

# RIO GRANDE DO SUL

THE ROLE OF TECHNOLOGY IN  
EMERGENCY PUBLIC MANAGEMENT

**Gabriel Souza**

Vice Governor of the State of Rio Grande do Sul



# RIO GRANDE DO SUL

## LOCATION

The southernmost state in Brazil, Rio Grande do Sul borders Uruguay to the south, Argentina to the west, the state of Santa Catarina to the north and the Atlantic Ocean to the east.

## ECONOMY AND GDP

- GDP (2024): **US\$124,47 billion**
  - **6%** of the national GDP
- GDP per capita (2024): **US\$11,080**
  - **13.9%** above the national average

## INFRASTRUCTURE AND LOGISTICS

- **Port of Rio Grande**
  - One of Brazil's main export hubs
- **Highways: BR-116, BR-290 and BR-101**
- **Railways**
- **Salgado Filho International Airport**

## ECONOMIC SECTORS

- **Agriculture and livestock**
  - Highlights: soybeans, corn, wheat, rice, beef and pork, milk, wine
- **Industry**
  - Significant sectors: food processing, metallurgy, footwear, furniture, textiles
- **Services Sector**
  - Encompasses commerce, transportation, health, public administration and others





# THE STATE FACED 10 EXTREME WEATHER EVENTS IN LESS THAN A YEAR

**JUNE 15, 2023**

**Caraá and  
Maquiné**

**JULY 13, 2023**

**Sede Nova**

**SEPT. 2 TO 6, 2023**

**Vale do Taquari**

**SEPT. 25, 2023**

**Bagé**

**JUNE 15, 2023**

**Rio Grande and  
Pelotas**

**OCT. 4, 2023**

**Caraá and  
Maquiné**

**NOV. 3, 2023**

**Barra do Rio  
Azul**

**NOV. 17, 2023**

**Vale do Taquari,  
do Caí and  
Serra**

**JAN. 17 TO 18,  
2024**

**Vales and RMPA**

**APR. TO MAY, 2024**

**Centro, Vales,  
Serra and  
Metropolitan Area  
of Porto Alegre**



# ONE YEAR AGO, WE FACED THE MOST DEVASTATING DISASTER IN OUR HISTORY



## VALES AND SERRA

- Flash floods
- Landslides



## METROPOLITAN AREA

- Prolonged flooding in densely urbanized areas



## COSTA DOCE

- Prolonged flooding



## RIO GRANDE DO SUL MAY 2024

- 806 injured
- 184 deaths
- 2.4 million affected
- 581.6 thousand homeless
- 81.4 thousand people in shelters
- 25 still missing





# PERSISTENT HEAVY RAINS

Equivalent to **3 months** of **rainfall** in RS: an average of **420 mm** of rain accumulated between April and early May 2024

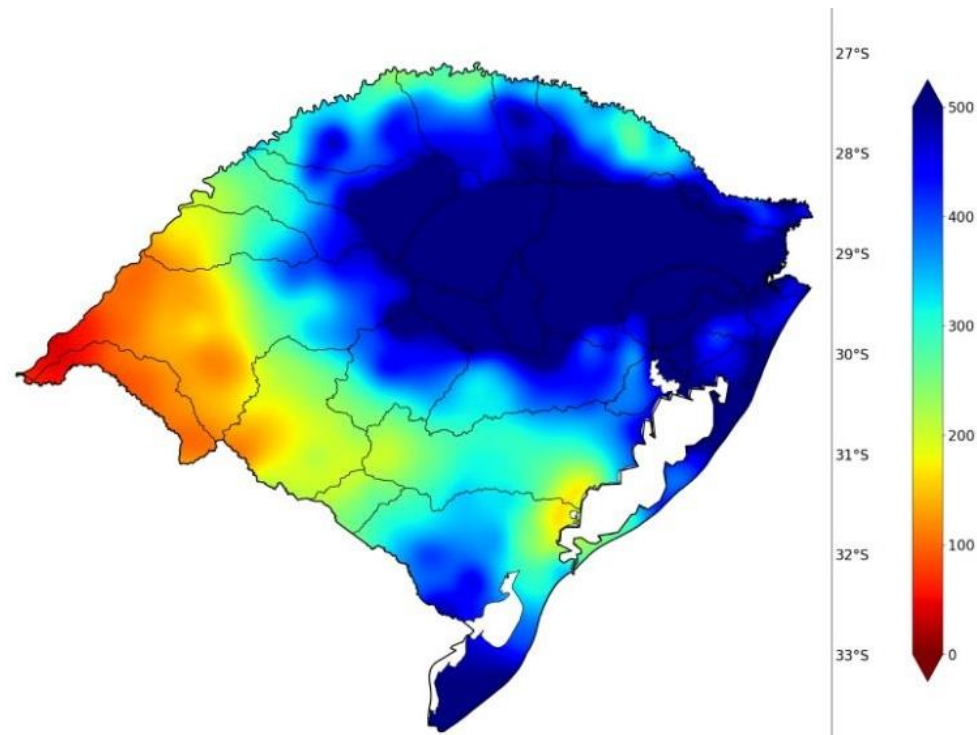
On average, **180 mm** of rain is expected for the month of May

**GZH**

02 de maio de 2024

Em 24 horas, ao menos 14 municípios gaúchos registram volume de chuva superior à média esperada para maio no Estado

## ACCUMMULATED RAINFALL (mm), May 1 to 30 , 2024



Source: Situation Room / Department of Water Resources and Sanitation / Secretariat of Environment and Infrastructure



# DEVASTATED NEIGHBORHOODS

Flash floods caused rapid destruction of **houses, infrastructure** and **public equipment** and required disaster preparedness protocols

Encantado



Porto Alegre



Canoas



Roca Sales



Arroio do Meio



Cruzeiro do Sul





# IMPACTS ON PUBLIC SERVICE AND LOGISTICS

The 2024 floods in Rio Grande do Sul severely disrupted services and logistics, halted production, overwhelmed security forces, and strained public infrastructure—exposing the region to critical risks





# SERVICES

- More than **1.3 million** customers without **water**
- More than 360 thousand households and companies without **energy power**
- **Dozens** of municipalities without **telephone** and **internet** at the peak of the crisis



# LOGISTICS



- **527 blocked areas** on state and federal highways
- **Airport paralyzed** until mid-October. **Flights resumed** only in December



# PRODUCTION DISRUPTION

- Estimated impact of **US\$14 billion to US\$21 billion** on the state's **GDP 12 months** after the disaster (8-12% drop in annual GDP)
- Estimated impact of **US\$11 billion to US\$13 billion** on assets (loss or deterioration of capital goods)
- The closure of the POA Airport alone until Dec. 2024 resulted in an impact of **US\$440 million** to US\$563 million on the GDP

**InfoMoney** 02 de maio de 2024  
**Chuvas afetam fase final de  
safras no RS; fábricas  
suspendem atividades**



# SECURITY

- **77,874** people rescued
- **12,543** animals rescued
- Mobilization of the entire state's public security forces
- **Recall of 1,360** police officers and firefighters from reserve
- Reinforcement from **other states** and from the **National Force**





# PUBLIC SERVICES

- The **Administrative Center** and the **Information and Communication Technology Center of the state** flooded and paralyzed
- **1,090 schools** were affected (damaged, used as shelters, had transport or access problems, etc.), of which **22** need **relocation** or **total reconstruction**



# SHELTERS

- More than **800** shelters in more than **100 municipalities**, with over **80 thousand people** accommodated

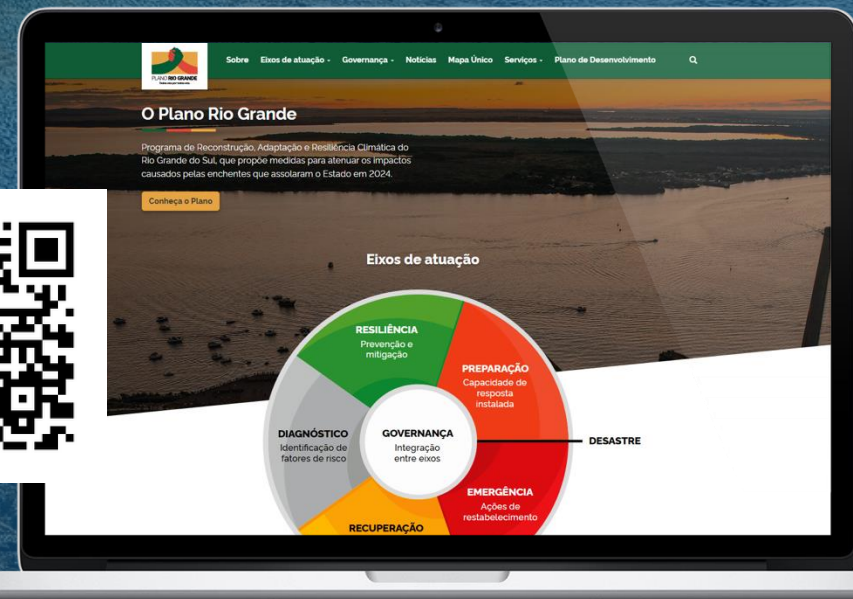




# THE RIO GRANDE PLAN

Agenda for **preparation, reconstruction, adaptation** and **climate resilience**

[planoriogrande.rs.gov.br](http://planoriogrande.rs.gov.br)





# RIO GRANDE PLAN

A unified action plan covering the short, medium, and long term.



**PLANO RIO GRANDE**





















**Todos nós por todos nós.**





# STRATEGIC PROJECTS OF THE RIO GRANDE PLAN

## EMERGENCY

RECOVERY	DIAGNOSIS	RESILIENCE	PREPAREDNESS	GOVERNANCE
 Resilient Infrastructure and Partnerships Program	 Bathymetric mapping	 Flood Protection and Containment Systems	 Monitoring and alert systems	 RIOS Project: Resilience, innovation and works for the future of RS
 Bridges, roads, and highways	 Topographic mapping	 Nature-Based Solutions (NBS)	 Strengthening Civil Defense structures and response forces	 State Center for Integrated Risk and Disaster Management (CEGIRD)
 Desilting of Rivers and Streams	 Unique Map of Rio Grande	 Research and development	 Contingency plans	 Integrated Data Platform
 Housing		 Protection and Containment		 CRIEC
 Schools and hospitals				
 Social Policies				



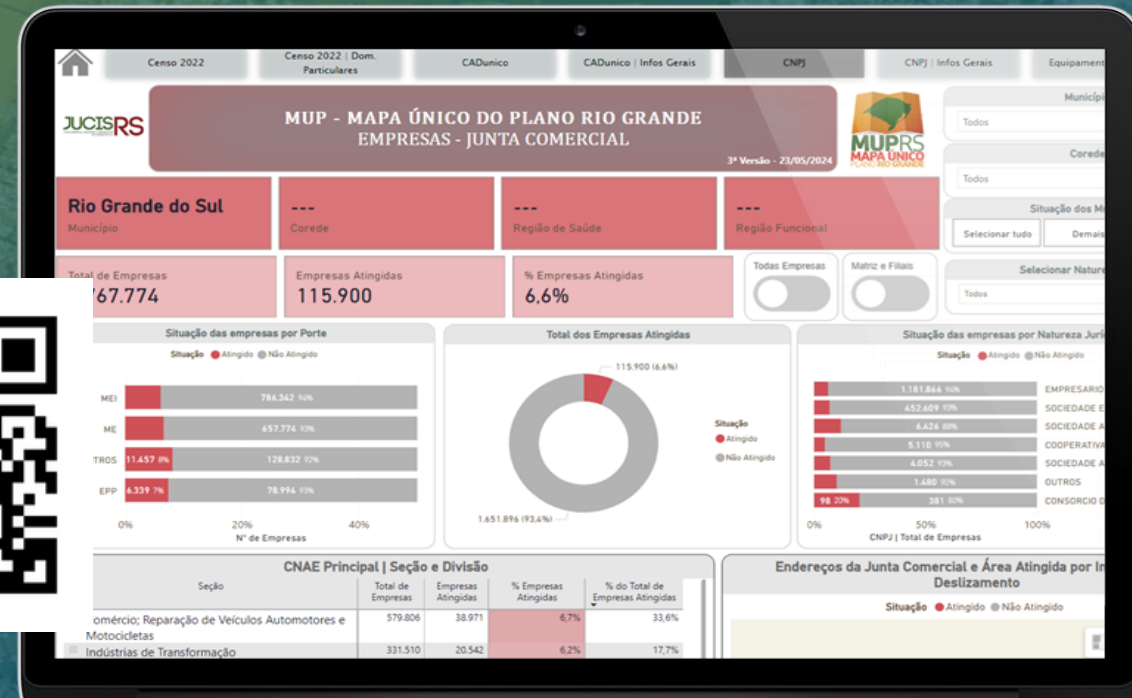
# THE UNIQUE MAP OF THE RIO GRANDE PLAN

Integrated and Unified  
System for Mapping Areas  
Directly Affected by the  
April–May 2024 Climate  
Events



**MUPRS**  
**MAPA ÚNICO**  
PLANO RIO GRANDE

[mup.rs.gov.br](http://mup.rs.gov.br)





# THE UNIQUE MAP OF THE RIO GRANDE PLAN



## OBJECTIVES



To identify and quantify the addresses, roads, households, businesses, public facilities and, especially, the affected population



To provide faster and more accurate guidance for public policy



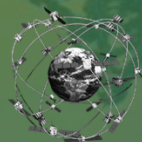
To simplify processes, speeding up the delivery of resources to those in need, without the need for registrations or bureaucratic steps



# THE UNIQUE MAP OF THE RIO GRANDE PLAN



## DATABASE



Satellite images  
from the  
PlanetScope - Dove  
Satellite  
Constellation  
(3m)



Images from the  
Open Street Map  
(OSM)



Administrative records  
from state agencies  
(social assistance, health, education,  
public safety, finance, commercial  
registry, etc.)



Information from the  
Unified Registry  
(CadÚnico)



Information  
from the 2022  
Demographic  
Census



# THE UNIQUE MAP OF THE RIO GRANDE PLAN



Satellite images were used to delimit the areas directly affected

Next, cross-referencing was carried out with the georeferenced variables of interest





# US\$ 169 MILLION IN FINANCIAL AID FOR 170,000 FAMILIES

## SUPPORTED PROGRAMS

### PROGRAMA Volta por Cima

The definition of the affected areas enabled payments to around **100,000** families, with up to **US\$439.79** deposited for each, totaling **US\$44.19 million**

### SOS RIO GRANDE DO SUL

The mapping enabled **36,800 families** to receive **US\$351.97** in aid, totaling **US\$12.96 million** in disbursements.

### MEI RS CALAMIDADES

Disbursement of **US\$5.8 million** to individual micro-entrepreneurs located within the flood zone in municipalities under a state of calamity

### Pronampe Gaúcho

Targeted at individual micro-entrepreneurs (MEIs), microenterprises and small businesses located in municipalities under a state of calamity and identified by the MUP RS, the program will benefit **2,000** families with an investment of **US\$17.8 million**

### ESTRATÉGIA INTEGRADA DE HABITAÇÃO



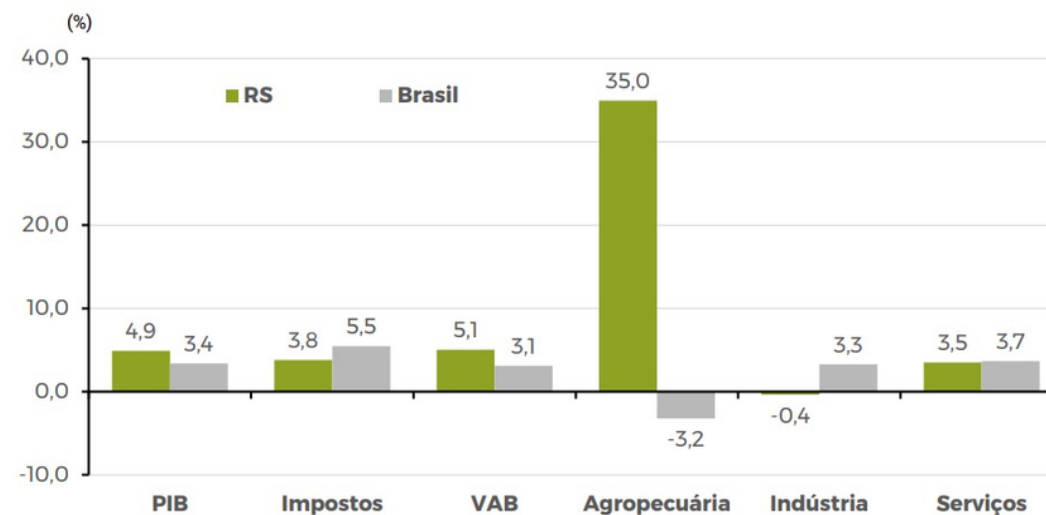
Integrated Housing Strategy with the goal of enabling **9.000 housing units** and **US\$88.9 million** in investment



# IMPACT ON THE ECONOMY

Public policies supporting income transfers and the productive sector contributed to a **4.9% GDP growth**, **surpassing the national average** by **1.5 p.p.**

This was driven by the agricultural recovery post-drought, the increased retail sales and the growth of the construction industry due to the reconstruction projects





# MORE THAN **US\$ 1.2 BILLION** IN INVESTMENTS – FUNRIGS

Logistics and Transportation	US\$614.44 M
Dredging and Desilting	US\$181.34 M
Public Security and Penal System	US\$163.73 M
Housing Programs	US\$89.08 M
Economic Activation	US\$70.77 M
Financial Aid for Families	US\$50.00 M
Education-Focused Investments	US\$39.44 M
Assistance and Health	US\$38.91 M



# Thank you!

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STATE  
GOVERNMENT  
**RIO  
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BRAZIL





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