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# Catalyzing Decarbonization: Ternium's strategic Roadmap for Sustainable Steel Production in Latin America.



**Climate Action**  
BREAKTHROUGH TECHNOLOGY  
CONFERENCE

**worldsteel**  
ASSOCIATION

2023

# Techint Group | +75K employees



**Leading flat steel company in Latin America**, manufacturing and processing a wide range of flat and long steel products.



**World's leading producer and supplier of steel tubes** and services for the energy sector, as well as industrial applications.



Offers engineering, supply, construction, operation, and **project management services for large-scale projects globally**, from design to launch.



**One of the world's largest suppliers of high-tech products and services** for the metallurgical and mining industry.



An **exploration, production, transport, and distribution** company for hydrocarbons and electricity generation.



**Handles purchases** for Tenaris and Ternium.

TERNIUM

## Strong presence in the Americas

**US\$ 16,4**

Billion of sales revenue

2022

**12 M**

Million-ton shipments

2022

**20.5 K**

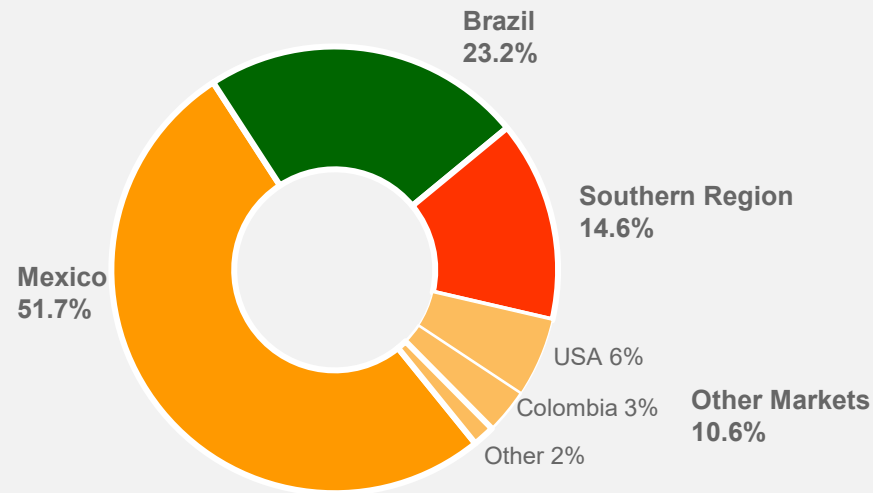
Direct jobs

2022

**51.5%**

Participation in Usiminas' control group

## STEEL SHIPMENTS THIRD QUARTER 2023



STEEL

## Steel industry CO<sub>2</sub> impact:

Ternium

Decarbonization Target:

**20%** carbon dioxide emissions  
reduction by 2030.

2018: 1.69 tCO<sub>2</sub>/CS

2030: 1.35 tCO<sub>2</sub>/CS

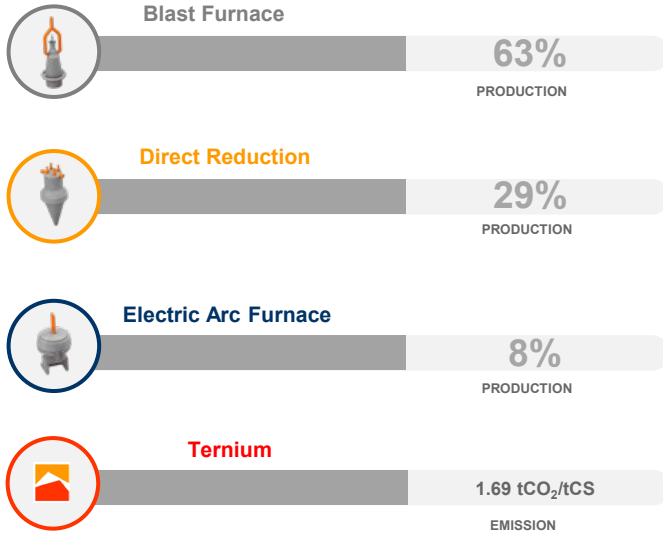
(S1+S2)



TERNIUM

# Crude Steel Production

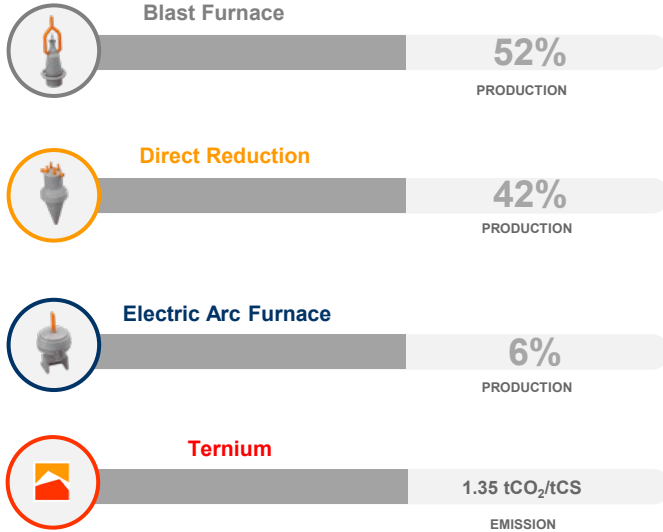
(2022 | S1+S2)



TERNIUM

# Crude Steel Production

(2030 | S1+S2)









## OUR DESCARBONIZATION JOURNEY

# A broader vision | 2030

### Plans for 20% Emission Intensity Reduction by 2030

● PROJECTS EXECUTED
 ◐ PROJECTS UNDER DEVELOPMENT
 ○ PROJECTS UNDER ANALYSIS

INITIATIVES	MEXICO	BRAZIL	ARGENTINA	PROGRESS DURING 2022
 Energy efficiency projects	●	●	●	<ul style="list-style-type: none"> <li>Guerrero facility in Mexico certified under ISO 50001</li> <li>Blast furnace expert control system incorporated at Brazil's facility (IA technology)</li> <li>Increase of pulverized coal injection (PCI) in Brazil</li> <li>Equipment changes aimed at enhancing the energy efficiency of the production system</li> </ul>
 Scrap in the metallic mix		◐		<ul style="list-style-type: none"> <li>Increase of the scrapyards capacity in Brazil</li> <li>The company recycled an aggregate of 2.8 million tons of scrap in 2022</li> </ul>
 Alternative raw materials-biomass	○	◐	◐	<ul style="list-style-type: none"> <li>Tryouts for mineral coal substitutes at an industrial scale with focus on biocarbon</li> </ul>
 Renewable energy	○	○	◐	<ul style="list-style-type: none"> <li>Recently announced wind-farm project in Argentina and execution of smaller onsite projects</li> </ul>
 Carbon Capture and Usage (CCU)	●	○	○	<ul style="list-style-type: none"> <li>First phase of CCU expansion in Mexico completed in 2021. Ongoing studies to increase CCU in Mexico and plans to build a pilot plant in Brazil</li> </ul>
 Low carbon technology	◐		○	<ul style="list-style-type: none"> <li>Announced EAF Project in Mexico based on DRI-EAF Technology</li> </ul>

In the long term Ternium has the ambition to achieve carbon neutrality.

This will depend on multiple technological breakthroughs:

**Tenova**, is assisting in the development of carbon capture equipment and hydrogen-based burners.

**Tecpetrol's Energy Transition Business Unit** is collaborating in the development of renewable energy projects, carbon capture and storage facilities and green hydrogen infrastructure.

**Tecpetrol** has launched a venture capital initiative to foster the growth of startups with the aim at accelerating decarbonization opportunities.

## HIGH PERFORMANCE SOLUTIONS

# Energy Production | (Wind Farm- Argentina)

With a total capacity of 99 megawatts, the wind farm located in the city of Olavarria is foreseen to become a prominent player in the region's energy landscape. The project will feature cutting-edge wind turbines, each boasting a power output of 4.5 megawatts.

The collective effort will replace a substantial of 90% of Ternium Argentina's current electricity procurement from external suppliers within the national interconnected system. Anticipated to be operational in the latter half of 2024





HIGH PERFORMANCE SOLUTIONS

## Smart Production, Scrap and Biomass | Brazil



### **Blast Furnace:**

Smart Production using AI

- Implementation of AI in processes to increase energy efficiency.



### **Steel scrap:**

Investment of 29 million dollars in stock yard.

- Reduction of emissions by 5.5%.



### **Biomass**

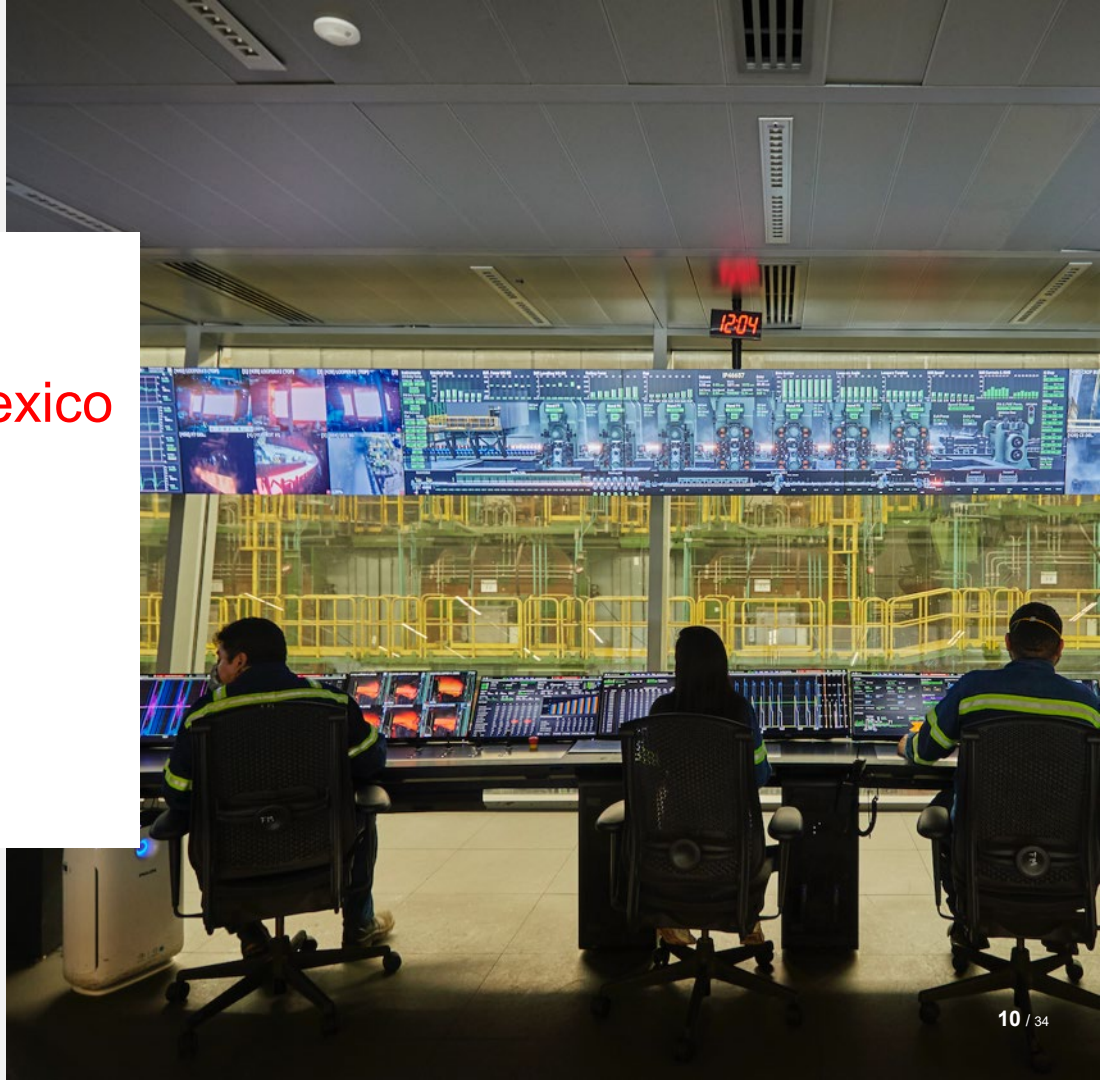
Biomass injection and Biomethane as NG



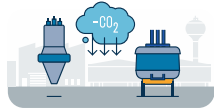
## HIGH PERFORMANCE SOLUTIONS

# New Direct Reduction | Mexico

- **2.6 million tons** of slabs destined primarily to automotive customers
- **2.1 million tons** of DRI capacity
- **Start-up in mid 2026**
- **Investment of \$2.2 billion**
- **< 0.6 CO<sub>2</sub> tons emitted per ton of crude steel produced** (expected by 2030)



# Decades of Dedication: Our Decarbonization Journey in Mexico



## Extensive knowledge in the application of low-carbon technologies

- Ternium uses DRI-EAF technology at its steelmaking sites in Mexico since 1957.
- DRI-EAF generates less than half of the emissions produced by traditional Blast Furnaces.



## Development of an extensive scrap supply network

- The Guerrero, Puebla and Apodaca sites in Mexico use scrap as one of their main raw materials.
- Ternium Mexico recycled 1.8 million tons in 2022



## Proven track record implementing CCU solutions

- We capture and sell over 260 thousand tons of CO<sub>2</sub> in our facilities in the country.
- Ternium increased by 40% its carbon capture and usage (CCU) capacity between 2017 and 2022

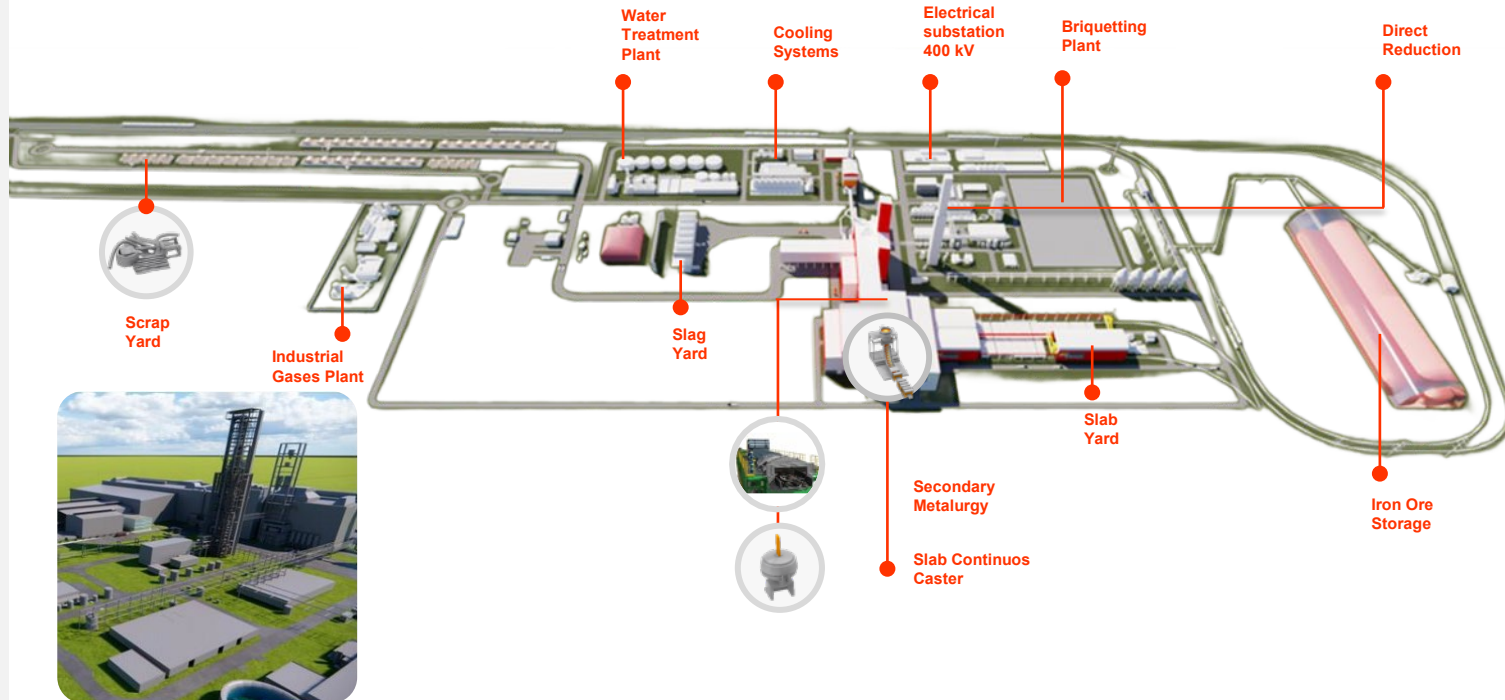


## Strategic Partnerships

- We have a strong partnership with Tenova, a leading company in technology and green solutions.
- In our new Hot Rolling Mill in Pesquería, we installed two purposed designed walking beam furnaces (WBF) which contribute to substantial energy savings, thus reducing emissions.

DRIVING SUSTAINABILITY: NEW STEELMAKING FACILITY IN THE USMCA REGION

# New slab mill at Ternium's Pesquería Industrial Center



BEYOND 2030

# New connecting technologies

BIO-MASS

Ternium Lab

TechEnergy  
Ventures

CCSU

BRIQUETTS



BIO-FUEL

NAT. GAS

H2

MEDIUM & LOW  
GRADE IRON ORES

Ternium Lab

tenova

PIG IRON-LIKE  
MELT

BIO-FUELS



H2



Ternium Lab

HIGH - END  
STEEL GRADES

BRIQUETTS

TechEnergy  
Ventures



## Conclusion

- Ternium's carbon reduction strategy is optimized according to the fundamentals for each country where it operates.
- The company has a long tradition in DRI operation for a wide range of flat and long products.
- Ternium has been investing in very low emission intensity technologies.
- Ternium's decarbonization new initiatives includes optimization of existing processes and disruptive technologies.
- Ternium cooperates with technological leading partners for breakthrough developments along its value chain.





# Thank you!

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