<sub>2</sub> is also stored by the development of marine plant and animal biomass. A large number of these organisms live in the uppermost water layers and upon dying they transport the stored carbon into the depths, in a process known as the “biological carbon pump”.

Functioning like a massive conveyor, large-scale marine currents have long since been responsible for comfortably warm and mild temperatures in higher latitudes. That said, it takes centuries for the global conveyor to mix all of the water in the oceans. Consequently, shorter-term developments on the ocean surface, such as increased absorption of CO<sub>2</sub> or heat, only exert an effect on the oceans as a whole after a long delay. Nevertheless, the IPCC be-

lieves that the Atlantic meridional overturning circulation, commonly known as the Gulf Stream, has weakened in recent years compared to pre-industrial times.

Marine warming and the related thermal expansion of the water is also causing a continuous rise in sea levels. With temperatures also rising, there is a risk of massive melting of global ice packs. This in turn opens up the possibility that the related freshwater input into the oceans could change marine circulation patterns overall and thus influence weather developments. The reaction of the oceans to the rising temperatures on the one hand and the increase in greenhouse gas emissions on the other hand occurs very slowly. Thus, if the marine ecosystem is knocked out of balance, it is possible that the negative consequences may only become visible decades later.

Over the last twelve months, new record-setting temperatures were seen every month for the planet’s oceans. The previous pattern of the sea temperature reaching a high point in March and then cooling down significantly by June also failed to materialise.

According to the IPCC, the oceans will change massively in the 21st century, >



## ESG ASSESSMENT

In relation to the individual sustainability criteria, the assessment of the set of topics "Oceans" is as follows:

### **E (environment):**

Oceans are an often underestimated part of our environment. So far, there is little collective awareness of the interactions with all forms of life on the planet as a whole and the vulnerability of the marine ecosystems. This is reflected in SDG #14 "Life below water", which is often not a main focus for enterprises and investors. In terms of importance for the environment, the oceans have great significance from a sustainability perspective.

### **S (social):**

The indirect effects of the condition of the marine ecosystem on people and society should not be underestimated; in part, this stems from the linkages to climate developments and in part from the role of the oceans as a source of – healthy – nutrition.

### **G (governance):**

Taking responsibility for the conditions of the oceans, along with protecting the oceans, is a topic that has been embraced by environmental NGOs in particular in recent decades. However, the international community has only started addressing this issue more intensively in recent years and formulating measures to protect the marine environment.

driven by factors such as elevated water temperatures, stronger stratification in the upper ocean layers, further acidification, and the steady decline in oxygen. Marine heatwaves and extreme El Niño events will occur more frequently.

# DEEP SEA MINING

## EXPLICATIONS

- 1** The plume of heated liquid emitted from chimney-like or tube-like formations is enriched with darker-hued or lighter-hued particles and looks like rising clouds of smoke, which is why they are known as black or white smokers.
- 2** For example, cobalt-rich iron-manganese crusts grow at rates of up to 5 mm in 1 million years. Polymetallic nodules with a diameter of 15 cm may be up to 15 million years old.
- 3** The concentrations of the minerals depends on the location and deposit. For instance, a polymetallic nodule from the Peru Basin has the following average mineral content: 1.3% nickel, 0.6% copper, and 0.05% cobalt. The manganese content may be 34.2% (source: Geomar).
- 4** DISCOL stands for DISturbance and reCOLonisation Experiment: A manganese nodule field (11 km<sup>2</sup>) was ploughed in 1989 to simulate deep sea mining activities. Review of the site 26 years later showed that the seafloor was relatively unchanged, without signs of repopulation.

Certain commodities, including copper, cobalt, nickel, and rare earths, are found in the deep sea. These minerals are particularly important in relation to the energy transition, as a result of which they are also referred to as "greenablers". In recent years, demand for these materials has increased significantly.

Demand is expected to remain strong in the future as well, as greenablers are used in batteries for electric vehicles, magnets in wind turbines, and other renewable energy applications. This elevated demand for certain materials has revived interest in deep sea deposits and triggered numerous discussions about potential exploitation.

Generally speaking, deep sea mining refers to the extraction of three kinds of mineral deposits that are found on the seabed:

- polymetallic sulphides (so-called black smokers or white smokers<sup>1</sup>),
- polymetallic nodules (so-called manganese nodules), and
- cobalt-rich crusts.

These deposits have formed over many millions of years,<sup>2</sup> with concentrations of greenabler elements that are in the low single-digit percentage range.<sup>3</sup>

## THE LARGEST ECOSYSTEM

The deep sea accounts for about 54% of the surface of the Earth and about 90% of the oceans. It is the Earth's largest ecosystem and home to many specialised species, which live in extreme conditions such as high pressure, low temperatures, relatively high concentrations of oxygen in the water, and no light. The biodiversity of deep sea areas with the aforementioned deposits of commodities is particularly high. The reason for this is mainly the higher nutritional content in the surrounding waters. Polymetallic nodules are also often the only solid rock in the otherwise very soft deep seafloor, and thus the only available habitat for sedentary organisms.

Life in the deep sea was only discovered in the second half of the 19th century. Systematic exploration started with the British Challenger expedi- >



**Magdalena Quell**  
Product and Project Manager  
at Raiffeisen KAG

tion from 1872 to 1876. In subsequent decades, more discoveries were made such as the first black smoker in 1978/1979, while the DISCOL<sup>4</sup> experiment conducted in the late 1980s investigated the effects of disturbances on the deep seafloor. During recent decades, the extraction of commodities from the deep sea has only been carried out in small areas as part of research and development expeditions. The equipment deployed was often based on technologies used for deep sea oil drilling and mostly has not even completed the development phase. At present, commercial-scale deep sea mining is not taking place.

## RISKS AND CONSEQUENCES

There are significant ecological risks related to deep sea mining. Interventions in the deep sea can result in long-term disruptions in the ecosystem and extinctions, with potentially wide-ranging consequences for other habits and their food chains. The costs for extraction, research, and monitoring in the deep sea are very high, and the restoration of former production sites is complex and protracted (if it is even possible at all in full). The ISA plays a central role in issuing licences and formulating en-

vironmental protection standards, but is subject to criticism, due to its dual mandate of protecting natural resources and promoting economic exploitation. The deep sea and its role in complex, global interactions related to the climate, food chains, and the like have not yet been researched enough to be able to estimate the consequences of large-scale, long-lasting disruptions of this fragile ecosystem.

Up to the present, the ISA has not issued any licences for commercial deep sea mining, and the codex for commercial deep sea mining remains unfinished. In light of the above uncertainties, many scientists, environmental protection organisations, companies, and national governments have called for a moratorium on deep sea mining until additional research results are available and effective protection measures can be formulated.

Raiffeisen KAG is opposed to deep sea mining. According to the current state of scientific knowledge, the environmental risks and the widespread consequences of disruptions to the ecosystem are incompatible with the responsible use of resources.

The deep sea covers water depths and seabeds located at or below around approximately 200 metres from the surface. These depths are mostly or completely dark and are often located outside national jurisdictions. Consequently, the majority of the deep seabed falls under the jurisdiction of the International Seabed Authority (ISA or ISBA), which was established by the United Nations. The ISA has a dual mandate: On the one hand, the goal is to protect the deep seas as part of humanity's heritage, and on the other it is to promote the economic extraction of commodities in the deep sea.







Moderated by  
Dieter Aigner,  
Managing Director  
of Raiffeisen KAG



## Round table discussion on ocean warming, the possible consequences, and responsible action.



**Professor Leopold Haimberger**  
Department of Meteorology and  
Geophysics, University of Vienna



**Michaela Krömer**  
Attorney-at-law specialising in fundamen-  
tal and human rights, the climate crisis,  
and migration



**Gabriel Panzenböck**  
Fund Manager in Rates & FX Team,  
Raiffeisen Capital Management



**Philipp Stadler**  
Head of CCU Team, Net Zero Emission  
Team, Rohrdorfer

*Professor Haimberger, climate change is something that really cannot be denied anymore: For example, floods around the world, recently even in Africa, and hailstones the size of tennis balls are no longer just figments of filmmakers' imagination. More and more, they are a quite unpleasant reality, even here in Austria. As a meteorologist, you get to see the increasingly obvious signs of climate change up close and personal. What role do the oceans play in these wild weather conditions?*

**Leopold Haimberger:** The role of the oceans is to establish a balance between the tropics and the polar regions. And, very importantly, they also function as a massive energy sink. Due to the high concentration of CO<sub>2</sub> here on Earth, we have a surplus of energy. This means that, in net terms, the planet is being heated up. And more than 90% of the energy goes into the oceans. If there weren't any oceans, the global temperature would probably already be one degree centigrade higher than it currently is. Because the oceans absorb the energy and mix it into deeper layers. This holds true both for energy and warming, but also for carbon dioxide as well naturally. The oceans absorb roughly one quarter of the additional carbon dioxide that is being emitted.

And that brings us to the real problem. Because if the oceans keep warming up, their ability to store CO<sub>2</sub> declines. We cannot rely on the oceans continuing to be such an effective sink for CO<sub>2</sub>. As for the unpredictable weather, heavy precipitation events will keep intensifying with warmer oceans. They may not necessarily occur more frequently, but if weather conditions are right for this kind of precipitation, then these events will be more intense in many parts of the world.

*What will happen, since it does appear likely to indeed occur, if global warming exceeds two degree centigrade and continues on to three or even four degrees or more?*

**Leopold Haimberger:** People are always talking about reducing CO<sub>2</sub> emissions. The fact of the matter is, however, that we are well on the way to exceeding two degrees. The radical measures being talked about are not materialising. And if CO<sub>2</sub> emissions continue to rise, then we cannot rule seeing an increase of three degrees or more. This means that sea levels will rise dangerously; we're talking about several metres in this case. That said, the real effects will only be seen after 2050 or even after 2100. This will impact an unbelievable amount of land and a very large

# "SEA LEVELS WILL RISE DANGEROUSLY; WE'RE TALKING ABOUT SEVERAL METRES"

proportion of the world's population. We should not underestimate this. Over the short term, over the next 20 years, this will not impact us here in Austria, and as a land-locked country it won't have much effect on us anyway. But rising sea levels are a major problem.

*One hears the expression "tipping point" in the media a lot. What does this refer to?*

**Leopold Haimberger:** For example, there are worries that the Amazon rainforest could become unstable, burn down, and not be able to regenerate itself. This also applies to forests in other regions, where forest fires are already becoming more frequent. Naturally, this is a problem, because the forests in Russia and Canada store a great deal of CO<sub>2</sub>. And if forest fires continue to increase, then this CO<sub>2</sub> storage function will decrease substantially. The oceans are incapable of storing the CO<sub>2</sub> all on their own.

*Ms Krömer, in April the so-called Swiss Climate Seniors' Association won a case before the European Court of Human Rights that Switzerland was in violation of the European Convention on Human Rights due to its overly lax climate protection measures.*

*These climate cases are intended to force Europe's states to take stronger measures to fight the climate crisis. How important is this ruling for climate protection?*

**Michaela Krömer:** At the international level, we're seeing a trend towards more and more climate-related legal proceedings ending with positive rulings. And since we are actually talking about the oceans... Just a few weeks ago, the International Tribunal for the Law of the Sea issued an advisory opinion in which greenhouse gases constitute pollution under the UN Convention. This opens up new avenues for lawsuits. We are also anticipating other opinions at the international level, and climate-related lawsuits are having more and more success in many countries. This is a positive development, but also a negative one, because it shows how grave the situation is, insofar that legal intervention is actually necessary. The courts often lag behind and they are often hesitant about intervening, with an eye to the separation of powers. But we are now seeing space open up, because states are completely petrified. Looking at the regulatory frameworks, it is clear that the reality they see is completely different from what scientific community is telling us.

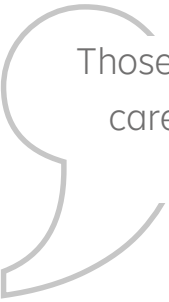
*Are the courts taking over the responsibilities of the state?*

**Michaela Krömer:** No, courts can only intervene in cases where rights are violated. However, they are increasingly required to intervene due to national climate policies which are far too relaxed. If one listens to Mr Haimberger and does the math, it is clear that 2100 is just 75 years away, which means that my 4-month old son may experience a world that is three degrees warmer, with all of the serious consequences. If we all had a life expectancy of 200 years and it was clear that all of this was going to happen to us personally, then we'd probably be demanding more from the politicians. And politicians would probably not be afraid to take the necessary measures. With the result that the courts would not have to intervene so much.

*What is the situation in Austria? Have there been any such rulings?*

**Michaela Krömer:** In Austria, it's difficult right now, because we don't have the tools to file cogent cases. But the international developments are cause for hope. Fundamentally speaking, the law always consists of two parts: substantive law and the opportunity to enforce it. And in Austria, we have a gap in legal protec-





Those of us who want to see changes have to be careful that we don't get constantly distracted and consequently don't approach the issue in such a unified manner as we could.

tion in the field of climate protection. For formal reasons, we cannot resort to the courts. Right now, there is another case before the Constitutional Court which was brought by children and should be decided soon. Despite the ruling in favour of the Swiss Climate Seniors' Association, I do not believe that the Austrian courts will take a new, innovative approach in relation to the children, as children's rights are separate fundamental rights. There has also been an ongoing case against Austria before the European Court of Human Rights for the last three years. Similar to the ECHR ruling on Switzerland, this will have to result in some stronger activity in this regard. Nevertheless, positive rulings by the courts are always just one part of the puzzle and never the solution to the problem.

*At the moment, the climate movement is feeling some headwinds, because there are some topics that are felt to be possibly more important, such as the war on the edge of Europe, China's economic dominance, etc. Do you also get this feeling?*

**Michaela Krömer:** Yes, the challenges are tangible. Climate researcher Helga Kromp-Kolb once said in a discussion we had: "The monster fights back before it dies." It's a real danger. I think one has to take the climate movement, which is now occurring in various different professional areas, more seriously. Those of

us who want to see changes have to be careful that we don't get constantly distracted and consequently don't approach the issue in such a unified manner as we could. The "other side" is often very well organised. We have to hold our own. And there are now a lot of people in different professions who are interested in achieving the transformation. We cannot allow ourselves to be convinced that we are not able to do so.

*Speaking of transformation, the cement industry is one of the most resource-intensive industries of all, and it is under intense pressure, from investors as well, to reduce its CO<sub>2</sub> emissions. Mr Stadler, can you tell us what's going on in this regard?*

**Philipp Stadler:** As the father of two children, I also think about the future and it motivates me to push for change. Right now, the cement industry is responsible for 7% of the CO<sub>2</sub> emissions. Cement is a key building material of the future, but it comes with a CO<sub>2</sub> burden of 500 kg/tonne. A large part of these emissions come from the raw material, the limestone, and these emissions are generally seen as being unavoidable. So, how can we reduce the emissions to net zero despite this? This is a big challenge, but it is absolutely feasible. We can cut 60% of the emissions by using alternative raw materials with less CO<sub>2</sub>, by changing the composition of the cement and the concrete, and by

shifting fuel use towards biogenic and renewable fuels. The rest of the unavoidable process emissions can be decreased to zero by way of carbon capture, use, and storage. At Rohrdorfer, we are already taking the necessary measures to move forward with decarbonisation. For example, three years ago, we started operating a carbon capture and utilisation system; we are also developing a process to transform CO<sub>2</sub> into compounds such as formic acid, and we are scaling these new technologies in all areas. Furthermore, we have launched projects to boost efficiency and avoid CO<sub>2</sub> emissions. As a result, our carbon footprint is already now smaller than it was ten years ago. We have a clear roadmap for the future: By 2038 we want to achieve net zero, meaning that we will produce high quality cement and construction materials which are climate neutral. To get there, Rohrdorfer is taking a proactive approach and has pooled all of its competencies in the Net Zero Emission Labs, with 25 experts working on the subject of CO<sub>2</sub> reduction.

*Net zero by 2038 sounds very ambitious. Can you achieve it?*

**Philipp Stadler:** Yes, but there is still another thing we have to change: Right now, we are still a fossil company and we are still dependent on oil and gas, which is imported to Austria to generate energy. We have to put an end to this and transition to renewables. We need pragmatic

Discussion with Leopold Haimberger, Michaela Krömer, Gabriel Panzenböck, and Philipp Stadler



solutions in order to be able to do this. And to meet the climate obligations, we have to be open to technologies that are currently still viewed with some scepticism, such as underground CO<sub>2</sub> storage. We have to make this possible in Austria as well, because otherwise we will not be able to achieve these ambitious goals.

*Of course, this has implications for infrastructure as well ...*

**Philipp Stadler:** Yes, we have to work on expanding the power grid and push forward with renewables. The second point is the transition from natural gas to hydrogen. To achieve this, capacities must be expanded, and it is possible that new pipelines will have to be built. We need CO<sub>2</sub> pipelines to transport the greenhouse gas from the point of emission to the hubs, so that it can be reused or stored. If these measures are carried out quickly, we can become carbon neutral. I'd also like to briefly add something to what Ms Krömer and Mr Haimberger said. We can also see that in relation to this subject there are sometimes efforts to distract attention to other issues that are not relevant at all. We need pragmatic solutions. We are frequently hindered by the regulatory framework. We support utilising CO<sub>2</sub> as a raw material and transforming it into things that we can use in everyday life. In doing so, we can close the carbon cycle and we would become carbon neutral. But at the moment, the regulator does

not foresee this kind of transformation. Sometimes one cannot help but get the feeling that climate regulations are made very quickly, but that what is needed to actually implement them is not provided politically. In our case, we are not going to wait any longer for the legal situation to change, and we assume that the law will catch up later.



And to meet the climate obligations, we have to be open to technologies that are currently still viewed with some scepticism, such as underground CO<sub>2</sub> storage.

*Returning to the subject of the oceans: What role does ocean warming play for fund management?*

**Gabriel Panzenböck:** As participants in the capital markets, we are often seen as a problem, as part of the monster that was mentioned earlier. From an economic perspective, overall we are faced with the classic prisoner's dilemma: The problem is that CO<sub>2</sub> is being emitted into the atmosphere at the global level, while at the same time individual countries have little incentive to change anything as long as the others don't. The investment industry is just one part of the overall solution. On our own – without

## ROUND TABLE DISCUSSION

political backing – we won't be able to achieve that, just as is the case with the courts or individual enterprises. But the facts of the matter are so clear-cut and so blatant, that from our perspective as investors it is clear that only regulatory pressure, and regulatory changes in decision-making processes will lead companies to be ready to do something and ready to move ahead in the right direction with innovation, which also represents better investments.

### *What industries and regions are impacted by the consequences of the climate crisis in the oceans?*

**Gabriel Panzenböck:** If individual companies try to still earn something with fossil CO<sub>2</sub>, they still might be able to do so in 2024. But there is mounting pressure in the public sphere and society to change our economic system more intensively and more quickly. As a result, an investment is more lucrative for us when we invest in companies that position themselves for climate protection earlier and more effectively. And this is becoming prevalent in many sectors. Because climate change and rising sea levels affect a very large number of sectors, for instance the food industry, in relation to the subject of food security. Or if we look at it from a regional perspective and think of the migration flows, which lead to changes in the labour market.

Companies that are well prepared in this regard and are ready for future developments will perform better than others. We are lucky that the economic pressure is pushing us in this direction. Solar and wind energy are now the cheapest forms of energy and at the same time they are CO<sub>2</sub>-free. That helps us move forward. So, there is a real chance that we have the peak levels of CO<sub>2</sub> emissions behind us, not only in Europe, but in China as well. One thing is clear: Pragmatic solutions need to be financed, but it must be possible to present the transformation process, showing what can logically be achieved in realistic timeframes. And it is important that more happens, not less.

**Leopold Haimberger:** China is a good example. We complain that we are being flooded with cheap solar panels from China. A few years we were complaining that our solar systems were too expensive. China made the decision to provide massive support for solar and wind energy. Our governments are called upon to offer conditions for companies here so that they are competitive and can

pursue new opportunities. The EU does a lot by international standards, but we are seeing that other countries are reacting even more quickly.

**Gabriel Panzenböck:** One should not forget that the European solar industry, in particular Germany, was once the world market leader. Back then, there was a lot of support behind it. The good news is that the economic pressure of technical innovation is pushing us in the right direction for energy systems. For example, we see this with electromobility. And this highlights the interdependence, namely that we have to pay attention and that we have to create the right incentives in steering innovation – and governments and democracies play a big role in this regard – so that things move in the right direction. This is strongly intertwined with the regulatory framework, which is incredibly important in this regard. For example, it starts with how much one is required to install a solar system when building a new house. Regulation is critically important, and failures in this regard cannot be solved by the courts.



The good news is that the economic pressure of technical innovation is pushing us in the right direction for energy systems.

We need more breadth and companies which are willing to stand up and demand these things.

*What pillars are needed so that ultimately everything doesn't end up going to the courts?*

**Michaela Krömer:** As mentioned, regulation is still needed at many different levels. Along with power grid expansion, there are some things that were already in the pipeline, for instance the Renewable Heat Act, which didn't end up like we would have needed it to. For a long time we've been talking about a Climate Protection Act which has established greenhouse gas targets and includes a solid catalogue of measures that can be legally enforced. We are talking about getting rid of subsidies that are harmful for the climate. There are still a large number of subsidies in the field of fossil energy, and for example we are conducting gas exploration on a scale that would cover 30 wind turbines. The heated discussions about solid wind turbine projects is also absurd to some degree, along with the resistance to carbon capture and storage.

*How can we move forward more quickly with these demands?*

**Michaela Krömer:** Right now, these demands are mostly coming from the "usual suspects", and unfortunately these parties are not taken seriously enough by the politicians. We need more breadth and companies which are willing to stand up and demand these things. For exam-

ple, to say: We'll pay a higher CO<sub>2</sub> price, give us clear bans, but don't regulate us so heavily, we need room for innovation. It's important that other players now get involved in these discussions, in addition to the environmental organisations and NGOs, so that the pressure increases. If we were still back in the 1970s, we could take a different starting point. But it's 2024 and we are under enormous time pressure. We have to act pragmatically and quickly and adjust more quickly as well. Because we are probably not going to be able to get back to a world that's like we want it to be.

*Mr Stadler, do you see resistance in your process of transformation?*

**Philipp Stadler:** Yes, we do experience this resistance and we see a lot of stubbornness in society in the public discussions. In part, this resistance is motivated by worries about the future. That's understandable. If we want to reduce our CO<sub>2</sub> emissions, then we have to transition to a system of renewables, make green electricity cheap, and put a price on CO<sub>2</sub>. This leads to a quick transition by industry and society to carbon-neutral processes, like the ones we are implementing now at Rohrdorfer. I'm an optimist. We will achieve this transition and until we have done it we need good pragmatism, which is a big challenge for all of us. Industry is ready to move in this

direction. The people behind this also have kids and they want their kids to grow up in a good world. We are ready to move forward with decarbonisation and achieve net zero.

**Leopold Haimberger:** We have to stay focused and cut CO<sub>2</sub> emissions wherever we can. Leave the car behind and take the train. That might not sound like much, but every little bit counts and helps to preserve our planet for our children and grandchildren.

**Gabriel Panzenböck:** Change is going to happen, that's clear. 30 years ago a lot of things would have been easier to change in the system. But we can still make changes today as well. A lot of things are moving in the right direction, even though the pace of progress is not quite as fast as we want it to be. There is always the vision that our salvation will come from technology. And I do believe that technology will actually save us. It won't be flying nuclear-powered cars, however. It'll be wind turbines, batteries, and solar systems. But these three developments are cheap enough and so well technically developed that from now onwards we have a chance to achieve the scenario mentioned by Professor Haimberger, in which we may get a black eye, but we won't have to face the scenario of sea levels rising by several metres.



## EXPLICATIONS AND FURTHER INFORMATION

- 1** United Nations Convention on Biological Diversity (CBD), also known as the Biodiversity Convention.
- 2** The expression “ecosystem services” refers to the benefits of nature for people, which they obtain from ecosystems and organisms such as plants and animals, for example food, medicine, and climate regulation. According to the World Economic Forum, around one half of global value added depends directly and indirectly on ecosystem services.
- 3** The United Nations Conference on Environment and Development was held in Rio de Janeiro, Brazil, in 1992 and is often referred to as the “Earth Summit”.
- 4** COP stands for Conference of the Parties, which is the United Nations world conference on nature held since 1995; the Climate Conference is held annually and the Biodiversity Conference is held every two years. COP15 stands for the 15th Biodiversity Conference of the United Nations.
- 5** COP16 stands for the 16th Biodiversity Conference of the United Nations, which will occur in the fourth quarter of 2024 in Columbia.
- 6** The UN High Seas Treaty (officially known as the agreement on Biodiversity Beyond National Jurisdiction or ‘BBNJ’) is a multilateral treaty which establishes uniform rules on the preservation and sustainable utilisation of marine biological diversity in areas beyond national jurisdiction (the high seas).
- 7** [www.financeforbiodiversity.org/](http://www.financeforbiodiversity.org/)

# INFOBOX: BIODIVERSITY

According to the Convention on Biological Diversity, biodiversity is defined as the variability among living organisms on Earth at different levels including genetics, species, biomes, and ecosystems.<sup>1</sup> It thus not only refers to the diversity of species, but also that of the ecosystems in which these species live and the genetic diversity within each species. Biodiversity is essential for maintaining ecosystem services,<sup>2</sup> which are critically important to human well-being and sustainable development.

## DECADE OF BIODIVERSITY

The topic of biodiversity has received greater attention from politics and business since the early 1990s, as reflected for example by the signing of the Biodiversity Convention at the so-called “Earth Summit”<sup>3</sup> in 1992. However, only the first decade of the 21st century was declared as the Decade of Biodiversity by the United Nations. As part of this, five strategic goals were formulated (the so-called “Aichi biodiversity goals”), which were not achieved however. It was not until COP15<sup>4</sup> in December 2022 that the international community reached an agreement on 23 targets within the Kunming–Montréal Global Biodiversity Framework (GBF). The GBF is a comprehensive framework, which defines targets and measures for the preservation and sustainable utilisation of biodiversity at the global level. Among





other things, these targets include conserving at least 30% of the Earth's terrestrial and marine areas, restoring at least 20% of degraded ecosystems, and reducing pollution. The GBF intends to contribute to limiting the loss of biodiversity and protecting the Earth's ecosystems, in order to ensure a sustainable future for all. By the time COP16<sup>5</sup> is held, the CBD signatory states will develop national strategies to implement the GBF targets. Amongst other things, the Conference will also address the definition of specific indicators for measuring and enhancing transparency. This is intended to ensure that the GBF targets do not suffer a fate similar to that of the Aichi goals.

#### MARINE BIODIVERSITY

The world's oceans play a key role in preserving biodiversity, as a large portion of the Earth's biological diversity is found there. The seas are home to millions of species, ranging from minuscule plankton to gigantic whales and sharks. They feature a multitude of diverse habitats such as coral reefs, seagrass

meadows, mangrove forests, and abyssal plains. At the same time, the oceans play a key role in regulating the climate and maintaining ecosystem services; consequently, they are of vital importance to human well-being. In 2023, after 20 years of negotiation, the international community was finally able to conclude an agreement on the protection of the seas. This treaty allows for a binding set of regulations for the high seas, for example for the creation of marine preserves, the establishment of environmental impact assessments, and other measures to better protect endangered species and habitats.

The economy and the financial industry are increasingly aware of their responsibility to play an active role in preserving biodiversity. In recent quarters, numerous initiatives have been launched, often emulating the climate framework conventions, which enable and facilitate topic-specific transparency and reporting. Raiffeisen KAG joined Finance für Biodiversity in 2023 (see information box).



## Finance *for* Biodiversity Foundation

Finance for Biodiversity is a voluntary obligation by financial institutions with the objective of stopping the loss of biodiversity and contributing to a responsible use of biodiversity. The goal is to protect and restore bio-

diversity through finance activities and investments, and to heighten the awareness of biodiversity-related risks and opportunities in politics and business. Finance for Biodiversity is a key part of establishing industry standards to increase the transparency of biodiversity risks and opportunities, to work on setting science-based targets, and to facilitate the exchange of knowledge on this topic within the financial industry. In 2023, Raiffeisen KAG signed the Finance for Biodiversity Pledge and became a member of the Finance for Biodiversity Foundation.



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# CORPORATE VOICES ON ...

The condition of the oceans is crucial for the stability of the Earth's ecological balance. However, negative environmental impacts on the oceans, and the effects and consequences of such are difficult for most people to understand and thus remain literally submerged and out of sight for most of us. The universe of investable companies in the field of "cleaning the oceans" is very small. Consequently, shareholder engagement is a promising way for investors to address the subject of the potential negative impacts on the oceans and to simultane-

ously incentivise companies to demonstrate better environmental behaviour.

In light of the general business model, at the global level, mining companies account for the biggest share of negative environmental impacts that lead to marine pollution. Raiffeisen KAG's shareholder engagement activities include dialogue with the largest global mine operators in this field. Around 20 mining giants, such as BHP, Rio Tinto, and Vale, were contacted and asked the following questions:

- 1** What measures is your company taking to minimise the environmental impacts of its mines in terms of marine pollution and what environmental management systems have been put in place to prevent pollution in the case of a disaster and how are these environmental impacts monitored?
- 2** How does your company handle the disposal of hazardous wastes and chemicals from its mines?
- 3** Is the water quality measured in the vicinity of your mines, and if so, can you provide us with the relevant data?
- 4** What investments has your company made in sustainable mining practices and technologies to protect and maintain the marine environment?

# ... THE SUBJECT OF MARINE POLLUTION BY MINING COMPANIES

## 1 Newmont Mining

With the current development of gold prices, gold producers are coming more and more into focus for investors. The world leader in this field is the company Newmont Mining, which is included in the Standard & Poor's 500. In response to our enquiry about marine environmental impacts, the company referred us to its "Environmental Management and Monitoring Program". Newmont's site with the potentially biggest negative impacts on the marine environment are located on the Lihir island group, north of New Ireland in the south-west Pacific. Using the Monitoring Program, Newmont is able to objectively measure the water quality and the surrounding coral reefs and fish populations in this area.

According to Newmont, there is no alternative to using the ocean as storage for waste, but attempts are made to keep the environmental pollution as low as possible using chemical stabilisation and dilution.

## 2 China Hongqiao Group

In many cases, the ores that are extracted contain all kinds of toxic substances. The most important aluminium ore is bauxite. However, bauxite contains significant traces of highly toxic sub-

stances such as arsenic and mercury. Consequently, proper handling of these ores and the residues created during processing is extremely important in order to prevent possible environmental problems. China Hongqiao Group is the world's largest aluminium producer, with revenues of around USD 7 billion and is thus responsible for a large portion of bauxite waste products. The company has developed a "Plan for the Management of Hazardous Products and Residues", establishing comprehensive regulations for the substances produced and their storage, as well as clearly defined processes for their disposal.

Circular economy requires much more than just recycling, and consequently waste prevention and reutilisation represent a fundamental aspect of this plan. In addition to specific measures for the handling of hazardous wastes and chemicals from the mines, particular attention is paid to keeping all substances away from oceans and rivers in the course of maritime and river transport. Regulations are in place which mainly involve the disposal of hazardous wastes from shipping activities (e.g. used oil).

In order to continuously implement and comply with the plan, China Hongqiao >

A person with curly hair, wearing a black cap with a red visor, glasses, a black t-shirt, a blue life vest, and yellow gloves, is leaning over the side of a white boat. They are holding a clear plastic cup labeled '1803' and collecting a water sample from the turquoise water. The background is a clear blue sky.

CORPORATE  
VOICES ON THE  
SUBJECT OF  
MARINE POLLU-  
TION BY MINING  
COMPANIES



Group regularly engages independent auditors to perform annual checks of the systems.

### 3 Vale

Companies need proper data in order to be able to establish goal-oriented environmental management systems. The quality of the measures taken can only be evaluated with precise measurements, which are intended to ensure a higher water quality in the area of the mines, which in turn has an effect on marine pollution. The Brazilian company Vale is the world's largest supplier of iron ore, with a market share of 35%. At various locations, the group has 2,600 monitoring points, which delivered more than 400,000 data points on water quality last year. According to Vale, water quality measurements allow for operational control in real time.

As a result, possible negative impacts are easier to predict with the use of forecasting models, which allow the companies to take countermeasures in good time.

### 4 Anglo American

Environment protection requires investments. In its conversation with

Raiffeisen KAG, the company Anglo American presented what it says is the largest water recycling project in Brazil. Stretching 525 kilometres, the iron ore pipeline from Minas to Rio de Janeiro is the longest of its kind in the world. It allows for the transport of 26.5 million tonnes of iron ore per year, which moves through the pipeline as a slurry. In 2021, the company announced that it would start recycling the waste water from this pipeline, in cooperation with the harbour of Açú. Release of the waste water into the sea will be stopped and the newly generated water will help reduce the decline in local water tables. Raiffeisen KAG will continue to keenly monitor Anglo American's efforts, in particular the Minas project.

Using shareholder engagement as a component of active management, investors are able to highlight important sustainability issues for companies. Investors in the funds participate in this process by way of their investment. However, it is also the case that companies in which there is no investment can be incentivised to take a more sustainable approach to the environment and society through shareholder engagement.



# THE COMMODITIES GIANT BHP

The use of certain materials is necessary for a successful transition to environmentally-sound, sustainable economics. One need only think of the massive expansion of lithium mining for use in e-mobility applications as an example for the future demand for some commodities. Unfortunately, the mining and extraction of all kinds of commodities can lead to massive problems for the environment and humans.

These include soil and water pollution due to the use of chemicals, such as acids and heavy metals, in the processing of ores and minerals. Air pollution can occur due to the use of explosives and the combustion of fossil fuels for electricity production, and these activities are also associated with a higher-than-average rate of accidents causing injuries. Massive changes in the landscape are another possible consequence, due to the extraction of underground resources and construction of the necessary infrastructure, such as roads and mine facilities. This habitat destruction and the related displacement of indigenous populations and plant and animal species has clearly negative impacts on biodiversity. Mining activities also entail higher-than-average risks for mine workers and the surrounding population, as they often come into contact with poisonous substances and dust particles.

BHP (Billiton), one of Australia's largest companies and a global market leader,

is active in this complex and challenging field.

In 1883, Charles Rasp, an Australian of German descent, who was knowledgeable of minerals, identified rocks containing lead and silver ore in the course of his work as a "boundary rider" on a sheep farm in the far western reaches of Australia. He immediately recognised the region's potential for mining. Together with some partners, he formed a syndicate, leased the land, and founded The Broken Hill Proprietary Company, or BHP for short.

The company initially specialised in mining silver, lead, and zinc. Over time, BHP expanded its activities and began mining iron ore, coal, copper, and other commodities.

The Billiton mine was discovered in Indonesia in the mid-19th century and turned out to be rich in tin. The Billiton Company was founded in 1860 and was active in mining tin, copper, coal, and >



**Herbert Perus**  
Sustainability Office  
at Raiffeisen KAG

aluminium. Over time, the company expanded its operations to other countries and over the course of many decades it grew to become an important player in the global mining business.

## FUSION OF BHP AND BILLITON

BHP and Billiton then ultimately merged in 2001 to form the company BHP Billiton. This merger created what was then one of the largest mining groups in the world, with a broad portfolio of commodities and mining activities. For instance, the company is active in the extraction of commodities, such as iron ore, copper, coal, crude oil, and other minerals, as well as the lithium mentioned above. BHP operates mines, foundries, and other plants in various countries, including Australia, Chile, the USA, Canada, and many more. As a result, it plays a key role in global commodity supplies and is extremely important for the economies in many countries, in particular in the global growth markets. At present, a workforce of more than 83,000 is employed in BHP plants and the company has a stock market valuation of almost EUR 150 billion (as of May 2024).

## GOOD THINGS COME IN THREES?

In November 2007, BHP made a takeover bid for the Rio Tinto Group, which

envisaged exchanging one share in Rio Tinto for three in BHP Billiton. Rio Tinto initially rejected the offer. After the bid was raised a few times, the total value of the offer was almost USD 148 billion. Had the takeover been successful, it would have led to the creation of a gigantic company with an estimated market value of USD 350 billion. It would have been the second largest takeover ever, coming in behind the acquisition of Mannesmann by Vodafone in 2000. In November 2008, however, the company announced that the deal had failed due to the declines in commodity prices as a result of the financial crisis that was taking place.

The next attempt was made in 2010, when BHP launched a hostile takeover bid for the Canadian potash and fertiliser producer Potash Corporation, which controlled more than 25% of the global supply of potash fertilisers at that time. This takeover bid, however, was blocked by the Canadian government.

At present, BHP is trying to take over its competitor Anglo American. If this third attempt at a takeover or merger is successful, it would lead to a new market leader in the commodities sector, with a far higher market capitalisation than the currently first-placed company, Rio Tinto. >

## COMPANY SPOTLIGHT

### DISASTER STRIKES

In November 2015, one of the worst-ever environmental disasters occurred in Brazil: the Bento Rodrigues dam collapse. When the dam operated by the mining company Samarco (a joint venture of BHP and the Brazilian mining company Vale) burst, it triggered a massive flood that wiped out entire villages and cities. The flood consisted of mud, water, and poisonous chemicals from the mine. The results were devastating: 19 people were killed, hundreds injured and thousands lost their homes. The environment suffered even greater damage, as rivers and soils were contaminated, living organisms were decimated, and entire communities were destroyed.

Brazil's government and Samarco were criticised for their lack of precaution and inadequate safety measures. It was found that the dam had not been properly maintained and checked due to the costs involved. The mining industry in Brazil was subject to public scrutiny and there were calls for stricter environmental regulations and checks.

The clean-up work last for years and cost billions of dollars. The communities affected are still struggling with the

consequences of the catastrophe today. Many people's livelihoods were ruined, as agriculture and fishing is no longer possible in the region. The health of the impacted population is also at risk, as people were exposed to toxic mud.

Samarco undertook to pay compensation and to mitigate the damages. There were claims, however that the compensation was not enough and that the process was too slow. The communities impacted demanded comprehensive compensation and the quick restoration of living conditions.

In April 2024, Vale and BHP announced that the clean-up was proceeding well, with an independent report estimating that water quality along a 120-km long river section was as good as it was prior to the disaster. According to BHP, thousands of Samarco personnel were involved in intensive cleaning, reconstruction, and restoration measures, which concentrated on the stabilisation, reconstruction, and monitoring of the dam. Above and beyond this, BHP explained that it had initiated a wide-ranging set of reconstruction and compensation measures, by way of an agreement reached with the Brazilian authorities in

March 2016. These programmes envisage restoring the communities and environment impacted by the dam disaster, or appropriate compensation of the parties affected. Altogether, these measures will cost more than USD 25 billion.

According to BHP Billiton, the company has become a pioneer in its sector in relation to sustainability and environmental protection. The company has undertaken to conduct its mining activities in a responsible manner and to concentrate on environmental protection, social responsibility, and good corporate governance.

The Bento Rodrigues dam disaster is a tragic example of how short-term profit optimisation can lead to serious environmental damage and human suffering. It also shows how important it is for companies and governments to be aware of their responsibility for the environment and society and to take suitable preventive and safety measures. We will continue to accompany BHP on this path and carefully monitor future measures.







# FOOTPRINT-CUBE KEEPS FOCUS ON ENVIRONMENTAL FOOTPRINT



In addition to continuously developing the responsible investment process, Raiffeisen Capital Management is working on operational ecology measures at a company level, in order to decrease its own environmental footprint.



A carbon footprint team was formed several years ago, which is committed to developing and implementing operational ecology measures and to creating its own information platform.

On the screens, the Cube displays current information on the company's operational ecology measures on the one hand and numerous interesting tips on the responsible use of resources on the other. Positioned in a location where plenty of communication takes place, the Footprint Cube is intended to raise employee awareness of the environmental footprint and inspire discussion of this subject.

In April 2024, the "Info Footprint Cube" was unveiled in the meet-up area at Raiffeisen Capital Management as part of an employee event. Using two integrated

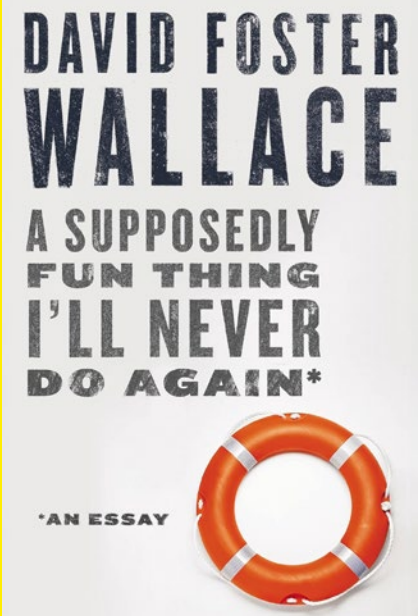


- ### OPERATIONAL ECOLOGY MEASURES
- > Challenges (hiking day, cycling challenge)
  - > Paper reduction
  - > Promoting low-carbon mobility
  - > Compensation for carbon footprint
  - > Sustainable production of marketing articles and printed materials
  - > Green events
  - > Responsible use of resources
  - > Green terrace
  - > Organic fruit
  - > Employee videos about their own footprint

Every little bit counts!







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### BOOK TIP

By Herbert Perus

### DAVID FOSTER WALLACE, A SUPPOSEDLY FUN THING I'LL NEVER DO AGAIN

The US author D.F. Wallace is known to many for his masterpiece *Infinite Jest*. He is less well known in his role as an essay writer and reporter. One of his merciless reports, written for *Harper's Magazine*, focuses on a horrible luxury cruise in the Caribbean. Foster Wallace really writes well, with pace and brilliance, without taking the wrong tone and with a sure sense for effect, if one likes his peculiar language and slightly offbeat humour. Ultimately, the piece is written by an attentive, analytical and – despite all the malice – very serious author, who dissects the microcosm and sociology of a cruise ship with journalistic enthusiasm and a quasi-ethnological eye, taking a very close look at cruises, this aggrandisement of mass tourism, from a civilisation-critiquing perspective.

This little book should be recommended for anyone who is considering going on a cruise. At least then they cannot say that they were not warned.





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