ASSESSMENT OF UNDISCOVERED CONVENTIONAL OIL AND GAS RESOURCES IN THE PELOTAS BASIN



Oil, Gas and Biofuels Studies Division
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PUBLIC VALUE

The Brazilian Energy Research Office (EPE) conducts research and produces studies to inform the formulation, implementation, and evaluation of public policies and energy planning within the Brazilian government.

This study enhances transparency and reduces information asymmetry by providing data and evidence that contribute to the debate on oil and gas exploration in new frontier basins.

DISCLAIMER



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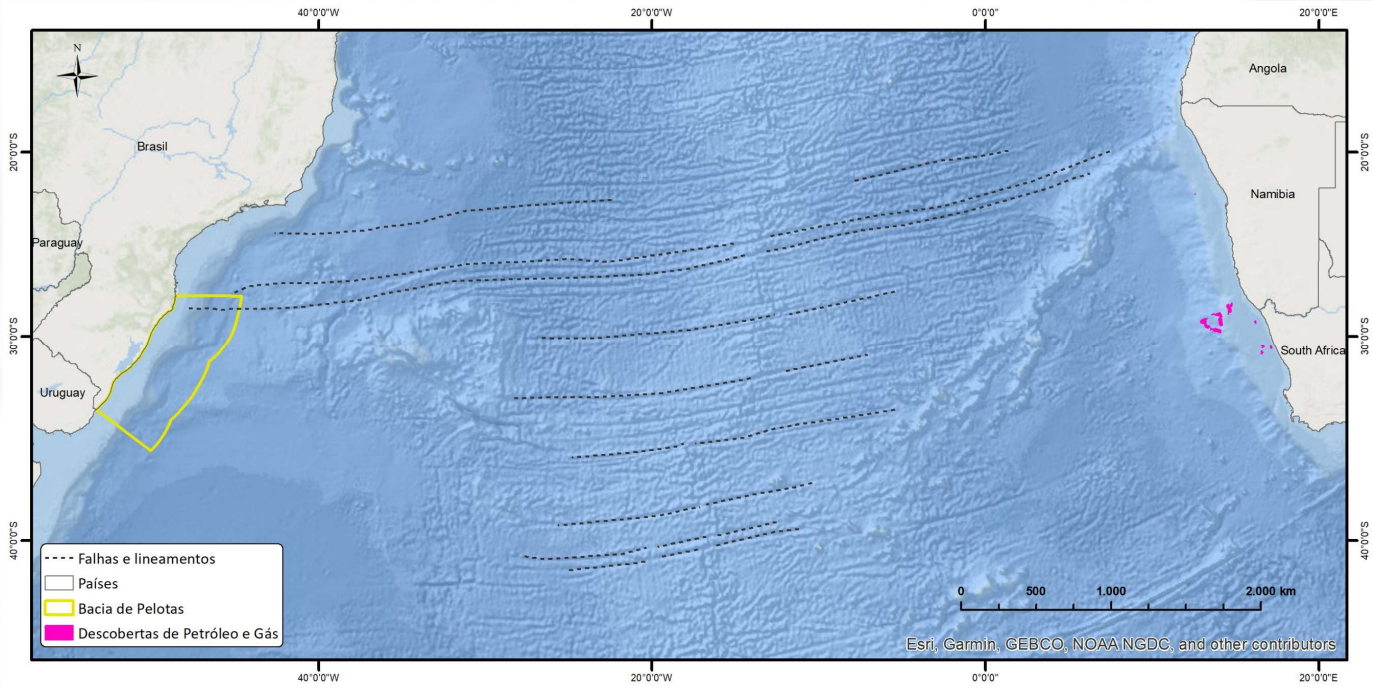
Pelotas Basin

Introduction

The Pelotas Basin is one of the sedimentary basins that constitute the South Atlantic Margin. Within Brazilian territory, this basin extends from the Uruguayan border in the south to its northern boundary with the Santos Basin, encompassing the entire coastline of Rio Grande do Sul and a portion of the Santa Catarina coast.

The geological evolution of the Pelotas Basin is similar to that of its conjugate margin in Africa and its neighboring basin in Uruguay, unfolding within the context of the Atlantic Ocean's formation following the breakup of Gondwana (~ 200 a 145 Ma).

Since 2022, significant oil and gas discoveries along the Namibian margin have heightened exploratory interest in the basins of the South Atlantic margin. In this context, the Pelotas Basin is currently experiencing a new wave of exploration activity by the oil and gas industry.



These findings reaffirm the importance of re-evaluating Brazil's prospective reservoir potential.

Pelotas Basin within EPE’s Strategic Planning Framework

Improvement of Sedimentary Basin Analysis and Petroleum System Modeling

Included in EPE's strategic planning since 2021, this study involved seismic interpretation and well data analysis. The objective was to improve the understanding of local stratigraphy and the boundaries of the geological formations associated with the play fairway analysis in the ZNMT, as well as to assess undiscovered hydrocarbon resources.

2021

Parnaíba ✓
seismic interpretation

Barreirinhas ✓
seismic interpretation

2022

Parnaíba ✓
seismic interpretation

Pará-Maranhão ✓
seismic interpretation (shallow waters)

2023-2024

Parnaíba ✓
volumetric assessment

Parecis ✓
seismic interpretation

Foz do Amazonas ✓
NW portion
seismic interpretation and volumetric assessment

2025-2026

Foz do Amazonas
SE portion and Cone area
seismic interpretation and volumetric assessment

Pelotas ✓
seismic interpretation and volumetric assessment

Assessment of Undiscovered Conventional Oil and Gas Resources in the Pelotas Basin



Pelotas Basin
348,383 Km²

October 2023

Well and seismic data loading into interpretation software.

2024-2025

Regional stratigraphic horizon mapping into the whole extension of the basin, identification and evaluation of leads.

July 2025 - Engagement of specialized consulting R&F Advisory (CT-EPE-022/2025)

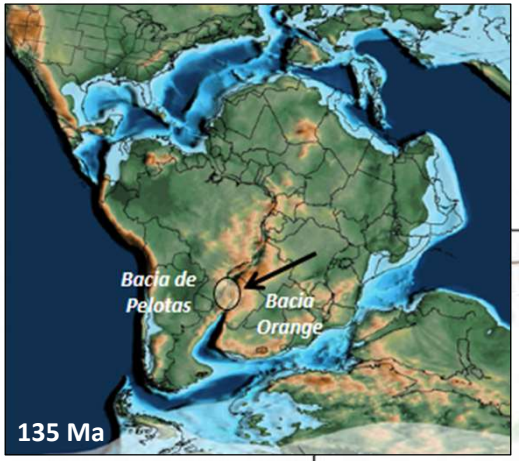
Conducted a peer review of EPE's interpretation studies and exploratory assessment of the Pelotas Basin. Discussions focused on identifying typical reservoir seismic facies, evaluating source rock potential, and analyzing other elements of the petroleum system. The final assessment of potential hydrocarbon resources was performed by EPE in collaboration with the consultants.

In-Place Volumetric Estimation

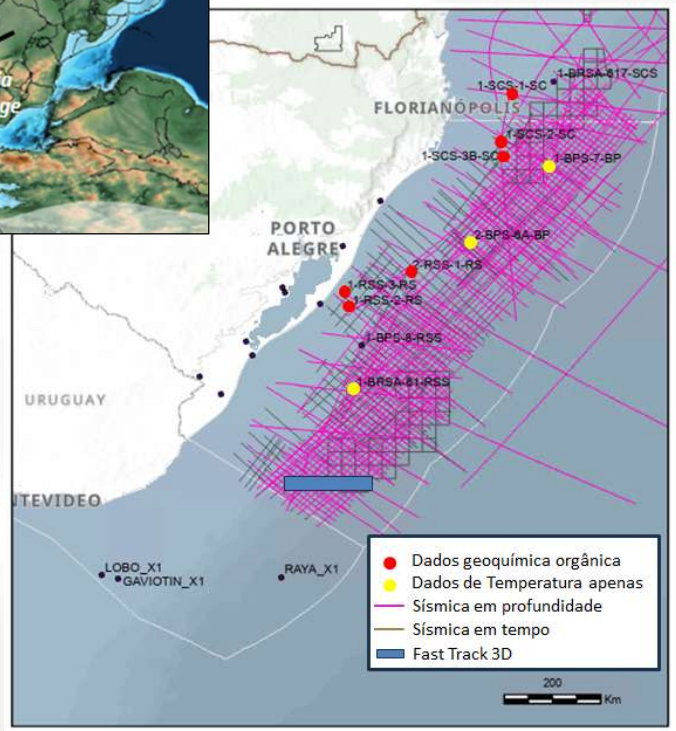
Data Source

For this study, all available information from the nine offshore wells was reviewed, including geochemical data. The formation tops of the main stratigraphic units were reinterpreted and tied to the seismic data.

A total of 454[1] 2D seismic lines, processed in both time and depth domains, were interpreted, covering 80,000 linear kilometers.



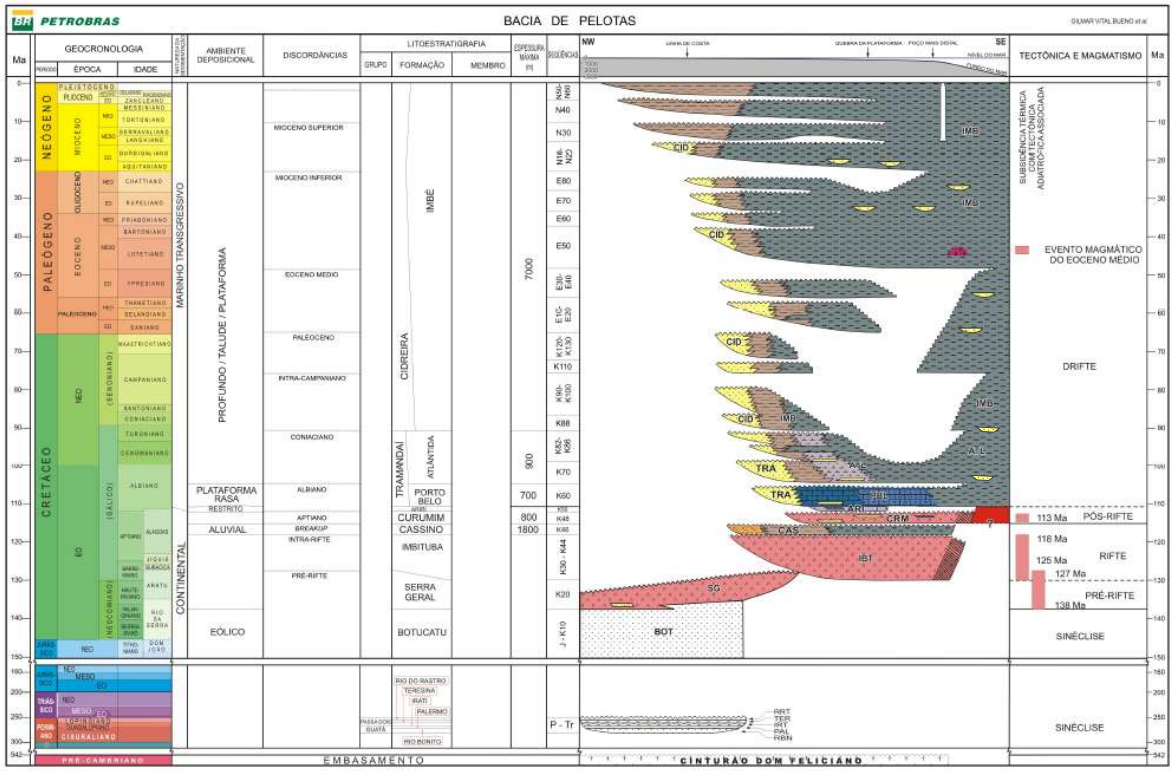
Scotese et al., 2024



[1] *Public and confidential seismic data obtained from BDEP were used under the ANP-EPE Cooperation Agreement (Case No. 48610.205220/2023-71).*

Pelotas Basin

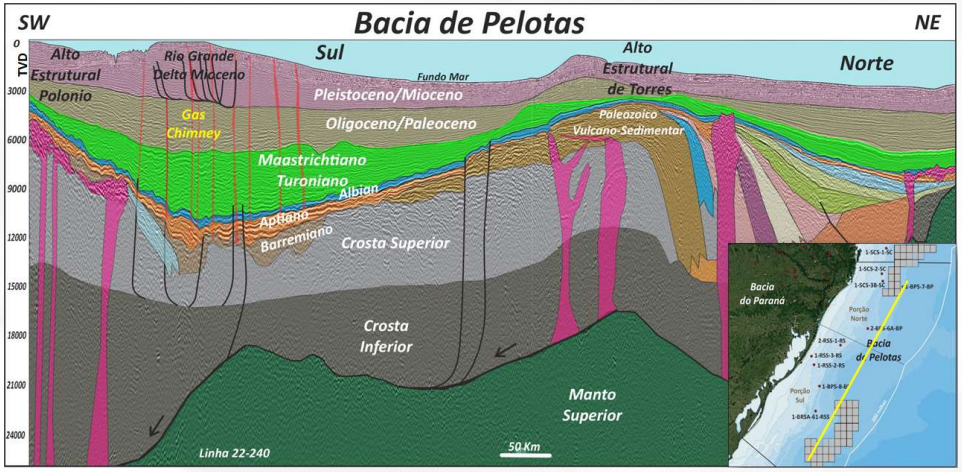
EPE, with the technical support of R&F Advisory, assessed the potential of undiscovered conventional oil and gas resources in the Pelotas Basin.



Modificado de Bueno et al., 2007

Throughout this study, sedimentary units ranging from the Aptian to the Neogene were analyzed to evaluate their tectono-sedimentary evolution, depositional systems, and the risks associated with petroleum system elements.

In this context, Cretaceous plays - particularly those where the reservoir is in direct contact with the source rock - represent the most significant prospectivity, drawing a direct analogy with recent discoveries on the conjugate margin in Africa (Zalán, 2017).

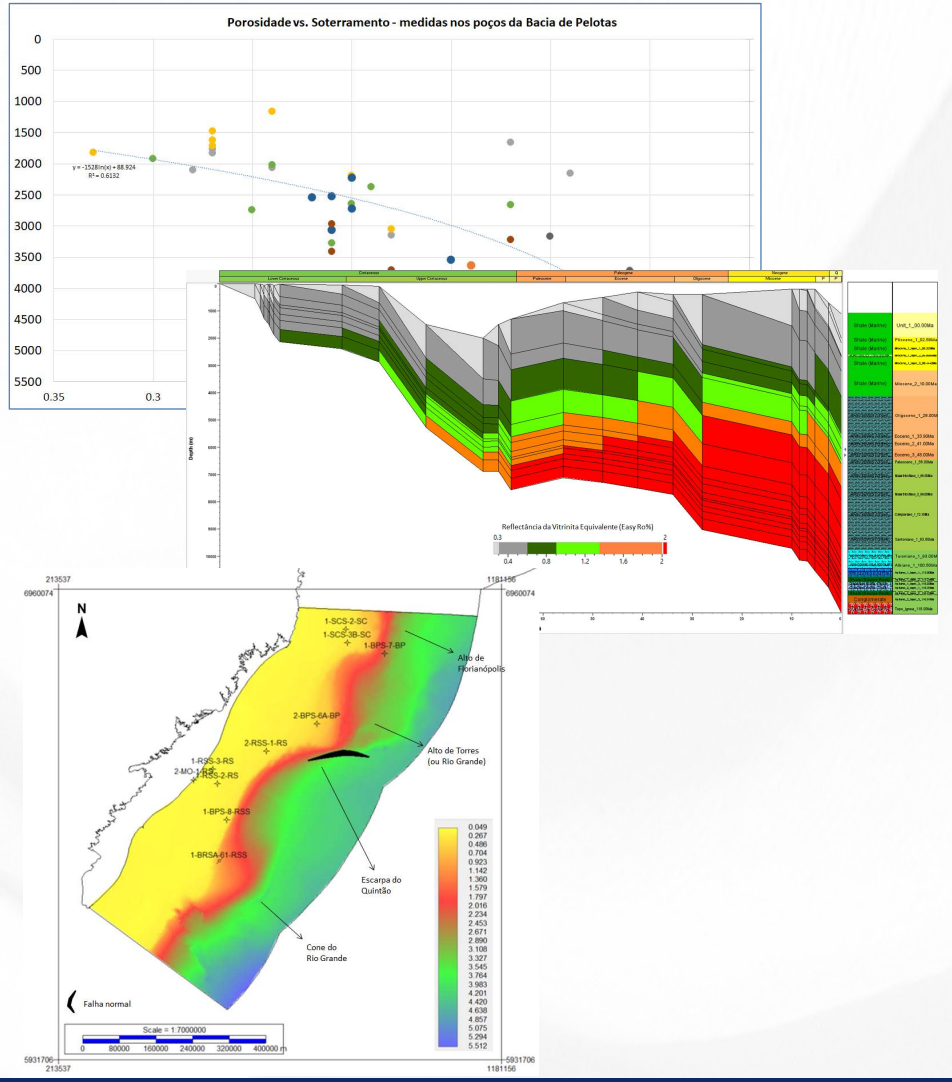


EPE e R&F Advisory, 2026

Metodology

A total of 80 basin-wide leads were identified across both licensed and unlicensed blocks. Their volumes were calculated using Capen's (1992) methodology, accounting for the high uncertainty and risks consistent with the current stage of exploration in the Pelotas Basin, to assess their risked resource potential.

Input parameters and the geological probability of success (Pg) for each lead were estimated based on several key indicators: negative amplitude anomalies within the reservoir, proximity to source rocks and migration pathways, structural closure and/or updip pinch-outs, and robust seismic-to-well ties. Additionally, 1D petroleum system modeling was utilized to predict the expected hydrocarbon phase.



[2] According to the SPE (2001) guidelines, poorly defined prospective resources are classified as leads, requiring further data acquisition and evaluation to mature into prospects. This classification aligns with the sparse 2D seismic coverage utilized in this study.

Volumetric Assessment

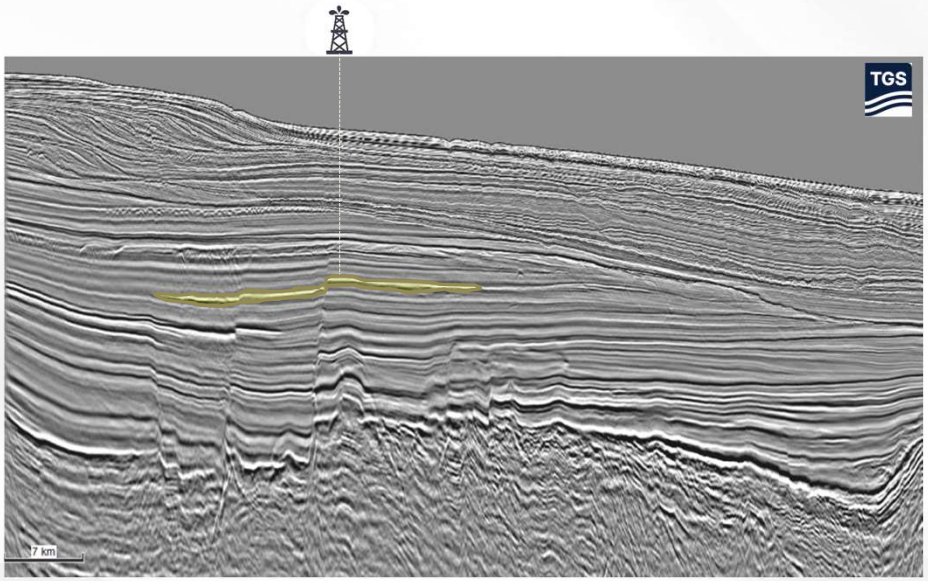
Basin-wide consolidation of risked, in-place potential volumes at surface conditions, derived from the 80 identified leads.

The volumes represent a preliminary assessment of undiscovered conventional oil and gas resources in the Pelotas Basin, based on currently available geological and geophysical knowledge and the assumptions adopted in this study. The results carry an appropriate degree of uncertainty and risk consistent with the basin's current stage of exploration and should be interpreted as an order-of-magnitude estimate of the exploration potential, subject to revision as new data and studies become available.

17,9
billion barrels of oil equivalent in-place

35% oil-prone leads
Average recovery factor of Brazilian offshore oil fields

80% gas-prone leads
Average recovery factor of Brazilian offshore gas fields



Seismic Data Courtesy of TGS

3,4
billion barrels of recoverable oil

1.006,6
billion cubic meters of recoverable gas

9,7 [3]
billion barrels of oil equivalent recoverable

[3] The 2D seismic data used in this study indicate potential technological challenges for some of the identified leads - ultra-deep objectives (> 7,700 m).

Concluding remarks

Concluding remarks



The total oil and gas volume, expressed in barrels of oil equivalent, estimated in this study for **the Pelotas Basin** – the geological analogue of the promising Orange Basin in Namibia – **is on the order of 17,9 billion barrels of oil equivalent (boe) in-place.**



On the conjugate African margin, within the **Orange Basin in Namibia,** the estimated **oil and gas volumes, expressed in barrels of oil equivalent, total 18 billion boe in-place**[4]. Recent exploration campaigns in this basin have resulted in 14 discoveries, with first oil from the Venus field expected in 2030.



In Brazil, no wildcat wells have been drilled in the Pelotas Basin since 2001.

These results reaffirm the importance of re-evaluating Brazil's exploration potential.

The technical, geological, and methodological findings generated by this study will be detailed in future EPE publications.

[4] *Source: Rystad Energy, Spektra, Set. 2026.*

Works Cited

BUENO, G. V. et al. 2007. **Bacia de Pelotas**. Boletim de Geociências da Petrobras, v. 15 (2), p. 551–559.

CAPEN E. C. 1992. **Dealing with Exploration Uncertainties**. In: R. Steinmetz (ed.) The Business of Petroleum Exploration, treatise of Petroleum Geology, Handbook of Petroleum Geology. American Association of Petroleum Geologists: 29–61.

EPE e R&F ADVISORY, E. 2026. **Bacia de Pelotas: A próxima Fronteira do Petróleo Brasileiro**. Consultoria CT-EPE-022/2025, Produto 4, Relatório interno.

SCOTESE, C. R. et al. 2024. **The Cretaceous world: plate tectonics, palaeogeography and palaeoclimate**. Geological Society, London, Special Publications, v. 544, p. 31-202. DOI: 10.1144/SP544-2024-28

SPE 2001. **Guidelines for the evaluation of petroleum reserves and resources: a supplement to the SPE/WPC petroleum reserves definitions and the SPE/WPC/AAPG petroleum resources definitions**. Society of Petroleum Engineers, 141 p.

ZALÁN, P.V. 2017. **Where Should We Drill in the Deep Waters of the Pelotas Basin, Southern Brazil and Uruguay?**. In: AAPG Annual Convention & Exibition, 2017, Houston.

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