

# Impact on Copper Production Could Exceed US\$40 Million, Government Assures Room for Recovery

■ The Minister of Mining emphasized that a seven-hour stoppage at mining operations "is a contingency that the mining industry can handle."

**Diario Financiero, February 27, 2025**  
**By Patricia Marchetti**

Not even Chile's leading copper miners—including some of the world's largest—were spared from Tuesday's blackout. Several went without power for up to seven hours, while others operated partially using autonomous equipment.

Since early Wednesday morning, the sector has been gradually resuming operations and assessing the potential impact on copper production. Meanwhile, the government highlighted the activation of emergency protocols and stressed that, should there be a production shortfall, "there is room for recovery."

According to Álvaro Merino, Executive Director of Núcleo Minero, a seven-hour stoppage could mean a production loss of around 4,500 tons of copper. At the current price of US\$9,500 per ton, this equates to nearly US\$43 million.

The Center for Mining Studies and Documentation at the National Mining Society (Sonami) estimated that a full-day production halt in private mining firms corresponds to 8,730 tons of fine copper, representing 60% of Chile's daily output and a loss of US\$83 million.

"We must ensure that this remains a theoretical estimate and prevent contingencies like this from impacting the industry," said Jorge Riesco, president of the mining association. He added that the organization is "coordinating with companies and authorities to mitigate the effects."

In response to the blackout, Riesco praised the sector's emergency response plans and urged the government to "adopt a strategic vision regarding infrastructure and service improvements to ensure a reliable electricity supply that meets the industry's increasing demands."

Codelco, which lost power at Chuquicamata, Salvador, Andina, and El Teniente while operating partially at other sites, confirmed that "all our divisions were affected by the outage, triggering immediate contingency and backup plans to protect personnel safety and equipment integrity."

"The impact on our production plan is still under evaluation, but undoubtedly, its recovery will be a top priority for our operational teams," the company added.

Key operations of Anglo American, Antofagasta Minerals, and BHP were also affected.

The situation is being monitored by Sernageomin in coordination with the Ministry of Mining, Cochilco, and Senapred.

## "Room for Recovery"

In an interview with *Diario Financiero*, Minister of Mining Aurora Williams emphasized the immediate activation of corporate safety protocols, the absence of incidents or accidents due to the blackout, and the direct coordination between Sernageomin and mining operations, which in turn reported to Senapred.

When asked about the potential impact on copper production, she responded, "Large-scale operations that may have been affected have the capacity to recover from a seven-hour production delay, especially considering that we are still in February—a traditionally low-production month. Beyond this month, there is room over the year for recovery."

She underscored that "a seven-hour stoppage falls within the expected probability of occurrence for various types of events. This is factored into operational protocols and thus within the scope of recovery possibilities."

According to Cochilco data, February was the lowest production month for copper in 2023, 2022, and 2021, averaging 400,000 tons. In 2024, it was the second lowest.

Reflecting on past contingencies in the sector, such as the pandemic, earthquakes, and floods, Williams reiterated the resilience of Chile's mining industry: "I believe that is more important than the numerical impact on production."

"At this moment, we need to accurately assess what happened, but these are challenges the mining industry is equipped to handle," the minister emphasized.

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### **Metal Prices Rise on the London Metal Exchange**

▣ Not everything was "dark" after Tuesday's blackout. The disruption in mining operations had an impact on copper prices, which rose 0.43% on the London Metal Exchange, reaching US\$4.31 per pound.

"I believe the key factors behind the copper price increase were, on one hand, the blackout that affected multiple state-owned and private mining firms, although by this morning (yesterday), they had resumed operations. On the other hand, the 'Trump effect,' with the executive order to examine potential copper tariffs, aimed at counteracting China's influence in the commodities market," Jorge Concha, FX trader at Banco Bci's Sales & Trading desk, told DF.

"The most significant driver was Trump's order to initiate a tariff investigation on copper imports," added Ricardo Bustamante, deputy head of research at Capitaria.

"Of course, there was also an additional impact from the evacuation of workers at Chuquicamata as authorities assessed how to proceed with production," he concluded.

*Following the Launch of a Trade Tariff Investigation by the Trump Administration:*

## **Despite 70% of U.S. Copper Imports Coming from Chile, Experts Warn Tariffs Would Be "Counterproductive"**

Santiago and Washington have a trade agreement in place that includes an anti-dumping section, shielding both countries from such measures.

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EYN TEAM**

The Trump administration's announcement of a review for potential tariffs on copper imports is crucial for Chile, as the local mining industry supplies 70% of the mineral shipments to the United States, according to investment bank JP Morgan.

However, experts caution that implementing such tariffs would be "counterproductive," given that nearly half of the U.S.'s demand for this essential raw material—key to the electromobility industry—is met through imports.

"Imports represent approximately 45% of the U.S.'s total copper consumption of 1.5 million tons. The top suppliers are Chile and Canada, accounting for 70% and 17% of total U.S. copper imports, respectively," JP Morgan stated in a report.

In detail, Chile supplied the U.S. market with 586,400 tons of copper in 2024, making up 70.3% of total imports and covering slightly over a third of total demand.

Another aspect highlighted in the investment bank's report is that "the U.S. is constrained by its smelting and refining capacity, meaning that domestic facilities for converting concentrate into refined copper are limited."

"Only two major smelters are currently operational in the U.S.: Rio Tinto's Kennecott smelter in Utah and Freeport's Miami smelter in Arizona," it revealed.

### **Security Risk**

The Trump administration has argued that the U.S.'s heavy reliance on copper imports presents a national security risk.

However, Juan Carlos Guajardo, director of consultancy Plusmining, considers it "difficult" to establish such a rationale.

He emphasizes that, unlike tariffs on steel and aluminum, the case for copper is different.

"The conditions are far more counterproductive for the United States if it chooses to move in this direction. If they proceed, it would mean that U.S. interests are directly aiming for a massive-scale reindustrialization plan, posing significant risks to their own economy," Guajardo warns.

### **Sonami: A Complement, Not Competition**

Regarding President Trump's announcement of an investigation into copper imports, the Chilean mining association Sonami admitted they are "closely monitoring the situation, as this measure is surprising given that Chilean copper is essential for business and industrial development in the U.S. Our copper exports to the U.S. complement their economy, not compete with it."

Currently, Chile and the United States have an active trade agreement that includes an anti-dumping section, shielding both nations from such practices.

Sonami also pointed to the Chilean government's role in mediating the situation.

"We are keen to understand the government's position and analysis on this matter, as it is responsible for activating, if necessary, protection or dispute mechanisms."

Chile's copper exports to the United States "complement its economy, not compete with it," Sonami stated.

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### **Foreign Ministry Avoids "Speculation" Until Official Announcements Are Made**

The Chilean government is cautiously observing the White House's announcement regarding a study on potential copper tariffs. When consulted by El Mercurio, the Foreign Ministry stated that it continues monitoring possible repercussions for Chile through established channels, including the Interministerial Committee for International Economic Negotiations—comprising the Ministries of Finance, Economy, Mining, Agriculture, and the

Government Secretariat—as well as the Public-Private Working Group, which includes industry and business representatives.

"These groups conduct ongoing analyses, complemented by the work of technical teams. If necessary, recommendations will emerge from these discussions, but no speculation can be made until a concrete announcement is issued," the Foreign Ministry detailed.

Both groups met last week but were not convened in an extraordinary session following President Donald Trump's statements. The Foreign Ministry pointed out that, for now, the announcement only concerns a study with a final deadline of nine months and that "this executive directive falls within the U.S. President's sovereign powers."

According to Felipe Lopeandía, Senior Manager of Global Trade & Investment at Deloitte, while imposing tariffs on imports could be "questionable under the terms of the Free Trade Agreement (FTA)" between Chile and the U.S., it is premature to predict the study's outcome. "The measures could take the form of tariffs, export controls, or domestic policies aimed at encouraging local copper production. Ultimately, it is the President who decides on the actions he deems necessary."

However, Lopeandía believes that from a political standpoint, given the significance of Chilean copper exports to the U.S. market, "it seems advisable to take proactive steps with the U.S. government, particularly with the Department of Commerce, which is responsible for conducting the investigation."

*The entity responsible for overseeing both the companies and the National Electricity Coordinator is the Superintendence of Electricity and Fuels (SEC).*

## **The Four Multisectoral Failures That Led to the Massive Power Outage**

Meanwhile, Camilo Charme, Executive Director of Generators of Chile, and Javier Tapia, Executive Director of the Association of Energy Transmitters, shared their assessment of the situation.

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Following the restoration of power supply, various system actors have engaged in cross-accusations over who is responsible for the massive blackout that occurred on Tuesday afternoon. While the root cause of the failure that triggered the service interruption is still unknown, initial assessments suggest that multiple control mechanisms across different stages of the electricity system failed, allowing the outage to spread in an unprecedented manner across nearly all of Chile.

On Tuesday night, President Gabriel Boric expressed his outrage over the failure, directly criticizing the companies involved in the system: "It is unacceptable that the daily lives of millions of Chileans are affected due to the responsibility of one or several companies. Therefore, it is the duty of the Chilean state to ensure accountability," he said.

Yesterday, Energy Minister Diego Pardow also blamed the companies for the prolonged duration of the power outage. "It is evident that the length of the outage was due to difficulties in executing the Service Recovery Plan, as the various participants involved—particularly the different companies—did not comply with their plan," he stated.

At the same time, he confirmed that the National Electricity Coordinator "will be audited for its conduct during the emergency." The entity responsible for overseeing both the companies and the Coordinator is the Superintendence of Electricity and Fuels (SEC), which operates under the Ministry of Energy.

### **1. Transmission**

The failure originated from a disturbance in the Nueva Maitencillo - Nueva Pan de Azúcar transmission line, owned by the Colombian company ISA Interchile. According to the company, the transmission line issue was resolved within 44 minutes.

The exact cause of the problem in the high-voltage transmission line remains unknown. However, authorities have ruled out acts of sabotage, fires, or equipment explosions.

### **2. Communications**

The Supervisory Control and Data Acquisition (SCADA) system, which remotely monitors critical data such as circuit breaker status, voltage levels, and energy production, experienced technical issues. The Transmission Association reported that communication failures in the system forced crews to be sent to substations to manually restore operations, and that the manual communication link between the Coordinator and the substations did not function as expected.

According to the National Electricity Coordinator, its communication system remained operational at all times, and the failure was in the system operated by Transelec, which was down until 6:00 PM and then functioned intermittently.

### **3. Generation**

In the event of a blackout, power supply must be restored gradually to balance energy demand with supply. According to the Transmission Association, some power plants failed to restart, despite being designed and designated for that function.

The Coordinator reported that both the Rapel Hydroelectric Plant and the Quintero Power Plant, both owned by Enel Generación, experienced connection issues. However, the Generation Association, which includes Enel,

claims that all its members' power plants were ready to enter the system but, in some cases, lacked authorization from the Coordinator.

#### **4. Protocols**

Several electricity sector players criticized the National Electricity Coordinator for delays in activating or providing information on the Service Recovery Plan. The Coordinator defended itself, stating that the plan includes immediate response measures.

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*Javier Tapia, Executive Director of the Transmission Association*

### **Transmission Sector: "This Was a Public-Private Failure... The System Failed"**

According to the association, the National Electricity Coordinator bears responsibility for communication issues.

If the transmission failure was the spark that ignited the power outage, the subsequent failures across the rest of the system were the fuel that allowed it to spread. This analogy is used by Javier Tapia, Executive Director of the Energy Transmission Association, to explain the prolonged blackout that affected the country on Tuesday.

"This was not just a failure of one company or a single entity. This was a failure involving multiple actors, a public-private failure. There was a major coordination breakdown that must be addressed, and responsibilities must be determined. However, accountability should not fall solely on one party—this was a systemic failure," says Tapia.

According to the executive, after the transmission failure, additional issues arose that exacerbated the outage and complicated recovery efforts, with causes unrelated to the initial transmission disturbance. "We faced a massive issue involving transmission companies, power generators, and, most importantly, the National Electricity Coordinator and its recovery protocols," he explains.

#### **Communication Failures**

The electricity system consists of multiple stakeholders operating in different parts of the supply chain. Power generators produce electricity, transmission companies transport it to cities, and distribution companies deliver it to end users. The National Electricity Coordinator, a public, autonomous, and non-profit entity, is responsible for integrating the grid and ensuring that electricity generation matches consumption. The entire system is supervised and regulated by the Superintendence of Electricity and Fuels (SEC).

"The problem was a major communication breakdown. Neither the automated communication nor the manual coordination between the Coordinator and substations functioned properly," Tapia adds.

— Was this failure an exception, or does it reveal a broader system weakness?

"It was an exception, but one we should have been prepared for—and we weren't. The protocol was inadequate. We have a protocol that is likely not designed for situations like this, and we probably lack industry experience in handling such failures because they haven't occurred in a long time. The reality is that our protocol is designed for much more contained incidents. However, many of the issues we faced could have been minimized," he says.

"This incident highlights the urgent need for a robust transmission network, and it exposes the fact that we have been neglecting grid investment for too long."

— Who decides how much should be invested in transmission?

"The government determines how, when, and where investments should be made. We have long argued that the state's investment plan is insufficient. Positive steps have been taken, particularly in recent years, but we are still lagging behind. We estimate that around US\$2 billion is needed to catch up. Ultimately, we depend on the state—not only for regulatory decisions but also for planning transmission investments."

"(The failure) was an exception for which we should have been prepared, and we weren't."

**Javier Tapia, EXECUTIVE DIRECTOR OF THE ENERGY TRANSMISSION ASSOCIATION**

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*Camilo Charme, Executive Director of the Generation Association*

### **Generation Sector: "The Power Plants Were Not the Cause of the Delay"**

The power plants say they were ready to operate but did not receive timely information from the Coordinator to connect to the system.

The Generation Association has accused the National Electricity Coordinator of failing to provide adequate and consistent information necessary for connecting power plants to the electrical system. Camilo Charme, Executive Director of Generators of Chile, stated that "generation plants continuously informed the Coordinator that they were in proper operational condition, in accordance with procedures and protocols, and that they were technically ready to enter the system."

"The delay was not caused by the power plants (...) From a generation standpoint, the Coordinator was always informed that they were available and ready to enter the system," Charme emphasized.

The executive director of the association explained that the National Electricity Coordinator functions like an airport control tower, where power plants are the airplanes, and transmission lines are the runways.

"Just as in an airport, airplanes cannot see the runways or other planes when landing—they depend on the control tower. There were times when the Coordinator did not inform the power plants whether to use runway one or two. We told them, 'The plane is ready for takeoff,' and the Coordinator did not respond. As a result, the plane could not move because our system is designed so that no individual company controls operations—the Coordinator acts as the control tower," Charme explained.

— The Coordinator and other system actors have stated that there were issues with power generators.

"The companies in the Generation Association have data confirming that all their units were available from the start and ready to be integrated into the system to help restore operations. Our companies' units were ready and consistently communicated this to the Coordinator. However, in some cases, the information received from the Coordinator did not allow for these power plants to be connected."

"Another important point to clarify is that the National Electricity Coordinator is not a public authority. It is an entity created by law to operate the system and coordinate generation and transmission companies. However, it does not hold a regulatory or supervisory role. In fact, it is subject to regulatory oversight just like any other company. The true regulatory authority here is the Superintendence of Electricity and Fuels."

"As a generation industry, we want the investigation to be carried out by the legally mandated entity, which is the Superintendence, in the most objective way possible. We recommend that the Superintendence be assisted by an external, independent, and preferably international audit, conducted by experts with significant experience in system analysis, system failures, and recovery processes. The Coordinator should also be subject to observations, criticisms, and recommendations."

— The focus has been on decarbonizing the energy matrix, but on Tuesday, diesel power plants were necessary to restore the system. What is their role in the future?

"We need to re-evaluate our roadmap. The penetration of renewable and variable energy sources is a reality, and it will continue to grow. However, the truth is that we must not only incorporate solar and wind power plants but also expand energy storage systems. Storage systems provide operational flexibility and enhance system security."

"As the generation industry, we want the investigation to be conducted by the legally mandated entity, which is the Superintendence."

**CAMILO CHARME, EXECUTIVE DIRECTOR OF GENERATORS OF CHILE**

## **More Investment in Infrastructure and Better Management: The Keys to Strengthening System Resilience**

The Kimal-Lo Aguirre transmission line, a project currently under review, would bolster the electricity grid's operation, though it would also add complexity.

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With power supply restored across the country, the discussion has shifted to how to prevent a failure of this magnitude from happening again. Experts agree that the priorities should focus on improving the management of the electricity system and reinforcing investment in transmission infrastructure.

"While it is true that more infrastructure is needed and construction timelines must be expedited, yesterday's blackout highlights the need to strengthen protocols and emergency plans, as well as conduct more frequent and in-depth inspections and audits of supervision, control, and backup systems. In short, a more diligent and proactive management approach—perhaps not the most glamorous task, but a highly necessary one," says Daniel Salazar, former executive director of the National Electricity Coordinator and managing partner at consulting firm Energie.

Rodrigo Castillo, partner at Táctica Abogados Consultores and former executive director of the Association of Electric Companies, believes the electricity system's restoration protocol must be reviewed. "I think it is very important to evaluate the National Electricity Coordinator's Service Recovery Plan (PRS), as it should have allowed for a quicker restoration of power. The restoration time was excessive, so, without making any premature judgments, it is necessary to audit its operation and review any potential failures in its execution," he states. Specifically, Castillo suggests that to improve system resilience, audits should be conducted on load disconnection schemes, line protections, and the coordination of distributed generation (PGND) to ensure efficient and rapid recovery from unexpected events. Additionally, he points out that it is "crucial to assess the incorporation of high-inertia generation sources, such as hydroelectric plants and other technologies that can provide stability to the system in events like this one."

### **Infrastructure**

Salazar stresses that more infrastructure is needed, particularly in the northern region, to enable quick power restoration. However, he notes that "in the rest of the grid, better operational management is required to ensure that existing resources function and operate as intended. It is inexplicable for monitoring systems (SCADA) to fail, for remote reconnections not to work, or for key power plants not to start up promptly."

Meanwhile, Carlos Suazo, director of consulting firm SPEC Energy, states that addressing the lack of infrastructure is crucial to preventing future blackouts like Tuesday's.

"The analyses gathered indicated very high transfers along the corridor that supposedly failed (...). This type of problem can be solved with infrastructure, through new transmission installations, or with compensation systems such as batteries capable of quickly injecting and absorbing active or reactive power to effectively handle contingencies like this one," he explains.

### **Kimal-Lo Aguirre**

In this regard, the Kimal-Lo Aguirre transmission line project, which involves an investment of nearly US\$2 billion, could be key to strengthening the system (see sidebar). "The construction of the Kimal-Lo Aguirre line will enable better interconnection between the country's main renewable energy generation areas (in the north) and consumption centers (in the central region). However, its impact will not be felt until 2032," says Castillo. He adds that "the presence of this line alone will not guarantee system stability if failures persist in protection and disconnection schemes."

Similarly, Salazar notes that the new transmission line will help transport greater volumes of energy from the north to the central-southern region. However, he warns that its operation will make "the network's operational



management more complex and sophisticated, a task that, judging by yesterday's events, is not being handled adequately or has significant vulnerabilities."

### **Storage vs. Thermal Units?**

On the other hand, the use of diesel power plants to restore the electricity system on Tuesday has sparked a debate over the role of such generation methods in the context of transitioning to a decarbonized energy grid. "This is a major discussion within the sector, as the current service recovery plan relies on these types of units," says Carlos Suazo.

According to the expert, as energy storage is gradually integrated into the system, the Service Recovery Plan will need to be updated, and the capacity of storage systems to support recovery will have to be verified. The goal, he explains, is to determine "whether storage systems could replace these units altogether."

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### **EXCESSIVE**

was the time required to restore power on Tuesday, according to an expert.

Tuesday's failure occurred between the Nueva Maitencillo and Nueva Pan de Azúcar substations, part of the Cardones-Polpaico transmission line.

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### **The Transmission Lines Still in Need of Decongestion**

The Kimal-Lo Aguirre project is expected to help ease congestion in the electricity grid by facilitating the transfer of energy from northern Chile to the central-southern region. However, the project still faces significant hurdles. The project's Environmental Impact Study was submitted in 2022, and it requires nearly 5,000 sectoral permits for approval. According to the timeline published on its website, construction is expected to begin in 2028, with the transmission line becoming operational in 2029.

Meanwhile, at the end of last year, the National Energy Commission (CNE) announced the Entre Ríos-Lo Aguirre transmission project, which aims to develop and evacuate wind energy potential from the southern region—similar to the Kimal-Lo Aguirre proposal. The CNE stated that this project "will mitigate congestion on the 500 kV Ancoa-Alto Jahuel and Alto Jahuel-Lo Aguirre corridor, enhancing the security of the National Electricity System's operation and reducing its operational costs."

At the time, Energy Minister Diego Pardow highlighted that this year's expansion plan includes this mega-project, "which is a new high-speed direct current transmission line, with its starting substation in the Ñuble Region at the Entre Ríos substation. This project is equivalent to Kimal-Lo Aguirre, but for the southern region of the country." "It is a long-term project. If everything is done correctly, we expect it to be operational by 2034," the minister added.

# Foreign Ministry Eases Concerns Over Trump's Tariff Study on Copper

■ The U.S. President announced on Wednesday that he will impose tariffs on the EU while postponing those planned for Mexico and Canada by another month, until April 2.

**Diario Financiero, February 27, 2025**  
**By Amanda Santillán R.**

On Tuesday afternoon, economic agents once again turned their attention to copper following U.S. President Donald Trump's announcement regarding the launch of an investigation into imports of the red metal. The investigation aims to consider the application of tariffs to rebuild domestic production of the mineral. Through his social media platform, Truth Social, Trump stated that the U.S. Secretaries of Commerce and Trade Representative would lead the study to end what he described as "unfair trade that leaves Americans without jobs."

Trump added that U.S. industries rely on copper and that the metal must be produced within the country without exemptions or exceptions. "The America First principle creates American jobs and protects our national security. It's time for copper to 'come home,'" he wrote.

On Wednesday, Chile's Foreign Ministry explained that the study has a timeline of 270 days (nine months) and that the executive order falls within the U.S. President's sovereign powers.

Additionally, the ministry highlighted that the Chilean government already has two dedicated working groups examining potential consequences for Chile.

Last week, the Interministerial Committee for International Economic Negotiations, led by Foreign Minister Alberto van Klaveren and Undersecretary for International Economic Relations (Subrei) Claudia Sanhueza, held a session alongside representatives from the private sector.

"These groups conduct ongoing analyses, complemented by the work of technical teams. If necessary, recommendations will emerge from these discussions, but no speculation can be made until a concrete announcement is issued," the Foreign Ministry stated.

According to figures from ProChile, the U.S. accounted for 11.35% (US\$5.657 billion) of Chilean copper exports in 2024, making it the second-largest destination after China (US\$25.927 billion).

Furthermore, Codelco contributes 45% of Chile's copper exports, followed by Minera El Abra (controlled by U.S. company Freeport-McMoRan, with Codelco holding a 49% stake) at 14%. BHP's Escondida and Spence mines accounted for 11% and 9% of total exports, respectively.

## Extended Deadline for Mexico and Canada

The copper investigation is part of a broader set of trade measures by Trump. On Wednesday, he held his first cabinet meeting, where he made several announcements on foreign trade policy.

He revealed a 25% tariff on imports from the European Union, though he provided no further details.

"We have made a decision, and we will announce it very soon. It will be a 25% tariff in general terms, and that will apply to automobiles and everything else," Trump stated.

This is not the first time he has addressed trade relations with the EU, and he has been critical of its policies, including the value-added tax imposed on imported goods.

"Let's be honest, the European Union was formed to ruin the United States. That is its purpose. And they have done a very good job," Trump claimed.

Additionally, the President announced that the 25% tariffs on two of the country's key trading partners, Canada and Mexico, would take effect on April 2—nearly a month later than the previously set March 4 deadline.

While he did not provide further details on the implementation of these tariffs, he stated that "not all, but many" of the tariffs would take effect within the new timeframe.

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"If necessary, recommendations will emerge from these discussions, but no speculation can be made until a concrete announcement is issued," stated the Foreign Ministry.

# Coordinator Takes Aim at ISA Over Power Outage and Points to Transelec for Delays in Recovery

"Once a failure occurs, they must immediately enable their facilities to reconnect to the system. Forty-four minutes is too long," said the president of the National Electrical Coordinator, Juan Carlos Olmedo, regarding ISA Interchile's response after the massive outage.

**PULSO**

**By Emiliano Carrizo**

The president of the National Electrical Coordinator, Juan Carlos Olmedo, provided an update following the massive power outage that affected almost all of Chile, outlining the steps taken after the crisis and further details on the causes that prolonged the blackout for several hours. Olmedo stated that audits have been ordered for the facilities operated by ISA Interchile, which caused the failure, as well as for the monitoring and control systems of coordinated companies. "We have instructed the executive director to prepare the fault analysis report within a short timeframe to verify compliance with the recovery plan by all coordinated entities," he added.

Olmedo criticized the time ISA Interchile took to make its Nueva Maitencillo-Nueva Pan de Azúcar operations—responsible for the nationwide power outage—available for reintegration into the recovery plan.

"Once a failure occurs, they must immediately enable their facilities to reconnect to the system: forty-four minutes is too long," Olmedo stated.

Regarding the prolonged outage, Olmedo explained that after resolving the initial failure that triggered the blackout, additional issues arose, delaying service restoration. Consequently, an audit was ordered for Transelec due to failures in its Scada system and internal and external voice and data telecommunications systems.

"Transelec's Scada system was down at least until six in the evening, and after that, it continued experiencing intermittent issues, which prevented visibility into the network's status and hindered remote operations for a swift recovery. Even this morning, in the northern region, there was still a lack of visibility (...) forcing operators to rely on telephone inquiries about the state of the facilities. That results in delays," he explained.

"The system has immediate response measures, but if there is no full visibility of the facilities' status and the owner cannot operate them, it is impossible to restore service quickly," he added.

Regarding the cause of the outage, Olmedo stated, "What we know so far is that it was an unintended activation of the protection system—meaning the protection system should not have triggered this operation. As for cybersecurity events, that is part of the ongoing fault investigation and will be included in the final analysis."

"Electrical systems can experience failures. These systems have protections, just like the fuse panel in our homes, which prevents conductors from burning out in case of excessive consumption. Electrical grids have similar protections, though much more complex, to safeguard infrastructure integrity. In this case, there was an activation of protections that should not have occurred. That is the issue," he added.

He further explained, "The facility owner must configure their protection systems, which function like computers where various parameters must be set to ensure correct operation. In this case, the protection system malfunctioned."

# Total Blackout in the Country: Companies Face Fines of Up to US\$8 Million and Compensations of US\$15 Million

The amounts would apply to each company if investigations by the Superintendence of Electricity and Fuels (SEC) and the Coordinator allow it. However, industry associations are calling for caution. Acera urged authorities to avoid "premature judgments," while Generadoras de Chile called for "impartial international experts" to be involved, asserting that its members "were always prepared to contribute their generation capacity for the prompt restoration of electrical service."

**PULSO**

**By Víctor Guillou**

The total blackout that affected the National Electrical System (SEN) on Tuesday has sparked a new conflict in the energy sector between industry companies and authorities. While investigations are underway to determine how the initial failure of a transmission line in Norte Chico spread to the entire SEN, statements from the government on one side and the National Electrical Coordinator (CEN) on the other have caused surprise and even unease in the electricity industry.

President Gabriel Boric himself, in his first statement on the matter, pointed to one of the companies involved: ISA Interchile. The firm, controlled by Colombian state-owned company Ecopetrol, operates the double-circuit Nueva Maitencillo - Nueva Pan de Azúcar transmission line, which runs at 500,000 volts between Vallenar and Coquimbo. The president stated that the failure originated from this line, "causing a massive power outage across the country."

The company itself stated that, although it was still investigating the causes, the failure was likely due to "the unintended activation of its protection schemes, which triggered the automatic disconnection of both circuits." However, the tone adopted by the authorities caused frustration. After attending a Cogrid meeting, Minister Diego Pardow again pointed to the Colombian-owned company but also mentioned "a set of responsibilities" concerning the scale of the blackout. Regarding the delay in service restoration, he stated that "some generation assets did not function or encountered issues when attempting to restart from black start conditions." These remarks later prompted responses.

During that press briefing, the minister also discussed potential customer compensations for the power supply interruption, in addition to possible fines.

According to an analysis by the Libertad y Desarrollo Institute, the most severe penalties companies may face relate to extremely serious infractions, such as causing death or serious injury to individuals or "causing a widespread failure in the operation of an electrical or fuel system," according to the law governing the Superintendence of Electricity and Fuels.

"Such infractions are punishable by fines of up to 10,000 Annual Tax Units (UTA). Based on the UTA value for March 2025, fines could reach CLP 8,164,080,000, equivalent to US\$8 million," the report states. In the case of compensations, the amount increases to 20,000 UTA, or CLP 16,328,160,000, equivalent to US\$16 million. However, compensation amounts for customers are calculated by multiplying by fifteen based on the value of the energy supplied during the blackout, with a cap for transmission companies. According to electrical regulations, compensation per event cannot exceed 5% of their regulated revenue from the previous calendar year for the respective transmission segment or 5% of their total revenue from the national market.

For ISA Interchile, this amount would be around US\$5 million, considering the company's reported operational revenue of US\$102 million in 2023.

However, another point of contention involves statements from the CEN's Board of Directors, which, in addition to ordering audits of ISA Interchile and Transelec, directly implicated the companies in both the initial failure and the prolonged restoration time (see related report).

Meanwhile, the National Consumer Service (Sernac) also contributed to the compensation discussion by announcing the implementation of a protection plan. It urged customers to file claims for damages related to the massive blackout, expanding beyond the electricity market. The agency aims to assess the impact on services

such as telecommunications, potable water, air, ground, and intercity transportation, as well as major event organizers, among others.

"Sernac seeks to quantify and measure the impact suffered by individuals due to a problem that, while originating in the electrical sector, affected various essential services and the daily lives of millions of citizens," the agency stated in a release.

Among electricity generation companies, reactions to the authorities' statements were channeled through industry associations, particularly the two most relevant in the generation sector: the Chilean Association of Renewable Energies and Storage (Acera), the main renewable energy association, and Generadoras de Chile, which represents the country's largest power generation companies.

Acera—of which ISA Interchile is a member—stressed the importance of "a thorough investigation by the responsible entities to determine the causes and possible liabilities."

"The CEN must conduct the Fault Analysis Study (EAF), identifying key factors of the event, the reasons for its propagation, and the performance of the Service Recovery Plan (PRS). Meanwhile, the Superintendence of Electricity and Fuels, as the regulatory body, must investigate the causes and determine any potential responsibilities," the statement said.

The association further stated that "it is prudent and advisable to await the investigation's results and conclusions before making premature judgments" and called for a focus on "effectively using the information obtained to prevent events of this magnitude and impact from recurring in our country."

"It is essential that this situation be analyzed objectively and without rushing to assign blame before all the facts are known. Our commitment is to contribute to identifying solutions that strengthen the stability and reliability of the electrical system," said Ana Lía Rojas, Acera's Executive Director.

Meanwhile, Generadoras de Chile's Executive Director, Camilo Charme, refuted Minister Pardow's suggestion that the mentioned generation companies failed to operate properly.

"The power plants of our member companies were always ready to contribute their generation capacity for the prompt restoration of electrical service, in accordance with procedures established by the National Electrical Coordinator. Thus, plant connections were executed when instructions, coordination, availability of information, and operating conditions were appropriate and consistent," he stated in a declaration.

He emphasized that it is "imperative" for the investigation "to clarify the facts, focus on a thorough analysis of the incident, objectively identify the causes, and assess the quality of information, coordination, and regulation within the electrical system."

He also insisted that the investigation "must be conducted to the highest standards, including advice from impartial international experts with extensive experience in analyzing electrical systems, to propose improvements in the implementation of security protocols and minimize the occurrence of such events and their consequences."

Additionally, Javier Bustos, Executive Director of the Association of Unregulated Customers (Acenor)—an entity representing major energy consumers—emphasized that, beyond the investigation, solutions cannot rely solely on expanding transmission infrastructure.

"From what we've been able to determine regarding this specific failure, even if we had more transmission infrastructure, it would not necessarily have been preventable," he stated, underscoring that "what matters here is having contingency plans that are effective and knowing how to react to restore power supply."

He further noted that "we are already paying for all transmission infrastructure. We are paying for all services related to contingency plans. We fund the entire budget of the National Electrical Coordinator. And we are not paying a small amount. Electricity prices in Chile are high compared to other countries. Therefore, the service must improve, or someone else will have to start covering the additional costs."