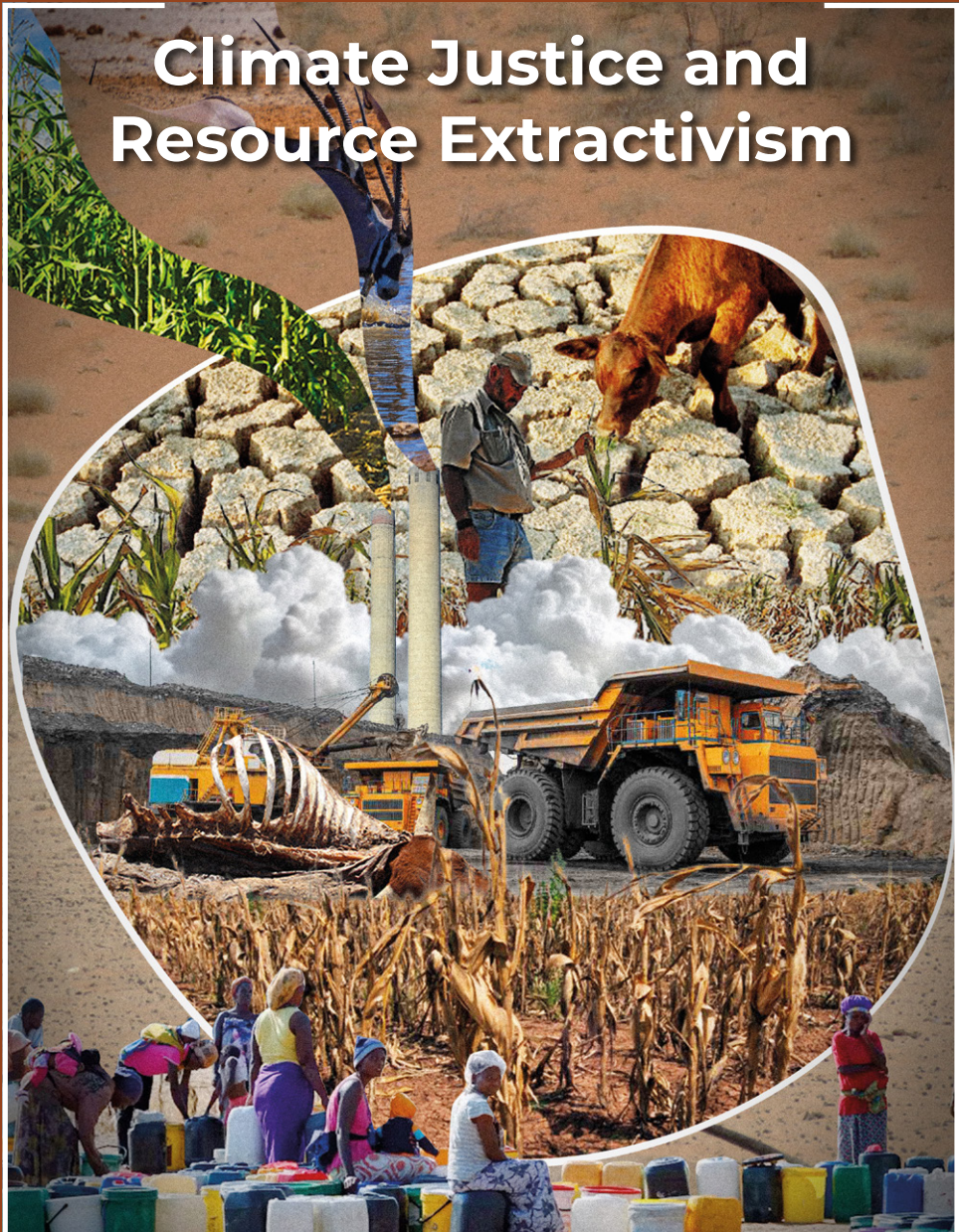


# Climate Justice and Resource Extractivism



## Editorial

*Lucy Edwards-Jauch & Ndumba Kamwanyah*

### Background

Climate change refers to long-term changes in global temperature, winds, precipitation and atmospheric pressure. The climate change that the earth is experiencing is manifest in global warming (increasing average temperature at the earth's surface), rainfall variability, and rising sea levels. In Namibia, climate change has resulted in an 18% increase in the frequency of floods and droughts over the last four decades (Lubinda, 2015).

Notwithstanding the dispute about whether the world is in the geological epoch of the Anthropocene, there is general consensus that climate change is primarily caused by human, or anthropogenic, actions. The most damaging of these is the burning of fossil fuels. Fossil fuels like oil, gas and coal release and trap greenhouse gases (GHG), most notably carbon dioxide (CO<sub>2</sub>), in the earth's atmosphere. The burning of fossil fuels, together with the clearing of forests, is the most important source of GHG emissions (Chen et al., 2017).

Globally, climate change has increased and intensified adverse weather events. In 2024, the world

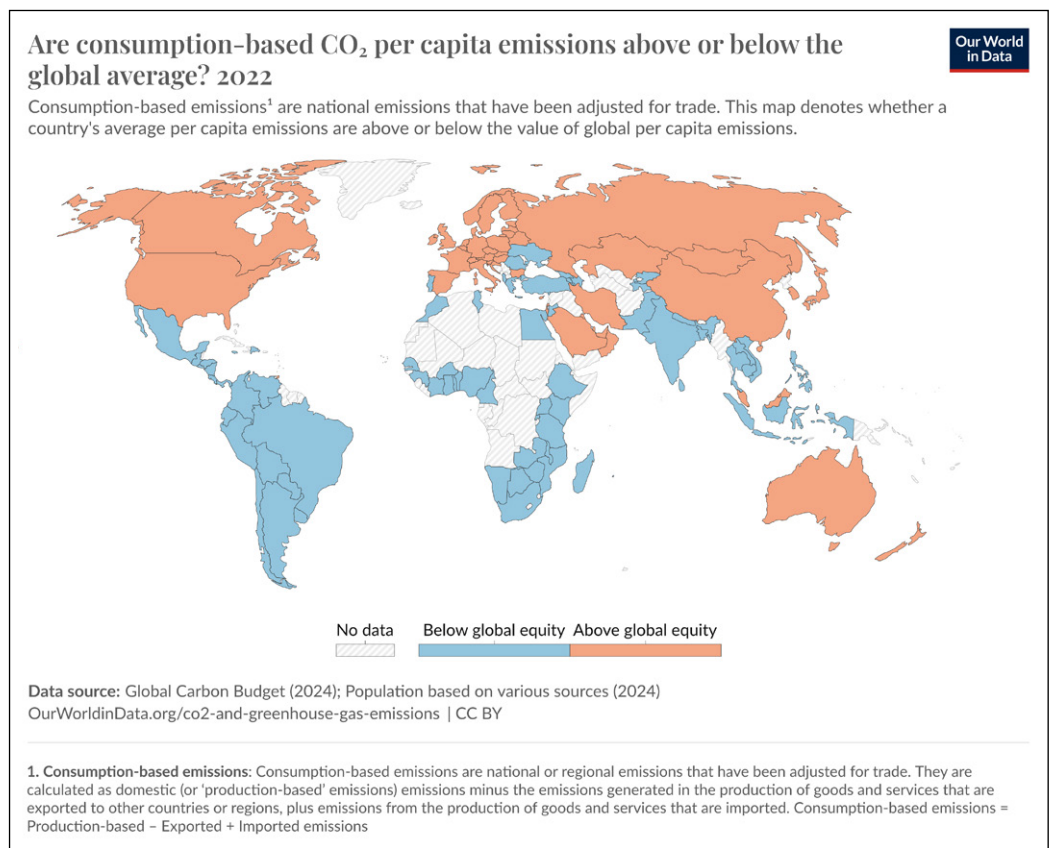
saw super-typhoons in Taiwan and the Philippines; floods in Mali, Chad, Morocco, Algeria, Libya, Tanzania, South Africa, Dubai, Bahrain, Oman, Qatar, Bangladesh, India, Pakistan, Spain, France, Nepal, China and Brazil; severe storms in Australia and central Europe; cyclones and hurricanes in the United States of America and Mauritius; and wildfires in the United States (Atlas Magazine, 2024). At the same time, most of southern Africa experienced a severe drought that has left 23 million people severely food insecure in Angola, Botswana, Mozambique, Lesotho, Malawi, Namibia, Zambia, and Zimbabwe (World Food Programme, 2024).

The greatest climate change injustice is that poor people and poor countries pay the heaviest price for the ecological destruction caused by high levels of carbon emitted by rich people and rich countries (Mager & Chaparro, 2023). Those most adversely impacted also emit the least GHGs, and happen to be mainly black people and people of colour; climate justice must therefore be linked to racial justice. Environmental racism entrenches the poverty of many formerly colonised and currently racialised groups. The

higher environmental health burden carried by these groups has increased calls for reparations and redress – not only for past colonial injustices like slavery and colonial wealth extraction that occurred at the expense of black and indigenous populations, but also climate reparations for the disproportionate effects climate change has on groups who suffered under colonial exploitation and wealth extraction (Donoghoe & Perry, 2023).

There are global and local level inequalities in the distribution of carbon dioxide emissions, inequalities in the distribution of climate change impacts, and inequalities in resilience to those impacts. Figure 1 below illustrates global inequalities in consumption-based carbon dioxide (CO<sub>2</sub>) emissions.

**Figure 1** *Global consumption-based CO<sub>2</sub> emissions*



Source: *Our World in Data* (2023)

## Climate Change Impacts for Namibia

### *Increased frequency and intensity of droughts*

Global circulation models predict temperature rises in Namibia of between 1.7°C and 5.4°C. At the same time, despite global precipitation increasing as an inevitable consequence of increased evaporation, precipitation rates in Namibia will decline by around 19%. Some models predict higher levels of rainfall decline in the more populous northern parts of Namibia and extreme weather conditions that will lead to declines in Namibia's staple crop production and deteriorations in Namibia's rangelands (World Bank Group, 2021). The latter will negatively affect livestock production. Global warming will also cause a rise in sea levels and water temperatures. This may affect fish stocks and threaten coastal livelihoods. Increased flooding will increase water and vector-borne epidemics, and previously eliminated diseases may re-emerge. Droughts will increase the incidence of wildfires, water stress, and competition for water sources. Flash floods may damage infrastructure, including communication and transport infrastructure, and therefore impede access to essential services.

The Namibian government has taken the bold step of joining a group

of small island states in bringing a case before the International Court of Justice (ICJ). In one of the largest cases before the ICJ, nearly a hundred countries that are adversely affected by climate change seek to hold countries with the highest GHG emissions accountable for the ecological destruction such GHGs cause. Namibia's case will focus on droughts, violations of human rights, and environmental destruction (Smit, 2024). The adverse effects of droughts in Namibia are so severe that the government has declared a national emergency. Declines in food production have resulted in starvation and more than a million Namibians being food-insecure, as food reserves in silos get depleted (National silos drying up, 2024), in addition to failed crops and livestock deaths. Declines in food production have also led to food price increases (Shikololo, 2024; Kooper, 2024). The Namibian government's action in seeking to enforce accountability at the ICJ is commendable, but such accountability is not always sought at home. Some articles in this volume of the NJSJ illustrate some of the most egregious violations of Namibian laws by transnational companies. The perpetrators are seldom held accountable for their violations of environmental standards and indigenous rights.

In their article Examining Namibia's Climate Vulnerability through the

Lens of Climate Justice, Romie Nghitevelekwa and Nelson Mlambo explore Namibia's vulnerability to climate change impacts. Their article specifically focuses on droughts to illustrate Namibia's climate vulnerability, the climate risks it faces, and its exposure and sensitivity to climate change. They point out that at a global level, the impacts of climate change are differentiated, uneven and disproportionate. There are uneven levels of exposure, sensitivity, and adaptive capacity, and these contribute to disparities. They further stress Namibia's urgent need for targeted support and justice-oriented climate policies, and advocate for a more transformative, just and equitable climate response that is appropriate to the Namibian context.

### *Effects of climate change on women*

Women are more likely to suffer the effects of climate change because they are subject to more resource constraints and are more likely to live in poverty than men (United Nations Economic Commission for Africa, 2020). Due to adverse weather events, women's unpaid care work increases as water and energy sources decline. This includes the time spent on procuring food, firewood and household water supplies. The greater demand on their unpaid domestic labour also

affects their ability to acquire the new skills needed to procure alternative livelihoods (Nabalamba et al., 2011).

Women are 14 times more likely to be injured or to die from adverse weather events than men. This is mainly attributed to poor nutrition, the lack of survival skills like swimming or tree climbing, and or restrictive dress codes. Their ability to escape danger speedily is impeded by their care roles for the young, sick and vulnerable (Nabalamba et al., 2011). Women are also at greater risk of sexual violence when they traverse greater distances to procure firewood and water. Climate-related shocks may result in stress migration that may expose them to sexual violence. Flood-damaged transport and communication infrastructure may cause disruptions in services, particularly sexual and reproductive health services like contraceptive services. This in turn could increase the risk of unintended pregnancies. The hardships caused by climate shocks may also increase the incidence of early and child marriages and transactional sex as survival strategies (World Food Programme, 2021).

Namibia's female subsistence farmers who rely on rain-fed agriculture are extremely vulnerable. They are mainly responsible for household food supply, and as droughts and floods increase, the likelihood of crop failures increases.



These threaten food security and incomes (World Food Programme, 2021). Droughts also increase the risk of wild fires, and therefore the destruction of forests. Biodiversity losses limit possibilities for accessing alternative food sources and income generation possibilities (Southern African Development Community [SADC], 2019). Climate shocks generally increase women's poverty and exacerbate pre-existing inequalities between women and men (United Nations Economic Commission for Africa, 2020).

Emma Nangolo's article *The Impacts of Climate Change on the Livelihoods of Rural Women: A Case Study from Onalusheshete District, Namibia* demonstrates the effects of climate change on women in rural Namibia, particularly with respect to food security, water availability, and income generating opportunities. Her empirical study was conducted in three neighbouring villages in Namibia's Oshikoto Region, namely Omatope, Elavi, and Emanyana. The villages all fall under the Nehale LyaMpingana Constituency of the Onalusheshete District, and the Ondonga Traditional Authority. She found that women's gender roles and social reproductive responsibilities make them particularly vulnerable to changing rainfall and temperature patterns. Although they have little information about climate change and its causes, they

have observed significant changes in their villages and the disappearance of certain species of fauna and flora, as biodiversity losses become more pronounced.

To demonstrate women's agency in combatting the effects of climate change, Nafimane Hamukoshi, in her case study *Preserving Heritage: The Importance of Seed Banking in Namibia*, provides a critical and timely exploration of seed banking as a cornerstone for sustainable agriculture, cultural preservation, and food sovereignty. Women are crucial contributors to the agricultural sector worldwide, and particularly so in sub-Saharan Africa (Von Maltitz & Bahta, 2024). The case study focuses on the role of rural women as custodians of traditional agricultural practices, amidst mounting challenges of climate change and the proliferation of genetically modified organisms (GMOs). The article offers valuable insights into the intersection between environmental sustainability, cultural heritage, and gendered agency in agricultural systems. The case study underscores the resilience and agency of communities in preserving their agricultural heritage. It also highlights the tension between indigenous agricultural practices and modern agribusiness paradigms, and draws attention to the impacts of climate change and GMOs on agricultural

diversity. By foregrounding the contributions of women, the article aligns with global movements that advocate for gender equity and the preservation of indigenous knowledge systems in sustainable development. The author therefore situates seed banking within pressing global challenges such as food insecurity and biodiversity loss.

### *Climate change, human rights and the law*

The negative effects of climate change, like droughts, floods, sea-level rise, heatwaves, extreme weather events, biodiversity loss, and ecosystems collapse, violate a number of human rights. These include the rights to life, self-determination, development, health, food, water, sanitation, and adequate housing. They also violate clauses of various global human rights instruments, including the Universal Declaration of Human Rights; the International Covenant on Civil and Political Rights; the Declaration on the Rights of Indigenous Peoples; the Declaration on the Right to Development; and the United Nations Agenda for Sustainable Development (Office of the High Commissioner for Human Rights [OHCHR], 2017). Article 95 of the Namibian Constitution compels the country to maintain ecosystems, biodiversity and essential ecological processes. Article 95 also

requires the sustainable management and utilisation of the country's natural resources to the benefit of all Namibians (Government of the Republic of Namibia [GRN], 1998).

In their article *Assessing Namibia's Climate Law and Policies: Applying the Human Rights Integration Framework for Climate Policy Evaluation*, Oliver Ruppel and Atieh Khatibi argue that Namibians, especially the most vulnerable, face climate change-induced threats to human rights. The socioeconomic effects of climate change violate important rights and entitlements, for example, access to water, food, land, and health. They use the Human Rights Integration Framework for Climate Policy Evaluation (HRIFCPE) to assess Namibia's integration of human rights into its climate laws and policies. They also focus on the inclusion and protection of vulnerable groups such as women, children, people living with disabilities, and indigenous groups. The article identifies legislative gaps and makes recommendations for legal and policy reforms to promote, uphold and protect rights.

### *Climate change mitigation and adaptation*

Mitigation measures are actions that prevent or limit GHG emissions in order to slow down or even reverse

global warming. Adaptation measures are intended to protect populations, economies, infrastructure, the environment and incomes against the impacts of climate change and to help build resilience to such impacts (Chen et al., 2017). For the Global South, which contributes very little to GHG emissions and global warming, the emphasis should be on climate change adaptation to boost resilience to adverse weather events.

Climate change transcends national boundaries and requires coordinated global action. The energy transition to low carbon or carbon neutral forms of energy generation is a tangible response. In his article *Climate Change, Exploitative Paradigms and Neocolonial Energy Transitions in Africa*, Bruno Venditto argues that the climate change demands that we urgently rethink not only our energy systems, but also our consumption patterns. He further argues that climate change presents an opportunity to redefine our relationship with energy, resources, and modes of production. He further argues that the climate crisis forces humanity to fundamentally re-evaluate societal values and behaviours related to energy consumption. He critiques the current “green” energy transition that entrenches and perpetuates inequalities and injustices, and calls for a just energy transition that goes beyond technological

transformation to address forms of ownership, control, and the fair distribution of benefits obtained from the African resources that enable this energy transition.

Namibia is currently at net carbon sink. This means that the country locks in more carbon than it releases through GHG emissions. Namibia’s share of global aggregated emissions is a paltry 0.00026%. Despite its minute contribution to global GHG emissions, the country has undertaken a number of mitigation measures to reduce such emissions in the areas of AFOLU (agriculture, forestry and other land use), IPPU (industrial processes and product use), and waste management (GRN, 2023). Namibia has also commenced with the construction of the Otjikoto Biomass Power Station that could both reduce carbon emissions and restore rangelands (Matthys, 2024c). It is believed that Namibia still has the capacity to further reduce its carbon emissions by 4.890 Mt CO<sub>2</sub> e (million tonnes of carbon dioxide equivalent), i.e. by 5.7%, by 2030 (GRN, 2023).

The irony is that Namibia’s net sink status provides it with the opportunity to source revenue that can fund adaptation through carbon trading markets, where carbon credits are traded with high GHG emitting companies and countries for their emissions – a scheme that enables



carbon offsetting. Carbon trading, as opposed to carbon taxation, has been pushed by European governments. It represents the commodification and financialisation of pollution for high GHG emitting companies and countries. They can evade responsibility for the climate catastrophe they are causing by buying carbon credits from low carbon emitting countries like Namibia. Some argue that the system of carbon markets perpetuates climate injustice and exacerbates inequalities and uneven development, and does not reduce carbon emissions (Pearse and Böhm, 2014).

Namibia's Community-based Natural Resource Management (CBNRM) programme seeks to balance communities' rights to access, use, control, and benefit from natural resources and environmental conservation. Under the rubric of CBNRM, communities can engage in the protection of ecosystems and biodiversity while utilising natural resources in a sustainable manner. The CBNRM programme is underpinned by the Nature Conservation Amendment Act (5 of 1996) and the Forest Act (12 of 2001). Through CBNRM, local natural resources are co-managed by community-based self-governing entities (GRN, 2013).

In their case study Social Justice amidst Climate Change in Namibia's

Community-based Natural Resource Management Programme, Selma Lendelvo and Sian Sullivan outline the intersections between social justice and climate change in Namibia's CBNRM programme. They confirm the role that CBNRM plays in Namibia's nature conservation through landscape protection, the promotion of ecosystems, and genetic diversity. The programme is also a source of income and employment for rural communities through joint-venture tourism, conservancies/associations, conservation hunting, and member benefits. They further explore some of the challenges and barriers some CBNRM projects face.

Namibia has introduced adaptation measures that have mitigation co-benefits like CO<sub>2</sub> sequestration through green urban corridors and agroforestry; the application of conservation agriculture principles; the combatting of bush encroachment; biodiversity conservation; carbon capture; and water recycling (GRN, 2023). Namibia's climate goals include measures to improve food security; water resources; biodiversity; energy supply; tourism; sustainable resource base management; and urban development (GRN, 2023). Namibia has recognised impediments to these goals, including technical capacities, appropriate agricultural practices and breeds, and policy harmonisation

(World Bank Group, 2021). There is an urgent need for policy coherence as some policies contradict and may even impede Namibia's climate change mitigation and adaptation efforts. While implementing mitigation and adaptation programmes, Namibia is also pursuing economic growth through neo-extractivism, and some of these extractivist activities cause ecological destruction that is diametrically opposed to Namibia's own climate change goals.

Various Namibian government departments have introduced programmes to strengthen food security and food sovereignty. Under the auspices of the United Nation's Build Back Better programme, the Namibian Ministry of Agriculture, Water and Land Reform is piloting a climate-smart, technology-based project to strengthen food systems. The project provides solar powered pumping and irrigations systems, and solar powered storage systems to increase adaptive capacities and resilience to climate shocks and improve incomes and agricultural productivity (Agriculture Ministry to strengthen food systems, 2024). In addition, the Ministry of Agriculture in partnership with a donor agency has introduced small-scale gardening projects (Shigweda, 2024); and the Ministry of Fisheries and Marine Resources has introduced and supports 150 small-scale fresh

water aquaculture and inland fishing projects in areas where water is available (Pinehas, 2024).

To improve resilience to the agricultural impacts of climate change, Namibian experts recommend sustainable water management; efficient water use in farming systems through drip irrigation and rainwater harvesting; crop diversification to reduce dependency on single crops; agroforestry to reduce soil erosion and protect crops against extreme heat; conservation agriculture, with crop rotation, minimal soil disturbance and permanent soil cover for soil moisture retention and minimised soil erosion; and improved livestock management to prevent over-grazing and promote pasture recovery (Louw, 2024).

In his article Exploring Climate Justice through Environmental Adaptation: A Case Study of Namibia, Jasper Kasoma explores Namibia's climate change adaptation agenda. He draws the linkages between climate justice and adaptation to argue that unequal resource distribution affects resilience, adaptation and the survival of communities and individuals adversely affected by climate change. He further explores the differential gender impacts of climate change and the number of financial, technical and capacity gaps that impede the implementation of Namibia's adaptation agenda.

### *Climate change finance*

As is the case with most countries in the Global South, Namibia has already identified the lack of climate finance, technologies and institutional capacity as the biggest stumbling block jeopardising the implementation of its climate change programmes (GRN, 2023).

The CBDR principle (“common but differentiated responsibilities”) was declared at the Rio Earth Summit in 1992 (Centre for International Law, 2019). The principle recognises climate change injustices emanating from the unequal distribution of global GHG emissions and compels high GHG emitters, to take greater responsibility for funding mitigation and adaptation measures. In keeping with the same principle, and to address climate change funding gaps, the concept of a Loss and Damage Fund was adopted by the 27th Conference of Parties (COP) in 2022. The fund is still in its formative stages and operational and access modalities are still to be clarified (International Centre for Climate Change and Development, 2024).

It is estimated that an amount of US\$400 billion per year will be needed by 2030 to fund climate change mitigation and adaptation. So far, global voluntary funding pledges and actual donations have fallen far short of the funds required (Mager & Chaparro,

2023). Climate finance was a key focus area of the United Nations Framework Convention on Climate Change (UNFCCC) COP29 conference in Azerbaijan in 2024. The conference deadlocked on climate finance, and the Namibian Minister of Environment, Forestry and Tourism lamented the fact that those who cause global warming refuse to provide adequate and predictable finance to developing countries to address climate change challenges. They have failed to fulfil their pledge of contributing US\$100 billion (0.1 % of global GDP) to the Green Climate Fund annually (Nakale, 2024). Instead, public funds are still used for fossil fuel subsidies. In 2023, developed countries spent a total of US\$370 billion on fuel subsidies. This is more than the US\$ 300 billion they pledged at COP29 to finance responses to climate change (Energy World, 2024).

The Tax Justice Network is lobbying the UN for global tax reform to bring about a more inclusive and equitable taxation regime. It opposes the system of carbon credit trading, for it misdirects responsibility for pollution away from the major corporations responsible for the majority of GHG emissions. Instead, they propose global tax reform (rather than voluntary pledges) to fund global mitigation and adaptation measures. They have outlined five principles (“five r’s”)

for global tax reform through which countries like Namibia could cover the huge costs of climate change adaptation (Mager & Chaparro, 2023). They are:

- revenue to fund universal public services and sustainable infrastructure;
- redistribution to curb inequality between individuals and between groups;
- repricing to limit public “bads” like carbon-intensive consumption or investment;
- representation to strengthen democratic processes and improve democratic governance; and
- reparation to redress the historical legacies of colonisation and ecological damage.

In a short article, *Climate Change Funding*, Bernadette Shalumba-Shivute argues that the onus is on the 12 high GHG emitting Annex I countries that are OECD (Organization for Economic Cooperation and Development) members to reduce carbon emissions. According to the UNFCCC, these countries are also responsible for providing financial and technical assistance to poorer countries severely impacted by climate change through a system of grants and loans channelled through the Global Environment Facility, the Green Climate Fund, and

the Adaptation Fund. She further sheds light on the funding gaps for Namibia’s climate change mitigation and adaptation agendas.

### *Green jobs*

Namibia is set to emerge as Africa’s leading centre for renewable energy (World Economic Forum, 2021). This will involve harnessing the country’s abundant renewable energy resources, such as biomass, wind, solar, and hydroelectric power (Energy Transition: The Global Energiewende, 2018). The emphasis on renewable energy, particularly solar and wind, highlights Namibia’s natural advantages. Yaloo Shikongo’s opinion piece, *Green Jobs: Pioneering Sustainable Growth and Environmental Stewardship*, is a timely analysis of the critical role green/climate jobs play in fostering both economic development and environmental sustainability. She identifies key challenges, including skill gaps and robust policy frameworks, to realise this development pathway and calls for green education and workforce training in the light of Namibia’s high youth unemployment rates.

### *Extractivism*

As far back as 2017, an estimated 100.6 billion metric tonnes of minerals and metals had been extracted and transported around the world; global

mineral extraction has grown on average by 4% per annum since 1950. It has shaped economies, altered patterns of wealth distribution and fundamentally transformed social structures. It has also transformed the biophysical environment, as it flattens mountains, excavates canyons, bores shafts into the crust of the earth, redirects rivers, destroys forests and contaminates the air, earth and water resources, often with impunity (Peša & Ross, 2021).

The Namibian economy is based on the extractive industries, mainly mining and fisheries. Extractivism has structured the Namibian economy as a raw material exporter. The imperatives of climate change have increased global demand for critical minerals that facilitate the energy transition. This “green” extraction is projected to increase between six and 13 times in the future (World Bank Group, 2024).

Various Namibian politicians and high-ranking officials have declared extractivism to be crucial for Namibia’s development (Maximise oil benefits, 2024; Markowitz, 2024b; Uanguta, 2024). However, the UN Special Rapporteur on Contemporary Forms of Racism, Racial Discrimination, Xenophobia and Intolerance has cautioned against the pitfalls of this neo-extractivism, which is driven by the governments of former colonies

for “developmental” purposes. The risk is that it follows the same racist and exploitative practices as colonial extractivism. It approximates the same removal of raw materials from territories for processing, sale and consumption elsewhere; it uses the same unequal systems of exchange and the same disproportionate benefit distributions between the Global North and the Global South (United Nations General Assembly, 2019).

Extractivism, whether of “green” or colonial ilk, remains ecologically destructive. The extraction of resources for the energy transition in the Global North leads to environmental degradation, biodiversity destruction, human rights abuses and land grabs in the Global South (Mager & Chaparro, 2023). It is also responsible for the displacement of indigenous groups and local communities. As the demand for critical minerals for the production of smartphones, solar panels and electric vehicles increases, so has the destruction of the most carbon-rich and biodiverse tropical rainforests in Indonesia, Brazil, Peru, Ghana, Suriname, Myanmar, Australia, and Guyana (Milko, 2024).

### *Oil and gas discoveries*

There has been a surge in oil and gas exploration in Namibia (Baunsgaard et al., 2024). Namibian government

officials hail such exploration and extraction as a much-needed platform from which Namibia could increase economic growth, diversify the economy, create jobs, develop infrastructure, ensure energy security, attract further investments, and fund renewable energy production (Uanguta, 2024). The International Monetary Fund (IMF) cautions that such mega projects could have a transformative but temporary impact. The IMF anticipates a decline in the demand for hydrocarbons as a result of the energy transition. This could result in some of these resources becoming stranded assets (Baunsgaard et al., 2024). There are also fears that, if realised, Namibia's oil wealth could exacerbate inequalities, as has been experienced in other countries that rely on single dominant sectors like oil and gas (Kalondo, 2024 ).

Phasing down will have socioeconomic implications for oil and gas export-dependent economies. Although there is a global imperative to curb GHG emissions, there are also debates about whether fossil fuel-producing low and lower-middle income countries (LLMICs) with very low carbon emissions, like Namibia, should continue to extract such resources to overcome their underdevelopment. Some argue that based on their low carbon emissions and their economic and energy needs,

there should be multiple fossil fuel production phasing-down pathways that are country-specific and address the needs of low and lower-middle income countries (Forster, et.al, 2024). Some take a more systemic perspective to critique the very concept of economic growth. They argue that the logic of growth is at the root of ecologically unsustainable and environmentally destructive economic models. They propose degrowth in the highly industrialised and high carbon-emitting economies. Degrowth denotes a fundamental economic reorganisation that reduces resource and energy dependency throughput (Kallis et al., 2018).

Namibia has an estimated 11 billion barrels of oil off its coast (Eco Atlantic Oil and Gas, n.d.), as revealed through the exploration activities of big transnational companies. Shell, for example, has discovered at least 500 million recoverable barrels of oil in the Orange Basin; Galp Energies discovered high quality light oil in the Mopane well; Total Energies found two billion barrels of recoverable oil at the Venus 1 and Graf 1 sites (Dlamini, 2024); Enigma Oil & Gas, owned by Chariot Oil & Gas, is prospecting along Namibia's southern coast, and estimates reserves of about four billion barrels of oil (Eco Atlantic Oil and Gas, n.d.); exploration activities in the Orange Basin are continuing, with

additional companies like Chevron and Exxon Mobil entering the field (Oil companies to double down, 2024).

Oil exploration and extraction carry environmental risks. Oil contains amines, azides, heavy metals, polycyclic aromatic hydrocarbons, and benzene compounds. All these have high levels of toxicity that can have short- and long-term impacts on marine life and human health (Sharma et al., 2024). Physical disturbances to the marine ecology can destroy fishing grounds and habitats well beyond the actual drilling sites as increased sedimentation can smother seabed resources and repulse mobile species. This may have short- and long-term behavioural effects on marine life, threaten the sustainability of certain species and, by extension, livelihoods based on the blue economy (United Nations Environment Programme Finance Initiative, 2022).

In a visual essay titled *the fish that sees its water is getting shallow cannot be stranded: a curatorial essay*, Nashilongweshipwe Mushaandja verbally curates the art works of various Namibian visual artists using water as a metaphor for life threatened by environmental destruction. The title repeats a popular African proverb that metaphorically and literally speaks to experiences of survival, livelihoods and mobility. Water is at

the centre of all these experiences. Mushaandja connects the various art works of prints, photography, mixed-media works, installations, sculpture and performances to the political and socioeconomic uses of oceans, rivers, reservoirs, springs, lakes and groundwater. As emphasised by different contributions in this journal, these water sources are all threatened by extractivism and climate change.

### *Uranium*

Namibia, is the world's third largest uranium producer, and government officials see uranium mining as being crucial to Namibia's economic development, and to carbon-neutral energy production (Markowitz, 2024b). Uranium also has a high energy content, as 1kg of uranium can produce the energy equivalence of 22 700 kg of coal (Radzysinski, 2021).

Uranium mining, irrespective of whether it is open pit, underground or in-situ leach mining, holds multiple risks. The long-term health and environmental consequences of such mining have not been fully investigated. Uranium tailing deposits are unstable and can cause landslides, air pollution and wildlife exposure; small particles of radioactive substances in tailings can be transported by wind; leaks in tailing ponds can contaminate underground water with heavy metals; it can also



pollute dams and rivers and cause serious damage to entire ecosystems (Radzyminski, 2021).

The negative environmental effects of uranium are sometimes pitted against the need for employment creation and income generation. This is a false dichotomy, because no life is possible without clean drinking water. Uranium mining in Namibia's Omaheke Region is a case in point. While the governor of region posited extraction of the region's uranium resources as a means of generating income that could stave off malnutrition and starvation, Namibia's Minister of Agriculture, Water and Land Reform pointed to the contamination risks such mining holds for the area's water and food sources (Ndjavera, 2024b). The risk to drinking water is so grave that the UN Special Rapporteur on Water Rights labelled the leaching method of uranium extraction in Namibia as ecocide and a crime, and called for an immediate end to these activities. He also referenced Peru as a cautionary case in point, where similar mining operations led to heavy metal poisoning of 30% of the population (Shipena, 2024).

The communities of Leonardville and Stampriet have raised their concerns about the proposed uranium mining by a Russian-owned company in their area. Through the in-situ leaching method, copper and uranium will be

extracted by drilling boreholes into the mineral deposits (Ngatjiheue, 2024). In a case study titled *Environmental Threats Posed by the Proposed In-situ Leach Mining of Uranium to Underground Potable Water Aquifers in the Stampriet Artesian Basin*, Roy Miller cautions against the possible contamination risks to water aquifers if the proposed in-situ leach mining for uranium goes ahead. The uranium extraction requires the injection of a leach solution containing sulphuric acid and oxidizing chemicals through boreholes into the uranium ore body. The dissolved ore is then pumped to the surface and bled in evaporation ponds. Small amounts of uranium, dissolved radionuclides and heavy metals may end up in the water aquifers, especially through leaks and spills, and contaminate drinking water.

### *Green hydrogen*

Green hydrogen (GH<sub>2</sub>) holds the promise of decarbonisation. To meet their own legal requirements for decarbonisation, European countries have intensified their push towards GH<sub>2</sub> production in Namibia and elsewhere in Africa. Through a process of electrolysis, solar, hydro-and wind power can be converted to energy for transport, industrial processing and power generation (Hassan et al., 2024). There is ongoing technological research aimed at making GH<sub>2</sub> electrolysis

and storage processes stable and cheaper (Franco, 2024; Tripathi, 2024; Hampson, 2024). However, due to its high costs and the complex technical adjustments required to facilitate the use of GH2, interest in purchasing it is still limited. To date, very few binding GH2 purchasing agreements have been signed (Baker, 2024).

By 30 August 2024, Namibia had eight active GH2 projects, namely Hyphen Hydrogen Energy (the biggest); Elof Hansson; HDF Energy; HyIron; Zhero Cleanergy Solutions; Daures Hydrogen Village; and Hyrail. By then, these GH2 projects had created 400 jobs (Namibia's green hydrogen projects, 2024). GH2 promoters project that by 2040, the industry will have created 250 000 Namibian jobs, (180 000 direct jobs in the GH2 industry itself, and 70 000 indirect and direct jobs in the green manufacturing sector (Green hydrogen projects create jobs, 2024). Most of the GH2 projects are either in their pilot or prefeasibility phases and the cited job creation and economic diversification potential is therefore still to be realised. Experts have cautioned against the exaggeration of GH2's job creation potential, for renewable energy projects rely on capital-intensive technology and will therefore employ very little labour beyond the construction phase (Matthys, 2024b). Research has shown that most of the jobs that will be created through GH2 will require higher

levels of skills and will mainly benefit wealthier Namibians (Schütte, 2024).

Advocates of GH2 argue that it will support small business development through outsourcing and subcontracting. They also point to its potential for infrastructural development, capacity-building and industrialisation (Green hydrogen projects create jobs, 2024). Scholarships have been made available for direct research and training geared towards the sector (Mnyupe, 2024). It is anticipated that GH2 will boost Namibia's export earnings and economic diversification, as Namibia hopes to export ammonia and related products from these ventures (Ndjavera, 2024b). Due to legal requirements to decarbonise in certain industrialised countries, GH2 production in Namibia may attract other industries to the country. A case in point is the HyIron Oshivela Project, which is set to produce zero emissions iron ore for carbon-free steel production on the Bloemhof and Geluk farms near the Namib-Naukluft National Park. The iron ore production facility will use GH2 as its energy source. The project will create 200 jobs in the construction phase and 50 jobs in its operational phase (Smith, 2023; Grobler, 2024).

There are plans to establish a cross-border green hydrogen pipeline between Namibia and South Africa. The Namibian government has also

signed off on an ambitious research project between various Namibian and South African entities to investigate the technological, commercial, financial, legal, environmental, socioeconomic and operational viability of GH2 (Namibia, South Africa sign energy agreement, 2024).

There are environmental hazards associated with GH2 production. The Namibian Chamber of Environment (NCE) has cautioned that GH2 is expensive, explosive, and prone to leakage, and that its production at certain ecologically sensitive sites in Namibia should therefore rather be framed as red hydrogen (NCE, 2024). They take particular issue with the location of the Hyphen Hydrogen Energy project, situated in the Tsau Khaeb National Park. This is the most biodiverse natural park in Namibia. Environmentalists have raised concerns about the short- and long-term effects of GH2 infrastructural developments like solar panels, desalination plants, road infrastructure or wind turbines on various flora and fauna species in the park. One example is the possible harm to birds caused by energy turbine blades (Brown, 2024). The NCE called for a stop to GH2 projects in the south of Namibia until a comprehensive independent environmental impact assessment has been conducted. The NCE has challenged the European Union, particularly Germany, to be

transparent and not to export the environmental costs of their energy requirements to Namibia (Prins, 2024).

In a joint letter to authorities, a group of civil society organisations raised their concerns about the lack of inclusive consultation which, they argue, impedes communities' rights to free, prior and informed consent. They also objected to the lack of access to information; the lack of transparency and accountability; the long-term economic, ecological and social implications of GH2; and the neocolonial nature of agreements based on asymmetric power relations that privilege the interests of European countries over the concerns of local communities (Economic and Social Justice Trust (ESJT), 2022).

Müller et al. (2022) point out a number of paradoxes in green hydrogen production that unmask global injustices and asymmetrical power relations. These include issues of energy and water access for communities where such GH2 production sites are located. They also raise the injustice of using the natural resources, like water, of countries in the Global South to produce energy, while populations in those countries suffer from water and energy poverty.

In this volume we have two case studies, both on the Hyphen Hydrogen

Project, to illustrate the various interests, benefits, asymmetric power relations, environmental threats, and financial pitfalls associated with GH2 production in Namibia.

In their article *Derisking of Dependency? A Political-economic Analysis of the Hyphen Hydrogen Project in Namibia*, Fabio Banet and Armin Höpfner presents a political-economic analysis of GH2 in the context of colonial dependencies and asymmetrical power relations. They argue that derisking is akin to publicly financed risk minimisation for private investors. An example of this is the role of the German Federal Ministry of Economics and Climate Protection in funding the price gap between production costs and the price the market is willing to pay. Given the high capital costs for such investments, the Namibian state's ability to initiate and support such investments is limited, as is the long-term strategy of shifting green hydrogen-based value chains to Namibia's national economy. They explore the roles of various actors in the global model of capitalist accumulation, and identify the role of the Namibian state as subordinate and primarily aimed at realising the international class-based division of labour; negotiating and pacifying social antagonisms; and establishing and securing the national accumulation regime. With reference

to international financial subordination theory, they explain the asymmetrical power relations that undergird GH2 production in Namibia, and conclude with three scenarios of possible outcomes of such production.

German involvement in Namibia's GH2 production is rich in irony: three-dimensional digital modelling and cutting-edge archaeological analysis by Forensis and Forensic Architecture shows that the proposed extension of the Lüderitz harbour for GH2 export will destroy parts of the historic Shark Island, the site of a concentration camp and probable mass graves that date back to the German colonial genocide against and Ovaherero and Nama people. Together with the traditional authorities of affected groups, they fear the erasure of part of this history and have called for the protection of the sanctity of Shark Island (Forensis and Forensic Architecture, 2024).

There are also concerns that GH2 projects may increase public debt. There are already indications that this could happen to the Dâures green hydrogen project, as the German government has threatened to pull out of the project (Shihepo, 2024).

Maximillian Ritscher's article *Development for Whom? Unveiling Socioeconomic Potential and Value: A Case Study of the Hyphen Project in*

Namibia empirically explores Lüderitz community members' knowledge, perceptions and concerns about the Hyphen GH2 project in their area. The case study poses an important question about whose interests the project serves. Rischer identifies the lack of information shared with the community as a threat to the internationally recognised principle that the free, prior, and informed consent of local communities must be obtained. He draws attention to community members' fear of exclusion from benefits, in particular jobs, environmental pollution from brine waste discharge by desalination plants, ammonia leakage into the ocean, and pollution from large vessel traffic. All these may negatively impact the fishing industry. Some community members raised social justice concerns around access. These include access to desalinated water and electricity produced from GH2 production. There are also concerns that the influx of workers from other areas may exacerbate the existing housing shortage and place strain on municipal services.

### *Ownership and governance of natural resources*

There is a debate about who actually owns Namibia's oil resources and how the eventual benefits will be distributed. The Namibian state-owned National

Petroleum Corporation (NAMCOR) holds a 10% share in some Namibian oil finds (Maximise oil benefits, 2024). The multiple discoveries of oil, gas and minerals bring the governance of these resources into focus. To increase transparency and avoid corruption and misgovernance, civil society organisations have implored the government to join the extractive Industries Transparency Initiative and to implement reforms aligned the standards it wants to see upheld (Matthys, 2024a). The IMF has echoed the same concerns by arguing that the petroleum sector is vulnerable to governance and corruption challenges, and that the government should therefore pre-emptively implement the highest standards of transparency and governance (Baunsgaard et al., 2024). Due to weak institutions for environmental oversight, the Namibian news media play an important role in exposing environmental violations and injustices. The Namibia Media Trust has called for the protection of journalists and other media practitioners who through their reporting hold powerful groups accountable (Markowitz, 2024a).

The ownership of Namibia's natural resources is disputed. In an opinion piece titled *Who Owns Namibia's Wealth and Natural Resources? A Response to Geingob*, John Nakuta takes issue with politicians

who argue that foreign transnational companies who currently control Namibian extractive industries rightfully own these natural resources. He cites national and international law to rebut such arguments, and argues that in terms of international law, the sovereign State or the people of a country are regarded as the owners of natural resources.

### *Sacrifice zones*

Globally, heavy and extractivist industries have created sacrifice zones where communities that reside in close proximity to environmentally hazardous sites experience the negative health effects of pollution, contamination and toxic waste (Scott & Smith, 2017). The UN Special Rapporteur on Human Rights and the Environment (2022) identifies sacrifice zones as areas where residents suffer devastating physical and mental health consequences resulting from human rights violations emanating from heavily polluting and hazardous facilities located near their residential areas. These hazardous facilities include open-pit mines, smelters, petroleum refineries, chemical plants, coal-fired power stations, oil and gas fields, steel plants, garbage dumps, and hazardous waste incinerators. Sacrifice zones often exist with the full knowledge of governments and the businesses that are responsible for environmental hazards. Sacrifice

zones are often inhabited by groups that already face racial, ethnic, class and gender oppression and discrimination. Due to power inequalities, such communities are often ignored and excluded from decision-making. Their human rights, notably rights established under international agreements and conventions, for example the right to a safe, clean, healthy and sustainable environment and the right to full, prior and informed consent, are trampled upon. Namibia has its own sacrifice zones. In this volume we focus on two such zones: the first is Tsumeb, where arsenic and other heavy metal pollution pose serious health risks to local residents; the second is Uis, where lithium mining is causing pollution, disruption, displacement, and the criminalisation of dissent.

The UN Special Rapporteur on Human Rights and the Environment (2022) identified Tsumeb as a sacrifice zone as a result of the copper smelter that discharges significant volumes of arsenic, copper and lead. Consequently, one sixth of all Tsumeb residents have elevated levels of arsenic in their blood. Emissions from the smelter place children, in particular, at risk. The poisonous substances in the environment also place residents at a higher risk of cancer and other diseases.

In a journalistic case study titled *Namibia's Sacrifice Zone: A Case Study*

of Arsenic Poisoning in Tsumeb, Samuel Schlaefli, assisted by Ester Mbathera, delves deeper into the environmental consequences of the Canadian company Dundee Precious Metals' copper smelting operation. Dundee Precious Metals smelts heavily arsenic-laden copper ore on behalf of the Geneva-based metal trading company IXM at the Tsumeb smelter. In the main, it is not Namibian copper being smelted. The copper comes from countries like Bulgaria where such smelting operations are not permitted, precisely because of the threats they pose to the environment and to human health. The evidence they unearthed shows high levels of arsenic in soil and hair samples. They also cite documentary evidence that shows that both the company and Namibian government are fully aware of the level of toxic emissions. The continued existence of these toxin-releasing activities demonstrates that decision-makers are willing to sacrifice the health of residents in Tsumeb to retain foreign direct investments and protect the profits of foreign transnational corporations.

Some companies in the extractivist industries act illegally and with impunity. There is suspicion of collusion between the industry and government officials who undermine laws and basic democratic principles of transparency and accountability. In their case study Mining and Community Struggles for

Economic Justice: A Case Study of Uis, Herbert Jauch and Lucy Edwards-Jauch document the struggles of the Uis community for social, economic, environmental and administrative justice. In the view of community members, mining companies are breaking a number of Namibian laws with impunity. The official structures specifically set up to investigate and prosecute malfeasance have dragged their feet. The study exposes how the indigenous community used the limited resources they have to bring the violations of their rights, and the destruction of their livelihoods and the environment to the attention of various governmental structures.

## References

- Agriculture Ministry to strengthen food systems. (2024, March 22). *New Era*, p. 3. <https://neweralive.na/agriculture-ministry-to-strengthen-food-systems-2/#:~:text=The%20Ministry%20of%20Agriculture%2C%20Water,emergencies%20and%20disease%2Drelated%20shocks.>
- Atlas Magazine. (2024). *Natural disasters in 2024*. <https://www.atlas-mag.net/en/natural-disasters>
- Baker, D. (2024, August 13). *Why almost no one is buying green hydrogen*. TechCentral. <https://techcentral.co.za/almost-no-one-is-buying-green-hydrogen/249545/>



Baunsgaard, T., Chagali, C., & Harris, P. (2024, June). *Namibia: Petroleum fiscal regime review*. IMF (HLS/24/023).

Brown, C. (2024, June 5). The pristine national park and the planned hydrogen plant. *The Namibian*, p. 5.

Centre for International Law (2019) *1992 Rio Declaration on Environment and Development*. <https://cil.nus.edu.sg/wp-content/uploads/2019/02/1992-Rio-Declaration-on-Environment-and-Development.pdf>

Chen, W.-Y., Suzuki, T., & Lackner, M. (2017). *Handbook of climate change mitigation and adaptation*. Springer. <https://doi.org/10.1007/978-3-319-14409-2>

Dlamini, M. (2024, January 29). Oil sector upbeat as new discoveries are made. *The Namibian*. <https://www.namibian.com.na/oil-sector-upbeat-as-new-discoveries-are-made/#:~:text=While%20Shell%20has%20discovered%20at,prospects%20after%20Galp's%20oil%20find>

Donoghoe, M., & Perry, A. M. (2023, March). *The case for climate reparations in the United States*. The Brookings Institute. <https://www.brookings.edu/articles/the-case-for-climate-reparations-in-the-united-states/>

Eco Atlantic Oil and Gas. (n.d.). *Namibia sees 11 billion barrels in offshore*

*oil reserves*. <https://www.ecoilandgas.com/namibia-sees-11-billion-barrels-in-offshore-oil-reserves/>

Economic and Social Justice Trust (ESJT) (2022, November 27). *Appeal to Refrain from Signing any Binding Trade Agreements Related to the EU–Namibia Strategic Partnership Agreement on Critical Raw Material Value Chain and Renewable Hydrogen*. Windhoek. Civil Society Petition Letter.

Energy Transition: The Global Energiewende. (2018, November 29). *Africa's energy transition: opportunities and challenges for decent work*. <https://energytransition.org/2018/11/african-energy-transition/>

Energy World. (2024). *Developed countries spent more on fossil fuel subsidies in 2023 than new climate finance package*. <https://energy.economictimes.indiatimes.com/news/oil-and-gas/developed-countries-spent-more-on-fossil-fuel-subsidies-in-2023-than-new-climate-finance-package/116487278>

Forensis and Forensic Architecture. (2024, April 12). *Shark Island: An architectural reconstruction of a death camp*. <https://content.forensic-architecture.org/wp-content/uploads/2024/04/Shark-Island-Report.pdf>

Franco, M. (2024, June 21). *Green hydrogen breakthrough swaps in water iridium*. New Atlas. <https://newatlas.com/energy/green-hydrogen-water-iridium/>

Green hydrogen projects create over 200 jobs and N\$170 million in SME contracts. (2024, July 21). *The Brief*, p. 13. <https://thebrief.com.na/2024/07/green-hydrogen-projects-create-over-200-jobs-and-n170-million-in-sme-contracts/>

GRN. (1998). *The Constitution of the Republic of Namibia*. Office of the Prime Minister. <https://www.refworld.org/legal/legislation/natlegbod/1990/en/33543>

GRN. (2013, March). *National policy on community based natural resource management*. Ministry of Environment and Tourism. <https://www.npc.gov.na/wp-content/uploads/2022/06/National-Policy-on-Community-Based-Natural-Resources-Management-March-2013.pdf>

GRN. (2023, April). *Namibia's first nationally determined contribution: Second update*. Ministry of Environment, Forestry and Tourism. <https://unfccc.int/sites/default/files/NDC/2024-01/FINAL%20UPDATED%20NAMIBIA%20NDC%202023.pdf>

Grobler, J. (2024, July 9). Green energy innovations are being developed in Namibia's desert. *The Namibian*. <https://www.namibian.com.na/green-energy-innovations-are-being-developed-in-namibias-desert/>

Hampson, M. (2024, May 16). *Hydrogen storage could slash renewa-*

*bles' costs: Modeling competing storage technologies reveals H2's grid-scale strengths*. *IEEE Spectrum*. <https://spectrum.ieee.org/hydrogen-storage-grid-scale>

Hassan, Q., Algburi, S., Sameen, A., Salman, H., & Jaszcur, M. (2024, January 2). Green Hydrogen: A pathway to a sustainable energy future. *International Journal of Hydrogen Energy*, 50, Part B, 310–333. <https://doi.org/10.1016/j.ijhydene.2023.08.321>

International Centre for Climate Change and Development. (2024, August 15). *Progress of the operationalization of the loss and damage fund: Key takeaways from the board proceedings and what lies ahead*. <https://iccad.net/blog/progress-of-the-operationalization-of-the-loss-and-damage-fund-key-takeaways-from-the-board-proceedings-and-what-lies-ahead/>

Kallis, G., Kostakis, V., Lange, S., Muraca, B., Paulson, S., & Schmelzer, M. (2018, October). Research on degrowth. *Annual Review of Environment and Resources*, 43, 291–316. *Annual Reviews*. <https://doi.org/10.1146/annurev-environ-102017-025941>

Kalondo, T. (2024, January 12). Ndeunyema: Oil discovery a beacon of hope. *New Era*, p. 3. <https://neweralive.na/ndeunyema-oil-discovery-a-beacon-of-hope/>

Kooper, L. (2024, July 24). Malnutrition kills 67 children in

Zambezi region. *The Namibian*. <https://www.namibian.com.na/malnutrition-kills-67-children-in-zambezi-region/>

Louw, B. (2024, May 27). Opinion – strategies for farmers to adapt to changing weather patterns. *New Era*, p. 7. <https://neweralive.na/opinion-strategies-for-farmers-to-adapt-to-changing-weather-patterns-2/>

Lubinda, M. (2015). *Think Namibia: Fact sheet on climate change*. Desert Research Foundation of Namibia. [https://www.thinknamibia.org.na/images/projects/enviro/Climate\\_Change\\_Factsheet\\_01.pdf](https://www.thinknamibia.org.na/images/projects/enviro/Climate_Change_Factsheet_01.pdf)

Mager, F., & Chaparro, S. (2023). *Delivering climate justice using the principles of tax justice: A guide for climate justice advocates* [Position Paper]. Tax Justice Network.

Markowitz, J. (2024a, May 3). Protection of environmental journalists crucial amid oil discoveries – media activists. *The Namibian*. <https://www.namibian.com.na/protection-of-environmental-journalists-crucial-amid-oil-discoveries-media-activists/>

Markowitz, J. (2024b, August 9). Uranium mining vital to economic growth – Nandi-Ndwaitwah. *The Namibian*. <https://www.namibian.com.na/uranium-mining-vital-to-economic-growth-nandi-ndaitwah/>

Matthys, D. (2024a, June 26). Namibia considers joining oil deal transparency project. *The Namibian*. <https://www.namibian.com.na/namibia-considers-joining-oil-deal-transparency-project/>

Matthys, D. (2024b, October 8). Govt cautioned not to ‘overhype’ green hydrogen jobs. *The Namibian*. <https://www.namibian.com.na/govt-cautioned-not-to-overhype-green-hydrogen-jobs/>

Matthys, D. (2024c, November 18). Construction of 40MW Otjikoto biomass power plant kicks off. *The Namibian*. <https://www.namibian.com.na/construction-of-40mw-otjikoto-biomass-power-plant-kicks-off/>

Milko, V. (2024, October 3). *Miners are razing forests to meet surging demand for metals and minerals, report says*. AP. <https://apnews.com/article/mining-deforestation-indonesia-climate-emissions-3bf4395f4a16d6097727da0793e311e4>

Mnyupe, J. (2024, September 21). The ‘faces’ of green hydrogen in Namibia. *The Namibian*, p. 16. <https://www.namibian.com.na/the-faces-of-green-hydrogen-in-namibia/>

Müller, F., Tunn, J., & Kalt, T. (2022, November 2). Hydrogen justice. *Environmental Research Letters*, 17(11) 115006. <https://iopscience.iop.org/article/10.1088/1748-9326/ac991a>

Nabalamba, A., Munila, M., & Alexander, P. (2011, November). Climate change, gender and development in Africa. *AfDB Chief Economist Complex*, 1(1), 1–46. African Development Bank. [https://www.afdb.org/sites/default/files/documents/publications/climate\\_change\\_gender\\_and\\_development\\_in\\_africa.pdf](https://www.afdb.org/sites/default/files/documents/publications/climate_change_gender_and_development_in_africa.pdf)

Namibia, South Africa sign energy agreement. (2024, July 16). *New Era*. <https://neweralive.na/namibia-south-africa-sign-energy-agreement/>

Nakale, A. (2024, November 18). Shifeta irked by inadequate climate financing. *New Era*, p. 4. <https://neweralive.na/shifeta-irked-by-inadequate-climate-financing/>

Namibia's green hydrogen projects reach key milestones. (2024, August 30). *Informanté*. <https://informante.web.na/?p=362052#:~:text=NG-H2P%20revealed%20that%20the%20Hyphen,masts%20crucial%20for%20data%20collection>

National silos drying up... as drought maintains grip on nation. (2024, April 25). *Africa Press*. <https://www.africa-press.net/namibia/all-news/national-silos-drying-up-as-drought-maintains-grip-on-nation>

NCE. (2024). *When green hydrogen turns red – Threatening a global biodiversity hotspot* [Position Paper]. <https://n-c-e.org/wp-content/uploads/Green-hydrogen-Tsau-Khaeb-National-Park-NCE-Position-Paper.pdf>

Ndjavera, M. (2024a, June 20). Nanganate in desperate push for uranium ... asks what dying residents have to lose. *New Era*, p. 1. <https://neweralive.na/nganate-in-desperate-push-for-uranium-asks-what-dying-residents-have-to-lose>

Ndjavera, M. (2024b, May 14). Namibia's green goal is flourishing ... Mnyupe clarifies structural development issues. *New Era*, p.14. <https://neweralive.na/namibias-green-goal-is-flourishing-mnyupe-clarifies-structural-development-issues-2/>

Ngatjiheue, C. (2024, March 13). Uranium company welcomes independent assessments of operations. *The Namibian*, p. 11. <https://www.namibian.com.na/uranium-company-welcomes-independent-assessments-of-operations/>

OHCHR. (2017). *Frequently asked questions on human rights and climate change: Fact sheet 38*. United Nations. [https://www.ohchr.org/sites/default/files/Documents/Publications/FSheet38\\_FAQ\\_HR\\_CC\\_EN.pdf](https://www.ohchr.org/sites/default/files/Documents/Publications/FSheet38_FAQ_HR_CC_EN.pdf) Oil companies to double down on Namibian exploration. (2024, April 26). *New Era*, p. 14. <https://neweralive.na/oil-companies-to-double-down-on-namibian-exploration-2/#:~:text=Chevron%2C%20ExxonMobil%2C%20Galp%20Energia%20and,Conference%20in%20Windhoek%20on%20Wednesday>

Our World in Data. (2023). *Per capita consumption-based CO<sub>2</sub> emissions*. <https://ourworldindata.org/grapher/consumption-co2-per-capita>

Pearse, R., & Böhm, S. (2014). Ten reasons why carbon markets will not bring about radical emissions reduction. *Carbon Management*, 5(4), 325–337. <https://doi.org/10.1080/17583004.2014.990679>

Peša, I., & Ross, C. (2021). Extractive industries and the environment: Production, pollution, and protest in global history. *The Extractive Industries and Society* 8(4), 10093.

Pinehas, T. (2024, March 27). Challenges and Opportunities of Aquaculture. *The Namibian*, Agriculture insert, p. 7.

Prins, B. (2024, May 23). Dark cloud hangs over hydrogen project. *The Namibian*, p. 1. <https://www.namibian.com.na/dark-cloud-hangs-over-hydrogen-project/>

Radzyminski, R. (2021, March 27). *Environmental and health consequences of uranium mining* [Coursework for Introduction to Nuclear Energy, Stanford University]. <http://large.stanford.edu/courses/2021/ph241/radzyminski2/>

SADC. (2019). *Development of a SADC gender-responsive disaster risk reduction strategic plan and plan of action 2018-2030: SADC gender analysis and stakeholder consultation report:*

*Deliverable 3*. [https://drmime.sadc.int/sites/default/files/document/2020-03/SADC%20Gender%20Analysis%20and%20Stakeholder%20Consultation%20Report\\_Formatted.pdf](https://drmime.sadc.int/sites/default/files/document/2020-03/SADC%20Gender%20Analysis%20and%20Stakeholder%20Consultation%20Report_Formatted.pdf)

Scott, D. N., & Smith, A. A. (2017, March). Sacrifice zones in the green energy economy: Toward an environmental justice framework. *McGill Law Journal* 62.3. <https://lawjournal.mcgill.ca/article/sacrifice-zones-in-the-green-energy-economy-toward-an-environmental-justice-framework/>

Schütte, A. (2024, November 18). Hydrogen to benefit the rich Namibians – researcher. *The Namibian*, p. 3. <https://www.namibian.com.na/hydrogen-likely-to-primarily-benefit-affluent-namibians-researcher/>

Sharma, K., Shah, G., Singhal, K., & Soni, V. (2024, September). Comprehensive insights into the impact of oil pollution on the environment. *Regional Studies in Marine Science*, 74, 103516. <https://doi.org/10.1016/j.rsma.2024.103516>

Shigweda, A. (2024, March 29). Community gardens contributing to food security. *The Namibian*, Agriculture insert, p 6. <https://www.namibian.com.na/community-gardens-contributing-to-food-security/>

Shihepo, T. (2024, November, 19). Dâures hydrogen begs for more after

spending N\$232m. *The Namibian*, p 1. <https://www.namibian.com.na/daures-hydrogen-begs-for-more-after-spending-n232m/>

Shikololo, A. (2024, September 12). Over 1 million grapple with food insecurity. *New Era*. <https://neweralive.na/over-1-million-grapple-food-insecurity/>

Shipena, J. (2024, October 30). UN Special Rapporteur slams Russian mining project in Namibia. *The Villager*. <https://www.thevillager.com.na/mining/2024/un-special-rapporteur-slams-russian-mining-project-in-namibia/>

Smith, T. (2023, November 8). *Namibia first in Africa to break ground on green steel project*. ESI Africa. <https://www.esi-africa.com/africa/namibia-first-in-africa-to-break-ground-on-green-steel-project/>

Tripathi, A. (2024, August 14). *Wood waste turned catalyst could unlock affordable hydrogen from the ocean*. Interesting Engineering. <https://interestingengineering.com/energy/wood-waste-green-hydrogen-ocean>

Uanguta, E. (2024, August 9). Namibia: Balancing sustainable and fossil energy for the future. *The Namibian*, p. 11. <https://www.namibian.com.na/namibia-balancing-sustainable-and-fossil-energy-for-the-future/>

United Nations Economic Commission for Africa. (2020, October). *Gender equality in climate change: Analysis report on gender in climate change policies, programs and NDC processes* (Second draft). [https://archive.uneca.org/sites/default/files/uploaded-documents/ACPC/2020/gender\\_analysis\\_of\\_climate\\_change\\_in\\_africa.pdf](https://archive.uneca.org/sites/default/files/uploaded-documents/ACPC/2020/gender_analysis_of_climate_change_in_africa.pdf)

United Nations Environment Programme Finance Initiative. (2022, June). Harmful marine extractives: Understanding the risks & impacts of financing non-renewable extractive industries (deep-sea mining). United Nations. <https://www.unepfi.org/publications/harmful-marine-extractives-deep-sea-mining/>

United Nations General Assembly. (2019, May 14). *Global extractivism and racial inequality: Report of the Special Rapporteur on contemporary forms of racism, racism discrimination, xenophobia and intolerance* (A/HRC/41/54). <https://www.ohchr.org/en/documents/thematic-reports/ahrc4154-global-extractivism-and-racial-equality-report-special>

UN Special Rapporteur on Human Rights and the Environment. (2022). *Additional sacrifice zones*. Office of the High Commissioner for Human Rights. [https://www.ohchr.org/sites/default/files/2022-03/Annex1\\_to\\_A\\_HRC\\_49\\_53.pdf](https://www.ohchr.org/sites/default/files/2022-03/Annex1_to_A_HRC_49_53.pdf)

Von Maltitz, L. & Bahta, Y. T. (2024, April 30). The impact of indigenous practices to promote women's empowerment in agriculture in South Africa. *Frontiers in Public Health*, 12. <https://pmc.ncbi.nlm.nih.gov/articles/PMC11091313/#B10>

We are prepared to maximise oil benefits – Mbumba. (2024, March 19). *New Era*, p. 6. <https://neweralive.na/we-are-prepared-to-maximise-oil-benefits-mbumba-4/>

World Bank Group. (2021). *Climate risk country profile: Namibia*. [https://climateknowledgeportal.worldbank.org/sites/default/files/2021-08/15931-WB\\_Namibia%20Country%20Profile-WEB.pdf](https://climateknowledgeportal.worldbank.org/sites/default/files/2021-08/15931-WB_Namibia%20Country%20Profile-WEB.pdf)

World Bank Group. (2024, August 29). *Extractive Industries*. <https://www.worldbank.org/en/topic/extractiveindustries/overview>

World Economic Forum. (2021, October 3). *Namibia is poised to become the renewable energy hub of Africa*. <https://www.weforum.org/stories/2021/10/namibia-is-positioned-to-become-the-renewable-energy-hub-of-africa/>

World Food Programme. (2021, June 17). *Climate change in southern Africa: A position paper*. <https://www.wfp.org/publications/climate-change-southern-africa-position-paper>

World Food Programme. (2024, 14 October). *Drought in southern Africa: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, Zambia, Zimbabwe*. Public Health Situation Analysis (PHSA). <https://reliefweb.int/report/angola/drought-southern-africa-angola-botswana-lesotho-malawi-mozambique-namibia-zambia-zimbabwe-public-health-situation-analysis-phsa-14-october-2024>