



The 500-mile drive across Guinea to the Simandou mountains takes three days. *Videographer: Jason Florio for Bloomberg Green*

China's Quest for Iron

Guinea's Simandou mountains hold the largest untapped iron-ore deposit on the planet. Now a consortium of China-connected companies is moving ahead with a plan that jeopardizes one of the most biologically rich ecosystems in Africa.

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Photographs and Video by Jason Florio

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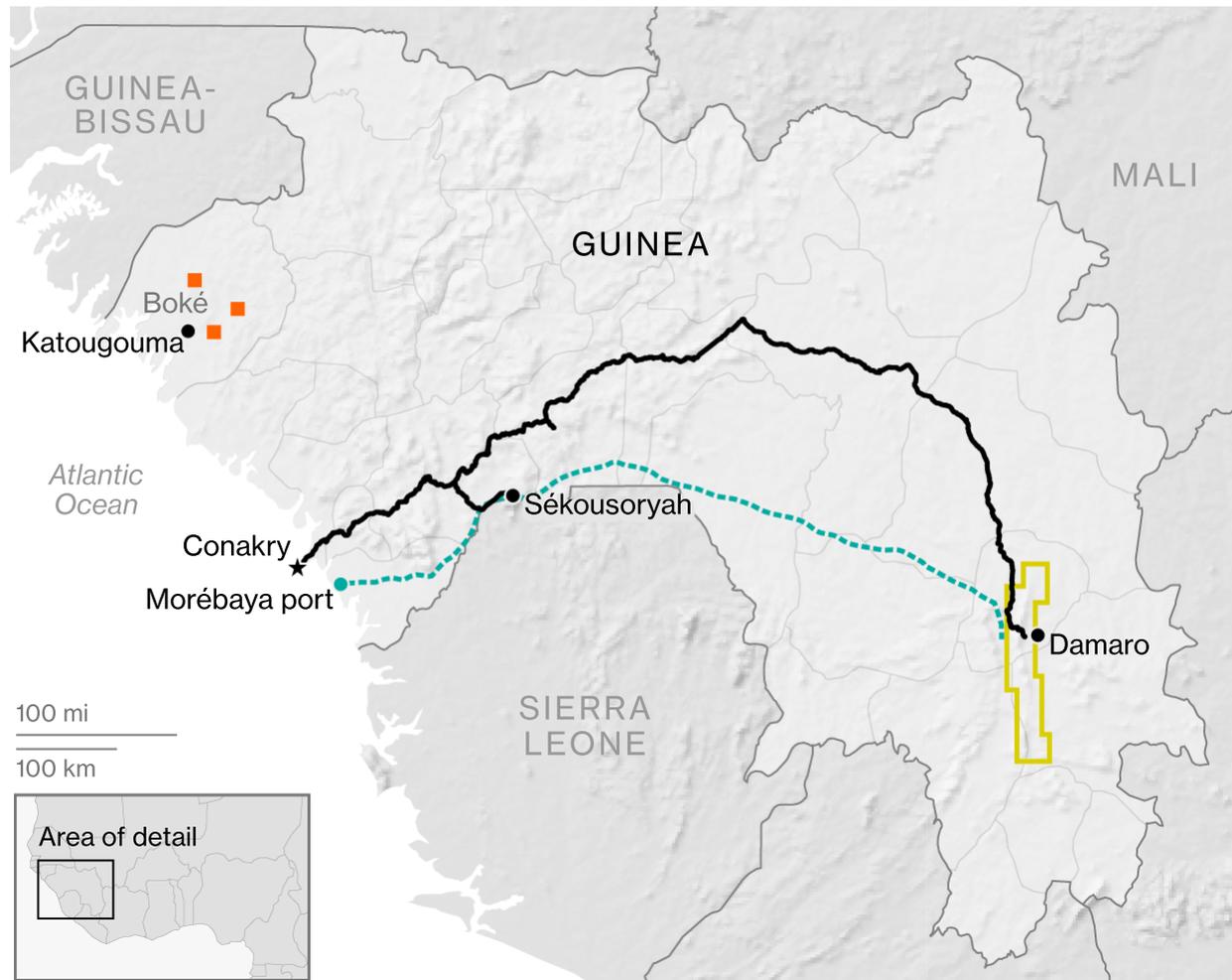
THE 500-MILE DRIVE ACROSS THE WEST AFRICAN NATION OF GUINEA TAKES THREE DAYS. The route traverses forests, mountain ridges, savannas, several rivers, the downtowns of four cities, and hundreds of villages of thatched roundhouse huts. The mostly dirt roads, pocked with craters, are choked by swirling laterite particles kicked up by rumbling vehicles and clouds of black exhaust. Goats and chickens wander among the

carcasses of abandoned trucks, which are flipped over like helpless turtles. Yet still the trucks come, transporting heavy equipment. We are all going to Simandou.

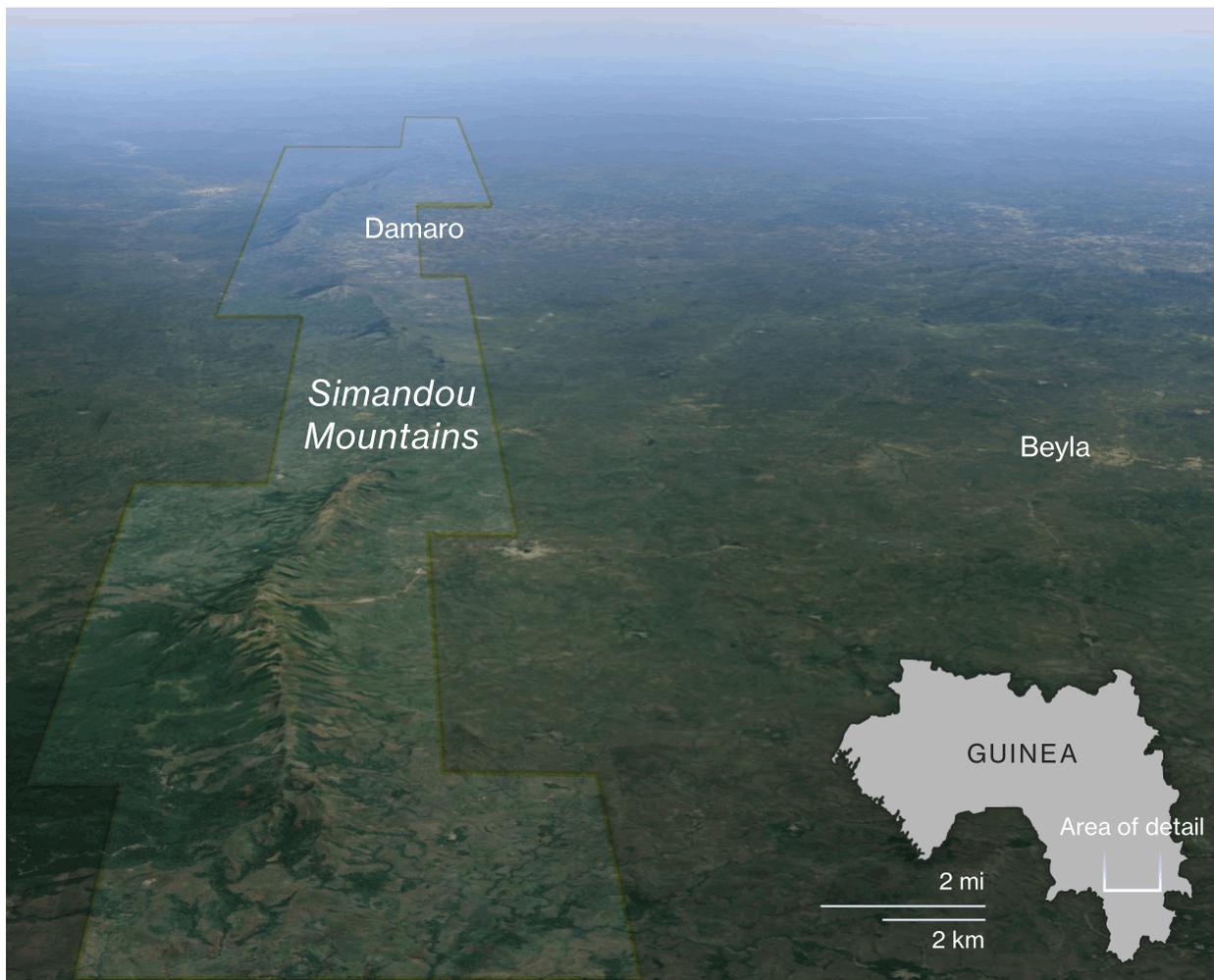
Our destination is a mountain range made of iron. An estimated 8.6 billion metric tons of ore are buried there, enough to forge the steel for 100,000 Empire State Buildings. The mountains are 2.5 billion years old, and geologists say their iron-rich ore is the largest and purest untapped deposit on the planet. But it's only in recent decades that efforts have been made to dig up this treasure. Starting in the 1990s, Rio Tinto Plc, then Israeli billionaire Beny Steinmetz, then Brazil's Vale SA won mining concessions. Successive efforts were thwarted by allegations of bribery, military coups, legal disputes, an outbreak of Ebola, and, not least, the enormous amount of capital needed to extract all that ore from such a remote place.

The Road to Simandou

Route to Simandou Proposed railway and port Simandou range SMB bauxite mines



Sources: SMB Winning Consortium; Winning Consortium Simandou



Source: Google Earth

Now it's China's turn. Three years ago, a consortium of China-connected companies, including the world's largest aluminum producer, won the rights to excavate half of the range. Last year Chinese workers began cutting mining roads and blasting tunnels for a 400-mile railway line to bring the ore to a new port planned for the Atlantic coast, where it can be loaded onto ships bound for the other side of the world. After a quarter-century of delays, the riches of Simandou were on the verge of being tapped.

China wants this cache to develop new streams of natural resources and reduce dependence on Australia, a reliance President Xi Jinping has called a "strategic weakness." Its global quest is a major driver of the Belt and Road initiative and has made China the biggest importer of raw materials from Africa, including those key to manufacturing electric vehicles: cobalt for batteries, copper for wires, bauxite for aluminum. China is already the world's largest steel producer, with more than half of global output. In 2020 it imported a record 1.2 billion metric tons of iron ore, most of it from Australia and Brazil. At that rate of consumption, there's enough ore in Simandou —\$1.1 trillion worth at today's prices—to build all of China's airports, skyscrapers, cargo ships, and weapons for seven years.

“In a world that Beijing increasingly sees as ‘decoupling’ as a result of great power rivalry,” says Nadège Rolland, senior fellow at the Washington-based National Bureau of Asian Research who’s written about the political implications of Belt and Road, “it has become a strategic imperative for China to maintain its access to raw materials and energy supplies in order to ensure its sustained economic production in case of potential future disruptions.”



“Guinea’s Iron Treasure” *Bloomberg Quicktake*

Yet this push comes at great environmental cost. Across Africa, Chinese companies are building roads and railways to remote places to reach previously inaccessible mineral deposits, as well as the mines to dig them out, energy plants to power the excavations, and ports to carry the resources away. Chinese investors now own 70% of the copper and cobalt mines in the Democratic Republic of Congo, where a United Nations study has found “alarming” environmental degradation. While European and North American companies dominated mining in Africa throughout the 20th century, also with serious environmental consequences, the new infrastructure push is leaving a mark far deeper inland. In Guinea, which signed on to the Belt and Road initiative in 2018 after surpassing Australia to become China’s top bauxite provider, 14 Chinese companies have mining-related operations.

“It’s a tiny country, but Chinese investment here represents a pattern of China’s outbound investments in developing countries,” says Jingjing Zhang, the China-born

founder and executive director of the Center for Transnational Environmental Accountability in Washington. An energetic lawyer, Zhang has been called the “Erin Brockovich of China” for winning that country’s first large class-action environmental lawsuit on behalf of Chinese villagers suing a Chinese chemical company for polluting the local water supply. China’s business practices were formed during the 1990s and 2000s, when weak environmental standards at home caused massive degradation, Zhang says, and it never set clear guidelines to manage the impact of its outbound investments. “When those Chinese companies come to a country like Guinea with very weak governance and rule of law, they take advantage to use these weak institutions to avoid the national law requirements,” she says. “Without international pressure and monitoring from outside, the companies will take advantage and avoid complying with the laws.”



The Road to Simandou

THE SIMANDOU RANGE IS ONE OF THE WORLD'S MOST BIOLOGICALLY RICH ECOSYSTEMS, IN a country with the largest remaining habitat of the critically endangered West African chimpanzee. Plans for open-pit mining envision cutting down trees on more than 182,000 acres. It's a dirty business: Diesel generators, trucks, and other equipment produce carbon dioxide and other noxious emissions, and the extraction process creates heavy metal and acid runoff. The project, scheduled to begin pulling ore out of the mountains in 2025, will affect at least 450 villages, according to the Chinese consortium.

But in September a military coup ratcheted up the uncertainty, with the new government saying it wanted to review Guinea's mining contracts. Environmental groups were alarmed that the consortium had begun blasting tunnels for the railway before submitting an impact assessment required for government approval.



Jingjing Zhang and Amadou Bah en route to Simandou. *Photographer: Jason Florio for Bloomberg Green*

In November, I set out for Simandou with Zhang and Amadou Bah, executive director of the nonprofit Action Mines Guinée. Zhang wanted to see for herself whether Chinese companies are complying with commitments their leaders have made. Bah, a 37-year-old former radio journalist, has reported on damage caused by the mining industry and has dedicated himself to fixing it. They have formed a partnership intending, in the absence of strong government monitoring, to demand that the consortium adhere not only to Guinean laws but internationally recognized mining standards. “We don’t want to stop the project, because it’s important for our economy,” Bah says. “But we want responsible mining.”

On the way to a site near the Sierra Leone border where Chinese workers are dynamiting a tunnel, the road breaks a tie bar on one of our Toyota Prados, causing it to lose steering and slump listlessly to the shoulder. We all pile into the other SUV for the remaining two hours of the journey. In Sékousoryah, we’re joined by Abdoulaye Bangoura, the 63-year-old, goateed district chief, who jumps in to guide us the last kilometer to the construction site.



Abdoulaye Bangoura, chief of Sékousoryah district, amid buildings cracked by dynamiting for a nearby railway tunnel. *Photographer: Jason Florio for Bloomberg Green*

The contractor, a subsidiary of state-owned China Railway Construction Corp. (CRCC), has been tunneling since March 2021. “Dynamite blasting damaged a lot of houses here,” Bangoura says, pointing out jagged fractures in the clay walls of buildings near a bustling open-air market, where uniformed Chinese workers buy food and cigarettes. Residents and animals in the area are startled at all hours because no one informs them when explosives are being set off, he says.

“To be honest, their economic benefit here is nothing. Zero.”

Compensation paid to 63 Sékousoryah families whose homes or land were appropriated, including his own, is insufficient, Bangoura says: just 11 million Guinean francs (\$1,235) for the farm where he grew pumpkin, peanuts, and coconuts, instead of the 200 million he estimates it’s worth. Most people can’t afford to build new houses with what they received, and there’s no compensation for damaged buildings. “We don’t have the ability to negotiate the compensation rate,” he says. “But we have to accept it, because there’s no place we can go to complain. These guys were brought in by the

government, and the government isn't a party you can negotiate with. You just have to accept it and live with it."



A Chinese construction company is blasting through a mountainous area near the Sierra Leone border for a planned 400-mile railway. *Photographer: Jason Florio for Bloomberg Green*



Chinese shipping containers at the tunnel construction site in Sékousoryah. *Photographer: Jason Florio for Bloomberg Green*

Zhang and Bah both express concern that the environmental assessment for the tunnel, when it was submitted three months after blasting began, didn't specify measures for compensating villagers, a budget for mitigation, or what the consortium would do to protect the 256 bird species, nine types of primates, and mammals including forest elephants and pygmy hippopotamuses in the area, simply noting that their "conservation is of concern."

Winning Consortium Simandou, the group that won the mining contract, didn't respond to requests for comment. Neither did CRCC.



Chinese workers have set up a gated camp larger than several football fields in Damaro, at the base of the Simandou range. *Videographer: Jason Florio for Bloomberg Green*

There are more grievances on the eastern side of the Simandou range, in Damaro. Chinese workers there have set up a gated camp larger than several football fields, with a greenhouse for growing vegetables and rows of containers from China COSCO Shipping Corp. full of supplies and equipment. On a hot Sunday morning at a community meeting, Ansoumane Ziko Camara, the district's liaison with the consortium, reads out a list of complaints.

Camara says the Chinese immediately poisoned relations with villagers by positioning their latrines upstream. He says he told the consortium many times that its operations polluted their streams not only with human waste, but with chemicals used for prospecting. Rocks falling down the mountain where they're building mining roads are killing their cows and goats. Half a dozen elders nod solemnly as he speaks.



Ansoumane Ziko Camara, the Damaro community's liaison with the mining camp, has registered complaints about Chinese activity polluting their water, killing their animals, and failing to provide economic benefit. *Photographer: Jason Florio for Bloomberg Green*

The community liaison officer at the camp, who's from China, declined to meet us. He speaks French, like Camara, but having a common language hasn't helped address villagers' grievances. The consortium did build a schoolhouse, but the well it dug had no water, Camara says. It could create jobs by hiring local people to handle waste management or grow vegetables, he says. That's what Vale did when it was prospecting. Now, locals working for the consortium as drivers or security guards receive low daily wages rather than a salary. The taxes it pays don't get sufficiently distributed to the community either, Camara says. "To be honest, their economic benefit here is nothing," he says. "Zero."

People want to go on strike or blockade the road to prevent Chinese workers from getting to Simandou, but Damaro's elders have advised patience. "We have ways to stand up and defend our rights," Camara warns. "Right now we want to play it cool, but if they continue being insensitive to our needs and concerns, we will resort to other ways."



China-connected companies are rebuilding roads and transporting heavy equipment to Simandou, one of the world's most biologically rich ecosystems.

Photographer: Jason Florio for Bloomberg Green



Lack of transportation infrastructure has Guineans frequently hailing rides. Mining, scheduled to begin in 2025, will affect or force relocation of at least 450 villages.

Photographer: Jason Florio for Bloomberg Green

Point 0

WHEN WE REACH SIMANDOU, CHINESE WORKERS ARE CUTTING RUST-RED MINING ROADS through green patches of mango and shea trees. Slashes of metallic-gray rock can be

seen streaking through wounds in the ferrous earth where their excavators have clawed. Walking along the ridge stains your shoes the color of rust. This type of hematite—from the Greek word for “blood”—turns so red when exposed to oxygen that it’s been used as a pigment since cave paintings of the Stone Age. The peaks contain as much as 65% iron, the highest grade possible in nature, according to Jamie Wilkinson, a professor of geology at Imperial College London.

At 3,700 feet is a core-sample marker the size of a hopscotch box, its June completion date hand-scrawled in cement like graffiti: 终孔 2021.6.15. In a clearing on the ridgeline, a white sentry shelter spray-painted “Point O” marks the center of the consortium’s \$14 billion plan to cut off these peaks and load the ore onto railway cars for the journey to the coast.



A core sample marker in a clearing on Simandou’s ridgeline records in Chinese the dates that drilling started and was completed, in June 2021. *Photographer: Jason Florio for Bloomberg Green*





“Point Zero” marks the center of the consortium’s \$14 billion project to cut off Simandou’s peaks and load the ore onto railway cars for the journey to the coast. *Photographer: Jason Florio for Bloomberg Green*

Three years ago, Winning Consortium Simandou, known as WCS, won the rights to mine the northern half of the 110-kilometer-long range. The consortium includes family-controlled China Hongqiao Group Ltd., the world’s largest aluminum producer. It’s led by Winning International Group, a private Singapore-based shipping concern whose founder is from Shandong, China, the same province where the aluminum company is based. Neither had any experience mining iron, but both are part of the SMB Winning Consortium, which since 2015 has been mining bauxite in Guinea’s Boké region. Their mine-first, fix-it-later approach there led to damaged crops, polluted water, protests, and condemnation by human-rights groups that fear a similar fate for Simandou. The companies, which have promised to do better this time, declined to comment or didn’t respond to requests for interviews.



Zhang, a Chinese environmental lawyer, atop the Simandou range. *Photographer: Jason Florio for Bloomberg Green*

Rio Tinto has the concession for the other half of the range. It once had the rights to all of Simandou, but in 2008 the Guinean government accused the British mining company of slow-walking the project to control global supply, took away half, and awarded it to Israeli mining billionaire Beny Steinmetz. Rio Tinto defended its pace, blaming costly logistics. Steinmetz paid \$160 million for the rights, then two years later sold 51% of his stake to Vale for \$2.5 billion.

A new Guinean government intervened in 2014, determining Steinmetz had obtained his concession through bribery. It revoked his rights, though it found no wrongdoing by Vale. Steinmetz, who made his fortune in diamond mining, was convicted of bribery in Geneva last year and sentenced to five years in prison. Prosecutors said he used Swiss accounts to pay \$10 million in bribes to Guinean officials, but he denied awareness and has appealed the verdict. The Guinean government re-tendered his blocks in 2019 and awarded them to WCS.

“The only thing we get is dust.”

The government has long been frustrated with Rio Tinto's slow pace and let the Chinese race ahead as a way of prodding the company, according to a Guinean mining ministry official who asked not to be identified because he isn't authorized to speak publicly. Rio Tinto had sold 40% of its stake in 2010 to Aluminum Corp. of China, known as Chinalco, a state-owned company that's the world's second-largest aluminum producer. But Chinese participation didn't get Rio Tinto to move faster.



Street vendors in Conakry, the capital of Guinea. Despite abundant mineral resources, 44% of the nation's 13 million people live in poverty. *Photographer: Jason Florio for Bloomberg Green*



In September 2021, Col. Mamadi Doumbouya led a military coup promising to review mineral contracts and asking mining companies to help alleviate poverty. *Photographer: Jason Florio for Bloomberg Green*

Last year, Rio Tinto reopened its office in Conakry, the nation’s capital, and told the government it was resuming preliminary work on Simandou. Drone footage viewed in late November showed trucks driving around its base camp in Beyla, another mining town at the foot of the range. But negotiations to cooperate with WCS on building the railway and port remained at a standoff. In December, Mamadi Doumbouya, coup leader and now interim president, summoned Rio Tinto Chief Executive Officer Jakob Stausholm to Conakry. The CEO said in a LinkedIn post after the meeting that he was committed to the project, but “in the right way, in line with high ethical and environmental standards.” Rio Tinto executives in Conakry and London declined to comment further.

Ismaël Diakité, president of the industry group Guinea Chamber of Mines, used to be Rio Tinto’s top executive in the country and is now a senior adviser for the Boké bauxite consortium. Sitting in a top-floor office in a modern building in Conakry, he says Guinea needs rapid development and Western companies get too bogged down in

feasibility studies. “The Chinese will fast-track that,” he says, because of “their own culture about risk-taking. The business model is more flexible.”

“Flexible” isn’t the word Zhang, the Chinese environmental lawyer, would use. “Chinese companies, their common thinking is, ‘We are here to bring economic opportunity to the country, we are investing in your country, so you should tolerate the negative side effects by us,’” she says. “But when you are investing here, you are not doing it just for the good of the country, you are doing it for your own profit. You are bringing natural resources to China, to fill China’s own domestic economy, and you are making profit from your mining activities. You should have a responsibility to those communities, to this country that you are making profit from.”



Mining Legacy: Dust Everywhere

BOKÉ, THE BAUXITE MINING REGION ON GUINEA'S NORTHWEST COAST, IS THE BEST PLACE to see why people are concerned about Simandou. Barge traffic has disrupted fishing, and rivers have been polluted. Dust kicked up by trucks hauling bauxite 24 hours a day on unpaved roads causes respiratory illnesses and diminished crop production, says Saa Pascal Tenguiano, a Guinean lawyer and environmental activist who works for South African nonprofit Natural Justice and has joined us on the trip. Everywhere we see cashew trees and other crops struggling under a blanket of dust. The impact is felt in about 30 villages, he says. "Today these communities face food insecurity where they cannot have proper food to feed themselves," says Tenguiano, speaking under a tree in Katougouma, one of Boké's most affected fishing villages.

The bauxite consortium promised to rectify the problems after a 2018 Human Rights Watch report called out these issues and riots broke out in Boké the following year. Winning Shipping and China Hongqiao have pointed to measures they've taken, including dust alleviation, school construction, and new wells.



Environmental lawyer Saa Pascal Tenguiano has been monitoring the impact of bauxite mining in Boké and is working to prevent similar damage in Simandou. *Photographer: Jason Florio for Bloomberg Green*

Tenguiano says you only have to look around to see that, with the exception of a few schoolhouses, those promises are unfulfilled. Despite trucks spraying the mining road to control the dust, the water dries quickly and the dust continues to fly. Wells dug in two villages are dry, and a third had water so high in iron content that the consortium warned villagers not to drink it. A roadside placard pointing to a designated crop area leads nowhere—“the sign of empty promises,” Tenguiano says. “If this company is not able to comply with national and international standards in Boké, do you think it can comply with these standards in Simandou?”

Zhang, who’s making her fifth visit to Boké, says little has changed. “All the issues around people’s health and their livelihood and their land and their right to a clean and healthy environment are still here,” she says after two days of looking around.

Tiguidankè Sylla, a 40-year-old former cucumber grower in a village along the mining road, says the consortium paid too little for the farmland it appropriated, and now she can’t grow enough food from the dust-covered crops that remain. “From the time they arrived, our income decreased, and the only thing we experienced is hardship,” she says

on her way to a well dug to compensate the community for the loss of groundwater. It flows as soon as the pump is pressed, but the water's iron content is too high, and villagers say the company told them not to drink it. Although power lines run directly overhead, there's no line dropping down to provide electricity. Other villagers point out a few solar panels the company provided that are covered in dust and stopped working long ago. "The only thing we get," Sylla says, "is dust."



Tigidankè Sylla (right) and N'nassta Dansoko, residents of a village along SMB's mining road, say water from this well built by the consortium is undrinkable because of high iron content.

Photographer: Jason Florio for Bloomberg Green

Bah, the mining activist, says the government needs to do more. "The company cannot create paradise for local communities," he says. Diakite, the head of the mining industry group, says he shares the frustration. It's the role of government to take its share in taxes and use them to improve the lives of its citizens, he says. He agrees that the consortium made mistakes in Boké but insists the industry is learning from its errors. "The responsibility of course lies on us, but it's also the role of government institutions to be close to us, monitoring, advising, supporting, reporting," he says. "If it cannot do it by itself, you have many NGOs and even media to raise awareness."

“The sheer scale of the project means that scrutiny and tensions around issues such as local content, biodiversity, and governance will be supercharged.”

IN EARLY MARCH, DOUMBOUYA’S GOVERNMENT HALTED WORK ON SIMANDOU. GUINEA HAD been asking Rio Tinto to cooperate with the Chinese consortium on building the railway and port. The rival mining groups were “miles apart,” in some measure because of differences over how to address the project’s environmental impact, says Eric Humphery-Smith, a London-based senior Africa analyst at risk intelligence firm Verisk Maplecroft.

But scrapping Simandou was never in the cards, not with the government anticipating \$15 billion in tax revenue over 25 years. The president’s edict forced the two sides together just weeks later and added the government as a 15% stakeholder in the mine and infrastructure projects. Combined output could ramp up to 200 million metric tons annually, worth \$26 billion at current prices. The government also threatened the companies with penalties, including expropriation, if they fail to complete the railway by the end of 2024 and don’t begin mining by early 2025. “The worry for investors is that this ultimatum may incentivize the developers to cut corners,” says Humphery-Smith. “The sheer scale of the project means that scrutiny and tensions around issues such as local content, biodiversity, and governance will be supercharged.” On June 18, Doumbaya ratcheted up the pressure, giving the companies two weeks to ensure funding for the project.



An abandoned truck on the road to a bauxite mine in Boké. *Photographer: Jason Florio for Bloomberg Green*

Sidiki Conde, director general of the department in the Ministry of Environment and Sustainable Development charged with monitoring Simandou, acknowledges that the project poses serious challenges for his office. He says the environmental impact statement the consortium filed in December for its mining operation “was seriously criticized” by a committee of government ministries, nonprofits, and researchers. In the end, “the political decision counts,” he says. “We strive to do the maximum, but at some point, we are obliged to support the project.”

Now that the Chinese consortium and Rio Tinto have agreed to cooperate, the pace is picking up and the 2025 target seems in reach. In late May, WCS accepted bids for laying timber along the length of the railway tracks. China Harbour Engineering Construction Co., part of state-owned China Communications Construction Co., won a contract to build the port at Morébaya where the iron ore will be loaded on ships bound for China. Even China’s plan to curb carbon emissions and a crisis in its housing market aren’t standing in the way. Earlier this year, Xi announced that the nation’s climate goals shouldn’t clash with other priorities, including securing adequate supplies of raw materials. For the Chinese government, more influence over the means of production abroad and the price globally, combined with policies shaping demand at home, would go a long way toward assuring that control over its fundamental economic pillars is ironclad.

Environmental groups in Guinea will be watching this progress, hoping to have the support of a new administration that has said it wants mining companies to help alleviate the country's crushing poverty and mitigate environmental destruction. "The new government won't let them do whatever they want," says Action Mines' Bah. "Otherwise it will be an ecological catastrophe."

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