

Article

Development, structural comparison, and growth of gross regional domestic product by industry

Agung Fadilah Ramadhan

Universitas Jambi, Indonesia

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Corresponding Author :

Agung Fadilah Ramadhan
Universitas Jambi, Indonesia
Email : agungfadilah42@gmail.com

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Keywords: economic growth; gross regional domestic product; primary sector; regional economy; structural transformation.

Abstract

Regional economic performance reflects both the pace of growth and the capacity of an economy to transform its production structure. This study analyzes the development, sectoral composition, and growth of the gross regional domestic product (GRDP) of Batang Hari Regency at constant prices during 2015–2024. A descriptive quantitative approach was applied to secondary data obtained from Statistics Indonesia. The analysis comprised trend assessment, year-on-year growth calculations, sectoral comparisons, and comparisons among the pre-pandemic, pandemic, and post-pandemic periods. The results show that real GRDP increased from IDR 9.70 trillion in 2015 to IDR 14.66 trillion in 2024. Economic growth remained relatively stable at approximately 4–5% during 2016–2019 before contracting by 0.48% in 2020. Recovery began in 2021 with growth of 4.85% and peaked at 12.26% in 2022, primarily driven by mining and quarrying. Growth subsequently moderated to 3.71% in 2023 and 2.99% in 2024. Agriculture, forestry, and fishing remained the dominant economic sector, while mining generated substantial short-term fluctuations. The findings indicate that Batang Hari's economy remains dependent on primary commodities, increasing its exposure to external shocks and commodity cycles. Strengthening manufacturing, value-added downstream activities, and service-sector development is therefore necessary to promote a more diversified, resilient, and sustainable regional economy.

Introduction

Regional economic development is an integral component of national development because national economic performance is largely determined by the productive capacity, sectoral competitiveness, and institutional quality of individual regions. At the regional level, economic development is expected not only to increase output but also to create employment, improve household income, reduce inequality, and strengthen resilience to external shocks. Consequently, regional development policies require measurable indicators capable of describing changes in economic activity over time. One of the principal indicators used for this purpose is Gross Regional Domestic Product (GRDP), which represents the total value added generated by all production units operating within a region during a particular period (Badan Pusat Statistik, 2025).

GRDP provides essential information about the size, growth, and structure of a regional economy. Changes in total GRDP indicate whether economic activity is expanding or contracting, whereas the distribution of GRDP across industries identifies sectors that contribute most significantly to regional production. GRDP analysis is therefore relevant for assessing regional economic performance, determining leading industries, and formulating sector-based development priorities (Pratiwi & Mariani, 2021). It also enables local governments to evaluate whether economic development remains concentrated in primary industries or has gradually shifted toward manufacturing and service activities.

Economic growth reflects an increase in an economy's capacity to produce goods and services over time. However, growth should not be interpreted solely as an increase in aggregate output. Sustainable regional development also requires improvements in productivity, employment creation, economic diversification, and the capacity to withstand economic disruptions (Todaro & Smith, 2020). Structural transformation theory explains that economic development generally involves a gradual reallocation of resources from low-productivity activities to sectors with higher productivity

and greater value added (Jhingan, 2000). Nevertheless, the direction and speed of this transformation vary among regions depending on their natural resources, infrastructure, human capital, investment, and access to markets.

Empirical evidence from Indonesia shows that structural change contributes to regional economic growth, although long-term growth continues to depend considerably on productivity improvements within individual industries (Andriansyah et al., 2023). This finding suggests that a region does not necessarily need to abandon its dominant industries. Instead, it may increase the productivity, value added, and intersectoral linkages of those industries. In resource-based regions, development strategies must therefore balance the contribution of primary industries with efforts to encourage downstream processing, trade, transportation, and other productive services.

GRDP can be measured at current prices and constant prices. GRDP at current prices is useful for examining the nominal size and composition of an economy because it incorporates prevailing market prices. However, nominal GRDP is affected by changes in both production volume and prices. By contrast, GRDP at constant prices eliminates the influence of price changes by applying prices from a designated base year. Consequently, constant-price GRDP provides a more accurate representation of changes in the real volume of goods and services produced over time (Badan Pusat Statistik Kabupaten Batang Hari, 2025). The annual growth rate calculated from constant-price GRDP can be expressed as follows:

$$g_t = \frac{GRDP_t - GRDP_{t-1}}{GRDP_{t-1}} \times 100\%$$

where g_t denotes the economic growth rate in year t , $GRDP_t$ represents real GRDP in the current year, and $GRDP_{t-1}$ represents real GRDP in the previous year. A positive value indicates economic expansion, while a negative value indicates contraction.

The industrial-origin approach divides regional production into industries such as agriculture, forestry and fishing; mining and quarrying; manufacturing; construction; wholesale and retail trade; transportation; accommodation and food services; information and communication; financial services; public administration; education; and health services. This classification makes it possible to identify industries that serve as regional economic bases and those that exhibit relatively rapid or slow growth. Sectoral analysis matters because a high aggregate growth rate may stem from a single volatile industry and may not reflect broad-based economic improvement (Siburian et al., 2021). Similarly, Thoriq (2024) demonstrates that identifying leading industries and changes in sectoral position can provide a stronger foundation for regional development planning than relying solely on aggregate GRDP growth.

Batang Hari Regency is one of the regencies in Provinsi Jambi whose economy is strongly influenced by primary industries. Agriculture, forestry, and fishing have historically provided a substantial contribution to regional output, employment, and household livelihoods. Mining and quarrying also contribute significantly, although their performance tends to fluctuate because of changes in production, commodity prices, investment, and market conditions. The continued importance of agriculture is consistent with Saban et al. (2024), who find that the agricultural sector remains strategically important in Indonesian regions through its contribution to output, intermediate demand, employment, and value creation. The magnitude of this contribution, however, differs according to each region's resource endowment and production structure.

A high dependence on primary industries can generate economic benefits while simultaneously increasing regional vulnerability. Agricultural production is sensitive to weather conditions, land productivity, commodity prices, and supply-chain disruptions. Mining activities are also affected by resource availability, production policy, global demand, and price fluctuations. Consequently, a temporary increase in mining output may produce exceptionally high regional growth without necessarily indicating balanced structural development. This condition makes it necessary to compare sectoral performance and identify whether economic growth is supported by several industries or concentrated in only a limited number of activities.

The historical economic performance of Batang Hari Regency from 2015 to 2024 demonstrates substantial annual variation. The annual real economic growth rates calculated from constant-price GRDP are presented in Table 1. The table contains one statistical indicator—annual economic growth—to ensure consistency in the interpretation of historical changes.

Table 1. Historical Economic Growth of Batang Hari Regency, 2015–2024

Year	Economic growth at constant prices (%)
2015	—
2016	4.60
2017	4.76
2018	4.89

2019	4.92
2020	-0.48
2021	4.85
2022	12.26
2023	3.71
2024	2.99

Source: Badan Pusat Statistik Kabupaten Batang Hari (2020, 2025), processed by the authors (2026). Note: 2015 is used as the initial observation year; therefore, its annual growth rate is not reported.

Table 1 shows that the economy of Batang Hari Regency grew relatively consistently before the COVID-19 pandemic. Between 2016 and 2019, annual growth remained within the range of 4.60–4.92 percent. This pattern indicates that the regional economy experienced moderate expansion without substantial year-to-year fluctuations. During the same period, the total real GRDP of Batang Hari Regency increased gradually, suggesting that economic activities generated positive additional output before the pandemic (Badan Pusat Statistik Kabupaten Batang Hari, 2020).

The growth pattern changed markedly in 2020, when the regional economy contracted by 0.48 percent. The contraction reflected disruptions to production, mobility, trade, and service activities during the COVID-19 pandemic. Although the contraction was relatively limited, it interrupted the positive growth trajectory recorded during the preceding years. The effects of the pandemic were not distributed evenly across industries because sectors requiring direct interaction and physical mobility generally faced more severe operational restrictions than agriculture and other essential activities.

Economic recovery began in 2021, when Batang Hari Regency recorded growth of 4.85 percent. The recovery accelerated sharply in 2022, with economic growth reaching 12.26 percent. This unusually high growth was primarily associated with the expansion of mining and quarrying activities rather than uniform acceleration across all industries. The 2022 performance must therefore be interpreted cautiously because sector-specific expansion can temporarily raise aggregate growth while leaving the broader economic structure relatively unchanged. Comparisons of regional growth should examine both the rate of expansion and the industries responsible for that expansion (Yuliana, 2025).

After the exceptional increase in 2022, economic growth moderated to 3.71 percent in 2023 and 2.99 percent in 2024. This deceleration suggests that the 2022 acceleration was not fully sustained in subsequent years. Nevertheless, Batang Hari Regency's total constant-price GRDP increased from IDR 9,695,287.2 million in 2015 to IDR 14,663,019.0 million in 2024. Thus, despite the 2020 contraction and subsequent growth fluctuations, the regional economy expanded substantially over the ten-year observation period (Badan Pusat Statistik Kabupaten Batang Hari, 2025).

Previous studies have employed GRDP data to evaluate regional economic performance from different perspectives. Pratiwi and Mariani (2021) identify industries that significantly influence regional economic development through changes in sectoral GRDP. Siburian et al. (2021) emphasize the importance of basic industries in promoting regional growth, while Thoriq (2024) combines leading-industry analysis with an examination of shifts in regional economic structure. These studies demonstrate that aggregate growth analysis becomes more meaningful when accompanied by sectoral comparisons.

Other studies have investigated the relationship between sectoral activity and broader development outcomes. Habiburrahman (2012) finds that changes in sectoral GRDP are associated with employment absorption, indicating that sectoral expansion has social and labor-market implications. Matondang (2018) similarly shows that industrial development and labor absorption contribute to economic growth. Meanwhile, Irianto (2025) illustrates that GRDP projections and sectoral contributions can support long-term regional economic planning. These findings confirm that the analysis of GRDP by industry is not limited to describing past performance but can also provide a basis for future policy formulation.

Despite the extensive literature on GRDP, leading industries, and regional economic growth, several gaps remain. First, many studies focus on a single analytical aspect, such as identifying basic industries, calculating sectoral contribution, or projecting future GRDP. Second, aggregate growth is often presented without explicitly comparing the pre-pandemic, pandemic, and post-pandemic periods. Third, limited attention has been given to whether unusually high growth in a resource-based region reflects broad-based economic recovery or expansion concentrated in a volatile industry. This distinction is particularly relevant for Batang Hari Regency because its economic performance is strongly influenced by agriculture and mining.

This study addresses these gaps by integrating three dimensions of analysis: the long-term development of real GRDP, comparisons of industrial performance across different economic periods, and the calculation and interpretation of annual economic growth. The 2015–2024 observation period captures relatively stable pre-pandemic growth, the 2020 economic contraction,

the subsequent recovery, the exceptional acceleration in 2022, and the moderation recorded in 2023–2024. The extended period provides a more comprehensive basis for determining whether changes in aggregate growth were accompanied by shifts in the industrial composition of the regional economy.

Accordingly, this study aims to analyze the development of Batang Hari Regency's constant-price GRDP by industry from 2015 to 2024, compare sectoral dynamics across the pre-pandemic, pandemic, and post-pandemic periods, and calculate and interpret annual regional economic growth. The results are expected to contribute empirical evidence regarding the economic resilience and structural characteristics of a primary-sector-based region. From a policy perspective, the findings can assist the Pemerintah Kabupaten Batang Hari in strengthening productive industries, reducing excessive dependence on volatile activities, promoting downstream value creation, and developing a more diversified and sustainable regional economy.

Literature Review

Regional Economic Growth and Gross Regional Domestic Product. Regional economic growth refers to a sustained increase in the capacity of a region to produce goods and services over a particular period (Todaro & Smith, 2020). This growth is generally measured through changes in real Gross Regional Domestic Product (GRDP), which represents the total value added generated by all production units within a regional territory (Badan Pusat Statistik, 2025). An increase in real GRDP indicates an expansion in production volume because the calculation at constant prices eliminates the effects of inflation and other price changes (Badan Pusat Statistik Kabupaten Batang Hari, 2025).

GRDP at current prices and GRDP at constant prices serve different analytical purposes. Current-price GRDP describes the nominal size and economic structure of a region based on prevailing market prices, whereas constant-price GRDP measures changes in real production using prices from a predetermined base year (Badan Pusat Statistik, 2025). Consequently, constant-price GRDP is more appropriate for calculating annual economic growth and comparing economic performance across different periods (Irianto, 2025).

Economic growth can generate higher regional income, employment opportunities, business expansion, and government revenue, although the distribution of these benefits depends on the structure of the regional economy (Todaro & Smith, 2020). Growth concentrated in capital-intensive or extractive industries may produce a substantial increase in GRDP without generating proportional employment and household income improvements (McMillan et al., 2014). Therefore, regional economic performance should be evaluated not only through aggregate growth but also through the industrial sources and sustainability of that growth (Andriansyah et al., 2023).

The production approach classifies GRDP according to the value added generated by different industries, including agriculture, mining, manufacturing, construction, trade, transportation, and services (Badan Pusat Statistik Kabupaten Batang Hari, 2025). This classification enables researchers to identify the contribution, growth, and relative position of each industry in the regional economy (Pratiwi & Mariani, 2021). Sectoral GRDP analysis can also reveal whether regional growth is broadly distributed or primarily driven by a limited number of industries (Thoriq, 2024).

Structural Transformation and Sectoral Economic Development. Structural transformation refers to a long-term shift in the composition of production, employment, and economic resources across industries (Kuznets, 1973). In the early stages of development, economic activity and employment are commonly concentrated in agriculture and other primary industries, while subsequent development is generally associated with the expansion of manufacturing and modern services (Lewis, 1954). This transformation occurs when labor, capital, and technology move from relatively low-productivity activities toward industries with higher productivity and value added (McMillan et al., 2014).

The reallocation of economic resources does not automatically produce higher productivity because its effect depends on the industries receiving those resources (McMillan et al., 2014). Structural change contributes positively to economic growth when workers and investment move toward more productive activities, but it can impede growth when resources shift toward low-productivity or informal activities (McMillan et al., 2014). Therefore, the quality of structural transformation is more important than a simple reduction in the contribution of the agricultural sector (Andriansyah et al., 2023).

In Indonesia, structural transformation has contributed to regional economic growth, although productivity improvements within industries remain a major determinant of long-term performance (Andriansyah et al., 2023). This evidence implies that regional development does not necessarily require the replacement of primary industries by manufacturing and services (Saban et al., 2024).

Resource-based regions may pursue development by increasing productivity, strengthening downstream processing, adopting more efficient technology, and creating stronger linkages between primary and non-primary industries (Saban et al., 2024).

The agricultural sector continues to perform important economic functions through food production, employment absorption, intermediate-input provision, and household income generation (Saban et al., 2024). Its contribution differs among regions because of variations in natural resources, land availability, infrastructure, productivity, and market access (Saban et al., 2024). In areas where agriculture dominates production and employment, a decline in its performance can have broad effects on household consumption and other local economic activities (Habiburrahman, 2012).

Mining and quarrying can also contribute significantly to regional output, exports, investment, and government revenue (Thoriq, 2024). However, mining-dependent economies tend to be vulnerable to changes in commodity prices, production volume, regulatory policies, and global market demand (van der Ploeg & Poelhekke, 2017). A substantial increase in mining production may cause exceptionally high GRDP growth in a particular year, although this growth may not reflect a permanent improvement in other industries (van der Ploeg & Poelhekke, 2017). Accordingly, the contribution and growth of mining should be interpreted together with developments in agriculture, manufacturing, trade, construction, and services (Thoriq, 2024).

Leading Industries and Regional Economic Performance. Industries have different roles in regional development because their productive capacity, market orientation, employment absorption, and interindustry linkages vary considerably (Siburian et al., 2021). A leading industry is generally characterized by a relatively large contribution, competitive growth, strong linkages with other activities, and the ability to serve markets beyond the region (Thoriq, 2024). Industries that produce goods or services for external markets can generate an inflow of income that stimulates consumption, investment, and supporting activities within the region (Siburian et al., 2021).

A large contribution to GRDP does not necessarily indicate that an industry is growing rapidly or competitively (Pratiwi & Mariani, 2021). A dominant industry may experience slow growth, while a smaller industry may expand rapidly and gradually increase its economic importance (Irianto, 2025). For this reason, sectoral contribution and sectoral growth should be analyzed simultaneously to avoid inaccurate conclusions about regional economic performance (Thoriq, 2024).

Employment absorption is another important consideration because industries differ in their ability to translate output growth into employment opportunities (Habiburrahman, 2012). Labor-intensive industries can distribute the benefits of growth through employment and wages, whereas capital-intensive industries may generate high value added with a relatively limited number of workers (Matondang, 2018). Consequently, an increase in aggregate GRDP cannot automatically be interpreted as an improvement in inclusive regional development (Todaro & Smith, 2020).

Economic diversification can reduce regional dependence on a single industry and strengthen economic stability when sector-specific disruptions occur (Martin & Sunley, 2015). A diversified production structure allows the contraction of one industry to be partially offset by growth in other industries (Di Caro, 2017). However, diversification generates stronger benefits when emerging industries have productive linkages with existing regional capabilities and resources (Martin & Sunley, 2015).

For Batang Hari Regency, the importance of agriculture and mining indicates that the regional economy remains strongly connected to natural-resource-based activities (Badan Pusat Statistik Kabupaten Batang Hari, 2025). This structure can support regional income when agricultural output, commodity demand, and mining production increase (Saban et al., 2024). Nevertheless, dependence on primary industries may expose the regional economy to commodity cycles, environmental constraints, and production fluctuations (van der Ploeg & Poelhekke, 2017). Strengthening manufacturing, trade, transportation, and other supporting services is therefore important for creating additional value from local resources and broadening the regional production base (Andriansyah et al., 2023).

Regional Economic Resilience and the COVID-19 Shock. Regional economic resilience describes the capacity of a regional economy to withstand, absorb, recover from, and adapt to economic disruptions (Martin & Sunley, 2015). Resilience is not limited to a region's ability to return to its pre-crisis growth path because economic shocks can also produce structural adjustment and new development trajectories (Martin & Sunley, 2015). Regional resilience is influenced by economic diversification, industrial composition, institutional capacity, labor-market flexibility, innovation, and connectivity with broader markets (Di Caro, 2017).

The COVID-19 pandemic created simultaneous disruptions to production, consumption, mobility, investment, and supply chains across regions (Organisation for Economic Co-operation

and Development, 2020). However, the magnitude of the economic contraction differed because each region had a distinct industrial structure and level of dependence on mobility-intensive activities (OECD, 2020). Regions relying heavily on tourism, accommodation, transportation, and face-to-face services generally experienced more severe disruptions, while agriculture and other essential industries demonstrated relatively stronger continuity in several areas (OECD, 2020).

Indonesia's regional economic performance during the pandemic was similarly heterogeneous because the effects of mobility restrictions varied across industries and territories (Hill et al., 2022). Regions with more diversified productive structures generally had more opportunities to compensate for contractions in severely affected industries (Hill et al., 2022). By contrast, regions dependent on a limited number of commodities remained exposed to fluctuations in production and external demand despite facing relatively different public-health restrictions (Hill et al., 2022).

Economic recovery should be evaluated by comparing the depth of contraction, speed of recovery, and sustainability of post-crisis growth (Martin & Sunley, 2015). A high growth rate immediately following a contraction may partly reflect a low-base effect rather than a fundamental improvement in regional productive capacity (OECD, 2021). Similarly, exceptionally high growth originating from one industry should be distinguished from recovery distributed across multiple industries (Di Caro, 2017).

Batang Hari Regency experienced a real economic contraction of 0.48 percent in 2020, followed by growth of 4.85 percent in 2021 and 12.26 percent in 2022 (Badan Pusat Statistik Kabupaten Batang Hari, 2025). The marked acceleration in 2022 was strongly associated with mining and quarrying performance, indicating that the regional recovery was influenced by sector-specific expansion (Badan Pusat Statistik Kabupaten Batang Hari, 2025). The subsequent moderation to 3.71 percent in 2023 and 2.99 percent in 2024 suggests that the exceptionally high growth recorded in 2022 was not fully sustained (Badan Pusat Statistik Kabupaten Batang Hari, 2025). This growth pattern reinforces the need to examine both aggregate GRDP and industrial sources of growth when evaluating post-pandemic recovery (Yuliana, 2025).

Previous Empirical Studies. Pratiwi and Mariani (2021) examined sectoral GRDP and identified industries that influenced the economic development of Kabupaten Semarang. Their study confirms that the contribution and growth of individual industries provide important information about changes in regional economic structure (Pratiwi & Mariani, 2021). However, their analysis focused on a different regional economy with industrial characteristics that cannot be directly generalized to Batang Hari Regency.

Siburian et al. (2021) analyzed basic industries and their relationship with economic growth in Kabupaten Labuhanbatu Selatan. Their findings emphasize that industries serving external markets can become drivers of regional economic activity through income and production linkages (Siburian et al., 2021). Nevertheless, identifying basic industries alone does not fully explain changes in total GRDP across pre-crisis, crisis, and recovery periods.

Thoriq (2024) investigated leading industries and economic shifts in Kabupaten Tanah Bumbu. The study demonstrates the importance of combining sectoral contribution with relative growth to understand changes in regional economic position (Thoriq, 2024). However, its analytical emphasis was placed on leading-industry classification rather than a longitudinal comparison of regional performance before, during, and after the COVID-19 pandemic.

Saban et al. (2024) examined the role of agriculture in Indonesia's regional economic structure and concluded that agricultural performance remains strongly influenced by each region's resource potential and production characteristics. Their findings show that agriculture continues to generate output, value added, and interindustry demand despite the expansion of non-agricultural activities (Saban et al., 2024). This evidence is particularly relevant to Batang Hari Regency because agriculture, forestry and fishing remain central to its regional economy (Badan Pusat Statistik Kabupaten Batang Hari, 2025).

Andriansyah et al. (2023) evaluated structural change and regional economic growth in Indonesia and found that both resource reallocation and within-industry productivity improvements contribute to regional growth. However, productivity growth within industries was found to be particularly important for sustained economic performance (Andriansyah et al., 2023). These findings suggest that Batang Hari Regency should not rely solely on changes in sectoral composition but should also strengthen productivity within agriculture, mining, manufacturing, and services.

Irianto (2025) used constant-price GRDP to project economic performance and sectoral contributions in Kota Cirebon. The study demonstrates that historical GRDP patterns can support long-term planning and the identification of future sectoral priorities (Irianto, 2025). Nevertheless, an urban service-oriented economy differs substantially from the natural-resource-based structure of Batang Hari Regency.

Yuliana (2025) compared economic growth in Kabupaten Tanjung Jabung Barat and Kabupaten Tanjung Jabung Timur during the 2010–2024 period. The study indicates that differences in industrial composition can produce different growth trajectories even among regions located within the same province (Yuliana, 2025). This finding supports the need for a region-specific analysis rather than assuming that provincial economic performance uniformly represents every regency.

Literature Synthesis and Research Gap. The literature establishes that real GRDP is an appropriate indicator for measuring changes in regional production over time because it excludes the effects of price changes (Badan Pusat Statistik, 2025). Previous studies also demonstrate that sectoral contribution, sectoral growth, employment absorption, and economic linkages must be considered to obtain a comprehensive understanding of regional economic performance (Habiburrahman, 2012; Pratiwi & Mariani, 2021; Thoriq, 2024). Moreover, regional resilience depends substantially on industrial diversification and the capacity of individual industries to respond to economic disruption (Di Caro, 2017; Martin & Sunley, 2015).

Nevertheless, previous studies have generally examined leading industries, structural shifts, employment absorption, or GRDP projections as separate analytical topics (Irianto, 2025; Matondang, 2018; Siburian et al., 2021). Limited research has integrated long-term real GRDP development, interperiod comparison, annual growth, and sectoral interpretation within a single analysis of Batang Hari Regency. Previous studies have also provided limited explanation of whether the extraordinary post-pandemic growth of a resource-based regional economy reflects broad-based recovery or temporary expansion in a particular industry.

This study addresses these gaps by analyzing Batang Hari Regency's constant-price GRDP by industry over the 2015–2024 period. The analysis compares economic performance during the pre-pandemic period of 2015–2019, the pandemic contraction in 2020, and the post-pandemic recovery during 2021–2024. It also interprets the exceptional growth recorded in 2022 by examining the industries responsible for the increase. Therefore, the study extends previous literature by connecting aggregate economic growth with sectoral dynamics and regional economic resilience in a primary-sector-based regency.

The conceptual relationship underlying the study assumes that changes in sectoral value added determine the development of total real GRDP, while differences in sectoral growth produce changes in the regional economic structure (Andriansyah et al., 2023). A regional economy is considered more economically stable when growth is supported by several productive industries rather than being excessively concentrated in one volatile sector (Di Caro, 2017). Accordingly, sustainable development in Batang Hari Regency requires not only higher aggregate GRDP but also stronger productivity, value-added creation, diversification, and linkages among agriculture, mining, manufacturing, trade, and services (Saban et al., 2024).

Methods

Research Design. This study employed a quantitative descriptive design to examine the development, sectoral dynamics, and economic growth of Batang Hari Regency during the 2015–2024 period. A quantitative descriptive approach was selected because the study focuses on measuring historical changes in economic output and interpreting differences in sectoral performance without testing causal relationships among variables (Creswell & Creswell, 2018). The unit of analysis was the economy of Batang Hari Regency as represented by Gross Regional Domestic Product (GRDP) at constant prices by industry.

The study used a time-series approach covering ten consecutive years. This observation period was considered sufficient to illustrate the regional economy before, during, and after the COVID-19 pandemic. The analysis was divided into three periods: the pre-pandemic period of 2015–2019, the pandemic period represented by 2020, and the post-pandemic recovery period of 2021–2024. This classification was used to identify changes in growth patterns and sectoral performance following a major economic disruption (Martin & Sunley, 2015; OECD, 2021).

Data Sources and Collection. The study used secondary data obtained from official statistical publications issued by Badan Pusat Statistik Kabupaten Batang Hari. The primary data consisted of annual GRDP at 2010 constant prices by industry for 2015–2024. Constant-price GRDP was selected because it measures changes in real production volume after eliminating the influence of price changes (Badan Pusat Statistik, 2025).

The data were obtained from the following publications *Produk Domestik Regional Bruto Kabupaten Batang Hari Menurut Lapangan Usaha 2015–2019*; and *Produk Domestik Regional Bruto Kabupaten Batang Hari Menurut Lapangan Usaha 2020–2024*.

Supporting data were obtained from *Kabupaten Batang Hari dalam Angka* and other relevant publications issued by Badan Pusat Statistik. Data collection was conducted through documentation by identifying, recording, classifying, and verifying GRDP data from the relevant publications. The use of official statistical publications ensured consistency in industrial classification, base-year prices, measurement units, and calculation procedures. Data from different publication periods were cross-checked to ensure that the time series used the same 2010 constant-price basis and was expressed in millions of Indonesian rupiah.

Research Variables and Measurements. The study examined three principal dimensions: GRDP development, sectoral economic structure, and economic growth. The operational measurements are presented in Table 2.

Table 2. Operational Measurement of Research Variables

Analytical dimension	Indicator	Measurement	Unit
GRDP development	Annual total GRDP at constant prices	Total real value added generated by all industries in a particular year	IDR million
Sectoral development	Annual GRDP of each industry	Real value added generated by each industry	IDR million
Sectoral contribution	Share of an industry in total GRDP	Sectoral GRDP divided by total GRDP and multiplied by 100 percent	Percent
Economic growth	Annual change in total real GRDP	Difference between current-year and previous-year GRDP relative to previous-year GRDP	Percent
Sectoral growth	Annual change in sectoral real GRDP	Difference between current-year and previous-year sectoral GRDP relative to previous-year sectoral GRDP	Percent
Interperiod dynamics	Difference among the pre-pandemic, pandemic, and post-pandemic periods	Comparison of the level, contribution, and growth of GRDP across periods	Percent and IDR million

Source: Developed by the authors (2026).

Data Analysis. Data analysis was conducted through four stages: GRDP development analysis, sectoral contribution analysis, economic growth analysis, and interperiod comparative analysis. Microsoft Excel was used to organize the dataset, perform calculations, verify annual changes, and present the results in tables and figures.

GRDP Development Analysis. GRDP development was analyzed by observing changes in total constant-price GRDP from 2015 to 2024. The analysis was conducted both in absolute terms and through an index of development. The absolute change in real GRDP was calculated as follows:

$$\Delta GRDP = GRDP_{2024} - GRDP_{2015}$$

This calculation was used to determine the cumulative expansion of the Batang Hari economy during the ten-year period.

Sectoral Contribution Analysis. Sectoral contribution analysis was used to determine the share of each industry in total real GRDP. The contribution of industry *i* in year *t* was calculated as follows:

$$SC_{it} = \frac{GRDP_{it}}{GRDP_t \times 100\%}$$

An industry with a relatively large percentage was interpreted as having a dominant position in the regional economic structure. Changes in sectoral contribution were interpreted as indications of shifts in the relative composition of the regional economy rather than direct evidence of causal structural transformation.

The change in the contribution of each industry between the beginning and end of the observation period was calculated using:

$$\Delta SC_i = SC_{i,2024} - SC_{i,2015}$$

A positive value indicated an increase in the industry's relative share, whereas a negative value indicated a decrease in its share of total real GRDP.

Annual Economic Growth Analysis. Annual economic growth was calculated from the percentage change in total constant-price GRDP between two consecutive years. The calculation followed the standard formula used by Badan Pusat Statistik:

$$g_t = \frac{GRDP_t - GRDP_{t-1}}{GRDP_{t-1}} \times 100\%$$

A positive result indicated economic expansion, whereas a negative result indicated economic contraction. The annual growth rates were used to identify periods of acceleration, deceleration, contraction, and recovery.

The average annual economic growth rate for a particular period was calculated as follows:

$$\bar{g} = \frac{\sum_{t=1}^n g_t}{n}$$

Average growth was calculated separately for the pre-pandemic and post-pandemic periods. The 2020 growth rate was analyzed separately because it represented the principal year of the COVID-19 economic disruption.

Sectoral Growth Analysis. Sectoral growth was calculated to determine which industries experienced expansion or contraction in each year. The annual growth rate of industry *i* was calculated as follows:

$$SG_{it} = \frac{GRDP_{it} - GRDP_{i,t-1}}{GRDP_{i,t-1}} \times 100\%$$

This calculation was used to distinguish industries that consistently expanded from industries that displayed substantial fluctuations. Particular attention was given to agriculture, forestry and fishing and mining and quarrying because these industries made substantial contributions to the Batang Hari economy.

Data Validity and Analytical Reliability. Data validity was maintained by using publications issued by Badan Pusat Statistik, which applies standardized concepts, definitions, industrial classifications, and national accounting procedures. Consistency checks were conducted by comparing total GRDP with the sum of sectoral GRDP and recalculating annual growth rates from the published constant-price series.

The calculated results were compared with the annual growth figures reported in the official statistical publications. Any minor differences caused by rounding were retained within two decimal places. The study also used the same constant-price base and measurement unit throughout the analysis to prevent distortions arising from changes in prices or data classification. Because this study relied on aggregate secondary data, no questionnaire, experimental intervention, or individual participant was involved. The analysis therefore did not require respondent sampling or informed consent. Nevertheless, all data sources were acknowledged, and the statistical information was processed without modifying the original values reported by Badan Pusat Statistik.

Result and Discussion

Development of Batang Hari Regency GRDP. Batang Hari Regency's GRDP at 2010 constant prices showed an upward long-term trend during 2015–2024. Real GRDP increased from IDR 9,695,287.2 million in 2015 to IDR 14,663,019.0 million in 2024. Therefore, the regional economy generated an additional real output of IDR 4,967,731.8 million, equivalent to a cumulative increase of 51.24 percent over the observation period.

The increase was not continuous throughout the entire period. Real GRDP expanded consistently between 2015 and 2019, declined in 2020, and subsequently recovered from 2021 onward. The annual GRDP values and calculated growth rates are presented in Table 3.

Table 5. GRDP and Economic Growth of Batang Hari Regency, 2015–2024

Year	GRDP at constant prices (IDR million)	Annual change (IDR million)	Economic growth (%)
2015	9,695,287.2	—	—
2016	10,146,144.6	450,857.4	4.65
2017	10,634,357.7	488,213.1	4.81
2018	11,161,789.8	527,432.1	4.96
2019	11,719,195.7	557,405.9	4.99

2020	11,662,606.6	-56,589.1	-0.48
2021	12,227,810.4	565,203.8	4.85
2022	13,727,430.1	1,499,619.7	12.26
2023	14,237,065.8	509,635.7	3.71
2024	14,663,019.0	425,953.2	2.99

Source: Badan Pusat Statistik Kabupaten Batang Hari (2020, 2025), processed by the authors (2026).

Table 5 shows that real GRDP increased by IDR 2,023,908.5 million between 2015 and 2019. The largest pre-pandemic annual increase occurred in 2019, when real GRDP increased by IDR 557,405.9 million. In 2020, real GRDP declined by IDR 56,589.1 million compared with the previous year. The regional economy returned to positive growth in 2021, followed by its largest annual increase in 2022, amounting to IDR 1,499,619.7 million.

Real GRDP continued to increase in 2023 and 2024, although the annual additions were lower than in 2022. The increase amounted to IDR 509,635.7 million in 2023 and IDR 425,953.2 million in 2024. These results indicate that the regional economy continued to expand after the exceptional increase recorded in 2022, but the rate of expansion moderated during the final two years of observation.

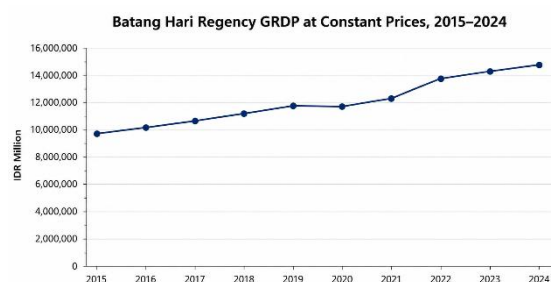


Fig 1.
Development of Batang Hari
Regency GRDP at Constant
Prices, 2015–2024

Figure 1 shows a relatively stable upward movement between 2015 and 2019, a slight decline in 2020, and renewed growth from 2021 onward. The most pronounced increase is visible between 2021 and 2022, after which the GRDP trend continued upward at a more moderate rate.

Development and Contribution of Major Industries. The industrial structure of Batang Hari Regency was dominated by agriculture, forestry and fishing; mining and quarrying; and manufacturing. Among these industries, agriculture, forestry and fishing consistently generated the largest real value added throughout the observation period.

The value added of agriculture, forestry and fishing increased from IDR 3,888,211.3 million in 2015 to IDR 5,496,217.6 million in 2024. Mining and quarrying increased from IDR 1,365,135.6 million to IDR 2,990,642.8 million during the same period, although its annual development was more volatile. Manufacturing increased more gradually from IDR 1,225,427.5 million in 2015 to IDR 1,474,042.8 million in 2024.

Table 3. Value and Contribution of Major Industries in Selected Years

Industry	Indicator	2015	2020	2022	2024
Agriculture, forestry and fishing	GRDP (IDR million)	3,888,211.3	4,608,804.0	4,892,794.6	5,496,217.6
	Contribution (%)	40.10	39.52	35.64	37.48
Mining and quarrying	GRDP (IDR million)	1,365,135.6	1,811,803.5	3,430,898.2	2,990,642.8
	Contribution (%)	14.08	15.54	24.99	20.40
Manufacturing	GRDP (IDR million)	1,225,427.5	1,319,529.3	1,302,335.8	1,474,042.8
	Contribution (%)	12.64	11.31	9.49	10.05

Source: Badan Pusat Statistik Kabupaten Batang Hari (2020, 2025), processed by the authors (2026).

Agriculture, forestry and fishing contributed 40.10 percent of total real GRDP in 2015. Its contribution declined slightly to 39.52 percent in 2020 and then decreased to 35.64 percent in 2022. The lower share in 2022 did not result from a contraction in agricultural output because its real value added continued to increase. Instead, mining and quarrying expanded more rapidly during that year. By 2024, the agricultural contribution had increased again to 37.48 percent.

Mining and quarrying accounted for 14.08 percent of total real GRDP in 2015 and 15.54 percent in 2020. Its contribution increased sharply to 24.99 percent in 2022 before decreasing to 20.40 percent in 2024. The pattern shows a substantial change in the relative importance of mining during the post-pandemic period.

Manufacturing contributed 12.64 percent of real GRDP in 2015. Its contribution declined to 11.31 percent in 2020 and 9.49 percent in 2022 before increasing slightly to 10.05 percent in 2024. Although manufacturing output in 2024 was higher than in 2015, its relative contribution decreased because other industries, particularly mining, expanded more rapidly.

Table 4. Cumulative Development of Major Industries, 2015–2024

Industry	GRDP in 2015 (IDR million)	GRDP in 2024 (IDR million)	Absolute change (IDR million)	Cumulative change (%)	Change in contribution (percentage points)
Agriculture, forestry and fishing	3,888,211.3	5,496,217.6	1,608,006.3	41.36	-2.62
Mining and quarrying	1,365,135.6	2,990,642.8	1,625,507.2	119.07	6.32
Manufacturing	1,225,427.5	1,474,042.8	248,615.3	20.29	-2.59

Source: Badan Pusat Statistik Kabupaten Batang Hari (2020, 2025), processed by the authors (2026).

Table 4 shows that mining and quarrying recorded the largest cumulative increase among the three principal industries, reaching 119.07 percent. Its contribution to the regional economy consequently increased by 6.32 percentage points between 2015 and 2024. Agriculture, forestry and fishing increased by 41.36 percent in real terms, although its relative contribution declined by 2.62 percentage points. Manufacturing recorded the smallest cumulative increase, at 20.29 percent, accompanied by a decline of 2.59 percentage points in its contribution.

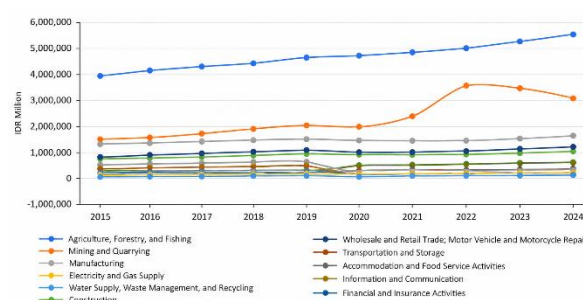


Fig 2.
GRDP of Batang Hari
Regency by Industry,
2015–2024

Figure 2 displays the development of real GRDP across industries. Agriculture, forestry and fishing remained the largest industry throughout the period, whereas mining and quarrying exhibited the most substantial fluctuations. Manufacturing and other non-primary industries developed more gradually and remained below the value added generated by the two principal primary industries.

Annual Economic Growth. Annual economic growth was calculated from changes in total GRDP at constant prices. The results show that economic growth remained within a relatively narrow range before the pandemic. Growth increased from 4.65 percent in 2016 to 4.99 percent in 2019, with an average annual rate of 4.85 percent during 2016–2019.

Economic growth turned negative in 2020, when Batang Hari Regency recorded a contraction of 0.48 percent. The economy recovered in 2021 with growth of 4.85 percent. The highest growth rate occurred in 2022 at 12.26 percent, followed by a slowdown to 3.71 percent in 2023 and 2.99 percent in 2024.

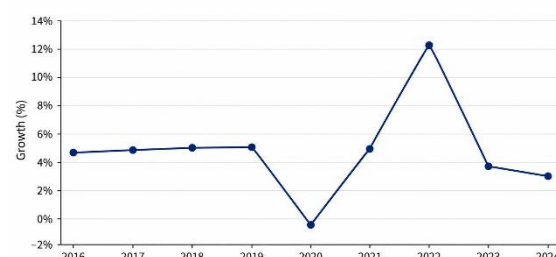


Fig 3.
Annual Economic Growth of
Batang Hari Regency, 2016–
2024

Figure 3 shows three distinct growth patterns. The first pattern was relatively stable growth before the pandemic. The second was the contraction recorded in 2020. The third was the post-pandemic recovery, characterized by positive growth in 2021, a sharp acceleration in 2022, and moderation in 2023–2024.

To identify the industrial source of these changes, Table 8 presents the growth of the three major industries during 2020–2024.

Table 5. Growth of Major Industries, 2020–2024

Industry	2020 (%)	2021 (%)	2022 (%)	2023 (%)	2024 (%)
Agriculture, forestry and fishing	1.39	2.69	3.38	5.61	6.36
Mining and quarrying	-2.51	19.04	59.07	-1.71	-11.32
Manufacturing	-1.54	-0.63	-0.68	5.22	7.57
Total GRDP	-0.48	4.85	12.26	3.71	2.99

Source: Badan Pusat Statistik Kabupaten Batang Hari (2020, 2025), processed by the authors (2026).

Agriculture, forestry and fishing maintained positive growth throughout 2020–2024. Its growth increased from 1.39 percent in 2020 to 6.36 percent in 2024. This industry therefore continued to expand even when the overall regional economy contracted in 2020. Mining and quarrying contracted by 2.51 percent in 2020 before growing by 19.04 percent in 2021 and 59.07 percent in 2022. The exceptional increase in 2022 coincided with Batang Hari Regency's highest overall economic growth. Mining subsequently contracted by 1.71 percent in 2023 and 11.32 percent in 2024.

Manufacturing contracted by 1.54 percent in 2020 and continued to decline slightly in 2021 and 2022. The industry returned to positive growth of 5.22 percent in 2023 and accelerated to 7.57 percent in 2024. The results indicate that manufacturing recovered later than total regional output.

Comparison of Economic Performance Across Periods. The interperiod comparison divided the observation period into the pre-pandemic period of 2015–2019, the pandemic year of 2020, and the post-pandemic period of 2021–2024. Table 6 presents the main indicators for these three phases.

Table 6. Comparison of Economic Performance Across Observation Periods

Economic period	Initial GRDP (IDR million)	Final GRDP (IDR million)	Absolute change (IDR million)	Cumulative change (%)	Average annual growth (%)	Main result
Pre-pandemic,	9,695,287.2	11,719,195.7	2,023,908.5	20.88	4.85	Stable expansion
Pandemic,	11,719,195.7	11,662,606.6	-56,589.1	-0.48	-0.48	Economic contraction
Post-pandemic,	11,662,606.6	14,663,019.0	3,000,412.4	25.73	5.95	Recovery followed by growth moderation

Source: Badan Pusat Statistik Kabupaten Batang Hari (2020, 2025), processed by the authors (2026).

During the pre-pandemic period, real GRDP increased by IDR 2,023,908.5 million, equivalent to 20.88 percent. Annual growth remained stable, ranging from 4.65 to 4.99 percent, with an average of 4.85 percent. The pandemic period produced a real output decline of IDR 56,589.1 million. The contraction was reflected in negative growth in mining and quarrying, manufacturing, trade, transportation, and several service activities, although agriculture, forestry and fishing continued to record positive growth.

During the post-pandemic period, total real GRDP increased by IDR 3,000,412.4 million or 25.73 percent relative to its 2020 level. Average annual growth during 2021–2024 reached 5.95 percent. However, this average was influenced by the exceptionally high growth recorded in 2022.

The sectoral results show that the 2022 acceleration was concentrated mainly in mining and quarrying, whose real value added increased from IDR 2,156,838.2 million in 2021 to IDR 3,430,898.2 million in 2022. This represented an annual increase of IDR 1,274,060.0 million or 59.07 percent. During the same year, agriculture grew by 3.38 percent, whereas manufacturing contracted by 0.68 percent. Therefore, the 12.26 percent aggregate growth recorded in 2022 did not reflect an equivalent expansion across all industries.

Discussion

Long-Term GRDP Development and the Quality of Regional Growth. The results demonstrate that Batang Hari Regency experienced positive long-term economic development, as its real GRDP increased from IDR 9,695,287.2 million in 2015 to IDR 14,663,019.0 million in 2024. The increase of IDR 4,967,731.8 million, or 51.24 percent, indicates that the region's capacity to produce goods and services expanded substantially during the ten-year observation period. Because the analysis

used GRDP at constant prices, this increase represents real output growth rather than a nominal increase caused by changes in market prices (Badan Pusat Statistik, 2025).

From the perspective of economic growth theory, a sustained increase in real output reflects an expansion in regional production capacity arising from capital accumulation, labor utilization, technological improvement, and productivity growth (Todaro & Smith, 2020). However, the developmental significance of growth depends not only on its magnitude but also on its industrial sources and capacity to generate employment, income, and intersectoral linkages (McMillan et al., 2014). Therefore, the 51.24 percent increase in Batang Hari Regency's real GRDP cannot be interpreted solely as evidence of balanced economic development because much of its growth remained concentrated in primary industries.

The relatively stable annual growth of 4.65–4.99 percent during 2016–2019 indicates that the regional economy expanded consistently before the COVID-19 pandemic. This pattern is consistent with Yuliana's (2025) finding that regencies in Provinsi Jambi generally experienced positive economic growth before the pandemic, although the magnitude of growth differed according to their industrial structures. It also supports Pratiwi and Mariani's (2021) argument that regional growth is closely associated with the development of industries that make large contributions to GRDP.

Pre-pandemic stability was supported primarily by continued development in agriculture, forestry and fishing, mining and quarrying, manufacturing, construction, and trade. Nevertheless, the industrial structure remained concentrated in agriculture and mining. Andriansyah et al. (2023) explain that regional growth in Indonesia is influenced by both structural change and productivity improvements within industries. Their study indicates that sustained economic growth cannot rely exclusively on transferring resources between industries because productivity improvement within dominant industries remains essential.

The Batang Hari findings partly support this argument. Agriculture remained dominant and continued to grow, while mining produced the most substantial increase during the observation period. However, manufacturing developed more slowly and its relative contribution declined. This means that Batang Hari Regency experienced real economic expansion without a strong shift toward manufacturing and other higher-value-added activities. Thus, the long-term increase in Batang Hari Regency's GRDP demonstrates expanding regional production, but it does not yet provide sufficient evidence of broad structural transformation. The growth pattern is better characterized as expansion within a natural-resource-based economic structure, with limited changes in the relative position of manufacturing and modern services.

Economic Contraction and Regional Resilience During the Pandemic. The Batang Hari economy contracted by 0.48 percent in 2020, as real GRDP declined by IDR 56,589.1 million. This was the only negative annual growth rate recorded during 2015–2024. The contraction interrupted the stable pre-pandemic growth pattern and reflected the disruption of production, mobility, trade, transportation, and service activities during the COVID-19 pandemic.

Regional economic resilience refers to the ability of a regional economy to withstand a disruption, minimize output losses, recover its previous level of activity, and adapt to changing economic conditions (Martin & Sunley, 2015). The magnitude of a regional contraction depends partly on its industrial composition because industries differ in their exposure to mobility restrictions, supply-chain interruptions, and declining consumer demand (OECD, 2020). Regions dependent on accommodation, transportation, tourism, and direct-contact services generally experienced severe disruption, whereas agriculture and other essential activities tended to maintain a greater degree of operational continuity (OECD, 2020).

The sectoral results show that Batang Hari's relatively limited contraction was supported by agriculture, forestry and fishing, which continued to grow by 1.39 percent in 2020. In contrast, mining and quarrying contracted by 2.51 percent and manufacturing by 1.54 percent. Trade, transportation, accommodation, and several service industries were also affected by reduced economic activity. The continued growth of agriculture helped prevent a deeper decline in total regional output.

This result is consistent with Saban et al. (2024), who find that agriculture remains a fundamental component of regional economies in Indonesia because it supplies essential products, supports household income, and creates demand for other economic activities. The result also supports the OECD's (2020) conclusion that the economic impact of the pandemic varied across regions according to their sectoral specialization. Agricultural regions were not entirely protected from the crisis, but the essential nature of food-related production helped maintain part of their economic activity.

The resilience shown by agriculture does not mean that all agricultural producers were unaffected. Aggregate sectoral output can remain positive even when particular commodities, producers, or distribution channels experience losses. Regional resilience should therefore be understood as the ability of the aggregate economy to limit its decline rather than evidence that

every industry or economic actor successfully avoided the effects of the crisis (Martin & Sunley, 2015).

Compared with the sharp disruptions experienced in many service-based regions, the contraction of 0.48 percent indicates that Batang Hari Regency had a relatively high level of resistance to the initial economic shock. However, this resistance resulted partly from the dominance of agriculture rather than from extensive economic diversification. Di Caro (2017) explains that diversification can strengthen resilience by enabling growth in one industry to compensate for contraction in another. In Batang Hari, agriculture served this compensating function during 2020, while several other industries simultaneously experienced contraction.

The findings therefore indicate that Batang Hari Regency possessed short-term resistance to the pandemic because its largest industry continued to expand. Nevertheless, its resilience remained dependent on a limited number of primary industries, meaning that its capacity to withstand future shocks may vary according to the type of disruption affecting agriculture and natural-resource production.

Post-Pandemic Recovery and the Mining-Led Expansion. The regional economy returned to positive growth of 4.85 percent in 2021 and accelerated sharply to 12.26 percent in 2022. However, sectoral analysis shows that the exceptional growth in 2022 was concentrated primarily in mining and quarrying. The real value added of this industry increased from IDR 2,156,838.2 million in 2021 to IDR 3,430,898.2 million in 2022, representing growth of 59.07 percent.

Economic recovery after a major disruption is commonly identified through the return of output to its pre-crisis level and the resumption of positive growth (Martin & Sunley, 2015). Nevertheless, high post-crisis growth can be influenced by the low-base effect, recovery of previously delayed production, and a temporary increase in a particular industry (OECD, 2021). Therefore, the sustainability of recovery must be evaluated through the industrial distribution of growth rather than through the aggregate growth rate alone.

Batang Hari's 2022 growth was not evenly distributed across industries. Agriculture grew by 3.38 percent, while manufacturing contracted by 0.68 percent. By contrast, mining expanded by 59.07 percent and increased its contribution to total real GRDP to 24.99 percent. These differences show that the 12.26 percent aggregate growth rate primarily reflected mining expansion rather than simultaneous acceleration throughout the regional economy.

The result is consistent with van der Ploeg and Poelhekke's (2017) explanation that natural-resource-dependent economies can experience substantial output fluctuations in response to changes in production, investment, and commodity-market conditions. Resource-based growth can generate a rapid increase in regional income, but it may also create volatility when regional performance becomes dependent on one extractive industry (van der Ploeg & Poelhekke, 2017). Thoriq (2024) similarly finds that regions with significant mining activities often record considerable changes in economic growth when the relative position of mining changes.

The subsequent performance of Batang Hari Regency strengthens this interpretation. Overall economic growth moderated to 3.71 percent in 2023 and 2.99 percent in 2024, while mining contracted by 1.71 and 11.32 percent, respectively. The decline in mining output reduced the regional growth rate even though agriculture and manufacturing continued to expand in 2024. This pattern indicates a close relationship between mining fluctuations and aggregate regional performance.

The result differs from a broad-based recovery in which agriculture, manufacturing, construction, trade, and services expand simultaneously. A broad-based recovery would distribute growth across more industries and reduce the influence of one industry on total GRDP. In Batang Hari Regency, the recovery was strong in terms of aggregate output but remained sectorally concentrated. Accordingly, the 2022 increase should be interpreted as a mining-led economic acceleration rather than conclusive evidence of comprehensive structural recovery. The decline in mining during 2023–2024 and the simultaneous slowdown in total economic growth confirm that dependence on mining created considerable short-term volatility in Batang Hari Regency's economic performance.

The Persistent Dominance of Agriculture. Agriculture, forestry and fishing remained the largest industry throughout the observation period. Its real value added increased from IDR 3,888,211.3 million in 2015 to IDR 5,496,217.6 million in 2024, representing cumulative growth of 41.36 percent. The industry contributed 40.10 percent of real GRDP in 2015 and 37.48 percent in 2024.

The decline of 2.62 percentage points in the agricultural contribution did not indicate an absolute contraction. Instead, it occurred because mining and several other industries grew more rapidly during particular years. This distinction is important because changes in relative contribution can occur even when an industry continues to expand in absolute terms (Irianto, 2025). Sectoral contribution must therefore be interpreted together with changes in real value added.

The continued dominance of agriculture reflects Batang Hari Regency's natural-resource endowment, land-use structure, production base, and dependence on agricultural commodities. Saban et al. (2024) emphasize that the economic role of agriculture differs among Indonesian regions according to resource potential, productivity, market access, and interindustry relationships. In agriculture-based regions, the sector remains important not only as a source of output but also as a provider of employment, household income, raw materials, and demand for supporting services.

The result is also consistent with Habiburrahman (2012), who finds that sectoral GRDP development is associated with employment absorption. Agriculture is particularly relevant because its effects extend beyond aggregate output to rural livelihoods and household purchasing power. Consequently, stable agricultural growth can contribute to economic continuity even when other industries experience disruption.

However, a large agricultural contribution does not automatically indicate high productivity or strong value creation. Traditional and low-productivity agricultural activities may generate a substantial share of regional output because of their scale while still producing limited income per worker (McMillan et al., 2014). The developmental value of agriculture therefore depends on productivity improvement, technology adoption, processing capacity, supply-chain efficiency, and access to higher-value markets (Saban et al., 2024).

The agricultural growth rate increased from 1.39 percent in 2020 to 6.36 percent in 2024. This pattern shows that agriculture not only maintained production during the pandemic but also strengthened during the final years of the study. Nevertheless, the region's continued reliance on agricultural commodities exposes it to weather conditions, land degradation, commodity-price fluctuations, and distribution constraints.

The findings therefore indicate that agriculture served as both the structural foundation and stabilizing industry of Batang Hari Regency. The appropriate development direction is not to reduce agriculture's role artificially, but to increase its productivity and value added through downstream processing, technological modernization, product diversification, and stronger connections with manufacturing, transportation, trade, and financial services.

Manufacturing Development and the Limited Structural Transformation. Manufacturing showed the slowest cumulative increase among the three principal industries. Its real value added increased from IDR 1,225,427.5 million in 2015 to IDR 1,474,042.8 million in 2024, representing cumulative growth of 20.29 percent. However, its contribution to total real GRDP declined from 12.64 to 10.05 percent.

Structural transformation theory associates long-term development with the movement of productive resources from relatively low-productivity activities toward manufacturing and modern services that generate higher value added (Lewis, 1954; Kuznets, 1973). Manufacturing is particularly important because it can process local raw materials, develop technological capabilities, create production linkages, and increase the value retained within a region (McMillan et al., 2014).

The Batang Hari results reveal that this transformation remained limited. Manufacturing contracted during 2020–2022 before returning to growth of 5.22 percent in 2023 and 7.57 percent in 2024. Although the final two years indicate improvement, the industry's contribution in 2024 remained lower than its contribution in 2015. Thus, manufacturing had not yet expanded rapidly enough to substantially alter the region's primary-sector-based structure.

This finding is consistent with Andriansyah et al. (2023), who report that structural change across Indonesian regions remains uneven and that within-industry productivity growth is an important source of regional development. It also corresponds with Matondang's (2018) argument that industrial development can support economic growth and employment when manufacturing activities expand and establish productive connections with local resources.

Batang Hari Regency possesses opportunities to develop resource-based manufacturing by processing agricultural, forestry, plantation, and mining outputs locally. Such development could increase regional value added without requiring the region to abandon its existing comparative advantages. Saban et al. (2024) argue that the contribution of agriculture can be strengthened when primary production is linked to processing, distribution, and other value-creating activities.

The increase in manufacturing growth during 2023–2024 is a positive development, particularly because it occurred while mining contracted. However, two years of positive growth are insufficient to establish a permanent structural shift. The trend must be sustained and supported by investment, infrastructure, technology, skilled labor, market access, and stronger supply-chain integration.

Therefore, the declining relative contribution of manufacturing indicates that Batang Hari Regency's structural transformation remained incomplete during 2015–2024. The sector's recovery in 2023–2024 provides an initial opportunity for diversification, but its contribution must increase consistently before manufacturing can become a major stabilizing force in the regional economy.

Changes in Sectoral Composition and Economic Diversification. The sectoral results indicate that Batang Hari Regency's economy remained concentrated in primary industries. In 2024, agriculture, forestry and fishing contributed 37.48 percent of real GRDP, while mining and quarrying contributed 20.40 percent. Together, these two industries accounted for approximately 57.88 percent of the regional economy.

Economic diversification refers to the expansion of productive activities across a broader range of industries, thereby reducing excessive dependence on a particular sector or commodity (Martin & Sunley, 2015). Diversification can improve economic stability because contractions in one industry may be offset by expansion in other industries (Di Caro, 2017). However, diversification should be based on industries that possess productive linkages with local resources and capabilities rather than on the simple addition of unrelated activities (Martin & Sunley, 2015).

The increase in mining's contribution from 14.08 percent in 2015 to 20.40 percent in 2024 indicates that the region became more dependent on mining over the observation period. Meanwhile, the contribution of manufacturing declined by 2.59 percentage points. This composition does not indicate a conventional structural shift from primary production toward manufacturing.

Siburian et al. (2021) show that basic industries can drive regional growth by selling goods and services beyond the region and generating an inflow of income. In Batang Hari Regency, agriculture and mining can perform this economic-base function because their products serve both internal and external markets. Nevertheless, dependence on a small number of basic industries can create vulnerability when commodity production or external demand declines.

Pratiwi and Mariani (2021) emphasize that the industries influencing regional development must be assessed through both their contribution and growth. Applying this perspective to Batang Hari shows that agriculture had the largest contribution and relatively stable growth, while mining combined a substantial contribution with highly volatile growth. Manufacturing had a meaningful contribution but grew more slowly over the complete observation period.

The sectoral structure thus contains both stability and vulnerability. Agriculture provides relative stability because of its large and continuously increasing output, whereas mining provides rapid but volatile growth. Manufacturing and services have not yet reached sufficient scale to substantially reduce dependence on these two primary industries.

The evidence leads to the conclusion that Batang Hari Regency experienced changes in sectoral proportions but not a comprehensive transformation toward a diversified economy. Sustainable diversification should build on existing agriculture and natural-resource activities by expanding processing, logistics, trade, business services, information technology, and other activities that increase local value creation.

Conclusion

This study concludes that Batang Hari Regency achieved substantial real economic expansion during 2015–2024, as GRDP at constant prices increased by 51.24 percent from IDR 9.70 trillion to IDR 14.66 trillion. Economic growth remained relatively stable before the pandemic, contracted by 0.48 percent in 2020, recovered in 2021, and reached 12.26 percent in 2022 before moderating to 3.71 percent in 2023 and 2.99 percent in 2024. Agriculture, forestry and fishing remained the largest and most stable contributor, whereas mining and quarrying generated both the strongest acceleration and the greatest volatility, particularly through its 59.07 percent expansion in 2022 and subsequent contraction in 2023–2024. Manufacturing began to recover in the final two years but remained insufficient to produce a substantial structural shift. These findings indicate that Batang Hari Regency's economic recovery was strong in aggregate terms but remained concentrated in primary industries. Therefore, sustainable regional development requires higher agricultural productivity, responsible utilization of mining-generated benefits, expansion of resource-based manufacturing, and stronger connections with trade, transportation, technology, and other productive services to create a more diversified and resilient regional economy.

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