

Chileans to decide fate of 'ecological' constitution

Chile

Chileans are slated to vote Sept. 4 on a new constitution that would significantly strengthen the country's environmental protections. Approval of the document, though, is by no means assured. Opposition is coming not only from parties on the political right, but also from some environmentalists and center-left politicians who worry the draft as written could trigger confusion and conflict.

Once seen by environmentalists as an historic opportunity to set the stage for green Chilean laws and institutions, the constitutional overhaul is now questioned by some activists who had strongly supported it. One is Macarena Soler, a longtime environmental lawyer and founder of Fundación Geute, a conservation

group headquartered in Puerto Varas, Chile.

Soler, who had been among those pushing for a new, more "ecological" constitution, surprised many when she recently appeared on national television in a block of video spots calling for rejection of the proposal.

"I am disappointed and very worried," a solemn-looking Soler said in the spot. "I cannot think we will achieve an effective protection of nature with this proposed constitution. I know a lot of people thought I would approve this proposal ... and I know for some this will be disappointing. But if I am coherent with my democratic, political, and even social beliefs, for me it is impossible to approve this constitution."

continued on page 9 ►

Long-shelved water law to be applied in Paraguay

Paraguay

For environmental advocates, the good news is that Paraguay will soon be subject to sweeping water-resources legislation. The not-so-good news is that the law won congressional approval in 2007 and went unimplemented for the past 15 years, a lapse that allowed many of the country's water-management problems to grow significantly worse.

Given its long period in limbo, some won-

dered whether the Water Resources Law would ever be implemented. But amid more than three years of drought and high-profile water problems, the government came under increasing social and political pressure to act. On May 3, Paraguayan President Mario Abdo Benítez responded, signing a decree initiating the implementation process. The move surprised stakeholders ranging from farmers and business

executives to conservationists and academics.

Experts agree that the long-dormant legislation does not address all current-day water-resource issues facing Paraguay. But they believe that its implementation, though expected to be gradual, offers important opportunities to tackle many urgent problems involving water supply, distribution and quality.

Paraguay has extensive water resources, but ranks last among South American countries in its ability to ensure citizens access to

continued on page 10 ►



Pontoon-mounted pumps photographed in 2019 on Paraguay's Tobicuary River, where government inspectors say rice growers were extracting water for irrigation without permission. (Photo by Mades)

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Vol. 24 - No. 10

Inside

Around the region 2

Cow burps focus of methane-reduction research in Brazil 3

Grassroots advocacy on water issues is spreading in Mexico 4

Colorado River water supply cutbacks will apply to Mexico, too 5

CENTERPIECE:

Latin America is at forefront of push to grant nature legal personhood, rights 6

Q&A:

Paraguay nonprofit urging transparency in implementation of broad water law 12

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Good U.S.-Mexican water policy news for a change

When it comes to water issues, welcome news has not exactly abounded in the U.S.-Mexican border region over the past year.

Consider the recent U.S. government's announcement that because of severe drought, it will decrease deliveries in the region of Colorado River water in 2023. And don't forget the rupture of aged sewer infrastructure that prompted the municipal water utility of El Paso, Texas to discharge raw sewage into the Rio Grande from August 2021 to January 2022. (See related stories—this issue.)

But on the western end of the border there was an important piece of good news. On Aug. 18, officials announced the enactment of a Mexican-U.S. agreement that is expected to dramatically upgrade wastewater treatment in the Tijuana River Valley of Tijuana and neighboring San Diego. (See "Settlement boosts Tijuana River cleanup projects"—EcoAméricas, May '22).

Brokered by the binational International Boundary and Water Commission (IBWC), Minute 328 commits US\$330 million from the U.S. government and \$144 million from the Mexican government for wastewater improvement projects. The work will target untreated sewage in Mexico that enters the Tijuana River, which flows mostly through Mexico but runs its final six miles (10 kms) through Southern California before emptying into coastal wetlands near the community of Imperial Beach.

Expected to be finished by the end of 2027, the funded projects will halve the number

of days that wastewater crosses the international boundary into the United States, according to the U.S. section of the IBWC. The agency says the new infrastructure also will cut by 80% the volume of untreated wastewater that flows from the mouth of the Tijuana River into the Pacific Ocean.

Held in Imperial Beach, California, the ceremony marking the implementation of Minute 328 was attended by officials from entities including the U.S. and Mexican sections of the IBWC; Mexico's National Water Commission and Secretariat of Foreign Affairs; the U.S. Environmental Protection Agency; and the U.S. Consulate in Tijuana.



In some ways, Bolsonaro and Lula platforms appear similar

With right-wing incumbent Jair Bolsonaro and leftist challenger Luiz Inácio Lula da Silva the widely acknowledged frontrunners in this year's race for the Brazilian presidency, one might expect a clash of diametrically opposed environmental visions.

In some respects, that is indeed the case in the 12-person contest, which involves a first round of balloting on Oct. 2 and, if no candidate receives more than half of the ballots cast, a runoff



Luiz Inácio Lula da Silva
(Photo by Isaac Fontana, Shutterstock)

between the first- and second-place finishers on Oct. 30.

Lula, who served two terms as president, from Jan. 1, 2003 to Jan. 1, 2011, has made environmental protec-

tion a central issue in his campaign. He has promised to halt illegal mining and logging in the Amazon, protect indigenous lands and promote reforestation of biomes.

Among the planks in his campaign platform are pledges to "fight environmental crime promoted by militias, land grabbers, loggers and any economic organization that acts contrary to the law" and promote "zero net deforestation."

And Lula can point to successes during his time as president. A prominent one was a US\$136 million woodland-protection program that cut deforestation in the Brazilian Amazon by 83% during 2004-12.

By contrast, Bolsonaro since taking office on Jan. 1, 2019, has presided over a period of lax environmental enforcement and rampant destruction of Amazon woodlands by illegal loggers, miners and land grabbers. He has advocated more intensive extractive activity in the rainforest region, including in indigenous reserves, which he has openly scorned as barriers to economic development.

Under Bolsonaro the Amazon deforestation rate increased three years in a row, with the 12-month period that ended in July 2021 showing a 28.7% rise. Definitive figures for the 12 months ending in July 2022 are not yet available.

Those expecting a night-



Jair Bolsonaro
(Photo by Ettore Chiereguini, Shutterstock)

and-day contrast between the two candidates' environmental platforms are likely puzzled by their approaches to fossil-fuel extraction and infra-

continued on page 11 ►

For climate's sake, Brazil tests cow-burp control

Brazil

Researchers in Brazil are intensifying work on ways to curb cow belching, a significant source of the methane emissions that makes agriculture account for 76% of the country's emissions of this potent greenhouse gas.

A key focus of the research by both public- and private-sector scientists is the use of more nutritious feed and synthetic feed supplements to alter fermentation in cows' stomachs so they burp less.

The effort is just one of many Brazil must pursue to make good on a commitment it made with over 100 countries at last year's United Nations climate change conference in Glasgow, Scotland, to cut methane emissions 30% below 2020 levels by 2030.

But reducing cow belches, odd as it might sound, is surprisingly important. A cow can belch up to 264 pounds of methane gas per year, according to the U.S. Environmental Protection Agency. Cattle are the world's leading source of agricultural emissions of the gas, which does not linger as long in the atmosphere as carbon dioxide does but has a warming effect that is 28 times greater over a 100-year period.

Addressing this problem is particularly important in Brazil, the second largest beef producer after the United States and home to the globe's largest commercial cattle herd. In Brazil, the world's fifth biggest emitter of greenhouse gasses, methane accounts for 27.6% of the country's overall greenhouse-gas emissions.

Focus on the rumen

Cows emit methane mainly due to belching associated with the enteric fermentation that occurs in their rumen. One of four stomach compartments, the rumen is where a cow's partially digested food is stored before being regurgitated, chewed and further digested. Contrary to popular lore, flatulence accounts for very little of a cow's methane output, though cow manure, depending on how it is processed, can generate significant additional methane emissions.

Some experts argue cattle operations are irredeemably incompatible with climate protection, biodiversity conservation and food security, given their emissions and vast land requirements. But others contend much can be done to shrink the industry's environmental footprint without halting meat and milk consumption.

Two entities working intensively in Brazil to investigate the possibilities are Embrapa, a research arm of Brazil's Agriculture Ministry, and JBS, a Brazilian meatpacking giant and the world's biggest beef producer and exporter.

Embrapa has found that feeding cattle mixtures of corn, cottonseed and soy in addition to their diet of signal grass, the main pasture forage in Brazil, brings the animals' methane out-

put 15% below the annual baseline of 60 kilos (132 pounds) per head.

Its scientists have conducted 20 trials of 50 head each since 2000, using methane-measuring equipment in barn feedlots and methane-collection collars for pasture-fed cows. The collars placed on grazing cattle are removed every 24 hours so researchers can use gas chromatography to calculate how much methane the cows burped during the period.

Alexandre Berndt, an Embrapa researcher, says the results have demonstrated potential gains for ranchers' budgets as well as for the environment. Says Berndt: "The new feed fattens [cows] more quickly, shaving a year off the [four-year] meat-production cycle and, as Embrapa has shown, reduces methane emissions... Sending cattle to the slaughterhouse one year earlier than usual allows ranchers to produce more beef, far outweighing the costs of providing their cattle with grain feedstock, which is more expensive to grow than pasture grass."

Embrapa is also experimenting with integrated crop and livestock operations as well as integrated crop, livestock and forestry operations. These put land to two or more agricultural uses that, through careful coordination, complement each other and potentially improve the land's ability to store carbon.

Commercial-scale use

JBS is the first company to test commercial-scale use of Bovaer, a synthetic feed additive developed by Dutch bioscience company Royal DSM. Begun early this year, the tests involve 30,000 confined cattle in western Mato Grosso do Sul state. The additive suppresses a stomach enzyme that drives methane production in the rumen. Royal DSM says that in developing Bovaer, it tested the supplement on farms in 13 countries over 10 years and found it could reduce enteric methane emissions by up to 90%.

A separate 2016-17 study of Bovaer by São Paulo State University (Unesp) showed enteric methane-emission reductions of up to 55%. Embrapa, for its part, says it will start testing a different synthetic additive later this year.

Ranchers' interest in putting cow-methane research to use appears strong. "We plan to buy Bovaer and apply the research done by JBS and Embrapa," says Pelerson Penido Dalla Vecchia, president of Grupo Roncador, a 76,000-head cattle and soy operation in the states of Mato Grosso and São Paulo. "That would help us play our part in reducing greenhouse emissions. And more nutritious feedstocks like those being researched by Embrapa can increase productivity by shortening the meat-production cycle."

—Michael Kepp



Pasture-fed cattle outfitted with methane-collection collars.

(Photo courtesy of Alexandre Berndt, Embrapa)

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Grassroots water advocacy growing in Mexico

Mexico-United States



Members of the Broad Environmental Front of the North (FAAN) at a meeting in Ciudad Juárez earlier this year.

(Photo by Kent Paterson)

Degraded by over-pumping, pollution and more, the Rio Grande as it runs through the U.S.-Mexican border region has long been a focal point of ecological crisis. But the consequences—persistent water deficits, poor water quality and habitat destruction—are increasingly spurring citizen action, particularly on the Mexican side of the border.

A recent catalyst was the prolonged discharge last year of untreated wastewater into the Rio Grande near the border of El Paso, Texas, and Sunland Park, New Mexico. (See “El Paso discharges point up border infrastructure needs”—EcoAméricas, Sept. ’21.) The rupture of an obsolete sewer main operated by the local utility, El Paso Water (EPW), sent raw sewage flowing downriver past neighboring Ciudad Juárez, Mexico, from Aug. 2021 to Jan. 2022.

Ciudad Juárez residents were appalled by the stench and discolored water streaming by homes and businesses. The months-long flow spurred the creation of an activist group, much of it comprising young people. Using Mexicans’ name for the river, the group calls itself Rio Bravo Defense. It is not only focusing on water pollution originating on the U.S. side of the border. “We founded this organization because of [EPW’s spill], but there are also [wastewater] discharges in Juárez,” says Mexican biologist Damián López Peña, a member. “The discharge problem hasn’t been handled in Juárez.”

Pressure on JMAS

Evidence of the group’s concern about spills on the Mexican side of the border came in February, when Rio Bravo Defense filed a legal complaint with Mexico’s Federal Attorney General for Environmental Protection against Ciudad Juárez’s municipal utility, JMAS. The suit cites untreated-sewage discharges by the city’s JMAS-operated wastewater system.

The group later filed a complaint with the Chihuahua state Human Rights Commission, arguing the discharges violate environmental guarantees in the Mexican Constitution. The commission has since turned the case over to the National Human Rights Commission. Under Mexico’s Constitution, citizens are entitled to a healthy environment, clean water, and participation in the formulation of water policy.

Rio Bravo Defense is part of the Broad Environmental Front of the North (FAAN), a new network of grassroots groups in Ciudad Juárez and the state of Chihuahua. Besides advocating Rio Grande cleanup, FAAN is spotlighting other issues such as pollution of Chihuahua’s Chuvicscar River, equity in water access, illegal drilling of water wells, encroachments on indigenous lands, and repression of environmental activists. Many such issues demand

binational solutions, FAAN activists say.

FAAN is not alone. Since last year, public protests and legal action over issues of water supply and quality also have been launched in Tijuana, Hermosillo, Guadalajara, Puerto Vallarta and Monterrey against a backdrop of drought-caused shortages.

In July, Mexico’s National Water Commission (Conagua) declared an emergency because of “severe, extreme, exceptional drought” in 26 of the nation’s water basins, including the one serving Mexico City and its suburbs. The measure gives Conagua the power to guarantee water resources for domestic and urban uses.

Mexican lawmakers are weighing in as well. A 25-year-old congresswoman, Andrea Chávez of Mexico’s ruling Morena party, co-organized a July 15 public forum on water as a human right in Ciudad Juárez. The event drew government officials, academics, environmentalists, businesspeople, and local residents.

Funding request

On July 4, Chihuahua state legislators approved a resolution demanding that JMAS halt untreated wastewater flows into the Rio Grande, and explain how it will do so. JMAS then asked elected officials to approve a US\$4.5 million loan to help finance the replacement of outdated sewer mains implicated in these discharges. The request is still pending.

The funds would add to \$26 million in financing for JMAS from the North American Development Bank. Known as NADBank, the bank is a binational institution established under the former North American Free Trade Agreement to fund border environmental and infrastructure projects. NADBank says the JMAS project will “prevent the potential discharge” of up to 22.8 million gallons of untreated wastewater daily into the Rio Grande.

On the U.S. side of the border, El Paso Water’s 2021-22 raw-sewage discharges remain in the spotlight. On June 9, the New Mexico Environment Department (NMED), announced it had slapped EPW with administrative compliance orders and US\$1.2 million in fines for illegally discharging an estimated 1.1 billion gallons of raw sewage into the Rio Grande.

EPW disputes the fine and the state government’s authority to levy it. The utility reported on cleanup efforts in June, saying 70,000 tons of potentially contaminated material had been removed from the riverbed as mitigation work continued along a 35-mile (56-km) stretch of the river. It said a new, corrosion-resistant sewer main will be installed by the end of 2023 at a cost of \$70 million.

—Kent Paterson

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Colorado River water cut in store for Mexico, too

Mexico-United States

Drought-induced reductions in 2023 Colorado River water deliveries, announced in August by the U.S. Department of the Interior (DOI), will affect not only the U.S. states of Nevada and Arizona, but also Mexico.

Under a 1944 water treaty with the United States, Mexico is entitled to 1.5 million acre-feet of Colorado River water annually, though an exception is made for instances of “extraordinary drought.” The plan announced in August calls for the country’s apportionment to be trimmed by 104,000 acre-feet, or 7%.

Arizona’s deliveries for next year would fall by 592,000 acre-feet, or 21% of its annual apportionment, and Nevada’s by 25,000 acre-feet, or 8%.

While acknowledging drought-response action by Colorado River Basin stakeholders in the United States and Mexico over the past two decades, the DOI said August’s announced cut-backs were needed due to “prolonged drought and low runoff conditions accelerated by climate change.”

Those conditions, the agency said, have produced “historically low water levels” in the basin’s two key reservoirs—Lake Powell and Lake Mead, which straddle the Utah-Arizona and Nevada-Arizona borders, respectively. Consequently, water use in the basin must be reduced in order to prevent a “catastrophic collapse of the Colorado River System and a future of uncertainty and conflict,” said DOI Assistant Secretary for Water and Science Tanya Trujillo.

Not your standard drought

The U.S. section of the United States and Mexico’s binational International Boundary and Water Commission (IBWC) termed the regional drought the worst ever in the 114 years in which records have been kept and one of the worst over the past 1,200 years. Moreover, the total system storage of Colorado River reservoirs has dwindled to 34% of capacity—the lowest level on record, according to the IBWC.

Stakeholders are seriously concerned at the “rapidly worsening hydrology on the Colorado River,” USIBWC Foreign Affairs Officer Sally Spener tells EcoAméricas.

The U.S. conservation group American Rivers recently declared the Colorado River the “Most Endangered River of 2022.”

Of the 104,000-acre-foot water apportionment cut planned for Mexico in 2023, some 70,000 acre-feet will come out of Mexico’s 1944 treaty allotment and another 34,000 acre-feet will come out of recoverable water savings stemming from a binational agreement reached in 2017.

That 2017 agreement, Minute 323, was adopted to address developing water short-

ages in the Colorado River ecosystem. It and a previous agreement, Minute 319, established environmental considerations—such as water conservation and releases of water to help sustain downstream riverine habitat—as key components of binational cooperation.

The so-called “environmental water” releases are aimed at maintaining at least some flows to the parched lower delta ecosystem of the Colorado River in Mexico. There, a binational coalition of six Mexican and U.S. non-governmental green groups, Raise the River, has been restoring habitat while implementing and monitoring environmental water releases.

Raise the River says this year’s environmental water flows, projected to total 35,000 acre-feet, began in May and were expected to last through mid-September. Under Minute 323, the United States budgeted US\$31.5 million for Colorado River water conservation purposes, with Mexico’s agriculturally rich Mexicali Valley a high-priority target for projects.

Growing project pipeline

Spener says dozens of projects have been underway in Mexico to save water by improving irrigation gates and canal linings.

“We’re building on that, adding new projects,” she says. So far, the IBWC says, work done in connection with Minute 319, Minute 323 and “related conservation activities” have generated 4.6 million acre-feet in water conservation at Lake Mead.

Brightening an otherwise doom-and-gloom outlook, more funding appears to be in the offing for water conservation projects beyond the \$31.5 million earmarked for them in Minute 323. The DOI’s Bureau of Reclamation has announced that water-conservation efforts in the border region and elsewhere in the United States will be able to draw on water- and drought-related earmarks of \$8.3 billion and \$4 billion contained, respectively, in the U.S. Bipartisan Infrastructure Law and Inflation Reduction Act.

Adriana Reséndiz, commissioner of the Mexican section of the IBWC, expresses deep concern about declining water supplies in the Colorado River Basin. She says her country is committed to identifying “projects that help conserve water and protect the reservoir levels in the basin.”

Spener notes that further water-conservation steps are slated to be discussed by stakeholders on both sides of the border, particularly in connection with negotiations to draft a successor-agreement to Minute 323, which expires at the end of 2026.

—Kent Paterson



NASA reported that as of July 18, the water level of Lake Mead, one of the Colorado River Basin’s two key reservoirs, stood at 27% of capacity. That was its lowest since April 1937, when the reservoir was in the process of being filled for the first time. A strong monsoon season has raised the water level somewhat since.

(Photo by Michael Vi, Shutterstock)

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Centerpiece

Giving nature personhood...and a chance

Region

One of Mari Luz Canaquiri's lasting childhood memories is of the mijano—the migration of huge schools of fish up the Marañón River past the indigenous Kukama village of Shapajilla, where her family lives in Peru's northeastern Loreto region.

Naming the large species prized as a food source in the Amazon, she recalls: "There was a mijano of paiche [*Arapaima gigas*], a mijano of gamitana [*Colossoma macropomum*], a mijano of dorado [*Brachyplatystoma rousseauxii*], a mijano of gilded catfish [*Zungaro zungaro*]." There were also mijanos of smaller species, she says, adding that members of her community refrained from catching these fish so the larger species could feed on them.

Today, the massive schools of large Amazon fish are a thing of the past, due to environmental pressures ranging from commercial fishing to deforestation and climate change. That leaves Canaquiri to worry about what her children and grandchildren will eat in the future. She sees other threats, too—pollution from oil spills and a plan, currently suspended, to dredge the river so it is more navigable during droughts. (See "Culture, ecology get short shrift in river plan"—EcoAméricas, Jan. '15.)

That's why in September 2021, she and other Kukama women in the organization Huaynakana Kamatahuara Kana—"women who work," in Kukama—filed a lawsuit asking Peru to recognize the Marañón and its tributaries as possessing the rights of a person.

In initiating the case, currently before a lower court, they joined a growing movement of organizations worldwide and in Latin America, including many indigenous peoples, insisting that nature, or elements of it, be granted legal personhood. The movement's overarching goal is to obligate governments and courts to protect nature's rights by ensuring ecosystems can remain healthy and perform their natural functions.

"If we don't do something, what will happen in the future?" Canaquiri asks. "What will people, the children who are born, eat if we don't safeguard the place where they're going to fish, plant

their gardens and build their houses?"

The path to personhood for nature has taken different forms in Latin America. Ecuador and Bolivia have enshrined the rights of nature in their constitutions, and Chileans are poised to vote Sept. 4 on a new constitution that, if approved, would recognize nature as having rights requiring protection. (See related article—this issue.)

In other countries, such as Brazil and Mexico, municipalities have taken the lead. In Colombia, advocates have won court decisions recognizing rivers as having rights. And most recently, in February, Panama passed a law stating that all people have the right to "an environment that is healthy and in harmony with Nature." The law also recognizes nature itself as having certain rights, including the rights to exist, to maintain its biological diversity, to be free of pollution, and to be restored when damaged by human activity.

Law with a spiritual dimension

A number of laws and court decisions mention not only the importance of a healthy environment for human welfare, but also the spiritual importance of the natural world, particularly rivers, for indigenous and traditional communities.

That emphasis on indigenous world views is "extremely important," says Grant Wilson, executive director of the U.S.-based Earth Law Center in Durango, Colorado. "You can't look at [the] rights of nature in a vacuum. It's interconnected with indigenous rights, with the indigenous cosmovision, and those have been very influential in how rights of nature look in Latin America, as well as in terms of support from indigenous communities."

The spiritual dimension is a cornerstone of the Peruvian case—the first of its kind in that country, though a local ordinance has recognized the rights of rivers in a province high in the Andes.

"For the Kukama people, the Marañón River is very sacred," Canaquiri says. "It's like a father who provides food. The river is also part of the territory, and the territory is our mother."



In many Amazonian cosmovisions, everything in the natural world has a madre, or spirit.

“For the Kukama people, the madre of the river is the purahua [anaconda], and the soul of the purahua is a person, a man. Every animal has a madre, and that madre is the spirit of each animal. And the animal’s spirit is a person,” Canaquiri says.

“If the soul of the anaconda is a person, why can’t it be a subject?” she asks, borrowing a word from the legal phrase ‘subject of rights,’ which refers to something with legal personhood. “Why can’t the river be a subject, if its soul is a person?”

The women’s legal case refers to the river’s cultural significance as the birthplace of the first Kukama person and as



Opposite page: Scene on Peru’s Marañón River, where Kukama women are suing to gain the river legal personhood. Bottom-right: Leaders of the women’s group, called Huaynakana Kamatahuara Kana—from left, Celia Fasabi, Mari Luz Canaquiri and Emilsen Flores. Above and top-right: For rural Marañón communities, fish are the main protein source. (Photos, respectively, by Radio Ucamara, Quisca, M. Araoz, and Barbara Fraser)

home to a myriad of spirits. Some of those spirits are those of people who vanished into the river’s depths and now inhabit cities whose entrances are the whirlpools that form on the surface in certain places. Others are spirits that shamans call on for help in healing people’s ills. If the suspended river-dredging project goes forward it would make the spirits flee, Canaquiri says. She adds that more development along the banks—privatized port services in the town of Nauta, or the purchase of riverfront property for tourist lodges—makes it harder for shamans to communicate with the spirits.

Indigenous people in Panama also have a close relationship with water and other elements of the natural world, says Felipe Baker, a 27-year-old Ngäbe-Buglé activist from Bocas del Toro on the country’s Caribbean coast. For his people, the turtle represents a maternal spirit, while jaguars are important in the Emberá Wounaan spirit world, he says.

Panama’s new rights of nature law recognizes that cultural significance, stating: “The cosmovision and knowledge of the country’s indigenous peoples must be



an integral part of the interpretation and application of the rights of Nature.”

Baker considers the new law a bridge between the indigenous world view, which he shares, and the Western legal and political perspective. He hopes it will act as a brake on plans for hydroelectric dams, mines and other development projects, and will encourage non-indigenous people to “see nature as a living being.”

That is one reason why indigenous people in other countries have also supported rights of nature legislation and court cases as “a new tool to help protect certain ecosystems and landscapes,” says Wilson.

“To some communities, their cosmovision, or relationship with nature, might have nothing to do with rights or Eurocentric legal principles, but [the concept of rights of nature] can still be an effective

tool to defend their native and traditional territory and something that makes sense when you translate some of their beliefs into a Western legal context,” he says.

Other groups find the concept “fits in very nicely with their beliefs,” Wilson adds. “The lesson I’ve learned is that there’s a diversity of beliefs and cosmovisions and understandings, even just in Latin America.”

The modern rights of nature movement dates back about half a century. In 1969, the Sierra Club in the United States sued to stop development in California’s Mineral King Valley, arguing that it had an interest in the issue because its purpose was to protect the environment. The group lost its last appeal to the U.S. Supreme Court; but in a dissenting opinion, Justice William Douglas wrote that the plaintiff in the case

continued on page 8 ▶

[continued from page 7](#)



Young women fetch water from the Marañón River, which despite its growing pollution serves as the sole drinking water source for many communities.

(Photo by Quisca Producciones/M. Araoz)

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Documents & Resources:

Overview of rights of nature laws and court cases:

<http://bit.ly/3dUUs9H>

Text of the Panamanian law, in Spanish:

<http://bit.ly/3R6X1NK>

was actually the valley, and that the Sierra Club had acted on its behalf.

That position was bolstered in 1972, with the publication in a law review of the article “Should Trees Have Standing?: Towards Legal Rights for Natural Objects,” by the late Christopher Stone, then a law professor at the University of Southern California.

But it was not until 2017 that a river was granted recognition as a legal person. New Zealand’s Whanganui River, known as Te Awa Tupua to the Maori people, who hold it sacred, has a group of legally appointed guardians to look out for its interests.

In Latin America, the movement gained steam in 2008, when Ecuador approved a new constitution that recognized both the rights of Ecuadorians to a healthy and ecologically balanced environment and the rights of the Pachamama, or Earth mother. Nature, the constitution says, has the right to integral respect for “its existence and the maintenance and regeneration of its vital cycles, structure, functions and evolutionary processes.”

The state, in turn, is obligated to “apply measures of precaution and restriction for activities that may lead to the extinction of species, destruction of ecosystems or permanent alteration of natural cycles.”

Ecuador on forefront

Bolivia has a similar provision in its constitution, but Ecuador has advanced further, Wilson says, with court decisions in cases aimed at protecting ecosystems from mining, a tailings dam, the illegal shark fin trade, genetically modified crops and development activities that would affect mangroves.

Most recently, in January of this year, Ecuador’s Constitutional Court ruled that the rights of two plaintiffs and the Monjas River near Quito had been violated, mainly by the discharge of wastewater into the river, and ordered “rehabilitation” of the river and “non-repetition” of the environmental violations.

Hugo Echeverría, an attorney who has been monitoring rights-of-nature implementation in Ecuador for the Center for Democratic and Environmental Rights in Spokane, Washington, says that so far the results are positive.

“In the cases in which the [Constitutional] Court has issued sentences, it has not only issued a sentence recognizing that the river is subject of rights, but has established very specific orders,” he says. “The most important are, for example, reforms to Ecuadorian legislation, to adapt the legislation not only to environmental rights but also to the rights of nature.”

In the case of a river that dried up because government-issued permits allowed too much

water to be withdrawn for irrigation, the court canceled the permits and ordered that new permits take into account the river’s right to maintain its natural functions.

In another case, the tribunal threw out mining-related environmental regulations because they allowed an entire river to be diverted for the benefit of a mining company, violating the river’s rights.

Colombia has not enshrined the rights of nature in its constitution, but in a 2016 case involving illegal mining, the country’s Constitutional Court recognized the Atrato River as having rights. The ruling highlighted the spiritual significance of the Atrato for indigenous and Afro-Colombian communities and was followed by decisions recognizing the rights of other rivers, a páramo ecosystem, a lake, several national parks and the Colombian Amazon. In Colombia, a new area of jurisprudence is emerging that focuses on “biocultural rights,” a melding of rights of nature with indigenous world views.

First steps in Peru

In Peru, people involved in the Marañón River lawsuit are not sure what that country’s courts will decide, but they view the lawsuit as a first step and say they will continue to press for recognition of rights of nature, even if the court rules against them.

Patricia Urteaga, a law professor at the Pontifical Catholic University of Peru with expertise in water-related issues, sees several potential legal hurdles. The Marañón River begins high in the Andes and passes through dozens of local jurisdictions on its journey to the Amazonian lowlands, where it joins the Ucayali River to form the Amazon River.

“It’s not just an indigenous river,” Urteaga says. “A lot of communities depend on the river and are not indigenous.” She also questions how a judge in one Amazon district can have the power to make decisions about a river that runs through dozens of jurisdictions. “My position is that it’s interesting to open the debate, but I think there are many things that aren’t resolved and, as a result, many decisions about the rights of rivers are not being applied,” she says.

Wilson of the Earth Law Center agrees that debate is crucial, adding he expects the rights of nature to continue evolving. “I am excited that there is mainstream dialogue about the rights of nature in pretty much every country in Latin America,” he says, acknowledging that some countries still have not adopted the concept. “It’s part of the public and political discourse now in a way that’s really amazing compared to 10 years ago, when it was a legal obscurity.”

—Barbara Fraser

Chilean referendum
continued from page 1

The constitutional rewrite stems largely from social conflict and street violence that engulfed Chile in October 2019. The unrest highlighted a range of festering issues, among them severe economic inequality and ongoing environmental-health threats posed by pollution-prone industrial areas known as ‘sacrifice zones.’ (See “As promised, Boric takes on ‘sacrifice zone’ issue”—EcoAméricas, June ’22.) Pledges by politicians to rewrite the constitution with social- and environmental-justice in mind were credited with helping pull Chile back from the brink. Among those calling for a new charter was Gabriel Boric, who became Chile’s president in March after riding a strong wave of optimism to win office in a two-candidate runoff, capturing 56% of the vote.

But the world economic slowdown and price shocks have forced Boric to begin his presidency amid slumping growth, fierce price inflation, falling copper prices and private sector fear that a new constitution will make matters worse. In the run-up to the vote, Chilean television has been awash in political commercials arguing for and against the proposed constitution, which will be decided by a mandatory vote of all legal residents age 18 or older.

Behind in the polls

An Aug. 19 opinion survey by the polling firm Pulso Ciudadano found 45.8% of Chileans plan to vote against the proposal. Only 32.9% said they’ll vote in favor and the rest stated they were undecided, would submit a blank vote or would not vote at all. Another polling firm, Cadem, drew a similar tally, finding that 46% intended to reject the new constitution.

Last year, Chile elected a constitutional assembly to propose a new national charter in 12 months’ time. The participation of independent candidates, who were barred from forming election slates in the past, was guaranteed for the first time, dramatically broadening participation. As a result, 103 independents won seats, with traditional-party slates roundly rejected. Crucially, Chile’s conservative elite failed to gain the one-third minority needed to block the passage of progressive articles.

The first article of the draft going to voters describes Chile as “plurinational, intercultural and ecological” and cites the “dignity, freedom, and substantive equality of human beings and their indissoluble relationship with nature” as “intrinsic and inalienable values.”

The entirety of its third chapter is devoted to “nature and the environment.” It establishes guiding principles on environmental justice, intergenerational solidarity, responsibility and fair climate action, and recognizes essential rights of nature itself, saying these must be pro-

tected and respected by “the state and society.”

The chapter also sets forth Chileans’ rights concerning natural commons such as land, water and air, and declares water a human right subject to “integrated management” by a new National Water Agency. It also grants the state “absolute and exclusive domain” over minerals and fossil fuels, prohibiting mining on glaciers, in parks and near large water bodies, and establishes new environmental entities. These include regional environmental courts and an ombudsman’s office citizens can use to hold the government or corporations responsible for violations of rights reserved for nature.

Key changes cited

Supporter Ezio Costa, executive director of FIMA, Chile’s largest and oldest public-interest environmental law firm, sees two changes as key. “With this constitution, Chile has given rights to nature and declared itself an ecological state, a country that protects its ecosystems,” he says. “Protection of nature will be indivisible from protection of present and future generations of Chileans. And the text expressly recognizes we are living in a climate crisis and puts urgency behind making changes to how we act to prevent damage to nature.”

It is the multiplicity of changes, and the potential for chaos in their implementation, that concerns Soler, who worked with the late U.S.-born conservationist Douglas Tompkins on his extensive Chilean parkland projects. “The proposal is very regulatory, almost a code, so at times it is confusing, contradictory and, therefore, has varied interpretations,” she told the daily *El Mercurio*. “What worries me most about the proposal is institutional weakening due to fragmentation, at all levels, of our country, and politicization...of many aspects of this.”

Free-market advocates warn of severe economic impacts. Natalia González of the Chilean think tank Libertad y Desarrollo, says the new constitution would stymie new investment. “This proposal positions development and sustainability as antagonists, helping neither,” González told EcoAméricas. “It mostly weakens Chile’s ability to achieve progress.”

But backers argue that by building strong legal foundations for natural-resource, climate and health protection, the new constitution will prevent the kinds of social conflicts that have so frequently embroiled development projects. Biologist Cristina Dorador, a convention delegate, says approval will align Chile with best practices: “We’re catching up with international standards for the protection of health and the environment.”

—James Langman



President Gabriel Boric appearing with Cabinet members on Aug. 25 to detail government plans for a constitutional referendum scheduled for Sept. 4.

(Photo by Chilean Office of the President)

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Paraguay's water law continued from page 1



Cyanobacteria outbreaks in Lake Ypacaraí have underscored Paraguay's growing water-quality problems. (Photo courtesy of Mades)

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Documents & Resources

May decree:
<https://bit.ly/3AHdoAH>

Water resource law:
<https://bit.ly/3dYDVBK>

potable water, according to the Global Water Partnership, an international network of agencies and organizations active on water issues. Government figures show that as of 2020, only 53.2% of the population had access to a reliable supply of clean water, while some form of sewage service was available to 68% of the rural population and 96% of city dwellers.

The wide-ranging law requires numerous watershed-conservation measures ranging from the establishment of buffer zones around forests to prioritized protected-area status for lands that encompass headwaters, springs, wetlands and aquifer-recharge areas. It also provides for public access to the banks of waterways that run through private property.

Among the legislation's most important features is its requirement that all businesses which extract water from aquifers, rivers and other natural sources must pay for that water. The mandate marks a major shift. Until now, even intensive water users ranging from soft-drink makers to rice producers could tap water sources at no charge, and some—rice producers in particular—continue doing so even when the government imposes restrictions.

"It is a big advance for a country that has always viewed the water supply as infinite and that has had the attitude, 'Since we have lots of water, why would we pay for it?'" Verónica Berestovoy, director of the Water Observatory at Paraguay's National University of Itapúa, told EcoAméricas in a recent interview.

Big job for ministry

The May decree by President Abdo Benítez puts Paraguay's Ministry of Environment and Sustainable Development (Mades) in charge of rule-making and implementation of the water-resources law. Among many other things, this means Mades will receive and act on requests for water-use permits by businesses that extract their own water, a process that the legislation requires to be completed within 180 days.

Although water-resource experts view this and other provisions of the law as a step forward, they say that a great deal of technical groundwork needs to be done to ensure successful implementation. Berestovoy says one of the most fundamental steps will be to conduct a national inventory of the quantity and quality of the water in Paraguay's rivers, streams, lakes and wetlands.

Much other preparatory work remains. José Pérez, president of the Paraguayan Association of Hydrological Resources, notes that the legislation does not set water prices or establish water-quality standards, for instance. The May decree leaves these and other important

tasks to Mades.

"Regulations must be created for everything," says Pérez, whose association is made up of water-resources specialists including engineers, hydrologists and academics. "That is the opportunity Mades has now."

Francisco Martínez, a Paraguayan engineer and professor at the National University of Asunción, accomplishing that mission ought to involve expansion of the ministry's staff and budget. As of late August, it was unclear whether this would occur.

The implementation challenge comes amid a water crisis in drought-parched Paraguay that Berestovoy describes as involving "not only availability [of water], but also quality and distribution."

Lake Ypacaraí paying price

A prime example of Paraguay's ongoing water-quality problems is Lake Ypacaraí, the country's largest lake, which is located 35 kilometers (22 miles) east of the national capital of Asunción and whose watershed covers 833 square kilometers (322 sq. miles). A major cyanobacteria outbreak in the lake in 2012 raised nationwide concern—though not enough to prompt implementation of the water-resources law, which at the time had been in limbo for five years.

For decades the lake received the untreated sewage discharges of dozens of communities as well as nutrient- and agrochemical-tainted runoff from the agricultural sector. Over the past 10 years, sewage treatment plants have been built in the area, but the lake's deterioration has continued, with algal blooms occurring every summer. "Ypacaraí is an emblematic case that is important in helping people understand the consequences of environmental, economic and tourism loss," Berestovoy says.

Meanwhile, ongoing drought has further revealed the weakness of Paraguay's water-distribution system, which has been subject to frequent and prolonged service interruptions. That system has long lagged behind others in Latin America. Not until the mid-to-late 1950s did Asunción install municipal water and sewer service, which by then existed in all other South American capitals.

The United Nations cites Paraguay as the country that over the past two decades has made the greatest progress in improving potable water supply and access. But Berestovoy, the Water Observatory director, notes the country still has a long way to go. "The [water-service] coverage has not been sufficient to guarantee access to water," she says.

—Javier Lyonnet

Around the Region continued from page 2

structure projects, however.

Lula's campaign platform calls for increasing offshore oil production—primarily by tapping the 'pre-salt' oil reserves that are found far off the coast, deep underneath layers of rock and salt. "It is necessary to expand the capacity to produce refined oil products in Brazil, taking advantage of the great wealth of the pre-salt [deposits]," the challenger's platform says.

Seeming to echo Mexican President Andrés Manuel López Obrador's nationalist energy policy, Lula's platform argues against "the ongoing privatization of Petrobras," the oil and gas giant that is majority-owned by the Brazilian government.

Instead, it seeks Petrobras's "return to being an integrated energy company, investing in exploration, production, refining and distribution, but also acting in segments connected to the ecological and energy transition, such as gas, fertilizer, biofuels and renewable energies."

This energy mix, Lula's platform argues, is necessary to stabilize domestic oil prices while still creating new, 'green' jobs by pushing the state-run oil company to boost renewable energy.

Bolsonaro's platform also attempts to balance oil- and coal-based power generation with energy production from clean and sustainable sources such as wind and solar to avoid compromising national demand and growth.

In its renewable-energy section, Bolsonaro's platform goes into more detail than Lula's does, stating that large- and small-scale solar and wind power generation could collectively increase by 45 to 75 gigawatts over the next 10 years.

It also points to the potential for energy exports in the form of "green hydrogen" produced with power from solar and wind farms, while

Lula's platform does not make mention of green hydrogen.

But the strong emphasis on fossil-fuel extraction in both Bolsonaro's and Lula's governing blueprints indicates that renewable power development would be unlikely to receive the priority attention and commitment that environmental advocates might wish.

Follow-up: Luiz Inácio Lula da Silva's campaign platform: <https://bit.ly/3AR8RN8>. President Jair Bolsonaro's campaign platform: <https://bit.ly/3ApcAzZ>.



Push planned to showcase Mercosur green credentials

During Uruguay's current stint in the presidency of Mercosur, South America's largest trading bloc, it plans to propose that Argentina, Brazil, Paraguay and Uruguay highlight their efforts on climate protection and other environmental priorities.

Though the six-month role typically involves promoting Mercosur trade abroad, the administration of Uruguayan President Luis Lacalle Pou wants to see the four Mercosur partners jointly promote awareness of their work on climate-change mitigation and other environmental issues.

"We believe that Mercosur has a great deficit when it comes to image and communication regarding the environment and sustainable development," Francisco Bustillo, Uruguay's foreign minister, said at an Aug. 3 meeting of the Uruguayan Senate's International Affairs Commission. "This deficit causes repercussions both at home and also abroad, where Mercosur often is the target of disproportionate and unjust criticism, the result of the disinformation that exists."

Uruguay plans to propose that Mercosur publicize the work member nations are doing to promote food

security, renewable-energy development, clean transportation, biodiversity conservation and climate action that shrinks the carbon footprint of the agricultural sector.

The plan appears aimed at reducing resistance in Europe to a proposed EU-Mercosur free-trade agreement, which has been held up in part due to environmental concerns—particularly about deforestation in the Brazilian Amazon. (See "EU bill aims to dial up forest-protection pressure"—EcoAméricas, Dec. '21.)

The campaign also will have to contend with broader-based criticism that Mercosur countries are backsliding when it comes to environmental protection. Such sentiment will likely be fueled by the 2022 Green Future Index issued by the Massachusetts Institute of Technology (MIT).

The index measures progress and commitment toward a low-carbon economy in 76 countries accounting for 95% of world GDP. In this year's edition, Uruguay fell from 20th in the ranking in 2021 to 38th this year, Argentina descended to 68th from 59th and Brazil ticked down to 34th from 32nd. Of the four core Mercosur partners, one, Paraguay, rose in the ranking. But that left it in 74th place, ahead of just two nations—Algeria and Iran.

The ranking, whose top performers were European countries, is based on an analysis of five "pillars"—carbon emissions, energy transition, green-society strategies, clean innovation and climate policies.

Other Latin American countries on the list also descended in the ranking compared to 2021, with Costa Rica moving to 20th from 7th, Colombia to 32nd from 25th, Chile to 33rd from 24th and Mexico to 54th from 36th. Ecuador and Peru each dropped one slot—to 63rd and 67th respectively.

Yet Uruguayan officials

say Mercosur countries have compelling environmental-protection stories to tell. In the case of Uruguay itself, they point to the country's economically important meat-export sector, which generated \$2.4 billion in beef sales in 2021 and \$1.8 billion in the first eight months of this year.

In May, the government reported on the first year of a program developed by the Ministry of Environment and the Ministry of Ranching, Agriculture and Fishing. Called Ganadería Climáticamente Inteligente, or Climate-Smart Ranching, the program helped an initial cohort of 60 small- and medium-sized ranching operations reduce the greenhouse-gas emissions of their operations by 5%.

The gains were made mainly through efficiency improvements, project organizers say, adding that these substantially benefited the bottom line of the ranches, whose collective landholdings total 35,000 hectares (86,000 acres). The program report claims participants boosted the production of beef by 10% and mutton by 15%, with the carbon-intensity of meat operations per kilo falling 16%.

Officials also point to the fact that in Dec. 2021, Uruguay became the first country in the world to export beef certified as carbon-neutral, followed by New Zealand in May of this year. So far two Uruguayan companies have completed the certification process, which is overseen jointly by two entities—Quality Austria and Technological Laboratory of Uruguay (LATU).

Follow-up: Francisco Bustillo, Uruguayan Minister of Foreign Affairs, Montevideo, Uruguay, +(598) 2902-1010, consultas.web@mrree.gub.uy; Kimberly Allen, Director of Media Relations, Massachusetts Institute of Technology, Cambridge, Massachusetts, (617) 253-2702, allenkc@mit.edu. To view ranking: <https://bit.ly/3AUKAWu>.

Q&A:

Paraguayan nonprofit pushing for transparency in water policy

Pursuing strategies to soften the effects of climate change, a Paraguayan think tank has focused on one in particular: improving water management and public access to the environmental information underlying it. Drawing on information it published in a Dec. 24, 2021 report, the nonprofit Environmental Law and Economy Institute (IDEA) asserts Paraguayan climate-change mitigation could improve if water-management policy is “corrected.” The group argues that as much information as possible must be publicly available so it can serve as a water-management tool. To that end, IDEA has lobbied hard for Paraguayan adoption of the Escazú Accord, a treaty negotiated in March 2018 to ease public access to environmental information and decision-making in Latin America and the Caribbean. Though Paraguay signed the treaty, it so far has failed to ratify it. (See “Information-access treaty is shelved in Paraguay”—EcoAméricas, April '20.) Federico Legal, IDEA’s projects director, discussed water management and information access recently with EcoAméricas correspondent Javier Lyonnet.



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What water-management questions stand out in Paraguay?

There are numerous indicators used to monitor the state of water management in the country. In our report “Water-resource management, climate change and public access to information in Paraguay,” which we drafted with help from the Canadian government’s Canada Fund for Local Initiatives, we carried out a systematic sampling of some of these indicators. For instance, one regulatory indicator is that Paraguay has had a modern [water management] law on the books since 2007, but not until May 3 of this year, 15 years after the law’s approval, did the executive branch order rule-making and implementation to begin. (See related article—this issue.) The Ministry of Environment and Sustainable Development (Mades) acknowledges that this has prevented legal application of the law, which officials say will be implemented gradually. As a result, there has been a lack of climate adaptation initiatives, such as creating water reserves for use in periods of extreme drought. What the study generally points out is that poor water-resource management has contributed to the negative effects of climate change. The [water-resources] law establishes obligations to set up registries of those who use and extract water resources in order to anticipate water-resource pressure through a system of supply and demand. However, accessing this information is difficult for a number of reasons, whether because it has not been gathered, is out of date or has not automatically been made available. Another basic issue is that because an implementation regimen has not yet been created for the law, no system of water fees has been developed. This means implementing authorities lack economic resources to apply their policies.

Against that backdrop, how else could water policy be used to help offset the impacts of climate change?

Since December 2021 dramatic declines in the water levels of the Tebicuary River and its watershed have been reported due both to the region’s drought and the pumping of water to irrigate rice crops. Prohibitions on this pumping have been ignored. Implementation of the water-resources law should

address this. Complaints from the public have been more effective than government monitoring. Another issue of utmost importance is the lack of indicators and policies that take gender into account. Considering that women and girls are especially vulnerable when [rural] water supplies are low [because they typically collect water for their households and must go farther afield to obtain it], the government should make decisions based on the realities facing this group. In response to our requests for information, the government has said it is working to address these situations.

What is the state of compliance with current environmental legislation and court orders?

Public information shows there is a large number of administrative proceedings underway to address infractions of environmental-mitigation requirements. However, few cases result in sanctions. These sanctions are typically appealed in court, and definitive sentences aren’t handed down. In criminal matters, few cases result in conviction; and in civil matters there are no instances of compensation for environmental damage.

Has IDEA continued researching, denouncing and suing in connection with environmental damage caused by deforestation, ranching or agriculture?

IDEA has filed various criminal complaints over illegal deforestation. In 2020 it secured a valuable legal precedent in criminal court in a case involving the deforestation of 2,000 hectares (4,900 acres) in the Paraguayan Chaco. Through access to public information and cross-referenced satellite images, it was possible to establish that a company had violated its obligation to preserve native forest. (See “Paraguayan case buoys forest-enforcement hopes”—EcoAméricas, Oct. '20.) In the case, the court ordered the deforested area be set aside for regeneration [of vegetation] and required investments in environmental-services certificates.

What benefits would the Escazú Accord bring in the water-management context, and what difficulties are preventing Paraguay from ratifying this treaty?

From the perspective of water management, the treaty could help ensure that water-resource stakeholders maintain up-to-date, standardized information on water supply and demand in different regions. This could drive better technical decision-making on water permits and ensure better large-scale public measures in the event of emergencies. More generally, the Escazú Accord would improve access to environmental information, citizen participation [in environmental decision-making] and access to environmental justice. There are innovative features; for example, there is a recommendation that environmental information be provided in open-source formats so that [governments] generate data that can be used to alert, focus or correct steps taken in environmental matters. Its prospects for ratification in Paraguay are poor because of the view taken by some interest groups that it would act as a disincentive to economic activity.