FROM WELL TO WHEEL

THE SOCIAL, ENVIRONMENTAL, AND CLIMATE COSTS OF AMAZON CRUDE

AMAZON WATCH

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Photo: Ivan Kashinsky

UNBEKNOWNST TO MOST, oil extraction in the Amazon is not only rampant; it is also expanding rapidly as global supplies dwindle and economic pressures multiply. Even lesser known is the fact that the majority of this rainforest-destroying fossil fuel ends up in gas tanks throughout the United States. In “From Well to Wheel: The Social, Environmental, and Climate Costs of Amazon Crude,” Amazon Watch tracks crude extracted from oil wells in the western Amazon to refineries in the United States, after which it makes its way into cars and trucking fleets throughout the country. This is the first thorough analysis of Amazon crude from its source to its final end use.

KEY FINDINGS:

- A thriving market for Amazon crude rationalizes the ongoing expansion of oil operations into some of the Amazon Rainforest's most pristine regions, which has devastating impacts for the Amazon's biodiversity and indigenous peoples, frontline communities in the United States, and our global climate.
- Drilling in the Amazon has a triple carbon impact: emissions from cutting down the rainforest to build well sites, pipelines, and access roads, higher levels of CO2 in the atmosphere by destroying the world's largest carbon sink, and burning the oil.
- Oil operations have particularly toxic impacts on the health of indigenous communities. In one oil producing region of the Peruvian Amazon, 98% of children in indigenous communities have high levels of toxic metals in their blood.
- California's refineries are the worst offenders, processing an average of 170,978 barrels (7.2 million gallons) of Amazon crude every day. The state processes roughly 60% of all exports of Amazon crude from Ecuador, Peru, and Colombia, and 74% of those that come to the United States.
- Every large public and private fleet in California uses diesel that is at least partly derived from Amazon crude, as do many outside of the state and country.

Recommendations for public and private fleets:

Most Amazon crude is refined into diesel and gasoline. A significant market for the final product is public and commercial vehicle fleets. Transitioning to Amazon-free operations is an important step in stopping the expansion of the Amazon oil frontier.

- Whenever possible, increase your fleet's efficiency and transition it to electric vehicles and hybrids and sustainable biodiesel and renewable diesel that do not include palm oil.
- For the gasoline and diesel that you continue to use, source your fuel from refineries that do not process Amazon crude. It is relatively simple to shift to Amazon-free operations. Out of the 117 refineries in the U.S., only 23 processed Amazon crude in 2015. The nine largest refiners of Amazon crude accounted for 85% of the roughly 230,000 barrels that came to the U.S. every day.
- Either through your regular fuel RFP or separately, require your transportation and fuel vendors to provide a list of refinery sources of origin for the fuel being used to move your vehicles and transport your products. Check these refineries against the chart of Amazon-processing refineries in this report.
- Provide your transportation and fuel vendors with a list of Amazon-free refineries. Inform them that your company has a preference for fuel from these refineries. If logistical barriers prevent access to Amazon-free product, the next best choices are refineries using minimal Amazon feedstock. Give preference whenever possible to vendors that have confirmed they can supply fuel from these Amazon-free refineries.
- Publicly commit to your company's preference for procuring fuel from Amazon-free refineries. This action reduces the company's environmental and human rights impact and better aligns the company's practice with its sustainability commitment. The public statement sends an important signal that there are actionable concerns about the environmental destruction, human rights, and climate risks embedded in the Amazon fuel industries.[4] For assistance in implementing these steps or to discuss Amazon oil in your fleet, contact Amazon Watch.

INTRODUCTION

The Amazon rainforest is an unparalleled global treasure. Encompassing an area the size of the continental United States, the world's largest rainforest spans nine countries and covers 40% of South America. It produces a fifth of the world's flowing freshwater, draws down a quarter of all carbon absorbed by land, and produces a fifth of the world's oxygen, driving weather patterns as it regulates global climate. The Amazon's forests host 30% of global biodiversity and are home to nearly 400 distinct indigenous peoples that depend on its resources for physical and cultural survival.

The opening of new oil drilling concessions constitutes one of the most serious threats to the western region of the Amazonian biome. Existing and proposed oil and gas blocks in the Amazon cover 283,172 square miles, an area larger than the state of Texas. Oil is presently being extracted from only 7% of these blocks, yet national governments aim to exploit an additional 40%, including those slated for pristine, mega-diverse forests such as Ecuador's Yasuní National Park, a UNESCO Biosphere Reserve.[5]

Drilling in the Amazon rainforest poses a triple threat to the climate: greenhouse gas emissions from burning the oil and felling the rainforest, combined with the degradation of this key carbon sink, have major implications for global climate stability. Resulting alterations in rain patterns could create or worsen catastrophic droughts or floods across the Western Hemisphere, setting off a chain reaction that could lead to ecological collapse.

Expanding the Amazon's oil frontier would also threaten the lives, livelihoods, and cultures of hundreds of indigenous communities, including those living in voluntary isolation. Oil has already polluted many of their rivers and forests, led to cultural devastation and destroyed livelihoods. Expanded oil operations would broaden and deepen such impacts.

This perilous trend is at odds with a growing scientific consensus that we must leave 80% of the planet's remaining fossil fuels in the ground and unburned in order to stave off climate catastrophe. Indigenous forest guardians are leading this movement, as they are among the first communities to bear the brunt of a changing climate.

Western consumers are unwittingly fueling this expansion at a time that North American multinationals leave the Amazon, giving way to Chinese and South American state-owned oil companies. As key biodiversity and cultural hotspots are a conservation imperative – to be considered no-go zones for industrial activity rather than sacrifice zones for short-term profit – we must forge new strategies to confront imminent threats to their existence.

By tracking oil from the rainforest to refineries that process it, we can identify and publicize how some of the planet's most destructive oil reaches our local refineries. This is a critical step in ensuring a drastically reduced market share for Amazon crude.

This report focuses on the Western Amazonian countries of Ecuador, Peru, and Colombia, given that the vast majority of Amazon oil originates from this region. Its findings, which lead the report, tell an important story of causation: in 2015 alone, refineries in the U.S. processed an average of 230,293 barrels of Amazon crude per day, accounting for by far the largest percentage of Amazon crude. California refineries alone processed 74% of that oil, roughly 170,000 barrels every day. In fact, in 2015 over 20% of California's oil imports came from Ecuador, which only produces oil from the Amazon. The small Amazonian country came in second only to oil giant Saudi Arabia.[6] Californians are therefore either part of the problem or part of the solution, as key stakeholders in the future health of the Amazon's forests and peoples, as well as the global climate.

The report also explores the context that underpins today's disastrous expansion of the oil frontier into the forest homelands of indigenous peoples, showing how the Chinese government leads a new set of actors dominating the Western Amazon's economic and political landscape. These evolving threats require new, innovative strategies to stem demand for this particularly destructive source of crude.

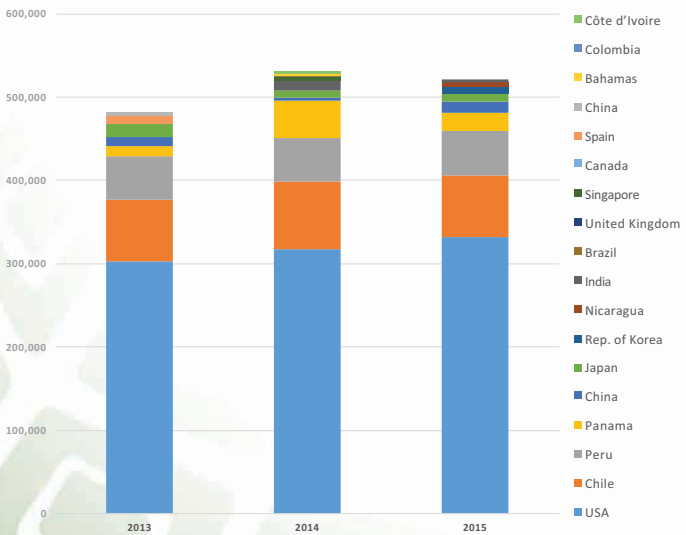
By showing the appalling impacts of oil drilling upon the forest and its peoples, the report then identifies norms that protect indigenous rights and territories, demonstrating that while these protections should steer government and corporate dealings with indigenous peoples, such considerations are routinely ignored. Given that this region's economies are reliant on oil revenue, the report also presents models that chart pathways to a just transition beyond fossil fuel dependence. Breaking free from oil dependence and keeping remaining fossil fuels in the ground is an urgent, collective endeavor, and the life-giving Amazon rainforest must be one of the first places we start.

Chevron's El Segundo Refinery, which processes an average of 56,463 barrels of Amazon crude oil every day. While Chevron blames PetroEcuador for its own contamination in the northern Ecuadorian Amazon, its El Segundo refinery is by far the largest non-Ecuadorian refiner of that company's crude. Credit: Pedro Szekely

AMAZON OIL BY THE NUMBERS

While overall U.S. crude imports are in decline, imports of oil from the Amazon have actually risen. This phenomenon is driven by increased domestic production from shale formations, which produce light crude that requires heavier crudes to create a blend for refineries.[7] Most Amazon oil is heavy, particularly Ecuador's crude, which is one reason why California's refineries imported and processed roughly 60% of Ecuador's crude exports in 2015.[8]

Exports of Crude from the Ecuadorian Amazon by Country



Credit: Original research by the Borealis Centre for Environmental and Trade Research[9]

The vast majority of Amazon crude imported to the U.S. in 2015 originated from Ecuador (90%), followed by Colombia (8%) and Peru (2%). The U.S. imports the lionshare of Amazon crude, followed by Chile, Peru, and Panama. A total of 23 U.S. refineries sourced Amazon crude in 2015, with 74% of U.S. imports going to refineries in California, and only five importing refineries accounting for 65% of this flow. The Chevron refinery in El Segundo single-handedly processed nearly one quarter of all U.S. Amazon crude imports, essentially extending the company's toxic legacy by creating a significant market incentive to expand the Amazon's oil frontier.

Complicit in this process are the end users of Amazon crude. Every large public and private truck fleet in California – and many outside of the state and country – uses diesel that is at least partly

derived from Amazon crude. That is because third party fuel carriers – the companies that deliver gasoline and diesel from refineries to their end users – do not have long-term contracts with refineries and regularly change their sourcing based upon miniscule ever-changing price variations. That means that over the course of a year every fleet uses gasoline derived from the Amazon, but it also means that it is relatively simple for them to shift to Amazon-free refineries. Twenty-one major companies and two cities have committed to eliminating or lessening their dependence on tar sands, so they and others can take action on Amazon crude.

A thriving market for Amazon crude rationalizes the ongoing expansion of oil operations into some of the Western Amazon's last pristine regions and indigenous peoples territories. Consumers of this crude, particularly those in California, can spur divestment from this toxic energy source by pressuring their local refineries to commit to rejecting gasoline and diesel from the Amazon and by pressuring their businesses and public institutions to only purchase from refineries that commit to going Amazon-free. This will ultimately reduce the market for Amazon crude and undercut the drivers of an expanded oil frontier.

U.S. Refineries that Processed Amazon Crude in 2013-2015

U.S. Refinery	2013		2014		2015		Rating
	Amaz. Oil (b/d)	Percent of Gross	Amaz. Oil (b/d)	Percent of Gross	Amaz. Oil (b/d)	Percent of Gross	
Chevron, El Segundo (CA)	47,205	21%	48,978	21%	56,463	24%	
Tesoro, Los Angeles (CA)	29,033	10%	11,663	4%	26,022	8%	
Tesoro, Golden Eagle (CA)	33,644	24%	19,970	14%	25,063	17%	
Phillips 66, Los Angeles (CA)	24,764	21%	18,493	15%	21,512	18%	
Shell, Martinez (CA)	26,068	20%	16,345	12%	19,570	14%	
CITGO, Corpus Christi (TX)	1,014	1%	15,389	10%	16,337	11%	
Chevron, Pascagoula (MS)			2,249	1%	12,619	4%	
Valero, Wilmington (CA)	4,312	6%	4,000	5%	12,055	15%	
Valero, Benicia (CA)	2,181	2%	4,025	4%	7,271	6%	
Deer Park Refining, Deer Park (TX)	1,953	1%	3,674	1%	5,770	2%	
CITGO, Lake Charles (LA)			3,614	1%	5,052	1%	
PBF Energy, Delaware City (DE)			992	1%	3,362	2%	
Houston Refining, Houston (TX)	18,953	8%	3,745	2%	2,945	1%	
Phillips 66, Lake Charles (LA)	8,951	4%	7,652	3%	2,841	1%	
PBF Energy, Paulsboro (NJ)	1,510	1%			2,666	2%	
Par Pacific, Par Hawaii (HI)			1,038	1%	2,019	2%	
Chevron, Richmond (CA)			879	0%	1,934	1%	
Marathon, Garyville (LA)					1,647	0%	
Phillips 66, San Francisco (CA)	1,468	1%			1,088	1%	
Shell, Puget Sound (WA)					1,052	1%	
ExxonMobil, Baton Rouge (LA)			3,789	1%	1,036	0%	
Phillips 66, Ferndale (WA)			219	0%	989	1%	
Motiva, Port Arthur (TX)	6,104	1%	5,849	1%	981	0%	
Valero, Port Arthur (TX)			1,049	0%			
Total SA, Port Arthur (TX)			2,005	1%			
Tesoro, Anacortes (WA)	1,014	1%	4,277	4%			
Phillips 66, Sweeny (TX)	1,036	0%					
Hunt Refining, Tuscaloosa (AL)	1,019	4%					
ExxonMobil, Torrance (CA)	2,301	2%	685	1%			
ExxonMobil, Beaumont (TX)	9,608	3%	7,732	2%			
ExxonMobil, Baytown (TX)			3,022	1%			
Total	**222,140**		**191,334**		**230,293**		

This refinery currently receives significant quantities of Amazon crude (greater than 5,000 bpd and/or greater than 10% of the refinery's feedstock).

This refinery currently receives smaller quantities of Amazon crude.

This refinery uses only negligible volumes of Amazon crude (under 100 bpd), or has received some Amazon crude in the past but not in the current year.

Credit: Original research by the Borealis Centre for Environmental and Trade Research[9]

Barrels filled with crude waste after a recent PetroPeru spill.

THE WESTERN AMAZON'S NEW OIL BOOM:

Rationale for an Expanding Oil Frontier

A new oil boom is underway in the western Amazon. But different from the past, an unlikely wave of petro-players is leading the charge. In today's Amazon oil fields, logos of the 'supermajors' – Chevron, ExxonMobil, Shell, ConocoPhillips, BP among others – are few and far between in work camps and well sites. In a globalized world of internet, social media, and camera phones, drilling in remote rainforest is not what it used to be for companies whose gasoline stations are on neighborhood street corners. Documentation of rights violations or oil spills are a click away, creating real reputational risk for companies whose brands are household names.

Geologic reality has also been a big factor. Much of the easy, light crude in the region has been tapped. What remains are smaller, heavy crude reserves with correspondingly increased infrastructure costs and ecological footprints. Yet for all the additional work to access and produce oil from these remote places, this Amazon crude is particularly discounted from the global benchmark, while the current crash in global oil prices renders most new projects economically unfeasible.

For the oil giants, the risk-reward quotient became adverse. Most have departed, leaving behind a legacy of litigation and toxins. Their departure ushered in a new era of state-run firms that are dominating new oil sector development.

In a testament to China's growing demand for natural resource access and major foray by its banks into international finance and oversees investment, the most prolific oil companies in the Amazon are now entirely financed by the People's Republic: CNPC, SINOPEC, PetroOriental, Andes Petroleum, and SAPET. As these are national oil companies, traditional mechanisms of accountability and information access are opaque. The combination of host governments with little capacity or political will to enforce environmental and human rights standards with

Oil Infrastructure in the Western Amazon

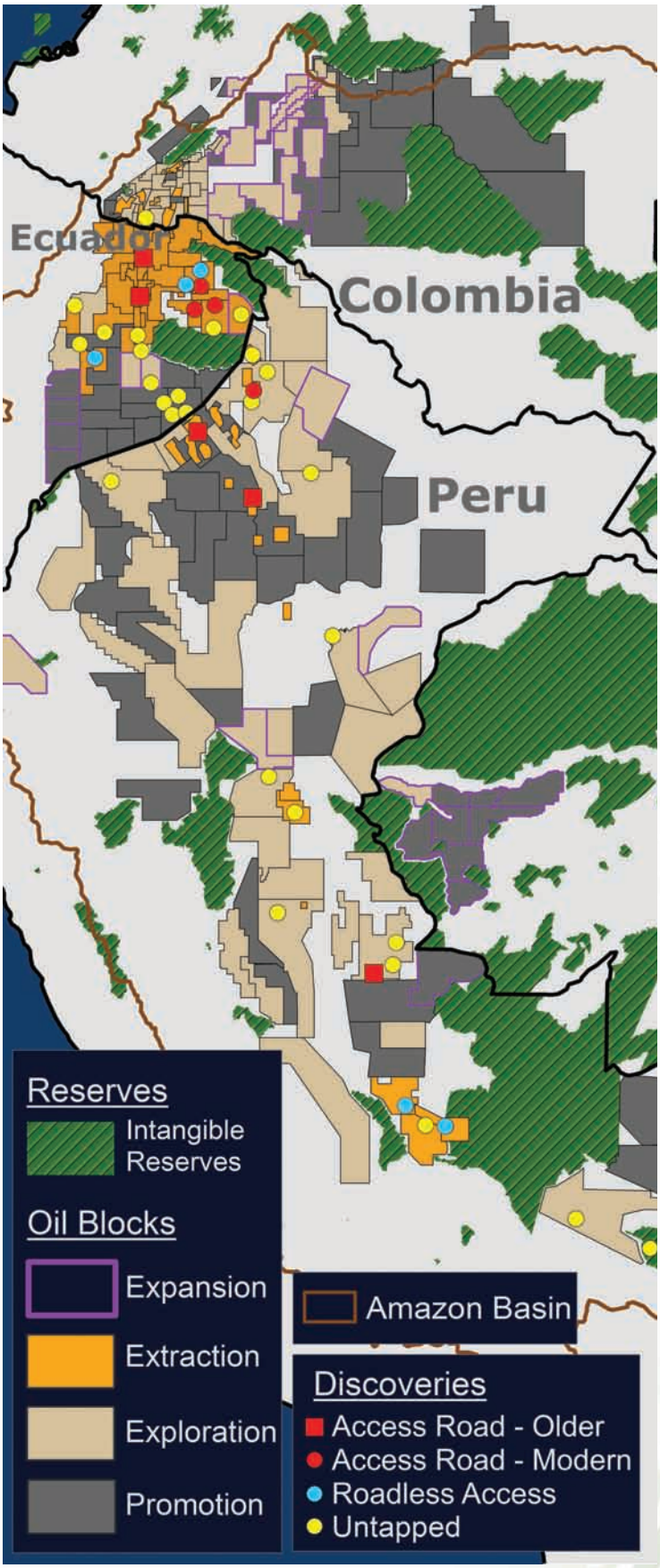
oil companies from autocratic states creates a vacuum of accountability where abuses can thrive.

Ecuador's spiraling debt to China led the government to announce a new oil bidding round in late 2016 that could place a dozen 200,000-hectare oil concessions for tender. Roughly two-thirds of the country's Amazon is already concessioned and zoned for oil extraction, and the new blocks would open up its last remaining roadless swath of frontier Amazonian forest in the country's Amazon.

In Peru, a new concession bidding round was scrapped after a series of protests, spills, and controversy over indigenous land titling and consultation obligations in its Amazon region. But the government continues to seek expansion of its rainforest oil patch. The country's new pro-business president, Pedro Pablo Kucynzski, favors export-led development and experts fear a resulting rollback of indigenous rights and enforcement of environmental laws.

Oil's Toxic Amazon Footprint

The ravages of Amazon oil operations are manifold. From massive forest and biodiversity loss, to the poisoning of indigenous and traditional forest communities, the region pays a deadly toll to feed global oil demand. Given this toxic legacy, the global imperative to keep fossil fuels in the ground and to create ecologically and culturally integral no-go zones for industrial activities must draw a line at the Western Amazon's oil frontier. This section of the report explores how Amazon crude's environmental and social cost is far too high to justify its ongoing and disastrous expansion.



Oil blocks in the Amazon Basin. Credit: Matt Finer[10]

Deforestation from oil spill remediation efforts in the Peruvian Amazon.

Deforestation from Oil Operations

"Destroying the Amazon... is like shooting yourself in the foot. The Amazon is a gigantic hydrological pump that brings the humidity of the Atlantic Ocean into the continent and guarantees the irrigation of the region."[11]

– Leading climate scientist Antonio Nobre

The Amazon's forests regulate the global climate, and their accelerating loss is driving climate instability. The felling of these forests could deepen historic drought in California, the state that processes 60% of Amazon oil exports. Climatologists' dire predictions that Amazon deforestation could mean "20 percent less rain for the coastal Northwest and a 50 percent reduction in [California's] Sierra Nevada snowpack" have borne out, with the state now facing its worst drought in 1200 years.[12]

Researchers have aptly termed oil extraction access roads a "Pandora's box"[13], as they drive illegal deforestation, illicit wildlife trade, colonization, species loss, and cultural degradation. Project developers typically underestimate massive deforestation resulting from their operations, with one study showing deforestation was 37 times its original projections, proving that "proximity to [oil roads] is the strongest spatial factor in predicting where deforestation [occurs]."[14]

Biodiversity Loss

The Amazon's vast biodiversity includes more than 430 mammal species, 1,300 bird species, 56,000 plant and tree species, 5,600 fish species, 1,000 species of amphibians, and 2.5 million insect species.[15,16] One hectare of Yasuní National Park contains 655 endemic tree species,[17] more than all of the tree species in the United States and Canada combined. The Amazon is an interdependent ecosystem, and the loss of one species can threaten many other species.

Oil-driven deforestation gravely threatens this complex web of biodiversity, with recent studies linking major, exponential extinctions to forest loss.[18,19] The planned, massive

A jaguar is seen crossing through an oil pipeline storage facility near a secret illegal road inside Yasuní National Park, Ecuador. Credit: Anonymous, first published by Plan V.

expansion of the oil and gas frontier threatens to magnify this grim phenomenon, with one such study stating "preserving the southern Amazon becomes essential to improve the protection of Amazon biodiversity in Ecuador, and avoiding oil exploitation in these areas . . . should be considered a conservation alternative."[20]

Health Impacts on Fenceline and Frontline Communities

"Our territory is our market; the forest is our pharmacy. It is our life ... but, it is very contaminated."

– Aurelio Chino, Quechua leader from the Peruvian Amazon

Both upstream and downstream oil operations have toxic impacts on the health of local communities. Refineries are typically in low-income communities of color that are marginalized even further by refinery emissions. Since heavier crudes are typically cheaper than light, sweet crudes, many refineries in California have moved to processing heavier crudes, which has drastically increased emissions for fenceline refinery communities.

Spills of Amazon crude poisons soil, groundwater, and surface streams causing mouth, stomach and uterine cancer, birth defects, and spontaneous miscarriages, while contaminating fish stocks with major implications on food security. In the northern Peruvian Amazon thirty-five years of oil production – and oil spills resulting from crumbling pipeline infrastructure – have left the Achuar, Urarina and Quechua indigenous peoples suffering malnutrition, sickness and social disruption. Since the 1970s, Occidental (Oxy) Petroleum led a succession of oil companies that left a legacy of harm in the region. Oxy's reckless operations illegally dumped approximately 9 billion barrels of "produced waters" – which contain highly toxic substances such as barium, lead and arsenic – throughout 30 years of operations.[21]


Oil spill in Peru's northern Amazon.

Pluspetrol, which took over the block in 1996, continued Oxy's criminal practices. According to Peru's Health Ministry, 98% of children in the affected indigenous communities have inadmissibly high levels of toxic metals in their blood.[22] As a result, the country's Environmental Ministry declared four river basins impacted by Pluspetrol's operations "environmental emergencies."[23]

THE AMAZON'S OIL FRONTIER AND ETHNOCIDE OF ISOLATED PEOPLES

The expansion of oil operations into remote and fragile ecosystems has serious implications for the region's last peoples living in voluntary isolation. On paper, the Amazon's isolated peoples enjoy unique protections and guarantees with regard to their territory, culture, and right to survival. The very nature of their intentional isolation from the outside world places the burden on the state to ensure their physical and environmental protection.

Ecuador's nomadic Tagaeri and Taromenane inhabit the forests of Yasuní, where their lands are increasingly surrounded by oil operations, spurring predictable and tragic consequences. While the country's constitution explicitly enshrines indigenous rights, prohibiting extractive activities in their territory by labeling such operations "a crime of ethnocide," the government's plans to drill hundreds of oil wells in Yasuní could very well lead to the commission of this very crime.

Ecuador's government justifies oil drilling in Yasuní by raising the dubious, convenient claim that the Tagaeri-Taromenane have migrated from the region, and with that excuse the government recently signed contracts with China's Andes Petroleum for oil blocks that overlap this new area of alleged migration. This government shell game imperils the very existence of its last isolated peoples.

END AMAZON CRUDE

DESTROYING THE RAINFOREST, DEVASTATING THE CLIMATE, DEADLY FOR INDIGENOUS PEOPLES.

The Amazon **regulates global weather**, contains 1/5 of the world's flowing **fresh water,** and produces 1/5 of our **oxygen.**

What's it worth? **All the oil in the entire Amazon** would produce only **a few months** of global supply.

Drilling the most biodiverse part of the Amazon would generate only **17 days** of global oil supply.

In just one oil-producing area of the northern Peruvian Amazon, **98% of indigenous children** have high levels of toxic metals in their blood.

Just **one hectare** of that area contains **more tree species** than all of the U.S. and Canada combined.


Deforestation in the Amazon is a direct contributor to California's current **drought.**
The US refined **225,441 barrels of Amazon Crude per day** in 2015. California processed 3/4 of those barrels.
Drilling in the Amazon has a **TRIPLE CARBON IMPACT:**
1 Burning the oil
2 Emissions from cutting down the rainforest, and
3 Additional emissions cause a reduction in the world's largest carbon sink.
FILLS 790,000 CARS per day
Despite ready alternatives, all truck fleets in California (and many elsewhere) use **Amazon Crude.**

Indigenous Sápara, Waorani, Shuar, and Kichwa women join with Casey Camp from Ponca Nation in a historic women's march for rights and against oil extraction in Puyo, Ecuador. Photo: Terra Mater

INDIGENOUS RIGHTS VERSUS RESOURCE RIGHTS

Indigenous peoples collectively possess a unique and extensive body of rights protections and guarantees that are enshrined in declarations, constitutions, conventions, and treaties. While not all are binding, they are instruments and standards that should guide political and corporate practice related to resource extraction or other forms development impacting indigenous lives, lands, or cultures. Much of the struggle in the Western Amazon over rights and resources can be traced to ownership of hydrocarbons or minerals and the right to access them.

The indigenous right to Free, Prior, and Informed Consent (FPIC) is at the heart of resource conflicts across the Amazon, conflicts which are often particularly intense surrounding oil operations. A rigorous implementation of FPIC implies that consent should be granted freely, prior to project approval, in an informed manner, with the state guaranteeing to transparently conduct this process. However, such a right is rarely implemented properly. In some cases, local legislation may recognize the right to consultation, but consultation is not the same as the right of indigenous peoples to say no to government-imposed extraction projects. Furthermore, even when states do purport to consult communities, many fail to meet even this low burden, which requires informing local communities of the impact of future operations.

Ecuador is a prime example of failed FPIC processes. Oil concessions are carved up into 200,000-hectare blocks and tendered to the highest bidder long before the indigenous landholders are even notified of the threat. The consultation process doesn't begin until contracts have been signed, investments made, and money has exchanged hands. Current and future oil-driven conflicts stem from this fundamental violation of the indigenous rights to determine the future well-being of their territories and communities.

Engendering Risk and Corruption

FPIC is not only legally mandatory for those countries that have ratified ILO Convention 169 or have otherwise enshrined it in local legislation, but for many companies it is a critical measure to insure project success, and to

THE SÁPARA PEOPLE UNDER THREAT

The Sápara, an indigenous people numbering only 575, inhabit an extraordinary, isolated mountainous territory at the headwaters of Ecuador's Amazon region. After forming a political federation in 1999, they gained recognition from UNESCO for their unique and vulnerable language and culture. With their traditional identity already eroding, their lands were auctioned to Andes Petroleum, a subsidiary of Chinese oil giants SINOPEC (China Petroleum and Chemical Company) and CNPC (Chinese National Petroleum Company) in early 2016.

The Sápara have repeatedly voiced their adamant opposition to drilling plans. In the face of this resistance, the government has sought to divide the communities, promising schools and health clinics to communities in exchange for permission to drill. Sowing the seeds of conflict has created a dangerous situation among people that are already vulnerable.

The government claims to have consulted the Sápara. But the communities, in testimony before the Inter-American Human Rights Commission, have shown that the 'consultation' was nothing more than a powerpoint touting the compensatory benefits of allowing drilling and downplaying any environmental risk – far from the reality of Ecuador's oil frontier. As the government and companies attempt to push the project forward, outspoken Sápara leaders have been subjected to intimidation and threats, putting their personal safety, and the fate of their people, at risk.

justify their incursion into fragile and culturally-sensitive forests to their shareholders. For many major investors, this social license to operate has become increasingly important, with shareholders demanding indigenous rights' policies, explicitly calling for not just consultation, but consent of local communities. For downstream refineries and purchasers, the implications of upstream rights violations, delayed deliveries, shipment schedule slippages, price variations, and an unreliable fuel supply do not present a sustainable business model.

In addition, this high-stakes and high-risk business environment has allowed corruption to thrive. China buys nearly all of Ecuador's oil and then resells it to corrupt Ecuadorian oil insiders, who then sell it on the open market at a markup. Private traders then sell the oil to refineries, with most of it going to California. An investigative report based on the Panama Papers showed that two of those middlemen managed to skim $1 off the top of every barrel of oil sold, earning a handsome $70 million "commission." Shell companies and offshore accounts were used to hide the paper trail and the money. These are the same middlemen who received tens of millions in inflated contracts and kickbacks from Petroecuador, a revelation that led to a prison sentence for the company's head and the forced resignation of the country's Hydrocarbons Minister.[24]

A Petroecuador separation station in Ecuador's northern Amazon rainforest.

CHEVRON DEEPENING ITS TOXIC LEGACY

Oil extraction began in Ecuador's northern Amazon in the 1960s when Texaco sunk its first exploratory wells in what was the traditional homeland of the Cofan indigenous peoples. The company's drill and dump tactics left the region and its people ravaged, spilling over 16.8 million gallons of crude, dumping some 18 billion gallons of toxic waste-water, and leaving behind more than 1,000 open superfund style waste pits. Texaco's toxic legacy is legendary, criminal, and unresolved.

Chevron merged with Texaco in 2001 and inherited a long standing class action suit by thousands of indigenous and *campesino* farmers. Since the *Aguinda v. Chevron* litigation was first filed in 1993, Chevron has long sought to shift blame for its contamination to Petroecuador, its former concession partner who inherited the company's rusty, leaking oil infrastructure. Chevron has also been an outspoken critic of the company's current operations, which have frequent spills. Yet for all of its scapegoating and feigned outrage over Petroecuador's terrible environmental record, Chevron's Los Angeles County refinery is by far the world's largest refiner of Petroecuador exports. In 2015 it processed an average of over 55,000 barrels per day of crude from the Ecuadorian Amazon – roughly a quarter of exports from the region – furthering its toxic legacy.

Nina Gualinga, indigenous youth leader from Kichwa community of Sarayaku, marches with northern First Nation leaders, Leonardo DiCaprio, and Ed Norton during Global Climate Week in New York, 2014.

BREAKING FREE FROM OIL DEPENDENCE

There is an urgent need for the world to wean itself from fossil fuels if we are to have any hope of maintaining a habitable planet. The pristine forests of the Western Amazon are a key location to begin these efforts, given their global significance as a carbon sink as well as their unparalleled environmental and cultural diversity. Radical and immediate change is needed from consumers and companies whose unchecked demand for fossil fuels has pushed us to the edge of climate catastrophe, while incentivizing producing nations to tap new oil reserves to the detriment of human rights and the integrity of ecosystems that are essential for a healthy planet.

In 2005, Oilwatch, network of community-based organizations resisting oil activities in the Global South, issued a pioneering global call: that oil reserves beneath biologically and culturally sensitive ecosystems must remain permanently in the ground. Ambitious for its time, the idea sought non-market mechanisms to help compensate oil-producing countries for abstaining from exploiting reserves in national parks and other biodiversity hotspots.

Fast-forward a decade, and scientific consensus corroborates these imperatives, with an International Energy Agency study declaring: "No more than one-third of proven reserves of fossil fuels can be consumed prior to 2050 if the world is to achieve the 2°C climate goal."[25]

Other institutions echoed these findings (see Annex). The movement to keep fossil fuels in the ground is gaining momentum with the backing of a global scientific mandate. It has stopped major pipeline and infrastructure projects, curtailed new drilling leases on public lands, and has increasingly shuttered the dirty coal industry.

Even the American Petroleum Institute sees the writing on the wall, assessing the growing threat of stranded assets and a need to review its approach to climate. Meanwhile, the movement for divestment from fossil fuel companies is having a major impact on corporate bottom lines, reshaping the investment landscape. Pension funds, universities and endowments, faith-based groups, and others have

dumped an estimated $3.4 trillion in fossil fuel funds. Tellingly, the divestment rationale is not only motivated by climate change and socio-environmental concerns, but also by the inherent risk of financial exposure to an industry in decline, while international, national, and local policies become prohibitively restrictive.

With the U.S. solar industry now providing more jobs than oil drilling in the U.S.,[26] a transition to clean, renewable energy is underway, but much work remains to ensure it is equitable and just, while prioritizing key starting points to halt fossil fuel extraction.

As this report puts forward, the drive to drill in key conservation zones like Yasuní National Park or pristine regions of the Western Amazon presents a triple threat for the climate, as deforestation from roads and subsequent colonization emit CO_2 while simultaneously eliminating the forest's carbon sequestration function. A new set of criteria not exclusively pegged to net CO_2 emissions must also account for above ground conditions like biodiversity and the presence of isolated indigenous peoples, boosting the rationale to prioritize such environments as no-go zones. Ultimately, if our climate reality dictates that the vast majority of known fossil fuel reserves are unburnable and must stay in the ground, why are we still looking for more?

Putting a Price on Carbon

When something is as detrimental to the fate of our planet as carbon emissions, it needs to not merely be regulated but also taxed to provide a disincentive for its continued use.

But using demand-side regulation at the tailpipe or smokestack has not been a sufficiently effective 'stick' to dissuade or decrease its use. Years of legislating have not had meaningful impact on reducing carbon emissions. Meanwhile, global temperatures continue to rise. A tax on carbon content of fuels and derivatives is the most common sense way of forcing the market to pivot away from the most detrimental greenhouse gas.

An inventive twist on the carbon tax was proposed by Ecuador before OPEC at the cartel's ministerial meeting in Riyadh in 2007. Known as the Daly-Correa Tax, after Ecuador President Rafael Correa and ecological-economist Herman Daly, it proposed a 3-5% tax on every barrel of oil exported to Annex I countries – essentially a supply side, per barrel eco-tax charged at the wellhead instead of the tailpipe. With 2012 oil prices it could raise between $40 and $60 billion for those countries who have little historic responsibility for contributing to climate change but bear the brunt of its impacts.[27]

Ultimately the proposal did not win approval by OPEC member countries, and something similar now would face an even greater uphill battle given current prices and the organization's loss of market share to U.S. fracking and increased production. But the eco-tax concept raises a critical question – could OPEC play a constructive role in addressing climate change despite its *raison d'etre*? At least for its member countries who have to make an inevitable transition from fossil fuels, it will need to.

Annex 0 – Concrete Incentives for Reducing Fossil Fuel Pollution at the Source

The COP21 Paris Accord produced a historic, binding global accord to tackle climate change and limit emissions. However, the words 'fossil fuels' are strikingly absent in the agreement text, as are important rights protections for indigenous peoples. Focusing on the demand-side use of CO_2 as a greenhouse gas, and avoiding commitments on the supply-side source, while politically expedient, lets the fossil fuel industry off the hook and ignores efforts of communities and countries to contribute to emissions reductions by keeping extractives in the ground.

As countries begin to implement their national plans to meet the Paris Accord, reporting on their progress every five years, a novel addition to the original United Nations Framework Convention on Climate Change (UNFCCC) is being called for to create incentives for those who keep oil, gas, and coal in the ground.

The existing categorization of the 197 member countries divides nations into two groups – Annex I, made up of the mostly northern industrialized countries most responsible for climate change and busting the carbon budget, and Annex II, the rest of the world, mostly developing countries. There is now a call for a third category – Annex 0. This classification would be for countries that can show at the source emission reductions within their borders for keeping fossil fuels in the ground. In return, recognition, compensation, or incentives would be provided by a UNFCCC administered fund. The system would serve to recognize historic and current contributions of communities that have long been providing climate stability by protecting their territories and resisting resource extraction.

Human banner inside Yasuní National Park to promote the Yasuní-ITT initiative, 2007. Photo: Lou Dematteis

YASUNÍ-ITT

Ecuador has long been an incubator of innovative environmental ideas. Its constitution recognizes the Rights of Nature, the first magna carta to do so, and it was the first country to launch an initiative to keep its oil in the ground. In 2007, President Correa adopted a concept from civil society and announced a pioneer proposal to keep the ITT fields – its largest reserve – in the ground in return for contributions to help the country offset its foregone revenue. The government sought $3.6 billion, half of the $7.2 billion it would have generated by drilling the oil beneath Yasuní National Park.

Launched during the global economic crisis, and before scientific consensus coalesced around the new mandate to keep ⅔ of oil reserves in the ground to maintain climate stability, the initiative was before its time. After seven years and far short of the fundraising goal, the project was scrapped and drilling plans approved. While blame for the initiative's failure is shared, the need for the success of a similar scheme is urgently needed.

The initiative failed to attract funds, in part because rich countries were unwilling to contribute to an untested supply-side proposal to keep fossil fuels in the ground instead of more traditional demand-side regulations and carbon offsets. Essentially, northern countries – the most responsible for climate change – were unwilling to finance the conservation of one of the world's most important places without getting anything tangible in exchange. Additionally, the administration was simultaneously tendering multiple oil blocks in the country's southern Amazon. Why pay to keep oil in the ground in one place if the host country government merely opens up new areas to compensate for lost revenue?

Since the initiative failed, the estimated amount of reserves under ITT have nearly doubled. Even if that meant double the $7.25 billion that Ecuador estimated it would have originally made by drilling the block, that would pale in comparison to other alternatives. The 110 largest companies in Ecuador only pay an average of 2.9%. Raising that only 1.5% would, over 25 years, raise over $20 billion.[28] Drilling ITT would provide only seventeen days of global oil supply, and protecting it would set an example for the world. Certainly, the world can't pay to keep all of the oil underground. But incentives or compensation for producing countries like Ecuador whose forests are providing a global, climate stabilization service must be championed.

Sarayaku marches during the national mobilization for water rights in Quito, Ecuador, 2010.

Achuar communities in Peru protest Petroperu's drilling plans in their territory.

COMMUNITY EFFORTS

Across the Amazon, indigenous peoples have been leading the way in maintaining climate stability for millennia by protecting their territories, keeping their forests intact, and, more recently, striving to keep oil, gas, and minerals in the ground. Studies indicate that indigenous lands and community managed forests are the best defense from unsustainable development policies reliant on export oriented extractives and agro-industries.[29]

For indigenous peoples living in the Amazon, perhaps the most important starting point in a conversation about alternative development involves first and foremost respecting their rights and autonomy, and an end to the imposition of extractive and mega-projects slated for their territories. These communities have their own vision, or life plans, of how they seek to live and sustain their people, cultures, and lands into the future. The root of conflict that pits indigenous rights against resource rights stems from a fundamental clash of worldviews, with indigenous people sharing a holistic view of the natural world and its collective resources, compared with a western view that commodifies natural resources both above and under their lands.

Sarayaku (Ecuador)

The Kichwa of Sarayaku provide an illustrative example. While the Kichwa have largely rejected what the Western world has to offer, they have selectively chosen certain technologies and techniques they believe can help advance their cause and defend their rights. Deep in the forest, they have implemented microgrid solar, satellite internet, and a sophisticated radio system geared for territorial defense and communication with the outside world. They are pursuing more solar power and renewable energy to both be truly energy sovereign and not complicit in using the dirty fossil fuel energy that they are advocating against.

Sarayaku also has an initiative, known as *Kawsak Sacha*, or 'Living Forest', to protect their territory and resources based on their traditional wisdom and worldview. This groundbreaking concept that redefines what is currently understood as a 'forest', bridging biological function with unique indigenous cosmovision of the relationship between ecosystem and the humans who inhabit it. *Kawsak Sacha* recognizes that the forest is made up entirely of living beings and the communicative relations they have with each other. Efforts are under way to obtain international recognition for Sarayaku's 'living forest' as a sacred natural area free from extraction before the IUCN, U.N. Convention on Biological Diversity among others.

Achuar (Peru)

While the Achuar of Peru's Corrientes River Basin are facing a legacy of international oil companies' contamination (see "Health impacts on indigenous peoples" section), their sister communities in the Pastaza River Basin have been successful in warding off a spate of oil companies – including Arco, Oxy, and Canada's Talisman Energy – since the block was created in 1995. With a focus on their Life Plan, a central pillar of which is territorial defense, the Achuar waged a 5-year international

Members of the U'wa during a community roadblock in Colombia. Credit: Tatiana Vila/Kinorama CopyLeft

campaign to keep Talisman out, involving multiple trips to the company's annual shareholder meeting in Calgary, extensive media work, and alliance building with Canadian First Nations. Ultimately Talisman desisted in 2012. Since then the block has been taken over by PetroPeru and Geopark, but little progress has been made due to ongoing Achuar resistance, low oil prices, and opposition within the Peruvian government to the state-run oil company playing a larger role in the oil sector.

U'wa (Colombia)

Perhaps the most emblematic ambassadors of the effort to keep oil in the ground on the community level comes from the U'wa in Colombia. Their cloudforest territory has been under threat from oil and gas extraction for the last two decades, with a historical precursor dating back to a proposed gold mine by the Spanish where a group of U'wa chose to commit collective suicide rather than be enslaved to work in mines that violated their own sacred territory. For the U'wa, Achuar, Sarayaku, and many other traditional peoples across South America and beyond, oil is considered the blood of the mother earth, a sort of literal and spiritual lubricant for the planet, and taking it out of the ground causes great imbalance. The U'wa medicine people (*Werjayas)* stopped this by retreating to the mountains and working spiritually to hide the oil from Occidental Petroleum. The company drilled four wildcat exploratory wells, and despite investing hundreds of millions of dollars, several years, and the best 3-D seismic testing and technology, they failed to find oil. While certainly the *Werjayas* can't hide all of the world's oil, it's the kind of effort that mitigates climate impact and keeps unburnable, future Co2 emissions naturally sequestered where they were meant to be, and could be rewarded under the concept of Annex 0 previously mentioned.

CONCLUSION

Amazonian peoples, many of whom consider oil to be the blood of Mother Earth, have long called on governments and corporations to keep it in the ground. Now scientists are catching up with their calls, stating that we need to keep 80% of fossil fuels in the ground in order to have a good chance of averting catastrophic climate change. As our planet's most important carbon sink, the home to over 400 distinct indigenous peoples, and the world's most biodiverse rainforest, it is urgent that we keep the oil in the ground in the Amazon. Amazon Watch is committed to supporting and amplifying the calls and proposals of our indigenous allies from the Amazon by ensuring that global governments and corporations respect their rights and territories. Based on the findings in this report, we call upon companies, universities, and governments to heed the call and change their vehicle fleets to Amazon-free fuel sources. By keeping the oil in the ground in the Amazon, we can contribute to the protection of the Amazon rainforest, indigenous peoples territories, and our global climate.

View of the Corrientes River Basin in Peru from Achuar territory in the middle of Oil Block 1A-B.

APPENDIX

Scientific Mandate to Keep Fossil Fuels in the Ground

80%	Carbon Tracker Initiative (2011): "If the 2°C target is rigorously applied, then up to 80% of declared reserves owned by the world's largest listed coal, oil and gas companies and their investors would be subject to impairment as these assets become stranded."[i]
67%	**International Energy Agency (2012):** "No more than one-third of proven reserves of fossil fuels can be consumed prior to 2050 if the world is to achieve the 2°C goal, unless carbon capture and storage (CCS) technology is widely deployed."[ii]
73-86%	**Intergovernmental Panel on Climate Change – IPCC (2014)**: "Multi-model results show that limiting total human-induced warming … to less than 2°C … with a probability of >66% would require total CO_2 emissions from all anthropogenic sources … to be limited to about 2900 $GtCO_2$…. About 1900 … $GtCO_2$ were emitted by 2011, leaving about 1000 $GtCO_2$ to be consistent with this temperature goal. Estimated total fossil carbon reserves exceed this remaining amount by a factor of 4 to 7 [3670 to 7100 $GtCO_2$]."[iii]
67%	**McGlade & Ekins (University College London) (2015)**: "It has been estimated that to have at least a 50 per cent chance of keeping warming below 2 °C throughout the twenty-first century, the cumulative carbon emissions between 2011 and 2050 need to be limited to around 1,100 gigatonnes of carbon dioxide (Gt CO_2). However, the greenhouse gas emissions contained in present estimates of global fossil fuel reserves are around three times higher than this, and so the unabated use of all current fossil fuel reserves is incompatible with a warming limit of 2 °C. Our results suggest that, globally, a third of oil reserves, half of gas reserves and over 80 per cent of current coal reserves should remain unused from 2010 to 2050 in order to meet the target of 2 °C."[iv]
84%	**Leave It in the Ground Initiative – LINGO (2016):** "In terms of fossil fuel extraction, the post-Paris carbon budget represents 16% of global fossil fuel reserves. Out of these reserves, 84% or 2427 Gigatons CO_2 must be kept in the ground."[v]

Credit: InterAmerican Clean Energy Institute

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