OUT OF POCKET:

HOW FOSSIL FUELS ARE DRAINING HOUSEHOLDS AND ECONOMIES

AND WHY THE WAR IN SOUTH WEST ASIA IS PROVING IT IN REAL TIME

+350

TABLE OF CONTENTS

OUT OF POCKET: HOW FOSSIL FUELS ARE DRAINING HOUSEHOLDS AND ECONOMIES.

LAUNCH DATE: 21/04/2026: 07 : 00 : 00 AM

PHOTO BY: LEONI FRETWELL / 350.ORG

FOREWORD BY BILL MCKIBBEN

The American and Israeli decision to attack Iran was stupid and unjust, but it's possible that it may play a key role in opening the eyes of people around the world to all the peril and folly of our fossil-fuel based system. I hope so—this must be a turning point, because the costs of that system are breaking the planet in real time.

As this remarkable report—the best combination of numbers and reporting on this issue I've ever seen—makes crystal clear, we've been unwise for many decades to rely on fossil fuels. That reliance has produced riches for a few, and penury for far too many; almost all of us live in the grip of a system over which we have little or no control. The price spikes and supply shocks that have come with this new war are just the latest and most profound evidence of these basic truths.

But there's another truth too, as these pages make clear. Just at the moment when we most need it, 'alternative' energy from the sun and wind is poised to become the obvious, common-sense choice. In the last few years we've crossed some invisible line and it is now cheaper—even before you figure in the costs to health or security—to produce clean energy. We live on a planet, to reiterate, where the cheapest way to make power is to point a sheet of glass at the sun.

Taking full advantage of that new fact requires the kinds of steps outlined in this report: rerouting fossil fuel subsidies so that they support the kind of small-scale clean energy development that support poor people instead of rich ones; reforming finance to make it easy to pay the upfront costs for things like solar panels so that people can access the bounty of free energy that the sun pours on us each day.

These steps will have to be taken over the (well-financed) objections of the fossil fuel industry. They control far too much of our political life. It's most obvious in the U.S., where Donald Trump literally told Big Oil executives that campaign donations would buy them anything they wanted, but it's true in much of the rest of the world too. If we're to stand up to that power, it will require the combination of good data and great organizing that marks 350.org and its allies.

And we take on this fight with the spectre of an ever-warming planet looming above us. We now think that a building El Niño means 2026 and 2027 will set new global temperature records, and that of course will offer yet more chaos, and yet more reminders that it is the poorest people on earth who must bear most of the cost of this ongoing tragedy,

We have a narrow path out of these crises, and that path has been illuminated by the bombs from this misbegotten war. It would be a waste and a sin not to seize this moment.

EXECUTIVE SUMMARY

Every time fuel prices spike, governments tell households it's a global shock beyond anyone's control. This report tells a different story. The war in South West Asia is sending oil and gas prices to the roof and squeezing households and public finances – from Pakistan to South Africa, the United States and beyond. This is not bad luck. It is the price of a system that was designed this way, kept this way, and is making a small number of corporations extraordinarily rich while doing it.

Ordinary people are paying for fossil fuels three times over. First, through their taxes: governments funnel public money into subsidies that deliver just 8 cents of every dollar to the poorest 20% of households, while the wealthy capture most of the benefit. **Second, through their bills:** every time a war, an embargo, or a supply disruption sends oil prices surging, import-dependent households absorb the shock in fuel costs, food prices, and transport fares with no savings buffer and no hedge. **Third, through mounting climate damages:** the floods in Sindh, the droughts in Morocco, the heatwaves closing schools in East Africa are not random disasters. They are the compounding cost of decades of subsidised fossil fuel combustion — falling, disproportionately, on the same households the subsidies claimed to protect.

The scale of what's being extracted from ordinary households is far larger than governments admit. The IMF puts global fossil fuel subsidies at US$7.4 trillion in 2024. But the IMF's climate damage figure rests on a carbon price — US$85 per tonne of CO_2 — that represents the cheapest possible price to keep warming below 2°C, not the actual damage fossil fuels cause. Using the peer-reviewed damage models that now underpin the US Environmental Protection Agency's official social cost of carbon, 350.org recalculated those figures for 186 countries. The result: **the industry causes at least US$9.3 trillion per year in climate damages and air pollution deaths alone** — and pays almost nothing for it. Add direct government subsidies and tax breaks, and the total transfer to the fossil fuel industry reaches **US$12 trillion a year,** including production-side subsidies tracked by the OECD— more than 60% above the IMF's figure, **roughly 100 times the US$115.9 billion in international climate finance that reached developing countries in 2022 (OECD), and equivalent to more than US$1,400 from every person on Earth.**

The fossil fuel industry knows how to profit from the very crises it creates — positioning itself to pocket massive windfall gains precisely when everyone else struggles as prices spike. US oil producers alone are set to pocket an extra US$60–63 billion in windfall profits in 2026 from the current crisis — more than double what the IEA estimates would be needed to deliver electricity and clean cooking to every person in Africa. Meanwhile, families across the Global South face fuel rationing, shortages of fertilizer, and soaring food prices. **The same war. Opposite outcomes.**

According to our new analysis, in the first 50 days of the war in South West Asia (Middle East), over **US$ 150 billion** has been siphoned from ordinary people to oil and gas companies due to soaring energy prices. This analysis calculates the losses from price spikes using weighted oil and gas price averages for the period, combined with global consumption levels. But it does not yet include wider knock-on effects such as inflation, decline in economic outputs and unemployment. As a result, the true economic damage is likely much bigger.

For decades, fossil fuel companies have run one of the most sophisticated lobbying operations in history — funding the think tanks, capturing the negotiating rooms, ensuring every climate commitment is ambitious enough to satisfy public pressure and vague enough to change nothing. At COP28 alone, the summit where governments pledged to transition away from fossil fuels, nearly 2,500 fossil fuel lobbyists were registered. The results speak for themselves: three quarters of humanity live in countries that are net importers of fossil fuels, absorbing every price shock, every supply disruption, every war — while the profits flow to a handful of corporations and the wealthiest households in producing countries.

The notion that fossil fuels are "cheaper" for ordinary people is a fiction engineered over decades by an industry with everything to gain from it. This report documents the stories of real people paying that fiction's true price: People in Sindh who have to rebuild their house after the 2022 floods. Families in South Sudan rationing electricity from 4pm. Farmers in Sri Lanka who cannot afford fertiliser for the planting season. Communities in La Guajira, Colombia, whose land has been sacrificed for coal that will never power their homes. In each of these places, the fossil fuel system is not providing affordable energy. It is extracting wealth — from households, from public budgets, from the climate, and concentrating it elsewhere.

Public discourse often focuses on the upfront cost of clean energy — solar panels, clean cookstoves, electric scooters, or home insulation — especially for households with no savings or access to credit. But it rarely looks at the real cost of staying dependent on fossil fuels. As a result, the conversation around the energy transition is dominated by GDP (Gross Domestic Product) charts and political talking points, instead of a simple question: **can ordinary people afford food, transport, housing and healthcare in a world shaped by the impacts of climate change and volatile fossil fuel prices?**

The cost of delay has never been higher. Globally, climate-related extreme weather events have imposed damages of more than US$2 trillion over the past decade, with some individual disasters costing vulnerable countries more than their annual GDP. On the other side of the equation is the solution: renewable energy sources, solar, wind and battery storage are now cheaper than new fossil fuel generation in most markets. The case for transition has never been stronger.

The solution is not complicated. It requires political will. As decision-makers gather in Santa Marta, Colombia, next week for the first international conference to phase out fossil fuels, they have the chance to put us on the right path: they can signal the end of a system that is silently siphoning trillions away from household budgets and draining state coffers.

In particular, they should:

- **Introduce permanent windfall taxes on fossil fuel companies** and others who profit from fossil volatility.
- **End the handouts** and replace blanket fossil fuel subsidies with targeted measures that actually reach the poor. The IMF estimates that removing explicit subsidies alone would raise revenue equivalent to 0.5% of global GDP.

  1. In the immediate crisis, this means cash transfers or other direct support for the most vulnerable households and workers —far more effective than fossil fuel subsidies, which deliver just 8 cents of every dollar spent to the poorest 20%.

  2. Over the medium term, subsidy savings should be channelled into programs that support families and small and micro enterprises to achieve permanent energy affordability and independence through solutions such as rooftop and balcony solar, electric vehicles, energy cooperatives and virtual power plants.

- **Make Polluters Pay** and implement carbon pricing that reflects the true cost of fossil fuels — not the IMF's conservative floor, but something approaching the $185–233 per tonne that peer-reviewed science now documents — and recycle revenues into clean energy access and climate finance for vulnerable countries.
- **Redirect public finance from fossil fuel expansion to a fast and fair energy transition.** National and international public finance (through export credit agencies, development finance institutions, public pension fund investments and multilateral development banks) continues to underwrite new oil, gas, and coal infrastructure. Redirecting these flows toward just transition, climate resilience and inclusive green industrialization is among the highest-leverage policy interventions available.
- **Fast-track investment in renewables for broad-based prosperity and energy security.** Simplify permitting, de-risk with guarantees, and prioritize the needs of communities, local businesses and families living in energy poverty.
- **Protect governments that act from fossil fuel retaliation.** Countries that move to phase out fossil fuels face a real legal and financial threat: energy companies can — and do — sue governments under international investment treaties for passing climate laws that reduce the value of their assets. Canada, the Netherlands and Germany have all faced such cases. Reform of Investor-State Dispute Settlement (ISDS) must be accelerated to remove this legal weapon from the industry's toolkit. At the same time, a new UN fossil fuel treaty and mandatory minimum fossil fuel taxes embedded in the UN Tax Convention would make the phase out a collective international commitment — so that no country has to bear the political and financial cost of going first alone. The COP30 Roadmap process must translate the COP28 pledge to transition away from fossil fuels into binding country-level timelines before the window closes.

INTRODUCTION

A war broke out. Within weeks, oil prices spiked and households from Pakistan to Morocco, Colombia and the United States were absorbing the shock — again. Energy, fertilizer and food import bills started soaring in many low and middle-income countries, weakening currencies (notable in Egypt, India, Thailand and South Korea) and feeding higher inflation. The shock will lead countless countries plunging into a budgetary and economic crisis, while oil companies continue to rake record profits. This is not a new story. It is the same one, playing again for the 7th time in 50 years. But this time, something is different. The case for staying on fossil fuels has collapsed entirely: supply chains are more fragile than ever, the alternative is already cheaper, and decision-makers are meeting for the first time to discuss when and how to end our dependence on oil, gas and coal. This could be the beginning of a new ending to a very old story.

Over those same five decades, each postponed decision to cut emissions and invest in clean, affordable energy has quietly erased an extraordinary opportunity to shield households from repeated oil shocks and create millions of good green jobs – avoiding a large share of today's climate-driven losses and damages. In family WhatsApp groups and kitchen tables around the world, the shocks of a fossil-fuelled world aren't discussed as abstract policy. The bill is being paid in higher prices, ruined livelihoods and shattered futures.

What makes this crisis particularly insidious is that much of the cost remains hidden. Every extra year of coal, oil and gas locks in more toxic air, more hospital visits and millions of avoidable premature deaths, as well as trillions in lost productivity ultimately paid for through higher taxes, weaker public services and stagnant wages. At the same time, public and private money is still being sunk into pipelines, power plants and oilfields that will push the world beyond 1.5–2 °C of warming, with workers and communities in the Global Majority first in line to bear the fallout. With each new heatwave, flood or drought, they face the loss of homes, harvests and savings. In 2025 alone, weather- and climate-related events caused well over US$ 224 billion in damages[1], pushing millions of people into debt, displacement or deeper poverty.

This report seeks to reset that conversation. It puts households, rather than headline growth figures, at the center. We know, with extraordinary precision, what fossil fuels cost us. We know it in dollars and in deaths, in harvests lost and homes washed away, in children's lungs and farmers' wells running dry. The evidence has been building for over 50 years. This report is not adding to that mountain — it is asking why, with all of it stacked in front of us, the phase-out keeps getting delayed, and who keeps paying the price while it does.

From Sindh to La Guajira, the Amazon and the Horn of Africa, this report also puts a spotlight on the solutions. It shows how people-powered, renewable energy is already cutting bills, cleaning the air and creating resilient local economies.

1 "Natural disaster figures 2025: Climate change presses on — devastating wildfires and intense thunderstorms exacerbate losses for insurers." Media Information, 13 January 2026. Munich Re, Munich.

PHOTO BY: FERNANDO MORALES

CHAPTER 01

THE HUMAN PRICE OF PROPPING UP BIG OIL

Fossil fuel interests have skewed the debate to make it seem as though taking action on climate is an unaffordable burden for households — especially the poorest — while keeping the real costs of fossil fuel dependency invisible. In their playbook, climate impacts are treated as distant and abstract, and only the upfront price of switching away from coal, oil and gas counts. This framing did not emerge by accident, it was engineered to protect trillions in profits. And it collapses completely against the lived reality of millions of people whose lives are being torn apart by climate breakdown and fuel price spikes right now.

A recent analysis of climate-related extreme weather finds that such events have already cost the global economy over US$ 2 trillion in the last decade, with single disasters in some developing countries imposing damages greater than their entire annual GDP.[2]

These very same communities that lost their homes and their loved ones to climate-related disasters are also severely hit by the current oil shock. In fact, the South West Asia war could add several basis points to consumer inflation across low and middle country economies, with the biggest effects recorded in countries where energy has a high weight in the typical household consumption basket and that rely heavily on imported fuels. In low-income countries, where households spend a large share of income on food and transport, this will worsen poverty and food insecurity.

Energy-import-dependent economies in South Asia and sub-Saharan Africa are especially exposed: limited foreign exchange reserves and constrained public budgets mean they cannot subsidise fuel or absorb the shock without gutting other social spending. They had no role in creating this crisis, but they are the ones left to pay for it — again — while oil company profits soar. [3]

---

2 ICC – International Chamber of Commerce (2023). "The economic cost of extreme weather events: could cost economy $2 trillion over the last decade." internationalchamberofcommerce.com; CGIAR (2023). Adaptation Loss and Damage: A Global Climate Impact Fund for Climate Justice. December 2023.

3 Chatham House (2026). "How will the Iran war affect the global economy?", 5 March 2026; Bloomberg (2026). "Iran War Oil Shock Threatens to Unleash Wave of Global Inflation," 3 March 2026; Al Jazeera (2026). "How will soaring oil prices caused by the Iran war impact food costs?", 10 March 2026.

“FUELFLATION” DEPRIVING POOR PEOPLE OF EID IN PAKISTAN

Higher fuel prices have made trips to celebrate the end of Ramadan much more expensive, forcing many low-income families either to pay sharply higher fares or to scale back their travel plans. On key Eid routes from Karachi, passengers report fare increases of roughly 20-25%, forcing families to leave some of their relatives behind or shorten their stay.

But the damage goes beyond the emotional toll of a truncated holiday. Eid in Pakistan is the single biggest spending period of the year, driving a surge in retail, food, transport, clothing and hospitality that millions of small businesses and informal workers depend on to make ends meet. When fuel costs force families to travel less, buy less and celebrate less, that is not just a personal loss, it is a direct hit to GDP, rippling through every market stall, minibus route and tailoring shop in the country.

This “fuelflation” is a direct byproduct of Pakistan’s import-dependent energy system. Citing international oil prices and fiscal pressures, federal authorities in Pakistan have already raised petrol and diesel prices by 20%.[4] If oil hits 130 dollars per barrel, a poor worker in the province of Sindh on the legal minimum wage who uses a motorbike for basic mobility would likely spend around 7-12% of monthly income on petrol alone.[5] Oil prices are also directly heating food prices given the dependence of Pakistan’s food system on diesel for production and transport of essential food crops. Fuelflation is just the last episode in a series of shocks hitting Pakistan whose economy and people were severely hit by the 2022 floods and now carries an US$ 8.6 billion circular energy debt from coal.[6]

ELECTRICITY RATIONING IN WAR, DISASTER AND FAMINE STRICKEN SOUTH SUDAN

Around 96% of South Sudan’s electricity is generated from oil, and the country depends on imported refined products despite having significant crude reserves, leaving it highly vulnerable to any disruption in Gulf supply routes. South Sudan is now rationing electricity to “limit oil consumption while reserves still exist” in response to the Iran war–driven fuel squeeze.

The main distributor in the capital announced that different neighbourhoods would face daily cuts, typically with power off from late afternoon until early morning, adding to earlier, more sporadic outages. Power cuts affect small businesses, cold chains, and basic services; residents report losing evening light for study and work, and paying more for private generators or going without electricity entirely.

These new challenges are only adding to the hardship caused by climate change, with UN and FAO reports describing South Sudan as “both drowning and drying.” Climate extremes are driving hunger to unprecedented levels and leaving over 70% of people unsure where their next meal will come from in some years. Climate-related floods and droughts are a major driver of internal displacement, often overlapping with conflict; recent years of record flooding have submerged villages, destroyed crops and homes, and forced hundreds of thousands to move, sometimes repeatedly.[7]

4 Reuters (2026). “Pakistan raises retail fuel prices by about 20% due to Middle East tension.” reuters.com

5 The estimate assumes Sindh’s notified minimum wage of PKR 40,000 per month and a typical low-income motorbike user consuming 10-17.5 litres of petrol monthly. Sources: WageIndicator Foundation (2025), wageindicator.org; Brecorder (2026), brecorder.com; IANS Live (2026), ianslive.in

6 Pakistan Institute of Development Economics (PIDE). “Circular Debt: An Unfortunate Misnomer.” PIDE Working Paper 191. file.pide.org.pk

7 BBC News (2026). “How African countries are coping with the effects of Iran war,” 26 March 2026; TRT Afrika (2026). “South Sudan announces electricity rationing in the capital due to fuel crisis,” 24 March 2026; Reuters (2026). “Africa grapples with energy crisis as Iran war disrupts fuel supplies,” 25 March 2026; NUPI & SIPRI (2025). “Climate, Peace and Security Fact Sheet: South Sudan”; UN Climate Security Mechanism (2025). “Joining Forces for a Conflict-Sensitive Flood Response in South Sudan,” 24 July 2025; Researching Internal Displacement (2025). “Escalating Crisis, Rising Floods: Insecurity, Conflict, and Displacement in South Sudan,” 5 November 2025.

FUEL RATIONING AND SCHOOL CLOSURES IN SRI LANKA

Several low -and middle-income countries have already introduced explicit fuel rationing or closely related fuel conservation measures in response to the Iran war–driven supply shock and price spike. Sri Lanka — which imports 60% of its energy needs, much of it through the Strait of Hormuz [8] — has reintroduced a QR-code-based fuel authorization system that limits weekly petrol and diesel purchases by vehicle type (for example, motorcycles, tuk-tuks, cars, buses and lorries) to manage scarce supplies, alongside sharp fuel price increases of about 33% since the conflict began. The Sri Lankan government has combined rationing with a four-day work week and other demand-reduction measures (school closures, reduced public events) specifically to “eke out” limited oil and gas stocks affected by disruption in Gulf shipments. All these measures have produced long queues and constrained mobility especially affecting women, who disproportionately queue for fuel, limit their own food intake and adapt cooking practices to manage shortages at household level.[9]

But the war’s damage to Sri Lanka’s food system runs deeper than pump prices. Fossil fertilizers — which heavily depend on oil and gas to be produced — have surged in price and tightened in supply as a direct consequence of the conflict. This is arriving at the worst possible moment: Sri Lanka’s Yala rice planting season begins in April, and farmers who are already struggling to afford inputs after years of climate shocks now face fertilizer costs that may put the season’s harvest out of reach. The Kiel Institute for the World Economy estimates Sri Lanka could see an overall food price increase of around 15% as a result of the war — a figure that lands on top of an agricultural sector already on its knees.

Sri Lanka’s economy was made fragile long before this crisis — not by bad luck, but by fossil fuel dependency that successive governments chose to maintain rather than dismantle. Floods alone cost Sri Lanka about US$ 240 million per year, and without stronger adaptation, climate-related losses could reach 3.5% of GDP by 2050, significantly raising poverty.[10]

“Due to floods, our crops were destroyed for several years. Due to drought, the fields did not bring much harvest this year. We are not sure if it will rain at the right time, and we are suffering from pests and diseases as well”,

says Ekanayake, a smallholder farmer from Trincomalee district in the island’s east, echoing similar stories from across Sri Lanka’s farming communities. [11]

8 Al Jazeera (2026). “Sri Lanka braces for new economic crisis as war on Iran continues,” 27 March 2026. aljazeera.com

9 The Guardian (2026). “Sri Lanka brings in four-day week to eke out stocks of oil and gas hit by Iran war,” 16 March 2026; Al Jazeera (2026). “Sri Lanka braces for new economic crisis as war on Iran continues,” 27 March 2026.

10 World Bank (2023). From Crisis to Comeback: How Climate-Smart Growth Can Power Sri Lanka’s Recovery. Washington DC: World Bank Group.

11 FAO / World Bank (2023). Managing Risk: How Sri Lankan Farmers Address Climate Threats.

PHOTO BY: LEONI FRETWELL / 350.ORG

CHAPTER 2

50 YEARS OF A MULTI-BILLION WEALTH DRAIN FROM HOUSEHOLDS

The historical pattern of fossil fuel shocks is striking but almost predictable. The next shock was always coming. In 1973–74, the Arab oil embargo quadrupled oil prices and ushered in a period of stagflation (a rare situation where prices soared while economic growth stalled) across much of the world. The 1979–80 shock, driven by upheaval in Iran and the Iran-Iraq War, pushed prices even higher and deepened inflation, contributing to the brutal interest-rate hikes and recessions of the early 1980s. Then in 1990, the Iraqi invasion of Kuwait triggered another sharp spike, coinciding with economic slowdowns in multiple economies. The 2000s saw oil prices climb steadily for years before spiking to over US$ 100 a barrel in 2008, hitting households and businesses just as the global financial crisis erupted. More recently, the 2011–12 period brought a renewed surge linked to the Arab Spring, supply disruptions in Libya and concerns around Iran, while the 2022 Russia–Ukraine war shock drove prices sharply higher again.[12] The 2026 tensions in the Persian Gulf, and their impact on shipping and perceived supply risk, are now triggering yet another round of oil and gas price hikes.

What is remarkable is not that shocks occur — energy markets are inherently exposed to geopolitical risk — but that, half a century after the first oil crisis, the global economy remains structurally dependent on a fuel whose price can double or halve in a matter of months. Each shock redistributes income from oil importers and consumers to oil exporters and fossil fuel producers. It also leaves lasting scars: slower growth, stalled investment, higher public debt, and social unrest.

At the back end of this redistribution are households and ordinary people who have no choice but to pay: at the pump, in their electricity or heating bills, and in the public services quietly hollowed out to fund yet another subsidy or bailout. Instead of steadily reducing this deadly dependence, many governments have spent decades using taxpayer money to cushion or perpetuate the system via price controls, production and consumption subsidies, tax breaks, and public backing for new fossil infrastructure.

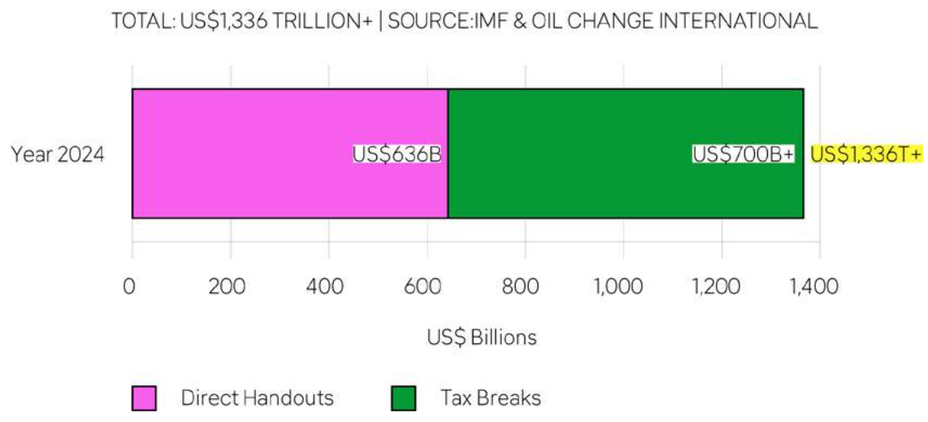
12 Hamilton, J.D. (2011). "Historical Oil Shocks." In Whaples, R. & Parker, R. (eds.), Handbook of Major Events in Economic History. NBER Working Paper 16790. Cambridge, MA: National Bureau of Economic Research.

PROFITS FOR THE FEW, VULNERABILITY FOR THE MANY

For decades, fossil fuel companies have known that their products would destabilize the climate and for decades, they have paid nothing for the damage they caused. Not a penny of the trillions of dollars in climate harm documented in this report has been recovered from the industry that caused it. Instead, the costs have been absorbed by the public: by farmers whose crops fail, by workers too heat-stressed to earn a living, by governments borrowing to rebuild after floods and storms, by communities displaced from land that can no longer sustain them.

Far from bearing any share of these costs, the fossil fuel industry continues to receive enormous public subsidies : **US$636 billion in direct government handouts in 2024 alone, plus over US$700 billion more in tax breaks, concessional finance, and regulatory favours** tracked by the OECD across just 52 countries. These transfers flow directly to corporate bottom lines. A peer-reviewed study published in the Proceedings of the National Academy of Sciences found that implicit subsidies in the United States alone were worth US$62 billion per year to fossil fuel producers, equivalent to 18% of the median oil and gas company's net income — and exceeding net income entirely for the majority of coal producers[13]. Research by the Stockholm Environment Institute found that US subsidies boost the expected profitability of new oil and gas fields by 55–68%, with almost all of the subsidy value flowing to excess profits rather than increased energy supply[14].

GRAPH 1. FOSSIL FUEL PUBLIC SUPPORT IN 2024

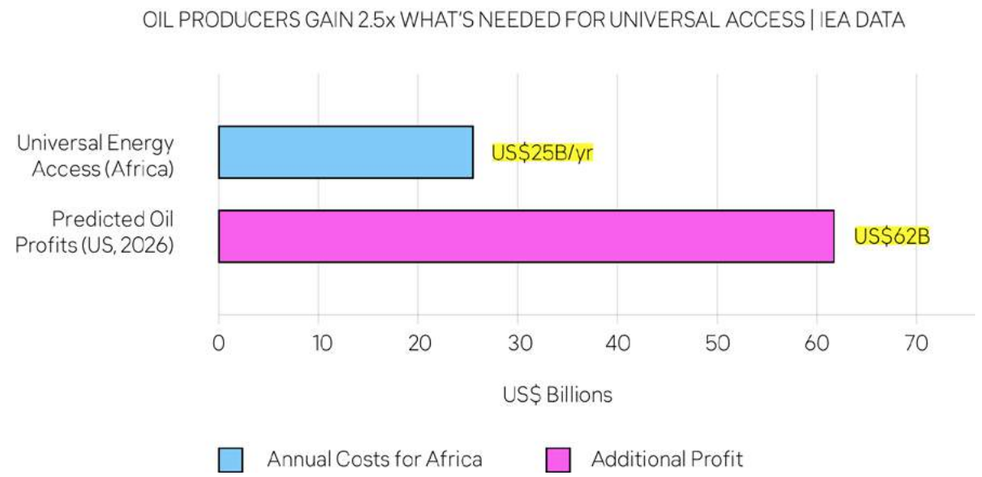


13 Kotchen, M.J. (2021). "The producer benefits of implicit fossil fuel subsidies in the United States." Proceedings of the National Academy of Sciences, 118(14), e2011969118. doi:10.1073/pnas.2011969118

14 Achakulwisut, P., Erickson, P. & Koplow, D. (2021). "Effect of subsidies and regulatory exemptions on 2020-2030 oil and gas production and profits in the United States." Environmental Research Letters, 16, 084023. doi:10.1088/1748-9326/ac0618

The result is an extraordinary imbalance between who profits and who pays. While universal modern energy access is still out of reach for hundreds of millions of people, estimated cumulative oil and gas profits since 1970 are on the order of US$ 50 trillion (in 2020 prices), or roughly US$ 1 trillion per year on average between 1970 and 2020.[15] That is a staggering transfer of wealth, much of it accruing to a relatively small number of producing states and corporations. In 2022 alone, as households faced a cost-of-living crisis amid soaring energy prices, the largest oil companies doubled their profits to something on the order of US$ 219 billion in that single year.[16] Turning to the current crisis, if crude prices stay near current elevated levels, US oil producers alone could reap around US$ 60-63 billion in additional profit in 2026, which is more than double the US$ 25 billion per year the IEA says would be enough to achieve universal access to modern energy (electricity plus clean cooking) across all of Africa.[17]

GRAPH 2. US OIL PROFITS VS. AFRICA ENERGY ACCESS



The recurring oil shocks since the 1970s have not been considered as a warning to accelerate structural change, away from the volatile and pricey fossil-fuelled system. Instead, they have been treated as opportunities for market speculation, extra profits and as "temporary storms" to be ridden out, often with public money, until prices settle back into a new "normal" that is itself only a pause before the next spike.

15 World Bank Open Data (2022). Oil and gas rents (value of production minus extraction costs). Washington DC: World Bank; The Guardian / ETEnergyworld (2022). "Oil and gas industry delivered $2.8bn a day in pure profit for last 50 years."

16 Reuters (2023). "Big Oil doubles profits in blockbuster 2022." reuters.com

17 Forbes / Rystad Energy (2026). "US Oil Companies Poised For $60 Billion Windfall Amid Iran War." March 2026; International Energy Agency (IEA) (2022). Africa Energy Outlook 2022. Paris: IEA. iea.org; Brickstone Africa, brickstone.africa

THREE QUARTERS OF HUMANITY SUFFER DURING PRICE SHOCKS

Photo by: Leoni Fretwell / 350.org

Most countries and people in the world are not on the winning side of this arrangement. A recent compilation based on World Bank and energy-trade data suggests that around 74% of the global population — roughly 6 billion people — live in countries that are net importers of fossil fuels, including oil.[18] **In practice, this means that three quarters of humanity live in countries that have to buy their energy from another country in another currency, usually in US dollars.** They must borrow or earn this money through exports, tourism or debt, just to pay for the energy that keeps their economies running, leaving them exposed every time global oil prices rise.

Within this group of net-importing countries, middle- and low-income economies are the most vulnerable. They face a twin exposure: to fossil fuel price hikes on the one hand, and to climate-exacerbated disasters on the other. When oil prices spike, these countries' import bills balloon, widening current-account deficits and putting downward pressure on their currencies. With higher external-debt-to-GDP ratios and lower per-capita incomes, they have less fiscal and monetary room to manoeuvre than richer importers. Efforts to shield households through fuel subsidies or tax cuts quickly strain public finances, while letting prices pass through can provoke social unrest and push millions into poverty.

The 2022 energy crisis illustrated this double bind vividly. Countries such as Pakistan and Bangladesh, both heavily dependent on imported fuels, were forced into massive power cuts as global prices for oil, gas and coal surged. Bangladesh, which increasingly relies on imported LNG (liquefied natural gas), reportedly faced power outages on 85 out of 92 days in late 2022 because it simply could not afford cargoes. Factories were idled, disrupting export earnings; small businesses and informal workers lost income; students could not study; hospitals struggled to operate equipment. Pakistan, already reeling from the deadly floods that year, saw fuel and electricity price increases push up inflation and deepen its balance-of-payments crisis.[19]

That same year, while these countries were rationing power, the five largest oil and gas majors posted combined profits exceeding US$190 billion — and in the United States alone, 50% of fossil fuel profit gains were captured by the wealthiest 1% of households, and 84% by the top 10%. The arrangement could not be more stark: the costs land on the poorest six billion, the gains flow to a handful of corporations and the already wealthy.

18 Ember (2025). Energy Security in an Insecure World. Based on Ember calculations from IEA energy balances data for 2022. ember-energy.org

19 Reuters (2023). "Gas shortage exposes fragile South Asian economies to more pain," 20 February 2023; Zero Carbon Analytics (2023). "Bangladesh's reliance on LNG increases heat stress, finance and energy risks," May 2023; World Bank (2022). Pakistan Development Update: Inflation and the Poor. October 2022. Washington DC: World Bank.

CASE STUDY 1: THE DEBT TRAP: PHILIPPINES

In the province of Albay, the fossil fuel lock-in has already resulted in unreliable services and high bills before the war. The province has over 500 MW of geothermal capacity, enough to power the region many times over — and yet still faces chronic outages and unmet demand in Legazpi and beyond. The problem is not a lack of clean energy but legacy debt and fossil-linked contracts that have strangled ALECO, the local electricity cooperative serving Albay's households and businesses, for years. ALECO's 2014, 25-year concession with a San Miguel subsidiary, meant to fix a two-billion-peso debt, left it by 2025 with 9.9 billion pesos owed, persistent brownouts, and exorbitant rates, surviving only thanks to an emergency coal-based supply deal with the same corporate group. Nationally, fossil-friendly purchase agreements for imported coal and diesel actually make Philippine electricity the most expensive in Southeast Asia, with contract terms that pass forced-outage costs straight to consumers. Grid upgrades to connect Albay's renewables — lines, substations, storage — remain slow and underfunded, while US$ 21 billion in coal assets risks becoming stranded, roughly a third of the national budget, with households ultimately on the hook. Albay is a clear case study of how a fossil fuel lock-in keeps people paying more for less.

This situation is expected to worsen not only in Albay but in the whole of the country as the Philippines imports almost all of its oil from Gulf producers, making it one of the most exposed countries to the current supply disruption and freight risk. Since late February, diesel prices have jumped by almost 40% and pump prices have seen repeated weekly hikes, with some reports describing fuel prices as having "nearly tripled" from pre-war levels in the worst-hit areas. The government expects electricity prices to rise by about 16% in April, mainly because oil, LNG and coal used in power plants have become much more expensive; LNG prices in particular are reported to be two to three times higher than before the war.[20]

20 Time (2026). "US-Israel-Iran war: Trump, Asia, economy, oil, energy, inflation, recession," 16 March 2026. time.com; CNN (2026). "As war with Iran drags on, rising fuel prices hit home in Philippines."

PHOTO BY: GO UP FOUNDATION

CHAPTER 03:

WHY POOR HOUSEHOLDS PAY THE HIGHEST PRICE

The war in South West Asia did not create this vulnerability. It revealed it, again. The same households described in the previous chapter as the ones with no savings buffer, no currency hedge, no political leverage are the ones now watching their fuel bills climb for the eighth time in 50 years.

Energy is a much larger share of their budgets. Available data suggest that low-income households spend almost twice as high a share of their total expenditure on energy — electricity, petrol, diesel and cooking fuels — as compared to higher-income households. **For a rich household, a doubling of fuel prices may be a painful but manageable nuisance; for a poor household, it can mean choosing between buying cooking gas, paying for transport to work, or purchasing sufficient food.**

Oil price hikes also cascade through the prices of other essential goods. Energy is an input into nearly all goods and services, but it is especially important for food and mobility. Higher diesel prices raise the cost of moving goods from farm to market, and higher fertilizer and irrigation costs can also push up food prices. Public transport fares, which low-income people rely on heavily, often increase when fuel prices are deregulated or subsidies are reduced. The result is a compound effect: households are hit at the pump, in their electricity bills, in the market where they buy food, and in the bus fares they pay to reach work or school.

An IMF study for Mali is often cited to illustrate these distributional effects. A major increase in petroleum prices (34%) cuts real incomes across all income groups by roughly 1%. That may sound modest, but in contexts where many people live just above the poverty line, such a hit can push large numbers back into poverty or deeper into it. Moreover, this figure only captures the immediate effect; repeated shocks and second-round impacts through wages, unemployment, and food prices can be far larger over time.[21]

21 IMF (2006). "Distributional Effects of Oil Price Changes on Household Expenditures: Evidence from Mali." IMF Working Paper WP/06/91. Washington DC: International Monetary Fund.

And the impacts are long-lasting. Poor households have limited buffers — little or no savings, restricted access to credit, and few liquid assets. When fuel and food prices rise or jobs are lost as energy-intensive sectors contract, they cope by cutting back on nutrition, health care, and education, by selling livestock or tools, or withdrawing children from school. These **coping strategies** have durable consequences: malnutrition can impair children's physical and cognitive development; interrupted schooling reduces lifetime earnings; selling productive assets undermines future livelihood opportunities.

The cruelest part of the fossil fuel trap is that it isn't even cheap. Kerosene, diesel and LPG look affordable because they require no upfront purchase — but the fuel never stops costing money, and its price rises with every geopolitical shock. A solar panel, once bought, generates electricity for 25 to 30 years at near-zero cost. Clean energy technologies like solar involve higher upfront costs but near-zero marginal costs. Evidence from studies such as Lee, Miguel, and Wolfram (2020) and Grimm et al. (2020), as well as reports from IRENA and the World Bank, shows that off-grid solar products deliver better lighting and additional services at comparable or lower total monthly cost than kerosene and batteries for many rural households. [22]

The reason poor households stay on kerosene is not that it is cheaper. It is that they cannot afford the upfront payment that would make it cheaper. **They are locked into the expensive option precisely because they are poor** — and the fossil fuel subsidy system, which flows mostly to wealthier consumers who use more energy, does almost nothing to help them out.

This pattern is not limited to developing countries: Modelling for the UK by Ember Energy suggests that a clean power system could reduce average household electricity bills by around £300 per year by lowering system costs and exposure to fossil fuel price shocks. Economically, this reflects a capital versus operating cost trade-off, where poorer households are often locked into high marginal cost systems.[23]

Photo by: Sarah Hassanein

22 Lee, K., Miguel, E. & Wolfram, C. (2020). "Does Household Electrification Supercharge Economic Development?" Journal of Economic Perspectives, 34(1), 122-144; Grimm, M. et al. (2020). Demand for Off-Grid Solar Electricity: Experimental Evidence from Rwanda. Journal of Development Economics; IRENA (2018-2024). Renewable Power Generation Costs. Abu Dhabi: IRENA; World Bank / Lighting Global (2020). Off-Grid Solar Market Trends Report. Washington DC: World Bank.

23 Ember (2023, 2024). "Cutting the bills: UK households profit from clean power" and "A clean power system saves UK households 300 per year." ember-energy.org

CASE STUDY 2 : THE TAKE-OR-PAY TRAP: GHANA

Ghana's experience shows how fossil-fuel based take-or-pay contracts can trap a country in fossil debt. In 2015, amid reduced Nigerian gas flows and a hydropower shortfall, the government signed long-term PPAs (Power Purchase Agreements) with fossil-fuel thermal producers for about 2,300 MW, paying for capacity regardless of demand. As contracted supply outpaced actual consumption, the treasury faced annual bills of roughly US$ 500 million for unused electricity. The Sankofa offshore gas project, backed by US$ 1.2 billion in guarantees, compounded the problem by forcing Ghana's national oil company to buy 90% of a fixed gas volume from Eni and Vitol whether it could use it or not, generating a further US$ 250 million bill for unused gas in 2019.

In effect, Ghana paid twice over: once for electricity it did not consume and once for gas it could not use, feeding a fossil-fuel debt spiral that the IMF estimated at about 2% of GDP per year, with energy sector debt exceeding US$ 3 billion by late 2024. The burden then shifted onto households: after an IMF bailout, electricity tariffs doubled in 2023, hitting small businesses and low-income consumers whose bills reflected not their usage but opaque contract terms agreed without real competition, scrutiny or safeguards when demand fell short. Ghana did not simply "overspend" into crisis; it was locked into it for years and years.

In early 2026, Ghana's new government finally managed to clear US$1.47 billion[24] in legacy energy sector debt — a significant fiscal achievement that restored the World Bank Partial Risk Guarantee for Ghana's energy sector and brought payments to gas suppliers and independent power producers current for the first time in years[25]. The take-or-pay trap has not automatically closed, but its grip has loosened. What the Iran war now threatens is whether that discipline can hold: as global oil prices approach US$120 per barrel, Ghana's import bill is rising again, putting pressure on the same fiscal position that the government just stabilised[26][27].

24 Ministry of Finance, Ghana (2026). "Mahama Administration Pays US$1.470 Billion to Clear Energy Sector Debt and Restore World Bank Guarantee," 12 January 2026. mofep.gov.gh

25 Energy for Growth Hub (2026). "Ghana Clears $1.47 Billion in Energy Debt: Preventing the Next Crisis is the Test." energyforgrowth.org

26 Citi Newsroom (2026). "Energy shockwaves: How Middle East conflict could reach Ghana's economy." citinewsroom.com

27 Al Jazeera (2026). "Why the oil and gas price shock from the Iran war won't just fade away," 23 March 2026. aljazeera.com

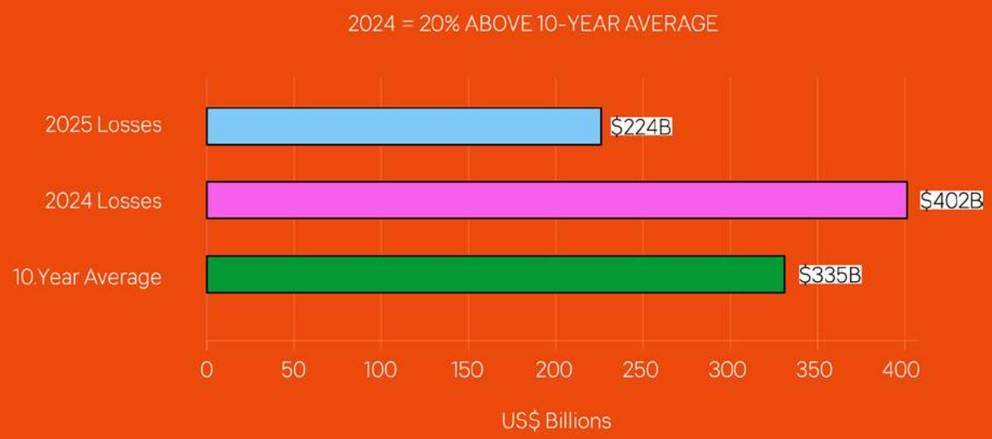
PHOTO BY: FOREST WOODWARD

CHAPTER 04:

THE PRICE OF DELAY

The economic damage that climate models projected for mid-century is arriving now. In 2024, weather and climate related disasters caused US$402 billion in economic losses globally — 20% above the ten-year average[28]. In 2025, the figure was US$224 billion, with the Los Angeles wildfires alone accounting for US$53 billion — the most expensive wildfire disaster ever recorded[29]. The three years 2023, 2024 and 2025 are the three highest on record for the number of billion-dollar climate disasters.[30]

GRAPH 3. GLOBAL CLIMATE DISASTER LOSSES (US$ BILLIONS)



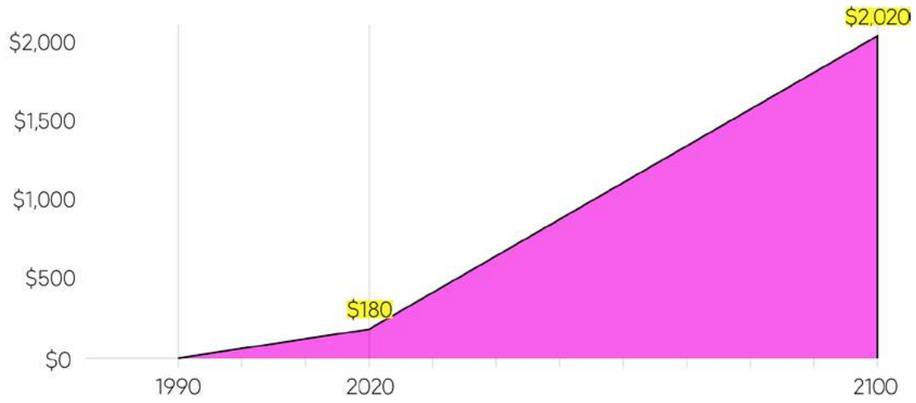
28 Gallagher Re (2024). Natural Catastrophe and Climate Report 2024. ajg.com/gallagherre

29 Munich Re (2026). "Natural disaster figures 2025." Media Information, January 2026. munichre.com

30 Climate Central (2025). "2025 in Review: U.S. Billion-Dollar Disasters." climatecentral.org

The damage does not peak and fade. It compounds. A study published in *Nature* in March 2026 puts a longer-run number on what this trajectory means. Researchers at Stanford found that **US emissions since 1990 have caused more than US$10 trillion in global economic damages to date — with the harm falling disproportionately on countries that emitted the least.** One tonne of CO_2 emitted in 1990 has already caused around US$180 in global economic damage by 2020, and will cause a further US$1,840 through 2100 — roughly ten times the harm already done[31] . Climate change has already cut US incomes by an estimated 12% relative to what they would otherwise have been — not a future projection, but a loss already embedded in the economy[32].

GRAPH 4. DAMAGE FROM ONE TONNE OF CO_2 OVER TIME



What makes these figures particularly striking is their implication for the true price of each tonne of carbon emitted. The same Stanford study puts the social cost of carbon — the discounted global economic harm caused by one tonne of CO_2 emitted today — at US$1,013/t$CO_2$. A parallel study by Bilal & Känzig (NBER, 2024) arrives at over US$1,200/t$CO_2$, by showing that global temperature, not country-level temperature, is the right variable for measuring damage — because it captures the extreme weather events that drive the bulk of economic harm. Both studies suggest that the careful sector-by-sector models used by institutions like the US EPA may capture only around one-fifth of total climate damages.

31 Burke, M., Zahid, M., Diffenbaugh, N.S. & Hsiang, S. (2026). "Quantifying climate loss and damage consistent with a social cost of carbon." Nature, 651, 959-966. doi:10.1038/s41586-026-10272-6

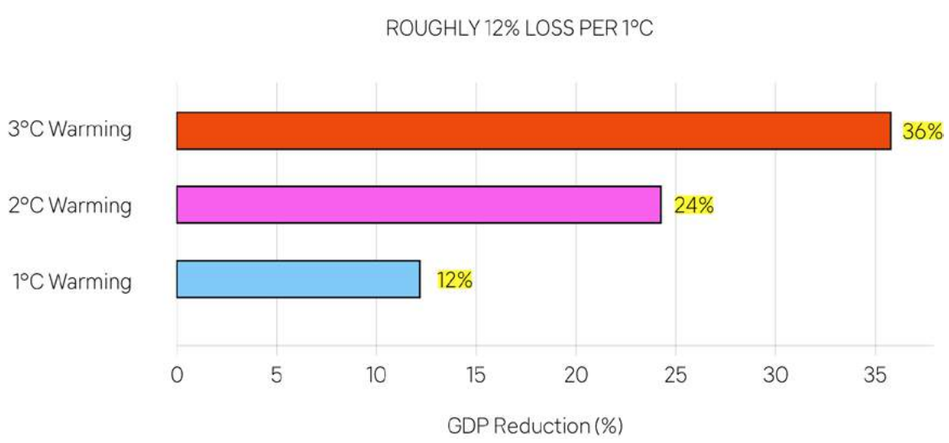
32 Bilal, A. & Kanzig, D.R. (2024). "The Macroeconomic Impact of Climate Change: Global vs. Local Temperature." Proceedings of the National Academy of Sciences. doi:10.1073/pnas.2504376122

The rest — the supply chain disruptions, the political instability, the compounding hits to growth — flows through channels that itemised models have not yet learned to count.

And the industry knows where this is heading. OPEC's own World Oil Outlook projects global oil demand reaching 116 million barrels per day by 2045. Read one way, this is a market forecast. Read another, it is an admission: the fossil fuel industry is betting its capital on a world that stays locked into the very trajectory now costing trillions. By contrast, the IEA's Net Zero by 2050 scenario and the class of IPCC 1.5°C pathways require rapid declines in oil and gas use: global oil and gas emissions should fall on the order of 15-30% by 2030 and about 65-70% by 2050 relative to 2020 levels. In such pathways, there is no need for new oil and gas fields beyond those already in production or under development — existing fields are sufficient to meet the declining demand.

Even using this broad GDP lens, an OECD study concludes that in a **strong climate action scenario to limit warming to 1.5–2°C, global GDP in 2030–2040 is roughly similar to the current baseline.**[33] By contrast, another study estimates that the world is already committed to an income (GDP) reduction of about 19% by 2050 due to past and current emissions. Their results also imply that **each 1°C of warming reduces global GDP by roughly 12%**, and that the damages from climate change are around six times larger than typical estimates of mitigation costs to limit warming to 2°C. [34]

GRAPH 5. GLOBAL GDP LOSS PER DEGREE OF WARMING



33 OECD (2023). Investing in Climate for Growth and Development. Paris: OECD Publishing. The report finds that in a "well-below 2 C" policy scenario, global GDP in 2030-2040 is roughly similar to a current-policies baseline.

34 Bilal, A. & Kanzig, D.R. (2024). "The Macroeconomic Impact of Climate Change: Global vs. Local Temperature." NBER Working Paper 32450, revised January 2026. Reported in The Guardian (2024). "Economic damage from climate change six times worse than thought."

Photo by: Hugo Duchesne

At the same time, a world that continues to depend heavily on fossil fuels remains vulnerable to economic volatility: If oil price hikes continue to occur in the same frequency as they have since the 1970's, the world could see another three oil crises before 2050 – which will be translated into repeated episodes of inflation, current-account stress and recessions in net-importing low- and middle-income countries. And because fossil-fuel-related air pollution already causes millions of premature deaths and trillions of dollars in health and productivity losses each year, higher fossil fuels use over the coming decades will also result in larger loss-and-damage and health bills, falling disproportionately on poorer populations.

To speak in terms economists understand: further delay is locking us in permanent income and GDP losses that cannot be recovered later. But what we all know, and what no GDP chart ever quite captures, is that as warming moves beyond 2°C, it means more days above the physiological heat limits at which outdoor work becomes impossible — and in Sindh, in the Sahel, in the construction sites of Jakarta, outdoor work is how families eat. It means more crop-killing droughts like those that have left farmers in East Africa and the Amazon with nothing to harvest for the second or third year running. It means more floods of the kind that swept away two million homes in Pakistan in a single season, and more of the displacement that follows — from land that can no longer sustain the people who have farmed it for generations. Attribution science from agencies including the Met Office and World Weather Attribution has now made the causal chain explicit: the emissions go in, the extremes come out, and the people least responsible for the first are most exposed to the second.

HOW AMBITIOUS ACTION PAYS OFF

Critically, some of the newer modelling literature finds that when you factor in lower fuel bills, reduced volatility, and co-benefits such as cleaner air and better health, **ambitious climate action can raise GDP or welfare compared to a high-warming world, especially in fossil-fuel-importing regions.** For example, shifting to a 2°C pathway could prevent 700,000 to 1.5 million early deaths each year by 2050 just from cleaner air. When translated in monetary terms, the value of these health benefits often outweighs the costs of taking action.[35]

At the national level, the UK's CCC (Climate Change Committee) recently concluded that delivering an 87% reduction in UK emissions by 2040 on the path to net zero would reduce average household energy bills by around £700 per year by 2050 (relative to 2025 levels). An additional £700 per year saving on motoring costs would become possible too, as electric vehicles replace internal-combustion cars. Overall, the CCC estimates that the net investment cost of reaching net zero for the UK is modest — around 0.2% of GDP over 25 years — while wider co-benefits such as warmer homes, cleaner air and healthier diets deliver additional net benefits valued at several billion pounds by 2050.[36]

In developing countries, emerging evidence from IMF, World Bank, and OECD indicates that rapid fossil fuel phase out in low- and middle-income countries, when backed by climate finance and pro-poor recycling of revenues, can improve poverty, inequality and household welfare outcomes. A 2024 paper on Ghana, Nigeria and Uganda shows that domestic carbon pricing is moderately progressive overall, and that if revenues are returned as equal lump-sum transfers, households in the bottom income quintile see net welfare gains of about 4.1% in Uganda, 16% in Nigeria and 18% in Ghana, with significant reductions in extreme poverty rates.[37]

35 Rafaj, P. et al. (2018). "Air quality co-benefits for human health and agriculture counterbalance costs to meet Paris Agreement pledges." Nature Communications. doi:10.1038/s41467-018-06885-9

36 Climate Change Committee (CCC) (2025). End the Fossil Fuel Age for a Secure and Prosperous Future. London: CCC. theccc.org.uk

37 Ayhan, S.H., Greve, H., Lay, J., Steckel, J.C. et al. (2024). "The poverty and distributional impacts of carbon pricing on households: evidence from Ghana, Nigeria and Uganda." Environment and Development Economics (online first). doi:10.1017/S1355770X24000214

PHOTO BY: LUIGI MACAIRAN / SURVIVAL MEDIA AGENCY

CHAPTER 05:

THE $12 TRILLION FREE RIDE

Fossil fuel subsidies are politically sold as protection for ordinary households from high energy prices. The reality is the opposite.

Households in net-importing low-income countries are not being shielded by the subsidy system — they are being charged by it, three times over, in ways designed to be invisible. First, they pay through their taxes and public budgets: governments redirect money that could fund health clinics, flood defences and schools into subsidies that deliver 8 cents per dollar to the poorest 20% of households while the wealthy capture most of the benefit. Second, they pay through the climate damages that decades of subsidised fossil fuel consumption have locked in — the floods in Sindh, the droughts in Morocco, the heatwaves forcing school closures in East Africa — none of which appear on any government subsidy ledger, but all of which fall disproportionately on the same households the subsidies claimed to protect. Third, they pay through the fiscal austerity that follows: when subsidy bills balloon during a price shock and governments cannot afford both fuel support and social spending, it is health budgets, cash transfers and infrastructure investment that get cut. Pakistan's $8.6 billion circular coal debt did not simply appear — it consumed, year after year, the fiscal space that might have funded the flood defences that failed in 2022. The subsidy system did not protect Jameelan in Sindh from the flood. It helped cause it, and then ensured there was no money left to rebuild.

This is not a hypothetical. Ecuador's Finance Minister Vega Malo has stated that fossil fuel subsidies cost the country over 3% of GDP, equivalent to the entire health budget, 70% of education spending, and three times what is spent on cash transfers to the poor. **The pattern repeats across the Global Majority.**

A recent World Bank review of 12 middle-income countries finds that they spend about 4% of GDP on energy subsidies on average. In most cases, this is equal to or larger than public health spending and often significantly higher than social assistance outlays, illustrating how large fossil fuel subsidies crowd out fiscal space for health, education and other basic services. When international oil or gas prices spike, governments face a brutal choice: either allow domestic prices to rise and risk social unrest, or increase subsidies and watch deficits and debt soar. In practice, many alternate between both, creating cycles of crisis and austerity. The result is a paradox: states borrow to keep fossil fuels artificially cheap in the short term, while under-investing in the very renewables and efficiency measures that would permanently lower bills and vulnerability.

THE HIDDEN SUBSIDY: HOW THE IMF UNDERSTATES THE CLIMATE COST OF FOSSIL FUELS BY AT LEAST $4.1 TRILLION

The IMF's fossil fuel subsidy database is the most comprehensive global accounting of fossil fuel underpricing in existence. Its headline finding — US$7.4 trillion in 2024 — is widely cited and has become a reference point for policy debates from the G20 to UNFCCC negotiations. But the climate damage component of this figure rests on a carbon price that significantly understates the actual harm caused by burning fossil fuels.

WHAT THE IMF'S CARBON PRICE ACTUALLY IS

The IMF doesn't actually calculate how much damage burning fossil fuels causes. Instead it asks a narrower question: what is the cheapest carbon price that could, in theory, keep warming below 2°C — assuming every government in the world implements it perfectly and simultaneously? That theoretical price works out to about US$85 per tonne of CO_2 for 2024.[38] It says nothing about how fast climate impacts are arriving or how hard they are hitting. It is a planning target, not a damage estimate — and the IMF knows it. Its own 2023 paper quietly noted that switching to a damage-based estimate would increase global subsidy figures by approximately 50%.

WHAT THE SCIENCE SAYS

Three peer-reviewed damage models — GIVE, Howard & Sterner, and DSCIM — form the basis of the US EPA's 2023 social cost of carbon framework, producing a combined central estimate of US$190/$tCO_2$. **All find damages two to three times higher than the IMF's current floor.** As Chapter 4 documents, **econometric research suggests the true cost of carbon may be five times higher still, meaning even the DSCIM-based figures here are likely a significant undercount.**

WHAT THIS MEANS: RECALCULATING THE IMF'S FIGURES

So what happens if you keep everything the IMF calculated — the country-by-country fuel consumption, the air pollution damages, the road externalities, the explicit subsidies — and simply replace the one input the IMF acknowledges is not a damage estimate with one that is?

That is what 350.org has done, using DSCIM — the most comprehensive of the three EPA models, and the only one that includes labour productivity losses from heat exposure, a damage channel that falls overwhelmingly on outdoor workers in the Global South. We took the IMF's country-level data for 186 countries and changed exactly one thing: the carbon price used to calculate the climate component. Everything else the IMF calculated — the air pollution damages, the explicit subsidies, the forgone consumption taxes — is left exactly as it is. **The result is not a competing analysis. It is the IMF's own accounting, corrected for the one number the IMF itself admits is a floor.**

38 Black, S. et al. (2025). "Underpriced and Overused: Fossil Fuel Subsidies Data 2025 Update." IMF Working Paper WP/25/270. The IMF uses an abatement-cost approach: a carbon price trajectory starting at US$77/$tCO_2$ in 2020, rising by US$1.90/year, reaching approximately US$85/$tCO_2$ for 2024 data (confirmed in Annex I, p.30 and body text p.14).

Applying the DSCIM social cost of carbon[39] (US$233/$tCO_2$) to the IMF's country-level data for 186 countries — adjusting only the climate component while holding all other externalities (air pollution, congestion, accidents) constant — produces the following results:

COUNTRY / REGION	IMF BASELINE (US$85/$tCO_2$)	DSCIM (US$233/$tCO_2$)	UNDERVALUATION CORRECTED
Global total	US$7.4 trn	**US$11.5 trn**	**US$4.1 trn**
China	US$2,833 bn	US$4,225 bn	US$1,392 bn
United States	US$1,118 bn	US$1,759 bn	US$641 bn
India	US$429 bn	US$753 bn	US$324 bn
Japan	US$193 bn	US$337 bn	US$144 bn
Indonesia	US$163 bn	US$256 bn	US$93 bn
Turkiye	US$129 bn	US$195 bn	US$66 bn
Brazil	US$62 bn	US$109 bn	US$46 bn
South Africa	US$52 bn	US$104 bn	US$52 bn
Canada	US$25 bn	US$48 bn	US$23 bn
Pakistan	US$33 bn	US$54 bn	US$20 bn
Philippines	US$29 bn	US$48 bn	US$18 bn
Nigeria	US$26 bn	US$40 bn	US$15 bn
Kenya	US$0.5 bn	US$1.4 bn	US$0.9 bn

The difference between the two bottom-up models comes down to a single damage category: labour productivity losses from heat exposure, which GIVE does not include. **That one omission accounts for US$1.3 trillion of the gap — a damage channel that falls overwhelmingly on outdoor workers in the Global South, and a powerful illustration of both what standard models still miss and how regressive the geography of climate damage really is.**

These figures capture only the consumption side of fossil fuel subsidisation. They do not include the approximately US$700 billion per year in production-side support documented by the OECD and IISD for G20 countries. This means upstream tax breaks, state-owned enterprise capital expenditure, and international public finance — which further inflate industry profits and bank continued extraction.

39 Climate Impact Lab (2023). Data-driven Spatial Climate Impact Model (DSCIM) User Manual, Version 092023-EPA. DSCIM incorporates five damage sectors including labour productivity losses from heat exposure and was one of three models used by the US EPA in its 2023 social cost of carbon framework. Theory published in Nature and The Quarterly Journal of Economics.

The US$4.1 trillion annual climate undervaluation alone could finance more than 5,900 gigawatts of new solar capacity — enough to power every home in Africa, South Asia and Latin America combined.

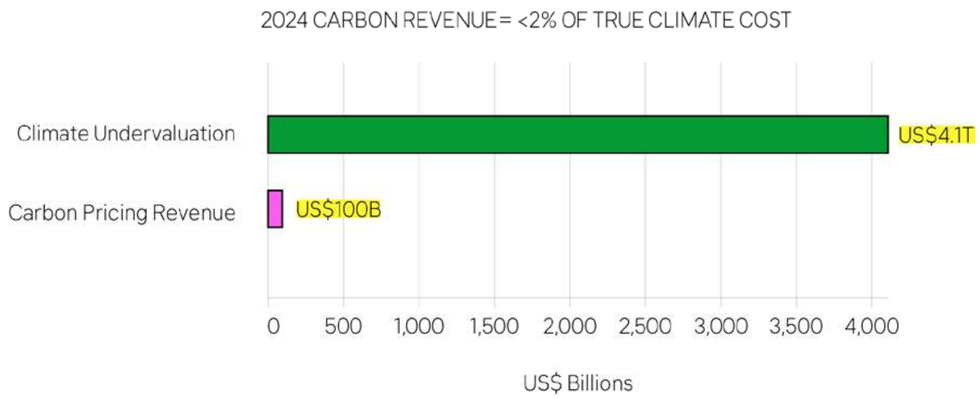
The $12 trillion flowing to the fossil fuel industry annually is nearly 100 times total global climate finance — the money the world has committed to help countries actually respond to the crisis that fossil fuels are causing.

WHAT THE INDUSTRY ACTUALLY PAYS: CARBON TAXES VERSUS ACTUAL DAMAGES

If the implicit subsidy represents what the fossil fuel industry is not being charged, carbon taxes represent what it is. The comparison is stark. Even the highest carbon tax in the world recovers less than two-thirds of the damage cost estimated by DSCIM. **Most countries — including almost all of those featured in this report — charge the industry nothing at all.**

Globally, carbon taxes cover only about 5% of emissions, while emissions trading systems cover a further 22% — meaning roughly three-quarters of all emissions face no carbon price whatsoever. Current carbon pricing raised just over US$100 billion for public budgets in 2024 — less than 2% of the US$4.1 trillion annual climate undervaluation identified in this analysis. And the direction of travel in some jurisdictions is backwards: Canada repealed its consumer carbon tax in April 2025, and the Netherlands is abolishing its national CO_2 levy. **The gap between what fossil fuels cost and what they should cost is not closing. It is being maintained by political choice — and the communities documented in this report are paying the price.**

GRAPH 6. CARBON PRICING VS. CLIMATE UNDERVALUATION



CARBON PRICING BY JURISDICTION

JURISDICTION	CARBON PRICE (US$/$TCO_2$)	TYPE	% OF DSCIM (US$233)
Uruguay	~US$160	Carbon tax	69%
Sweden	~US$145	Carbon tax	62%
Switzerland	~US$136	Carbon tax	58%
France	~US$49 (national) + ~US$70 (EU ETS) = ~US$119 combined	Tax + ETS	51%
Germany	~US$59 (national) + ~US$70 (EU ETS) = ~US$129 combined	Fuel ETS + EU ETS	55%
Netherlands	EU ETS only (~US$70); national levy being abolished	ETS	30%
EU ETS	~US$65–70	ETS	28–30%
UK	~US$45–50	UK ETS	19–21%
Canada	~US$51 (consumer tax repealed April 2025; industrial pricing remains)	Tax/OBPS	22%
Singapore	~US$18 (rising to US$36–57 by 2030)	Carbon tax	8%
New Zealand	~US$35	ETS	15%
China	~US$12	ETS	5%
South Africa	~US$9	Carbon tax	4%
Colombia	~US$5	Carbon tax	2%
Japan	~US$2	Carbon tax	<1%
IMF assumed price	US$85	Abatement cost	36%
India, Pakistan, Philippines, Indonesia, most of Africa	$0	None	0%

Three quarters of all emissions face no carbon price at all.

Photo by: Mas Agung Wilis Yudha Baskoro

WHAT THIS MEANS FOR THE COMMUNITIES IN THIS REPORT

The households documented in the preceding chapters face the real costs of fossil fuels starkly.

- The motorbike worker in Sindh spending 7-12% of income on petrol is living in a country where fossil fuels are underpriced by US$54 billion under DSCIM — more than 50% above the IMF's estimate — while the US$8.6 billion in circular coal debt that consumed the fiscal space for flood defences is itself a symptom of a system that systematically understates the cost of fossil fuels.
- The families in South Sudan sitting in darkness from 4pm, and the farmers in Sri Lanka watching their harvests fail are living in countries where fossil fuel prices fail to reflect even a fraction of the damage those fuels cause.
- The lock-in that makes Philippine electricity the most expensive in Southeast Asia is part of a national fossil fuel underpricing of US$48 billion under DSCIM. The US$21 billion in coal assets at risk of stranding is dwarfed by the annual climate damage that the current pricing fails to capture.
- South Africa's total fossil fuel subsidy under DSCIM reaches US$104 billion — 24% of GDP — driven almost entirely by the climate cost of coal. This is the hidden price of the country's coal dependence, paid in health impacts, climate vulnerability, and constrained fiscal space rather than in electricity bills.

Photo by: Leoni Fretwell / 350.org

Every year these gaps persist, they represent a transfer of wealth from the world's most vulnerable people to an industry that has known for decades what its products would do — and has not paid a penny for the damage. Far from protecting energy security, fossil fuel subsidies actively undermine it. The current crisis proves the point in real time: it is the countries with the deepest fossil fuel subsidies and the greatest import dependence — Pakistan, Sri Lanka, the Philippines, South Sudan — that are most exposed to the Iran war shock. **Every dollar spent subsidising diesel and gasoline is a dollar not invested in the solar panels, wind turbines, batteries, and efficient public transport that would have shielded those same households from exactly this kind of disruption.**

As IISD's recent analysis documents, subsidies weaken energy security across several dimensions: they deepen dependence on imported fuels rather than domestic renewables; they drain public finances that could fund resilient energy infrastructure; they crowd out investment in the diversified, distributed energy systems that provide genuine supply security; they weaken state-owned utilities by forcing them to sell below cost; they delay the deployment of clean technologies that are now cheaper than fossil alternatives in most markets; and they accelerate the climate change that is itself damaging energy infrastructure through extreme weather.

PHOTO BY: HANPO CHENG

CHAPTER 6:

THE WAY OUT: TOWARDS PEOPLE-POWERED RENEWABLES

The war in South West Asia has, inadvertently, made the transition argument easier to make — not on environmental grounds but on pure energy security and sovereignty grounds. Every solar panel installed in Sindh, every microgrid in the Amazon, every wind corridor in Colombia's La Guajira peninsula is a unit of energy that cannot be held hostage by a conflict in the Persian Gulf. Energy independence and climate action are, at this moment, the same argument. This chapter makes the case that the transition is not just possible but already happening — and that the only thing standing between it and scale is political will and redirected finance.

THE TECHNOLOGY ISN'T THE PROBLEM

Photo by: Wilfred

The evidence on what the world stands to gain from this shift is quite clear. Clean energy improves welfare through multiple channels. Electrification has been shown to increase labour supply and income[40], improve educational outcomes, and support small enterprise activity[41]. Clean cooking technologies reduce health risks. These broader benefits extend well beyond simple cost savings. And crucially, they are already materializing in communities that have made the switch — from Vila Limeira in the Amazon to off-grid villages in East Africa — proving that the transition is not a future aspiration but a present reality wherever finance and policy have allowed it to happen.

Germany's feed-in tariff, introduced in 2000, guaranteed above-market prices to renewable energy producers for 20 years. It drove explosive growth in solar and wind, helped bring down global solar module costs by over 90%, and was progressively reduced as the technology matured — with Germany shifting to competitive auctions in which solar projects now bid below wholesale electricity prices. The first wave of German solar installations reached the end of their 20-year support period in 2021 and are now operating profitably without any subsidy at all. The subsidy achieved its purpose and was no longer needed.

Bangladesh's IDCOL Solar Home Systems programme, launched in 2003 with World Bank support, installed over 4.1 million solar systems providing electricity to 20 million people in off-grid rural areas. The subsidy was deliberately designed to phase out as the market matured: when the programme started, the average subsidy was US$90 per system; by 2006 it had been halved, and by 2013 it was eliminated except for the smallest systems. As costs fell and local partner organizations built their capacity, the market sustained itself through microfinance rather than grants. The programme generated net financial benefits for households (US$745 million), for government (US$474 million in taxes and avoided kerosene subsidies), and for the implementing agencies. These are not experiments. They are proven models waiting for the political backing to go to scale.

40 Dinkelman, T. (2011). "The Effects of Rural Electrification on Employment: New Evidence from South Africa." American Economic Review, 101(7), 3078-3108. aeaweb.org

41 Lipscomb, M., Mobarak, A.M. & Barham, T. (2013). "Development Effects of Electrification." American Economic Journal: Applied Economics. aeaweb.org

THE BARRIER ISN'T TECHNOLOGY. IT'S MONEY AND POWER.

The case studies in this report from Sindh to the Amazon to La Guajira illustrate each of these barriers in practice. Albay, the Brazilian Amazon, East Africa, Sindh, the Mediterranean corridor, and La Guajira. Together, they represent more than local solutions: they are potential tipping points, places where the right political and financial backing could unlock change at scale.

The main barriers to adopting cleaner energy are not about technology, they are about access. Many households simply cannot afford the upfront investment needed to switch to clean energy. Access to credit is often limited, making it difficult to pay for solar panels or efficient appliances even when they would save money in the long run. Research has also shown that people often undervalue future savings when faced with immediate costs. On top of that, many households lack clear information about the long-term benefits of clean energy technologies or may distrust new systems, especially in places where solar markets are still developing. As a result, solutions that are cheaper over time remain out of reach for many people who would benefit the most. Where financing and policy have aligned, the results speak for themselves: Colombia's solar access programmes, the IDCOL solar home system scheme in Bangladesh, Germany's balcony solar initiative, India's PM Surya Ghar Muft Bijli Yojana scheme, and New South Wales's Empowering Homes programme have all demonstrated that upfront barriers can be overcome at scale.

These household barriers are compounded by a systemic one. **Around the world, ordinary people and local leaders are already building this better future; what holds them back is not technical potential but the inertia of fossil-centered finance, regulation and contracts.**

In practice, the cost of inaction is double in regions such as the Amazon, parts of sub-Saharan Africa, and South Asia, where there is abundant solar potential and significant unmet energy demand. Instead of using cheap solar to provide reliable, locally controlled power, countries often continue to import diesel or fuel oil for generators and rely on grid electricity from distant fossil-fuel plants, all while paying for fuel subsidies and incurring foreign-exchange risk. In effect, they pay twice: once for the fossil fuels themselves, and again in lost development opportunities on weathering oil price shocks and recovering from climate damages.

FOLLOW THE MONEY

The excuse that there is no money for the transition does not stack up.

- **Redirecting even only the explicit fossil fuel subsidies — US$636 billion in 2024 — towards solar, wind, storage, clean cooking and grid upgrades would represent a substantive contribution towards closing the global renewable energy investment gap.** Spread across the roughly 1.2 billion households in net fuel-importing low- and middle-income countries, $636 billion in explicit subsidies amounts to **around $530 per household per year** — nearly a third of a minimum-wage worker's annual income in Sindh. Yet the poorest 20% of households receive just 8 cents of every dollar spent this way — and will pay again through climate damages, austerity, and gutted public services. But the true fiscal opportunity is far larger.

- As our analysis shows, the climate component of **implicit subsidies alone is undervalued by US$4.1 trillion per year.** Corrective carbon pricing at even a fraction of the damage-based rate would generate enormous revenues that could fund universal energy access, retraining, regional diversification, and support to workers and communities currently dependent on fossil industries.

- **In addition, revenues from windfall taxes on fossil fuel producers — whose profits are inflated by the very subsidies that should be funding the transition** — could be earmarked for targeted pro-poor investment in renewable energy systems, clean cooking, and electric vehicles.

There is a fundamental difference between subsidies for fossil fuels and subsidies for clean energy. Fossil fuel subsidies sustain a mature, highly profitable industry that has been receiving public support for over a century. They must be paid every year, in perpetuity, because the underlying cost — buying and burning fuel — never goes away. The more fossil fuels a country consumes, the larger the subsidy bill becomes. **Clean energy subsidies work the opposite way. They are investments in cost reduction, designed to be temporary:** to bridge the gap between an emerging technology's initial cost and the lower cost it reaches at scale, at which point the subsidy is no longer needed. A solar panel generates electricity for 25–30 years at near-zero cost. An electric vehicle runs on domestically generated electricity rather than imported petroleum. The subsidy is a one-off expenditure that permanently changes a household's energy costs. No fossil fuel subsidy in history has worked this way. After a century of tax breaks, the oil and gas industry is no closer to not needing them.

For every dollar governments currently spend on explicit fuel subsidies, the poorest 20% of households receive just 8 cents. Replacing blanket fuel subsidies with direct cash transfers would deliver the same protection at a fraction of the cost — while freeing up resources for the clean energy investment that would end the cycle of crisis permanently.

The fossil fuel industry has had a century of public backing. The clean energy transition has had a decade. The question is not whether the technology works — it does, wherever finance and policy have allowed it to. The question is whether governments will stop paying for the problem and start paying for the solution. The money exists. The models exist. What is missing is the political decision to redirect one toward the others.

CASE STUDY 3: SINDH, PAKISTAN — FROM FLOOD DEBT TO WIND POWER

"My house fell down in 2022, and we rebuilt it for PKR 200,000 (US$720). There is no money left to rebuild again. Why should I build it again and again if the floods will come again in a year?"

– Jameelan Nour Mohammed, 41-year-old mother of five, Sindh province. (Amnesty International, October 2024)

In Sindh, Pakistan, the 2022 mega-floods are not just a "natural" catastrophe. Attribution studies show that human-driven warming made such extreme rainfall far more likely and intense, and global institutions estimate roughly US$ 30 billion in combined damages and economic losses — about 2-3% of Pakistan's GDP in a single season.[42] Nearly two million homes were destroyed or damaged. The 2024 floods compounded the trauma: over 500,000 acres of agricultural land were destroyed, and families interviewed by Amnesty International described eating only one meal a day, with some turned away from grocery stores after being refused further credit.[43]

The Sindh province alone accounted for close to 70% of total national damages and losses from the 2022 floods, and its recovery needs were assessed at US$ 7.9 billion — the highest of any province. What happened in Sindh was not the result of misfortune. Rather than investing in distributed, climate-resilient clean energy systems, successive governments locked the country into fossil-fuel-centered deals that compounded both import dependence and fiscal fragility. Over 70% of CPEC's (China-Pakistan Economic Corridor) energy projects were coal-fired, with more than half relying on imported coal; these plants were underwritten by sovereign guarantees and dollar-indexed take-or-pay contracts, meaning Pakistan owed capacity payments whether the electricity was used or not[44].

As industrial demand stagnated and cheaper alternatives eroded grid consumption, plants sat increasingly idle while the payments kept accumulating, driving unpaid obligations to power producers to US$ 8.6 billion by mid-2024[45]. This circular debt had been quietly consuming the fiscal space that might otherwise have funded flood defences, early-warning systems, or resilient housing — for years before the waters rose.

When the floods came, that pre-existing fiscal paralysis shaped everything that followed. Still reeling from the disaster, Pakistan was pushed into a year of brutal austerity under an IMF Stand-By Arrangement, with over four million more people

42 UNDP Pakistan (2022). "Post Disaster Needs Assessment: Pakistan Floods 2022." undp.org/pakistan

43 Amnesty International (2024). "Pakistan: Flood survivors in Sindh province suffer disease." October 2024. amnesty.org

44 New Security Beat / Wilson Center (2025). "Taking the Slow Lane to Green Transition in the China-Pakistan Economic Corridor," July 2025. newsecuritybeat.org

45 New Security Beat / Wilson Center (2025). "Taking the Slow Lane to Green Transition in the China-Pakistan Economic Corridor," July 2025. newsecuritybeat.org

pushed into poverty as food and energy prices surged[46]; tariff hikes and subsidy removals landed on the same households in Sindh that had just lost their homes and harvests.

The alternative is already being built. The Jhimpir–Keti Bandar wind corridor — stretching along Sindh's southern coast — has an economically viable wind potential of 11 GW, with the Sapphire-Tricon and Foundation Wind Energy farms already operating at 150 MW and 100 MW respectively. The Sukkur solar farm is operating at 150 MW. In pre-construction, the Oracle Green Hydrogen project in Thatta, Sindh, combines 1,000 MW of solar and 500 MW of wind with battery storage and a hydrogen production facility — approved by Sindh's Environmental Protection Agency in May 2024. Distributed solar is expanding rapidly: an estimated 5.3 GW of solar is now installed across Sindh's residential, commercial, industrial, and agricultural sectors, and analysts expect solar to generate 20% of Pakistan's total power in 2026. The World Bank-backed SSEP (Sindh Solar Energy Project) — a US$100 million programme — has already delivered 28 solar PV projects, generating 900 jobs in construction and 1,137 job-years (the total employment generated adds up to the equivalent of one person working for 1,137 years) in long-term operations and maintenance. Civil society groups and local communities are pushing for wind corridors and rooftop systems built around local needs. What they still lack is the space to overcome legacy coal contracts and a financial system that has, until now, consistently favoured fossil fuels over distributed, community-centered power[47].

CASE STUDY 4: LA GUAJIRA, COLOMBIA — FROM COAL EXTRACTION TO WIND SOVEREIGNTY

"Water is our number one problem. It is what keeps me awake at night."

– Elio Uriana, head of the Wayuu community of Santa Rita Dos, La Guajira. (Mongabay, 2018)

In La Guajira, the cost of fossil fuel lock-in is written into the landscape. The Cerrejón mine — now wholly owned by Swiss transnational Glencore — has diverted rivers, contaminated groundwater, and blanketed communities in coal dust across a region already classified as semi-arid. Reports submitted to the Inter-American Commission on Human Rights estimated that 4,770 Wayuu children died between 2008 and 2016 from causes linked to malnutrition and lack of drinking water. As of August 2025, the mine continues producing around 24 million tonnes of coal per year.

Every additional year of coal extraction deepens the lock-in. Investment in railways, ports, and associated infrastructure extends the political and financial tail of the coal economy, making managed decline harder and chaining Colombia to larger stranded-asset bills in the future. The cruel irony is that the Iran war is now generating short-term revenue windfalls for Colombian coal exports — precisely when managed decline is most urgent. Every windfall profit earned now makes the political case for keeping the mine open longer. The war should be a reason to transition, but it is being used as a reason not to.

The alternative is being actively — and painfully — contested from below. La Guajira is one of the best wind corridors in the Americas, and dozens of projects have been planned. But the transition is not going smoothly: major international developers including Enel and EDP Renewables have pulled out in recent years, citing regulatory delays, governance failures and inadequate community consultation processes. Of over 20 planned projects, only two are advancing. Meanwhile, 44% of La Guajira households still cook on firewood — not because clean energy is unavailable in the region, but because the projects being built extract value from Wayuu land without delivering energy to Wayuu homes. This is what a badly governed energy transition looks like: it replicates the extractive logic of coal rather than replacing it.

Wayuu Indigenous communities, supported by organizations including the JustRE Alliance, are insisting that this time development must be on fundamentally different terms: genuine free, prior and informed consent, co-ownership, local jobs, shared revenues, and long-term investment in water, health and education. Their demands — and the governance frameworks being developed to support them, including community-owned consultation protocols and new tools to give Wayuu members direct feedback on planned projects — sketch a blueprint for people-powered renewables that repair rather than repeat the harms of coal. If these frameworks are put in place and backed by real finance, La Guajira could still become a flagship for just, community-anchored wind development. But the window is narrowing, and the current trajectory is a warning, not a model.

CASE STUDY 5: THE BRAZILIAN AMAZON — FROM DIESEL DEPENDENCY TO SOLAR SOVEREIGNTY

"Before, to preserve the fish we used to put salt on it, but that causes high blood pressure, right? Now we can catch it, store it and enjoy a cold drink of water. And just not having to use the kerosene lamp anymore, not needing to buy fuel and not hearing that generator noise is already really good"

– Margarida Ribeiro da Silva, community leader of the Verde Para Sempre reserve about the switch from diesel to renewables in her community.[48]

46 Bretton Woods Project (2024). "Pakistan's Debt Crisis Fuelled by More IMF Loans," July 2024. brettonwoodsproject.org

47 Global Energy Monitor (2025). "Power Sector Transition in Sindh." gem.wiki

48 CEBDS (2023). "Comunidades na Amazonia comecam a trocar diesel por fontes renovaveis." cebds.org

In Brazil's Amazon, the cost of fossil fuel delay takes a different but equally revealing form. Remote communities — many of them Indigenous — remain dependent on diesel generators for electricity, paying among the highest energy prices in the country while suffering frequent blackouts and chronic air and noise pollution. The federal government spends roughly US$2.5 billion per year subsidising this off-grid diesel power generation — an ongoing transfer from public budgets to fuel suppliers and generator operators.

That figure is not a fixed cost. It is a floor that rises with every barrel. The Iran war has just raised that floor. On top of higher prices, diesel supply has become unreliable in parts of the country, threatening electricity access for the communities most dependent on it. The solar microgrid that could have freed these communities from that volatility is still waiting for funding. Each year of delay keeps Amazonian communities exposed to volatile prices, blackouts, and pollution.

From Vila Limeira to the Xingu — a movement is already under way. Vila Limeira, a river community of 90 people in the Médio Purus Extractive Reserve, was once dependent on a diesel generator providing just three hours of electricity a day. It is now the first community in southern Amazonas to run entirely on solar energy, following a project built by local residents alongside WWF-Brazil in 2021. Every home has a refrigerator, a washing machine, and internet access.

"The arrival of solar energy has brought many improvements for us,"

— said Raimunda Ferreira de Oliveira, a 24-year resident.

Vila Limeira is one of a growing network. In Terra Firme, on the Madeira River in Rondônia, 27 families now have 24-hour electricity from individual solar units — including a young man who returned from the city to open a barbershop. In Santa Helena do Inglês on the Negro River, 132 solar panels and 54 batteries now save the community of 130 residents 54 litres of diesel and 143 kg of CO_2 every single day, while enabling the women to run an ecotourism lodge. In the Tapajós-Arapiuns Reserve, the Porto Rico community has round-the-clock electricity from a participatory solar and hydrokinetic microgrid installed in 2023. In Vila Restauração — accessible only by a 10-hour boat ride — a 325 kW solar system delivers 24-hour electricity at 60% lower cost. In the Xingu Indigenous Park, the Instituto Socioambiental has installed photovoltaic systems in 80 villages, with 100 Xingu men trained in installation and maintenance and the project scaling to 82 villages, 55 schools and 22 health centres. On the Tapajós River, the Munduruku of Sawré Muybu have installed a solar microgrid that powers their homes and enables them to monitor their territory against illegal mining and logging.

These are not pilot dreams. Minigrids already serve more than three million people across the Amazon rainforest. The federal programme Mais Luz para a Amazônia has installed 8,828 solar units to date, reaching around 35,000 people, with a target of 850,000 people by 2030. Redirecting even a fraction of the US$2.5 billion spent annually on diesel subsidies into properly designed, community-led solar systems would bring clean, locally controlled power to the roughly one million Amazonian families still waiting for it — and free them from a price that rises with every barrel, and every war.

CASE STUDY 6: EAST AND HORN OF AFRICA — FROM CLIMATE SHOCK TO COMMUNITY POWER

"Nearly every family has lost their entire livelihood. Our fields of maize and sorghum have failed completely — there is nothing left to harvest."

– Community representative, Afgooye District, Somalia
(Save the Children, December 2025)

In East and the Horn of Africa, the cost of a delayed fossil fuel phase out appears in the increasing frequency and depth of climate shocks that undo hard-won development gains. Prolonged droughts followed by extreme floods — now clearly linked to a warmer climate — have pushed tens of millions into acute food insecurity. By May 2024, over 48.1 million people across Ethiopia, Kenya, Somalia, South Sudan, and Sudan were already facing, or risking to face hunger. The number of displaced people across the region stood at 18.4 million in May 2024, rising to over 20 million by September. In South Sudan alone, over two million people have been displaced by flooding and drought in recent years. In February 2025, a heatwave forced schools to close for two weeks as children collapsed from heatstroke.

If global emissions had peaked and declined sharply in the 1990s or early 2000s, these communities would still face variability — but not the same stacked, record-breaking extremes. The additional warming from decades of delayed phase out is what turns local vulnerabilities into permanent emergencies. The war in South West Asia is intensifying the crisis further: rising food and fuel costs — driven partly by the oil price spike — are pushing millions more toward hunger in import-dependent countries that had nothing to do with the conflict.

A better system is already taking shape. Government schemes supporting electric two-wheelers (particularly in Kenya, Ethiopia and Rwanda) have driven steep increases in EV adoption, creating new income streams for riders, reducing fuel import bills, and generating employment – making them an important model for the current fuel price shock. The region holds immense renewable potential: Tanzania alone has over 1,955 MW of solar in development and 500 MW of onshore wind announced. The Eastern Africa Power Pool is stitching together a network where countries rich in sun, wind, and hydro can share clean electricity, reducing everyone's exposure to volatile fossil fuel imports. At the community level, off-grid solar systems and independent minigrids are expanding electricity access across Uganda, Tanzania, South Sudan, and the DRC — delivering immediate, life-saving power to health clinics, schools, and displacement camps.

These systems bring light, refrigeration for medicine, internet connectivity, and new economic opportunities to communities that large fossil fuel infrastructure projects have historically bypassed entirely.

CASE STUDY 7: MOROCCO AND NORTH AFRICA — FROM DROUGHT AND PRICE SHOCKS TO A 1 TERAWATT VISION

"The most difficult drought we have experienced in history was this year. For me, the current agricultural year is lost."

– Abdelmajid El Wardi, farmer, Morocco
(BBC / Environmental Health News, April 2024)

North Africa and the Mediterranean have been warming roughly 20% faster than the global average — a direct consequence of cumulative emissions locked in by decades of a slow fossil fuel phase out. Climate change made the April 2023 Mediterranean and North Africa heatwave at least 100 times more likely. In Morocco, six consecutive years of drought have reduced the country's second-largest water reservoir to just 3% of its average volume. The 2024 wheat harvest was nearly 50% below normal. Farmers are selling animals one by one to buy fodder, abandoning land their families have farmed for generations, or digging ever deeper wells only to find them running dry.

The fossil fuel system compounds the climate damage directly. Egypt — the region's largest energy importer — announced fuel price hikes of up to 22% for petrol, diesel and cooking gas within days of the South West Asia war escalating. Morocco faces the same pressures. The diesel that runs irrigation pumps, the fertilizers that feed depleted soils, the trucks that move what little harvest remains — every input cost has risen since February 28, 2026. The six-year drought did not cause this. But the fossil-fuel-dependent system that was already bleeding these farmers dry has made their situation measurably worse, in real time, because of a war they have no control over.

The alternative is taking shape at scale. The TeraMed initiative — uniting more than a dozen countries across the Mediterranean and North Africa — is building toward 1 terawatt of renewables by 2030, showing how quickly scale can be unlocked when political will meets regional cooperation. In West Africa, an emerging Power Pool is stitching together a network where countries rich in sun and wind can share clean electricity with their neighbours, reducing everyone's exposure to the volatile import costs that the war has just made viscerally real.

CASE STUDY 8: ALBAY, PHILIPPINES — FROM FOSSIL LOCK-IN TO 100% RE-NEWABLES BY 2030

In Albay, Philippines, the contradiction between fossil lock-in and renewable potential is starker than almost anywhere else on Earth. The province has over 500 MW of geothermal capacity — yet its electricity system remains unreliable, with common outages affecting communities and businesses. The reason is structural: the local cooperative, ALECO, is locked into fossil-fuel purchase agreements that pass the cost of forced outages directly to consumers. Nationally, fossil-friendly contracts for imported coal and diesel make Philippine electricity the most expensive in Southeast Asia.

This is the cost of delay in Albay: not the absence of renewable energy, but the institutional inertia of a system that keeps communities paying for fossil fuel contracts long after cleaner alternatives have become cheaper.

The alternative is already under construction. In October 2023, Governor Edcel Greco Lagman declared a state of climate emergency; in February 2024 he signed a memorandum of understanding with the Philippine Movement for Climate Justice to build a renewable energy plan around community participation. The province has a technical untapped renewable energy resource of 988 GW, with 486 MW of identified solar potential and 502 MW of wind. A collective PHP 84 billion — approximately US$ 1.5 billion — has already been pledged by six investors to develop 1,250 MW of renewable energy. In 2025, Ligao City installed solar and battery systems on all 55 of its barangay halls as a first step toward ending power intermittency. The province that has paid the price of fossil lock-in is now committing to 100% renewable energy by 2030 — not as an aspiration, but as a plan already in motion.

CASE STUDY 9 : INDONESIA— COMMUNITY RENEWABLES = ENERGY CRISIS RESILIENCE

Since 1985, the community-owned Gunung Sawur microhydro plant in Sumberwuluh Village, Lumajang, has provided reliable, independent electricity to 137 customers, including 118 households and 19 tourist stalls. Its tariffs are up to three times cheaper than PLN, showing that locally owned renewables can dramatically reduce everyday energy costs for rural communities. During the 2021 Semeru eruption, the plant kept operating six days a week despite wider disruptions, ensuring power for homes and livelihoods when it was needed most. This experience shows how community control, local maintenance skills, and long-lived equipment turn cheap renewable energy into real shock resilience for essential services.

CONCLUSION

There is nothing inevitable about life in the dire straits of fossil fuel dependence. The spiralling household bills, faltering insurance markets and farms and homes washed away or baked dry are not the unavoidable price of "keeping the lights on"; they are the cumulative cost of clinging to an energy system that no longer works for most people. Decades of delay have turned every oil price spike into a household emergency and every climate-fuelled disaster into another withdrawal from the savings of the world's poorest communities, narrowing the margin for error with each passing year.
Yet the case studies in this report also point to a different route, already being charted from below. From Albay to Sindh, La Guajira to East and West Africa, communities are assembling the building blocks of a new energy settlement: community-owned grids, Indigenous-led wind projects, subnational 100% renewable commitments, regional power pools and subsidy reforms that begin to shift public money away from fossil fuels and towards people-centered renewables. These are not distant pilot schemes; they are working models that could deliver reliable, affordable, clean energy to all within a generation, if matched by the right finance and regulation.

Something else has changed too. For most of the past 50 years, the argument for staying on fossil fuels rested on a claim about cost and reliability: that coal, oil and gas were the affordable, dependable foundation of modern economies, and that the alternatives were too expensive, too intermittent, or too uncertain to replace them. That argument is now empirically false. Solar and wind are cheaper than new fossil fuel generation in most markets — and cheaper than the operating costs alone of many existing coal and gas plants. Battery storage costs have fallen by over 90% in a decade. Three major fossil fuel system failures in five years — a pandemic supply shock, a war-driven European energy crisis, and now a Gulf supply disruption — have demonstrated that it is the incumbent system, not the alternative, that is fragile, unreliable and ruinously expensive when it fails. **The economic argument for fossil fuels has not just weakened. It has collapsed.**

It is in this moment of crisis, but also of possibility, that the first conference on transitioning away from fossil fuels takes place. Hosted by the governments of Colombia and the Netherlands, Santa Marta is not another negotiation space, nor a replacement for the UN climate process. It is an implementation-focused gathering of countries ready to move further and faster, bringing together a coalition of the willing to share practical pathways and accelerate a just and orderly phase out of fossil fuels. Led by the Global Majority, it turns the narrative on its head: from countries historically positioned as fossil fuel exporters to countries leading the way in building solutions. Exiting the dire straits of a fossil-powered world is therefore less a leap into uncharted waters than a decision to follow channels that are already visible on the map. The safest passage lies in scaling up those people-powered solutions and aligning global finance, industrial policy and governance with their logic. That means redirecting fossil fuel subsidies, making major polluters pay, and recycling revenues, including from windfall taxes, into clean energy access, electrification of demand, social protection and just-transition measures that shield workers and communities.

As part of emergency plans, governments should take the following measures:

- Direct additional tax revenues linked with higher fuel prices into targeted cash support and mass clean-energy programs for the poorest households and for SMEs (solar home systems, clean cookstoves, e-two-wheelers, efficient public transport) instead of across-the-board petrol and diesel price controls or subsidies.

- Implement windfall taxes on fossil fuel companies and other sectors profiting from the current crisis

- Fast-track investment in resilient, people-centred grids and distributed renewables by simplifying permitting, de-risking projects with guarantees, and prioritising community-owned or municipal solar, wind and storage.

- Leverage the crisis in international negotiations to demand and channel concessional finance, debt swaps and loss-and-damage funds into just transition plans that create decent green jobs and support workers and communities currently dependent on fossil fuel value chains.

The analysis in this report reveals that the scale of the fossil fuel subsidy problem is far larger than even the IMF's headline figures suggest. When fossil fuel prices are measured against the actual damages they cause — using the best available peer-reviewed science — the global underpricing rises from US$7.4 trillion to at least US$11.4 trillion per year, and potentially far higher. Every year this gap persists, it represents a transfer of wealth from the world's most vulnerable households and economies to an industry that has known for decades what its products would do. The International Court of Justice has confirmed that states have a legal obligation to protect the climate, and that fossil fuel production, licensing, and subsidies can constitute internationally wrongful acts[49]. The data in this report provides the economic foundation for that legal finding.

The Santa Marta conference — the first international gathering dedicated to fossil fuel phase-out, convened by Colombia and the Netherlands with 46 countries confirmed — is the moment to act on this evidence. The communities featured in this report — from Sindh to the Amazon, from Albay to La Guajira — are not waiting for permission to build the next energy system. What they need is for the current system to stop working against them.

If governments choose that course, frontline communities will no longer appear only as victims of the fossil age, but as the navigators of a new energy era – one in which the benefits of transition are shared, and the costs of delay finally stop landing on household doormats.

49 ICJ Advisory Opinion on Obligations of States in respect of Climate Change, July 2024.

KEY REFERENCES

The following sources are cited across multiple chapters of this report. Full citations for all footnotes appear at the bottom of each page.

- Achakulwisut, P., Erickson, P. & Koplow, D. (2021). "Effect of subsidies and regulatory exemptions on 2020-2030 oil and gas production and profits in the United States." Environmental Research Letters, 16, 084023. doi:10.1088/1748-9326/ac0618

- Black, S., Celniak, W., Garcia-Huitron, A., Parry, I., Schulz Antipa, P. & Vernon-Lin, N. (2025). "Underpriced and Overused: Fossil Fuel Subsidies Data 2025 Update." IMF Working Paper WP/25/270. Washington DC: International Monetary Fund.

- Burke, M., Zahid, M., Diffenbaugh, N.S. & Hsiang, S. (2026). "Quantifying climate loss and damage consistent with a social cost of carbon." Nature, 651, 959-966. doi:10.1038/s41586-026-10272-6

- Climate Impact Lab (2023). Data-driven Spatial Climate Impact Model User Manual, Version 092023-EPA. Developed by the University of Chicago, Rhodium Group, UC Berkeley and Rutgers University.

- Erickson, P., Down, A., Lazarus, M. & Koplow, D. (2017). "Effect of subsidies to fossil fuel companies on United States crude oil production." Nature Energy, 2, 891-898. doi:10.1038/s41560-017-0009-8

- IISD (2025). "Seven Ways Fossil Fuel Subsidies Undermine Energy Security." International Institute for Sustainable Development. Available at: iisd.org/articles/deep-dive/seven-ways-fossil-fuel-subsidies-undermine-energy-security

- Kotchen, M.J. (2021). "The producer benefits of implicit fossil fuel subsidies in the United States." Proceedings of the National Academy of Sciences, 118(14), e2011969118. doi:10.1073/pnas.2011969118

- Rennert, K., Errickson, F., Prest, B.C. et al. (2022). "Comprehensive evidence implies a higher social cost of CO_2." Nature, 610, 687-692. doi:10.1038/s41586-022-05224-9

- Semieniuk, G., Weber, I.M. & Weaver, I.S. (2025). "Best of times, worst of times: record fossil-fuel profits, inflation and inequality." Ecological Economics. doi:10.1016/j.ecolecon.2024.10845

Background research support by Pro(to)topia. Views and proposals do not necessarily reflect those of Pro(to)topia.


EVERYTHING IS SO
EXPENSIVE
OUT OF POCKET
+350
BLAME the FOSSIL FUELS