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Geological CO_2 Storage Potential in Coal Seam D, South Sumatra Basin

Tiara Fadhillah[1], Silti Salinita[2], Handoyo Handoyo[1*]
[1]Geophysical Engineering Study Program, Institut Teknologi Sumatera, South Lampung, Indonesia
[2]Balai Besar Pengujian Mineral dan Batubara tekMIRA, West Java, Indonesia

Correspondence E-mail: handoyo.geoph@tg.itera.ac.id

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ABSTRACT

Rising atmospheric CO_2 emissions from fossil fuel-based industries have intensified the need for effective mitigation strategies, with Carbon Capture and Storage (CCS) in geological formations, particularly un-mined coal seams necessitates specialized research into numerous critical factors that are equivalent thorough characterization of coal properties such as porosity, permeability, uniaxial compressive strength (UCS), poisson ratio, and brittleness. This study serves as a preliminary assessment of the CCS potential of Coal Seam D in the Suban Burung Block, South Sumatra Basin, using drilling data from four wells (within area 960 m × 860 m). This study aims to describe the coal seam D strata for underground CO_2 storage. Coal Seam D was identified from core sample data, with laboratory analyses conducted to determine density and porosity values. Then, in this study we predict velocity (V_p and V_s), UCS values, and BI using petrophysical and rock physics approaches. The analysis by integrates well correlation, estimation of elastic and mechanical parameters, and spatial interpolation of petrophysical properties. Results indicate that Coal Seam D has a thickness of 8.1–10.7 m and porosity ranging from 0.14–0.198. Mechanical properties show Uniaxial Compressive Strength (UCS) values of 9.5-9.7 MPa and a Brittleness Index 0.47–0.50 which indicate coal with low to medium strength and medium brittleness. Based on the preliminary analysis, the coal seam D in this region exhibits favorable candidate for implementation CO_2 storage in South Sumatra, Indonesia.

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1. INTRODUCTION

The increasing concentration of carbon dioxide (CO_2) in the atmosphere is a primary factor contributing to global climate change. Fossil fuel-based industrial activities, including power generation, oil and gas operations, and coal mining, generate substantial amounts of CO_2 emissions, which can contribute to global warming (IPCC, 2023). Consequently, a range of carbon mitigation technologies have been developed to curtail the proliferation of greenhouse gas concentrations in the atmosphere. A prominent approach that has been the focus of extensive research in recent decades is Carbon Capture and Storage (CCS), a technology solution designed to capture CO_2 from emission sources and store it permanently in subsurface geological formations (Benson & Cole, 2008; Gao et al., 2022).

Geological sequestration of CO_2 can generally be implemented in three major subsurface environments. First option CO_2 may be injected into depleted oil and gas reservoirs, where it is widely used in enhanced oil recovery (EOR). In this process, CO_2 interacts with hydrocarbons, reducing oil viscosity and maintaining reservoir pressure, thereby enhancing hydrocarbon flow. A portion of the injected CO_2 remains stored, while the remainder may be produced and reinjected (Ravagnani et al., 2009). Second, CO_2 can be stored in unmined coal seams, where gases are predominantly retained through sorption within the coal matrix. Approximately 95–98% of gases such as methane (CH_4) are stored by adsorption, occurring on internal surfaces. Gas storage in coal occurs through three main mechanisms: a) adsorption on internal surfaces (cleats); b) in natural fractures and pores; and 3) absorption within the coal molecular structure (Shi & Durucan, 2005). CO_2 injection can also enhance coal-bed methane recovery through CO_2-enhanced coal-bed methane (CO_2-ECBM) technology (X. Li & Fang, 2014; Wu et al., 2023). Third, CO_2 may be injected into deep saline aquifers (>800 m), where pressure and temperature conditions approach or exceed the critical point of CO_2, increasing storage efficiency (Gibbins & Chalmers, 2008). Effective geological storage requires a suitable reservoir seal system, consisting of a high-porosity, high-permeability reservoir overlain by a low-permeability seal. Accordingly, subsurface utilization demands comprehensive characterization through multidisciplinary approaches, including geology, geophysics, rock physics, and petrophysics.

Previous studies have demonstrated that the CO_2 storage capacity of coal seams is strongly influenced by intrinsic coal properties, including rank, moisture content, maceral composition, and pore structure (Masoudian, 2016; White et al., 2005). In general, studies on CO_2 storage potential in coal seams have predominantly focused on adsorption characteristics controlled by coal composition. For instance, Ramdhani et al. (2024) demonstrated that the Muara Enim Formation exhibits a higher CO_2 adsorption capacity compared to the Lakat Formation, primarily influenced by differences in chemical and organic composition, including maceral content, moisture, and ash. However, such studies mainly emphasize adsorption capacity from a geochemical and petrographic perspective, with limited consideration of the physical and mechanical behavior of coal seams that also critically influence CO_2 injection and storage performance. In contrast, Handoyo et al. (2025) investigated the potential of CO_2 storage in the Muara Enim Formation using a petrophysical approach, incorporating parameters such as porosity, uniaxial compressive strength (UCS), Poisson's ratio, and brittleness index derived from well-log data. Based on several previous studies in **Table 1**, there are several aspects to consider when assessing the feasibility of coal reservoirs for CO_2 storage.

Table 1. Factors considered in assessing the feasibility of coal reservoirs for CO_2 storage.

Aspects	Effect
Structural geology (Omotilewa et al., 2021)	Coal reservoirs characterized by relatively simple geological structures are generally considered more suitable for CO_2 sequestration.
Coal rank (Yan et al., 2020)	The ability of coal to adsorb CO_2 generally increases with coal rank, progressing from long-flame coal to gas coal, then coking coal, and reaching the highest capacity in anthracite. Consequently, anthracite and high-rank bituminous coal with low ash content are regarded as the most favorable types for CO_2 sequestration.
Coal condition (Du, 2020; Liu, 2019)	The presence of fluids within coal seam pore channels can interfere with continuous CO_2 migration, resulting in a smaller interaction area between the injected CO_2 and the coal surface.
Cap rocks/ sealing rocks (White et al., 2005)	Suitable caprock formations generally possess low permeability, limited fracture development, sufficient thickness, good lateral continuity, and

	relatively tough mechanical behavior that prevents fractures from propagating through the entire layer.
Subsurface hydrology (Godec et al., 2014)	Geological settings without shallow freshwater aquifers and with stable hydrogeological conditions are generally considered more favorable for secure CO_2 sequestration.
Permeability (Wu et al., 2023)	Numerical modeling of CO_2 migration in Coal Bed Methane (CBM) reservoirs indicates that effective CO_2 storage can still be achieved in coal seams with relatively low permeability, including CBM reservoirs with permeability values of approximately $1 \times 10^{-3}$to 5×10^{-3} μm^2, and deep coal seams around 0.01×10^{-3} μm^2.
Reservoir depth (Xie & Economides, 2009)	Increasing burial depth generally leads to a reduction in the porosity and permeability of caprock formations. Economically, coal seams deeper than approximately 3300 m are considered less practical for CO_2 storage, whereas depths ranging from 300 to 1300 m are regarded as the most favorable for sequestration in coal reservoirs.
Time (W. Li, 2019)	During the early stages of CO_2 injection, transport within the coal seam is mainly controlled by Darcy flow due to uneven swelling, deformation, and increased internal expansion stress in the coal structure. Over longer time periods, however, processes such as mineral dissolution, degradation of coal macromolecular structures, and Fickian diffusion gradually become the dominant mechanisms influencing CO_2 migration within the seam.

Indonesia, particularly the Sumatra region, has significant potential for the development of geological CO_2 storage sites due to its extensive coal resources distributed across major basins, including the North Sumatra, Central Sumatra, and South Sumatra Basins. These basins host significant coal-bearing formations, notably the Muara Enim Formation, which is characterized by considerable thickness and lateral continuity (Bishop, 2001; Koesoemadinata, 2002). Coal-bearing formations in the South Sumatra Basin are commonly interpreted through density and gamma-ray well-log responses to distinguish potentially productive seams. Nevertheless, deeper coal layers such as Seam D are generally excluded from mining activities because their extraction is considered less feasible from both technical and economic perspectives. These deeper, unmined coal seams, however, present considerable potential for subsurface CO_2 storage (Talapatra, 2020).

This study estimates mechanical-elastic parameters, including uniaxial compressive strength (UCS), Poisson's ratio, and brittleness index (BI), are derived from density and porosity data obtained through laboratory analyses using established mathematical relationships related to rock physical properties. These parameters are essential in studying both the potential for CO_2 and mechanical response of coal seams during CO_2 injection (Handoyo et al., 2025). Porosity and permeability govern the ability of coal seams to store and transmit CO_2 through fracture networks (Wang et al., 2018; Zou et al., 2022), whereas UCS indicates the resistance of the rock to compressive stress, and brittleness describes the tendency of coal to fracture under deformation(Pan et al., 2013; Perera & P.G. Ranjith, 2012; Tenthorey et al., 2019). In contrast to previous studies that mainly emphasize adsorption characteristics, this study integrates petrophysical and geomechanical analyses derived from density and porosity data to provide a more comprehensive evaluation of the suitability of Coal Seam D for CO_2 storage in Sumatra, Indonesia.

2. METHODS

2.1 Regional Geology

The study area is part of the South Sumatra Basin, which formed as a result of tectonic interactions between the Eurasian Plate and the Indian Ocean Plate. These processes led to significant deformation of Paleozoic–Mesozoic rock complexes along the Barisan Mountains and contributed to the development of Tertiary basins along the western margin of the Sunda Shelf through basement fault reactivation and volcanic activity. The basin is bounded by the Sunda Shelf to the east, the Bukit Barisan tectonic zone to the west, and is adjacent to the West Java Basin and the Lampung High. It was originally part of a larger basin system together with the Central Sumatra Basin, before being separated by the Tigapuluh Mountains. Located in the Muara Enim region, the area is characterized by the Muara Enim Formation as shown in Figure 1, which overlies the Air Benakat Formation and is underlain by the Talang Akar Formation, with the Kasai Formation forming the uppermost unit. Structurally, the basin is subdivided into several sub-basins, including the Jambi Depression and the Palembang sub-basins, each bounded by basement highs (Darman & Sidi, 2000).

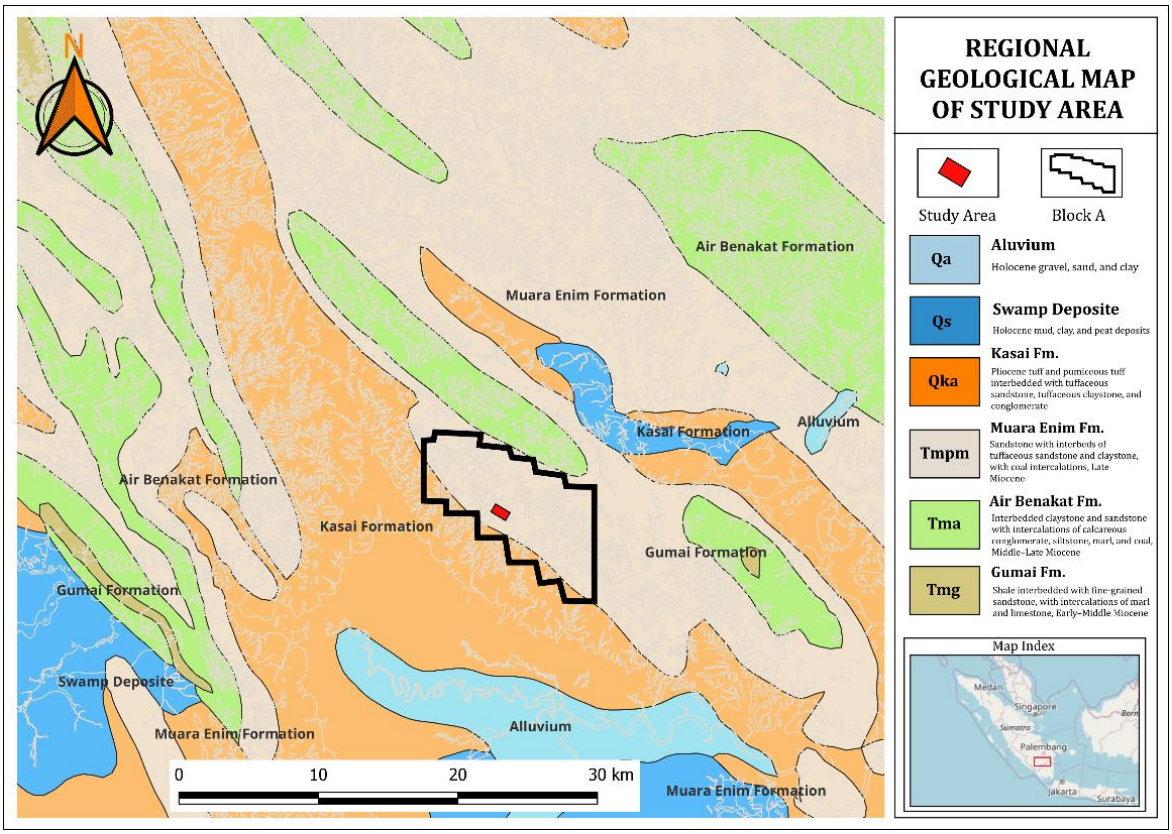


Figure 1. Regional geological map of the study area modified from (Suwarna et al., 1992)

2.2 Local Geology

The study area is morphologically characterized by undulating topography with elevations ranging from approximately 74 to 81 meters above sea level with slope angles ranging from 3° to 15° (Salinita et al., 2024). The lithology is dominated by clastic sedimentary deposits that are grouped into two main rock units: Sandstone Unit and Interbedded Sandstone–Claystone Unit Figure 3. Coal seams in this area exhibit relatively continuous lateral distribution, although local variations in thickness occur in the form of seam thickening and thinning. Structurally, the coal seams generally trend northwest–southeast and dip toward the southwest, with a strike and dip orientation of N120°E/20° as shown in Figure 2.

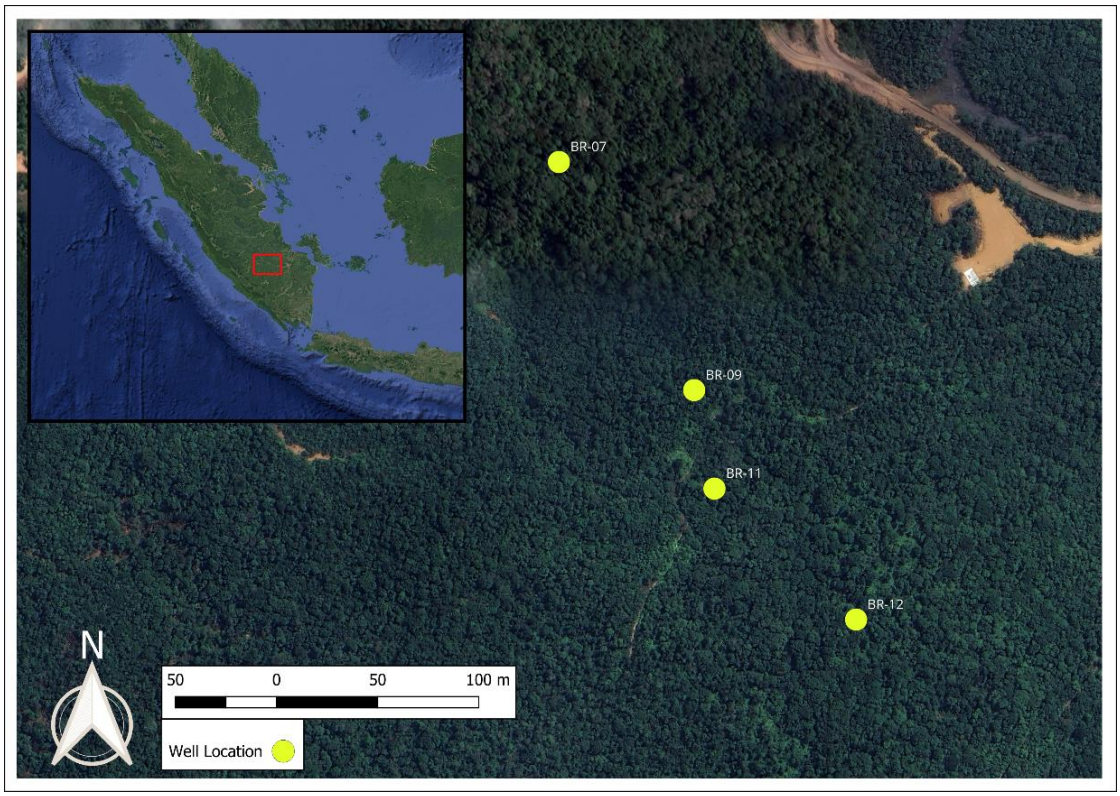


Figure 2. Basemap of the study area in the Suban Burung Block showing the locations of four wells.

2.3 Data Constraints

The study area is an unmined region located in the Suban Burung Block, South Sumatra Basin, Indonesia. As shown in Figure 2 this study utilizes data from four wells (BR-07, BR-09, BR-11, and BR-12), covering an area of approximately 825,600 m^2. Table 2 presents the availability of petrophysical parameters for each borehole including depth (m), density (g/cc), and coal seam D porosity obtained from laboratory analyses. This dataset are part of previous study that discussed about coal seam D analysis in South Sumatra (Salinita et al., 2024).

Table 2. Availability of coal seam D petrophysical data from laboratory analyses

Well Name	Density (g/cc)	Porosity (v/v)
BR-07	√	√
BR-09	√	√
BR-11	√	√
BR-12	√	√

2.4 Methodological Aspects

This study analyzes the layers of Coal Seam D through three main stages: (1) well correlation using drilling data, (2) estimation of P-wave velocity (V_p), Uniaxial Compressive Strength (UCS), and Brittleness Index (BI), and after calculating all physical properties (3) spatial mapping of physical and mechanical parameters. Then, correlation analysis was performed between rock properties and the characteristics of the coal seam.

Well correlation was conducted to the lateral continuity, thickness variation, and structural trends of Coal Seam D across the study area. This analysis was based on drilling data, including lithological descriptions, physical characteristics of the coal, seam boundaries, and the depths of the top and bottom seams. Coal Seam D was identified based on its distinctive core samples, such as dull black color, the presence of cleats, fracture patterns ranging from blocky to conchoidal, and clear contrasts with the sedimentary units above and below it. The correlation results were then used to

construct stratigraphic cross-sections and to analyze seam geometry, and the consistency of seam distribution between wells.

bb

$$UCS = 4.4299\ V_p + 1.309 \quad (1)$$

Where: UCS is the uniaxial compressive strength in MPa, V_p is wave velocity in km/s.

$$V_{p-\rho} = 105.91\ \rho^2 - 79.731\ \rho + 2135.6 \quad (2)$$

$$V_{p-\phi} = (1-\phi)^2\ V_{solid} + \phi\ V_{fluid} \quad (3)$$

$$V_p = \frac{(V_{p-\rho} + V_{p-\phi})/2}{1000} \quad (4)$$

Where: ρ is the density value of coal (g/cc), ϕ is porosity value of coal (v/v), V_{solid} represents the wave velocity in the solid coal matrix (±1900 m/s), where V_{fluid} represents the wave velocity in water (±1450 m/s) and V_p represents P-wave velocity in (km/s).

Then, the brittleness index (BI) is widely used to quantify the propensity of a rock to fail in a brittle manner, characterized by limited plastic deformation prior to fracture. Rocks with higher BI values tend to fracture more easily and support crack propagation, thus serving as an important indicator of reservoir quality and mechanical response (Griser & J, 2007; Rickman et al., 2008). To estimate the Brittleness Index (BI) approaches by elastic parameters including Young's modulus (E) and Poisson's ratio (PR). The initial step involved estimating the shear-wave velocity (V_s) using the empirical relationship between V_p and V_s proposed by (Castagna et al., 1993), as expressed in Equation (5).

$$V_s = 0.804\ V_p - 0.856 \quad (5)$$

The relationship between rock density (ρ), compressional wave velocity (V_p), and shear wave velocity (V_s) was used to calculate Young's modulus (E) as shown in Equation (6). Meanwhile, Poisson's ratio (PR) was determined using the mathematical relationship shown in Equation (7) (Mavko et al., 2009; Toksoz et al., 1976). The brittleness index was then determined based on Equation (8) and (9), and the final BI value was obtained using Equation (10) (Aligholi et al., 2017; Griser & J, 2007).

$$E = \frac{\rho Vs^2(3V_p^2 - 4V_s^2)}{Vp^2 - Vs^2} \quad (6)$$

$$PR = \frac{V_p^2 - 2V_s^2}{2(V_p^2 - V_s^2)} \quad (7)$$

$$BI_E = \frac{E - E_{min}}{E_{max} - E_{min}} \quad (8)$$

$$BI_{PR} = \frac{PR - PR_{min}}{PR_{max} - PR_{min}} \quad (9)$$

$$BI_{Average} = \frac{BI_E + BI_{PR}}{2} \quad (10)$$

After all physical and mechanical parameters were calculated for each well, the data were spatially integrated using an interpolation method based on the Kriging algorithm. This process utilizes statistical correlations among data points to estimate parameter values at unsampled locations, thereby providing representation of the lateral distribution of mechanical, elastic parameters, and porosity within Coal Seam D across the study area.

3. RESULT AND DISCUSSION

This segment presents the results and discussion in this study focuses on the physical-mechanichal properties and the potential for CO_2 storage in Coal Seam D. Result and discussion section is organized systematically into the following subsections: (i) Well correlation; (ii) Mechanical and elastic estimation of rock properties; (iii) The relationship between rock physical properties and the characteristics of the coal seam.; and (iv) Limitations of the study.

3.1 Well Correlation

Drilling data indicate the presence of at least five major coal seams, namely seams L, K, J, F, and D. As shown in Figure 3, the coal stratigraphy in this study consists of seams L and K, with thicknesses ranging from 2 to 5 m, forming the uppermost coal layers. These are underlain by coal seams J and F, which exhibit thicknesses of up to 5 m and show lateral continuity across the study area. Furthermore, Seam D is encountered in the northern part of the study area and is characterized by a dull black color, the presence of cleats, fracture patterns ranging from blocky to conchoidal, and the occurrence of resin. The coal rank within this seam ranges from lignite to sub-bituminous. In general, the coal seams trend northwest–southeast and dip toward the southwest, with a strike and dip orientation of N120°E/20°.

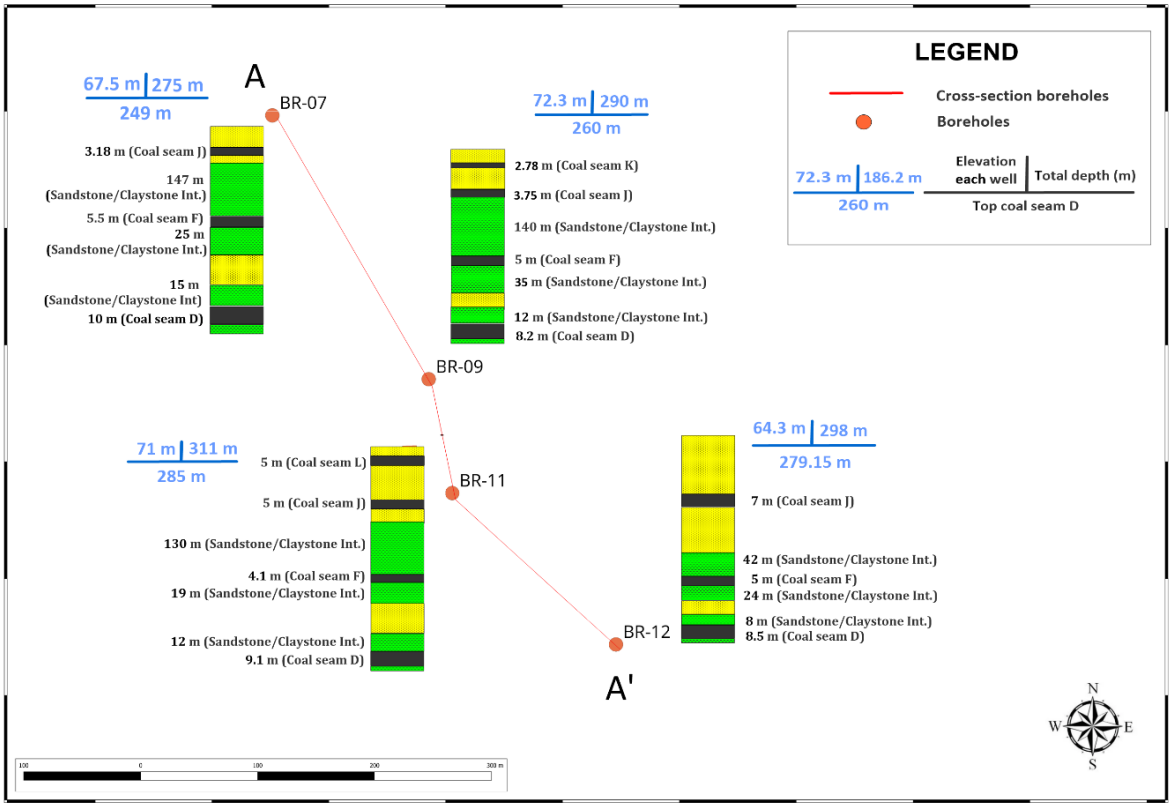


Figure 3. The base map of well data illustrates the vertical thickness of each strata, along with the total depth and well elevation, based on cross-sections from boreholes BR-07, BR-09, BR-11, and BR-12.

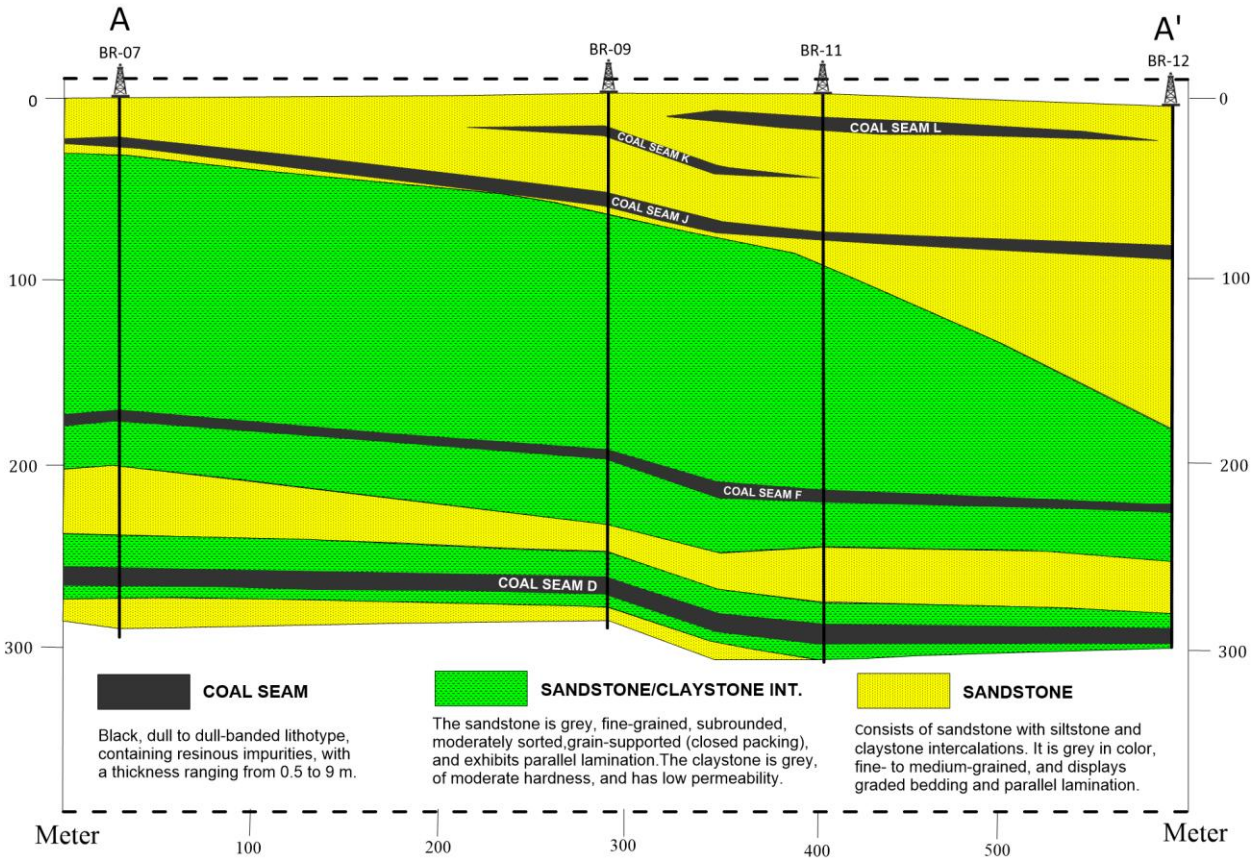


Figure 4. Well correlation cross-section A–A'.

Based on the A–A' well correlation cross-section **Figure 4**, Coal Seam D can be traced laterally across all analyzed wells, namely BR-07, BR-09, BR-11, and BR-12, indicating good continuity and vertically isolated from surrounding strata within the study area. This seam is bounded by an interbedded sandstone–claystone unit characterized by gray coloration, moderate hardness, and low permeability, as well as gray sandstone lithology with fine to medium grain size, moderate hardness and poor permeability. Coal Seam D exhibits a thickness varying between 8 and 10.7 m., which is relatively greater than the overlying coal seams (F, J, K and L). Coal seam thickness, laterally continuous, isolated from surrounding strata, minimally faulted and folded are important parameters in determining CO_2 storage potential because thicker seams provide larger reservoir volumes available for gas adsorption and storage processes (Zhang et al., 2023).

3.2 Mechanical and Elastic Estimation

In this subsection, the physical parameters of Coal Seam D were determined using the equations described from the previous section's in methodology aspects. The first parameter calculated was P-wave velocity (V_p). The V_p values were calculated using the average of Equation (4). The results show that the V_p value at Well BR-07 is 1892.47 m/s, decreasing to 1850.51 m/s at Well BR-09. At Well BR-11, the calculated P-wave velocity is 1873.21 m/s, while at Well BR-12 it increases to 1909.13 m/s. Variations in P-wave velocity (V_p) values indicate differences in lithological conditions and the degree of compaction within the coal seam across each well, as controlled by the porosity and density characteristics of the samples.

Then, the S-wave velocity (V_s) was calculated using Equation (5). The calculated V_s values are 665.55 m/s for Well BR-07, 631 m/s for Well BR-09, 650.06 m/s for Well BR-11, and 678.94 m/s for Well BR-12. These S-wave velocities provide additional information regarding the elastic properties of the rock, particularly related to the rock's ability to resist shear deformation. Based on these physical parameters, the mechanical and elastic properties of the coal seam were subsequently calculated to identify the geomechanical characteristics of the formation. One of the calculated

parameters is Poisson's ratio, the results show that the average Poisson's ratio values are 0.401 for Well BR-07, 0.407 for Well BR-09, 0.403 for Well BR-11, and 0.398 for Well BR-12. The calculated Brittleness Index values for the respective wells are 0.47, 0.50, 0.48, and 0.50. Finally, the rock strength values for each well are of 9.692 MPa, 9.506 MPa, 9.607 MPa, and 9.766 MPa. Overall, the estimated rock physical parameters for all analyzed wells are summarized in Table 3.

Table 3. Summary of in-situ petrophysical properties (density and porosity) and estimated mechanical properties of Coal Seam D.

Well Name	Top Depth (m)	Thick (m)	Density (g/cc)	Porosity (v/v)	Vp (m/s)	Vs (m/s)	E (Gpa)	PR	BI	UCS (MPa)
BR-07	249.3	10.7	1.266	0.155	1892.47	665.55	1.604	0.401	0.47	9.692
BR-09	260.0	8.1	1.202	0.198	1850.51	631.81	1.376	0.407	0.5	9.506
BR-11	285.3	9.1	1.237	0.174	1873.21	650.06	1.497	0.403	0.48	9.607
BR-12	279.15	8.58	1.305	0.141	1909.13	678.94	1.717	0.398	0.5	9.766

Following the calculation of all elastic, and mechanical parameters, their lateral distribution was established through interpolation of well data. The Kriging method, a widely accepted geostatistical technique, was applied to generate continuous spatial representations. The interpolation results are presented in Figure 5, where each parameter reflects the averaged values from individual wells to represent the characteristic properties of Coal Seam D.

3.3 The relationship between Rock Properties and the characteristics of Coal Seam D

The capacity of a rock formation to store and retain CO_2 is one factor in determining the ideal location for storing CO_2 in the subsurface, which is the rock layer's ability to hold the amount of CO_2 it contains. Therefore, coal seams with relatively high porosity and permeability are more effective in accommodating larger volumes of CO_2. In this study, the porosity of Coal Seam D in the Suban Burung Block ranges from 14.1% to 19.8%, indicating a considerable capacity for CO_2 storage. This finding is consistent with previous studies, which suggest that coal seams with porosity values between 5% and 10% are suitable for storing CO_2 and methane gas (Yan et al., 2020; Sander, 2014; Mwakipunda et al., 2023). Meanwhile, Figure 5b illustrates the porosity values at the corresponding spatial intervals. Well BR-09 exhibits the highest porosity, followed by Well BR-11, Well BR-07and Well BR-12. In addition, the thickness of Coal Seam D, ranging from 8 to 10.7 m, along with the spatial distribution of the top of the coal seam ranging from 248-288 m relative to sea level, is shown in Figure 5a, is expected to provide a larger storage volume, resulting in a greater capacity for CO_2 sequestration (Zhang et al., 2023).

Then, the injection of CO_2 into coal seams is related by the mechanical properties of the coal, particularly its brittleness and strength, which are represented by the Brittleness Index (BI) and Uniaxial Compressive Strength (UCS) values. The BI provides an indication of whether the coal exhibits brittle or ductile behavior, while UCS quantifies the coal's strength, which is important for drilling considerations. In this research, the UCS values of Coal Seam D in the Suban Burung Block range from 9.506 to 9.766 MPa Figure 5c, indicating that relatively low to moderate stress is required to induce fracture in the coal within this area (Gonzatti et al., 2014; James G. Speight, 2015; Kumar et al., 2017).

In addition, to enhance pore connectivity in coal seams, which are typically characterized by closed pore systems, fracturing is required to generate secondary porosity and thereby improve permeability. The effectiveness of the fracturing process depends on the mechanical properties of the coal, particularly its brittleness, which determines whether the material behaves in a brittle or ductile. Therefore, the Brittleness Index (BI) is an important parameter to describe the fracturability of coal seams. In this study, the BI values of Coal Seam D in the Suban Burung Block range from 0.47 to 0.50, with areas surrounding Wells BR-07 and BR-11 exhibiting the lowest brittleness compared to those areas around Wells BR-09 and BR-12 in Figure 5d. These values were correlated with the relationship between gamma-ray and BI, adapted from the classification proposed by Perez Altamar (2014), to assess the brittleness characteristics of the coal seam. Based on this classification, Coal

Seam D in this study area exhibits variable mechanical behavior, ranging from less brittle to brittle. Therefore, the potential for fracturing the Suban Burung Block D coal seams layer is promising.

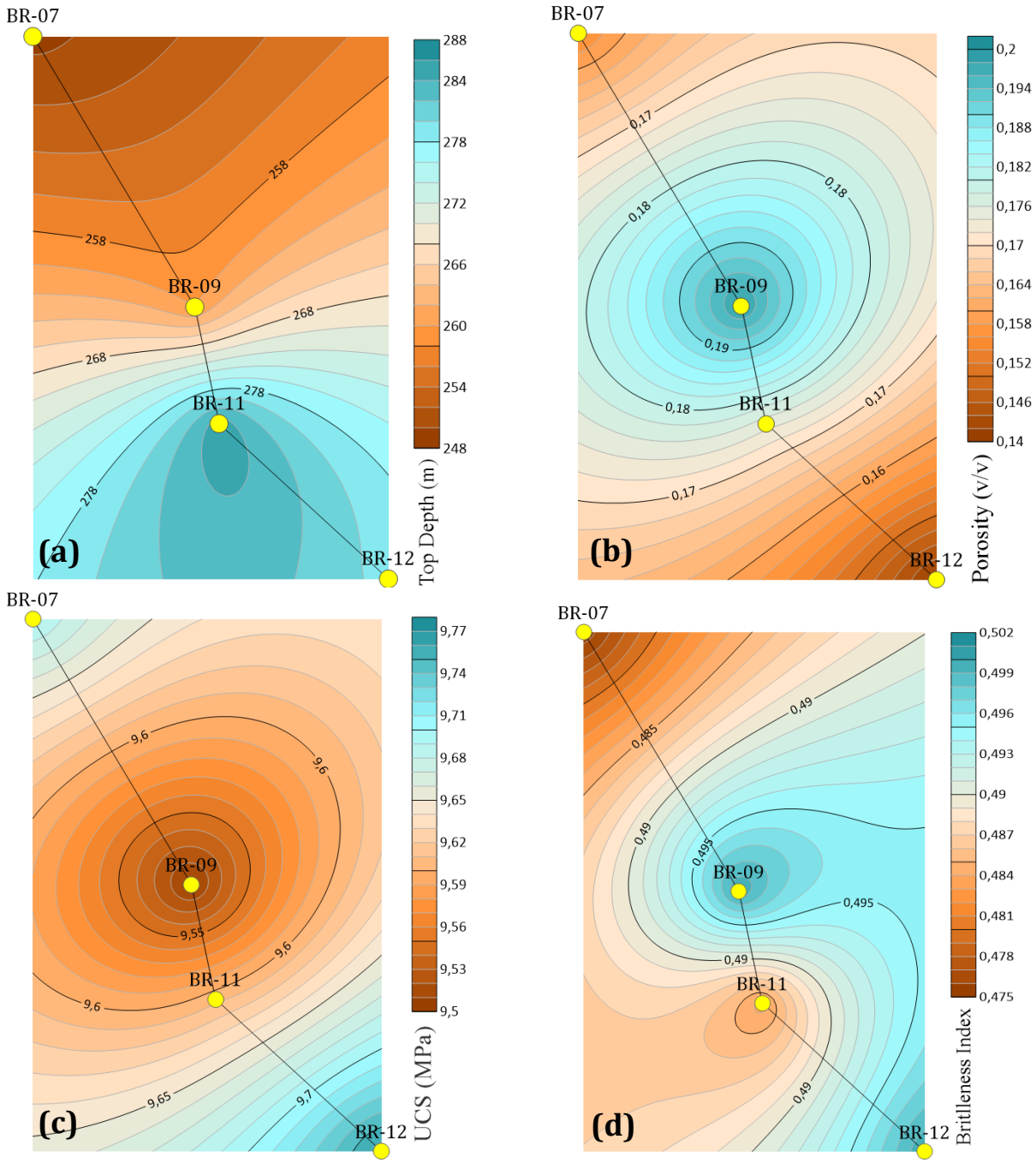


Figure 5. Lateral map distribution of the physical and mechanical properties Coal Seam D in Suban Burung Block using kringing interpolation; (5a) Map of the top depth of seam D; (5b) Map of porosity distribution; (5c) Map of rock strength (UCS); and (5d) Map of Brittleness Index (BI).

3.4 Limitation of This Study

In this study, the values of BI, UCS, and V_p–V_s were not obtained directly from well log data or laboratory core analyses but were instead estimated using theoretical approaches and empirical relationships in petrophysical studies. Therefore, future studies are expected to utilize in-situ data from well logs and laboratory testing to improve the accuracy of parameter estimation and to better represent actual subsurface conditions.

Furthermore, this study is subject to limitations related to the interpolation method applied. The use of Kriging assumes spatial continuity and stationarity of the data, which may not fully capture local heterogeneity in subsurface properties. Therefore, future studies are encouraged to incorporate a denser dataset, evaluate alternative interpolation methods, and perform uncertainty analysis to improve the reliability of spatial predictions.

In addition, future research is recommended to integrate other geophysical methods, such as seismic surveys, to obtain more detailed information regarding the lateral distribution of Coal Seam D thickness. Seismic data may also help identify geological structures, such as faults or natural fractures, that could influence fluid migration pathways within the study area. Additional studies on permeability analysis and CO_2 adsorption capacity are also recommended to estimate the CO_2 storage potential more quantitatively.

4. CONCLUSION

As a preliminary study to look into feasible options for CCS in un-mined coal seams in Suban Burung Block, South Sumatra Basin which was carried out based on information obtained from four data wells spread across the research location. The results of this study present an estimated 2D map of the top depth of Coal Seam D, ranging from 249 m to 285 m. The potential CO_2 storage characteristics are indicated by a seam thickness of 8.1–10.7 m and a relatively wide porosity range of 14.1–19.8%. In addition, the estimated UCS values of 9.506–9.766 MPa and brittleness index values of 0.47–0.50 indicate coal with low-to-moderate strength and brittleness characteristics. Further studies involving additional well-log and seismic data are necessary to improve the understanding of the reservoir geometry and enable more detailed 2D/3D characterization for CCS applications. In conclusion, Coal Seam D in the un-mined coal area of the Suban Burung Block, South Sumatra Basin represents a possible target for testing and carring further research on CCS in coal seams.

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