

# Sustainability of Economic Sector: Base on Gross Regional Domestic Product

MUH. OBI KASMIN<sup>1</sup>, SUPARMAN<sup>2</sup>, MUHTAR AMIN<sup>1</sup>, KARTOMO<sup>3</sup>, NURSALAM<sup>1</sup>,  
ANDI MARIANI RAMLAN<sup>4</sup>

<sup>1</sup>Department of Agribusiness, Universitas Sembilanbelas November Kolaka,  
Kelurahan Anaiwoi, Kecamatan Tanggetada, Kabupaten Kolaka,  
Sulawesi Tenggara,  
INDONESIA

<sup>2</sup>Department of Animal Husbandry, Universitas Sembilanbelas November Kolaka,  
Kelurahan Anaiwoi, Kecamatan Tanggetada, Kabupaten Kolaka,  
Sulawesi Tenggara,  
INDONESIA

<sup>3</sup>Department of Economics Development, Universitas Sembilanbelas November Kolaka,  
Desa Popalia Kecamatan Tanggetada Kabupaten Kolaka,  
Sulawesi Tenggara,  
INDONESIA

<sup>4</sup>Department of Mathematic, Universitas Sembilanbelas November Kolaka,  
Kelurahan Anaiwoi, Kecamatan Tanggetada, Kabupaten Kolaka,  
Sulawesi Tenggara,  
INDONESIA

Email Correspondent: [muhammadrobby441@gmail.com](mailto:muhammadrobby441@gmail.com)

**Abstract:** - This research aims to analyse the sustainable economic sector in Kolaka Regency, Southeast Sulawesi Province – Indonesia. Sustainable sectors are sectors that are currently included as core or non-core sectors and will become core sectors in the future even if their growth is slow or fast. Analytical methods used include location quotient (LQ), dynamic location quotient (DLQ) and Klassen typology analysis. According to the results of the LQ, DLQ and Klassen typology analysis, 6 sectors are included in the sustainable sector, namely the agriculture, forestry and fishing, electricity, and gas supply. sector, the water supply, waste and waste treatment sector, the information and communication services sector, financial and insurance services, the real estate sector, as well as the health services sector and social activities and the 11 unsustainable sectors are the mining and quarrying sector, the processing industry sector, the wholesale and retail trade sector, automobile and motorcycle repair, transport and trade, the accommodation and food services sector, the business services sector and other service sectors. This research is important because it can be used as a basis for making policies for the development of the economic sector, especially sustainable sectors.

**Key-Words:** - economic; sector; sustainability; GRDP

Received: March 29, 2024. Revised: January 21, 2025. Accepted: March 3, 2025. Published: May 7, 2025.

## 1 Introduction

Economic growth is an indicator that can be used to measure the economic improvement or growth of a region in various economic sectors [1] [2]. Kolaka Regency is one of the regions that has become an important and most important contributor to the economic structure of Southeast Sulawesi Province over the past 5 years [3]. Based on data from the Central Statistics Agency for Southeast Sulawesi, Kolaka Regency contributed 19.84 percent to the total Gross Domestic Product (GDP) at constant prices for South Sulawesi Province. -is, although based on the release of regional statistics for Kolaka Regency, the

economic growth rate of Kolaka Regency over the past five years included in the low category, namely 3.00 percent (Badan Pusat Statistik Kabupaten Kolaka, 2023). Over the past five years, the growth rate of regional gross domestic product (GRDP) at constant prices (ADHK) has declined quite significantly. The decline in the GRDP growth rate is believed to have occurred due to the large government spending on managing the Covid-19 and post-Covid-19 period.

Agriculture, forestry, and fisheries sectors as well as the mining and quarrying sectors are the main sectors that contribute the most to the GRDP structure of Kolaka Regency. These two sectors are

also those which absorb the most labor and have contributed to minimizing the unemployment rate. Based on this, the regional government of Kolaka Regency is making very intense efforts to develop these two sectors. However, the question currently arises whether the sectors developed by the regional government are sectors that will be sustainable in the future or not, requiring a more comprehensive and in-depth study.

The state of the GDP of a region can give an idea of the progress of the economic development of the region [5]. The most important aspect of a region's GRDP is how the benefits of economic development can be distributed to society [6]. Economic growth and its constituent variables are the main conditions for sustainable regional development [7], as population growth will impact growing economic needs [8].

Increasing the population's income is a necessity and will be achieved if the economic growth of a region continues optimally [9]. Optimizing the economic development of a region in the current era of autonomy refers to Law no. 32 of 2004 regarding regional government (Sahid et al., 2020), where economic development requires regional governments to be globally oriented. This condition will have an impact on increasing competition between regions, including in the economic sector [11]. This will lead to a change in government direction, where the challenges will no longer be questions of autonomy or decentralization but demands for increased competitiveness. Determining the leading sector of a region is no longer based on the characteristics of the region but is based on competitive advantages and comparative advantages to be able to support the accelerated development of the region [12].

Gross regional domestic product (GRDP) is an indicator that can be used to determine the economic situation of a region over a certain period, either based on current base prices or based on constant prices [13] [14] [9]. GRDP is the amount of value added produced by all economic units in a certain area or is the total value of final goods and services produced by all economic units in a certain area [2]. The success of economic development in a region can be seen from the economic growth of that region, where the GRDP value is an indicator that can show the status of economic growth in a region.

A common problem encountered in economic development using GRDP as an indicator is determining a sustainable economic sector among the many economic sectors that contribute to the GRDP structure of a region [15]. This does not

exclude the possibility that an economic sector which is currently a core sector may in the future become a non-core sector or vice versa due to future changes in the economics of a region. Based on this description, the purpose of this research is to analyse the sustainable economic sector in Kolaka Regency, Southeast Sulawesi.

## 2 Material and Methods

This research was carried out in Kolaka Regency in 2023, using secondary data. The data used in this research are GRDP data for Kolaka District and GRDP data for Southeast Sulawesi. The obtained data were analysed using the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) methods. The Location Quotient (LQ) method is used to determine which economic sectors are classified as core or non-core sectors. The Dynamic Location Quotient (DLQ) method is used to determine which economic sectors are growing faster or slower and to what extent the growth of these economic sectors is sustainable and the Klassen typology method. Comparison of LQ and DLQ results can be used to determine economic sectors that may be superior, promising, reliable or lagging. The Klassen typology method is used to determine fast-growing and fast-growing sectors, fast-growing sectors, advanced and slow-growing sectors, and/or relatively lagging sectors.

The LQ equation used in this research is [6]:

$$LQ = \frac{V_1^R / V^R}{V_1 / V} \quad (1)$$

Where:

LQ = Location Quotient

$V_1^R$  = GRDP value of an economic sector in Kolaka regency level

$V^R$  = GRDP value of all economic sectors in Kolaka Regency

$V_1$  = GRDP value of an economic sector at the provincial level of Southeast Sulawesi

$V$  = GRDP value of all economic sectors in Southeast Sulawesi Province

The evaluation criteria using location quotient (LQ) analysis are as follows:

$LQ > 1$  shows that this economic sector is a pillar or has potential, the products produced by this sector can not only meet the needs of a region but can also be exported outside the region. The higher the LQ value, the higher the comparative advantage.

$LQ < 1$  shows that the economic sector is classified as non-based, has no advantages or potential, the products produced by this sector cannot meet the

needs of one region, therefore it requires supplies or imports from other regions.

$LQ = 1$  This means that the economic sector is classified as non-based, has no advantages, the products produced by this sector can only meet regional needs and cannot be exported outside the region.

Changes in the economy of a region over a certain period can be analysed using the dynamic location quotient (DLQ) method to know the changes in each economic sector. DLQ is a modification of the statistical location quotient (SLQ) form considering the size of the GRDP of a particular economic sector or the value of products of a particular economic sector. The increase or decrease in LQ value of certain sectors in different periods can be determined using the following equation [3]:

$$DLQ_{ij} = \frac{(1+g_{ij})/(1+g_j)}{(1+G_i)/(1+G)} \quad (2)$$

Where:

$DLQ_{ij}$  = Sectoral potential index  $i$  at the Kolaka district level

$g_{ij}$  = Growth rate of value added in sector  $i$  at the Kolaka district level

$g_j$  = Average growth rate of GRDP at Kolaka regency level

$G_i$  = Growth rate of value added in sector  $i$  at the provincial level of Southeast Sulawesi

$G$  = Average growth rate of GRDP in Southeast Sulawesi province

DLQ value  $>1$  indicates that the development potential of sector  $i$  in Kolaka Regency is faster than the same sector in Southeast Sulawesi Province. On the other hand, if the DLQ value  $<1$  indicates that the potential development of sector  $i$  in Kolaka Regency is slower than the development in Southeast Sulawesi Province.

Comparison of LQ and DLQ values can be used as a reference to determine whether an economic sector is classified as forward-looking, superior, reliable, or lagging. The criteria for comparing LQ and DLQ values are as follows:

- If the LQ and DLQ values are  $>1$ , then the leading sector will remain the base sector now and in the future.
- If the LQ value is  $>1$  and DLQ  $<1$ , then the economic sector is prospective, which means that the sector will move from a basic sector to a non-basic sector in the future.
- If the value LQ  $<1$  and DLQ  $>1$ , then the economic sector is a pillar economic sector,

which means that the sector will move from a non-core sector to a core sector in the future.

- If the LQ and DLQ values are  $<1$ , then the economic sector is lagging, which means that the sector will remain a non-fundamental sector now and in the future.

Klassen typology analysis is used by comparing the growth rate and contribution of GRDP at the Kolaka regency level with a larger area, namely the Southeast Sulawesi province level. This is end of the paragraph for the subheading. Please, leave two blank lines between successive sections as here.

## 3 Result and Discussion

### 3.1 Location Quotient (LQ) Analysis

The results of the location quotient analysis of 17 economic sectors that make up the GRDP in Kolaka Regency based on the constant prices of 2010, it is known that there are 2 economic sectors that are the basic sectors, namely the mining and quarrying sector and the processing industry sector. At the same time, 15 other economic sectors, namely agriculture, forestry and fisheries sectors, electricity and gas supply sector, water supply sector, waste and management waste, construction sector, wholesale and retail sectors; car and motorcycle repair sector, transportation and warehousing sector, accommodation and catering sector, information and communication sector, financial services and insurance sector, transportation sector Real estate, business services sector, government administration and defines sector, education services sector, health services sector and social activities and other service sectors are included in the category of non-core sectors. The results of the LQ analysis of the economic sectors of Kolaka Regency are shown in the following figure.

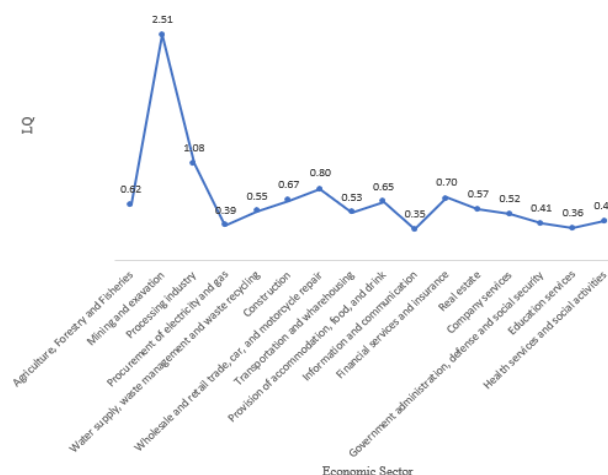


Figure 1. Results of Location Quotient (LQ)  
Analysis of Economic Sectors in Kolaka Regency,  
2023

The results of the LQ analysis of economic sectors in Kolaka Regency provide a signal to the regional government of Kolaka Regency and the provincial government of Southeast Sulawesi so that they can evaluate development policies, programs and activities that have been implemented, especially in economic sectors that fall into the category of non-core sectors so that these sectors can become core sectors in the future [7]. Acceleration activities and appropriate budgeting are expected to increase the LQ value of these non-based sectors in the future.

### 3.2 Kolaka Regency Economic Growth Model

The structure of economic growth patterns can be determined using Klassen cluster analysis. In the Klassen typology, two indicators are used, namely: the growth rate and the contribution of each sector in Kolaka regency. By determining economic growth as the vertical axis and the average contribution of each sector as the horizontal axis, it is divided into four classifications or quadrants, namely advanced and fast-growing sectors; advanced sectors experience slow growth; a rapidly growing sector; and it is a relatively underdeveloped sector [16] [17].

Regional economic development is a process in which the regional government and community components manage resources by forming a partnership model to create jobs in the development of economic activities. Regional classification is a very important basis in development planning carried out in related areas to determine variations in characteristics in certain areas.

Efforts and policies to improve the level of prosperity of society and regions by establishing economic relations and distributing economic activities from the primary sector to the secondary and tertiary sectors are part of the objective of economic growth [18]. The government's efforts to improve the economy of a region will continue to be implemented through sustainable development in various sectors so that it can stimulate strong growth [19]. The results of the Klassen cluster analysis of economic sectors in Kolaka Regency are presented in the following picture.

Table 1.

Results of Analysis of Sectoral Contribution to  
GRDP of Kolaka Regency, 2023

Economic Sector	Growth Rate	Contribution	Criteria
Agriculture, forestry,	rik>ri	yik<yi	Fast growing

and fisheries			sector
Mining and exavation	rik<ri	yik>yi	Advanced & slow growing sector
Processing industry	rik<ri	yik>yi	Advanced & slow growing sector
Procurement of electricity and gas	rik>ri	yik<yi	Fast growing sector
Water supply, waste management and waste recycling	rik>ri	yik<yi	Fast growing sector
Constrution	rik>ri	yik<yi	Fast growing sector
Wholesale and retail trade, car, and motorcycle repair	rik<ri	yik<yi	The sector relatively legging behind
Transportation and wharehousing	rik<ri	yik<yi	The sector relatively legging behind
Provision of accommodation, food, and drink	rik<ri	yik<yi	The sector relatively legging behind
Information and communication	rik>ri	yik<yi	Fast growing sector
Financial services and insurance	rik>ri	yik<yi	Fast growing sector
Real estate	rik>ri	yik<yi	Fast growing sector
Company services	rik<ri	yik<yi	The sector relatively legging behind
Government administration, defense and social security	rik>ri	yik<yi	Fast growing sector
Education services	rik>ri	yik<yi	Fast growing sector
Health services and social activities	rik>ri	yik<yi	Fast growing sector
Other services	rik<ri	yik<yi	The sector relatively legging behind

Source: data obtained, 2023

Table 1 shows that based on Klassen's cluster analysis of the economic sectors of Kolaka Regency that make up the GRDP structure, 3 criteria are formed, namely fast-growing sectors (quadrant II), sectors with advanced and slow growth (quadrant III) and relative sectors left behind (quadrant IV). Sectors included in quadrant II are advanced but depressed (stagnant) sectors. The growth rate of this sector tends to decline since the main activities of these sectors are depressed. Quadrant III sectors (advanced and slow-growing sectors) are sectors

that have great development potential but have not yet maximized existing potential. The third criterion concerns relatively lagging sectors, those which have a growth rate and a contribution lower than those of the reference zone.

Agriculture, forestry and fisheries sector are one of the sectors that is currently a non-core sector in Kolaka Regency, but in the future this sector will become a core sector because its rate of growth is higher than the growth rate of the same sector at the level of the province of Southeast Sulawesi. Meanwhile, the mining and quarrying sector, which is one of the pillar sectors of the GRDP structure of Kolaka Regency, is currently a core sector and based on the results of the DLQ analysis, this sector and other economic sectors are included in the basic sector. current and future category the future will become an off-base sector, which happens because the average increase in growth rate tends to decrease from year to year. The decline in growth rate was largely due to management that failed to pay attention to sustainability and a minimal increase in value added in the sector.

#### 4 Conclusion

Based on the results of the analysis performed, the following conclusions can be drawn.

1. Sustainable economic sectors of Kolaka Regency are agriculture, forestry and fisheries sectors, electricity and gas supply sector, water supply sector, waste and waste treatment, the information and communication sector, the financial and insurance services sector, real estate. sector, and the service, health, and social activities sector.
2. Economic sectors in Kolaka Regency that are not sustainable are the mining and quarrying sector, the processing industry sector, the wholesale and retail sector, the car and motorcycle repair sector, the transport and commerce, the accommodation and catering sector, the business services sector and other service sectors.

#### Acknowledgement:

Many thanks to LPPM-PMP Universitas Sembilanbelas November Kolaka for providing financial assistance in carrying out this research.

#### References:

- [1] G. Movkebayeva et al., "Energy security and sustainability in eurasian economic union in the terms of economic growth: The case of

Kazakhstan's energy sector up to 2040 perspectives," *International Journal of Energy Economics and Policy*, vol. 10, no. 2, pp. 497–503, 2020, doi: 10.32479/ijeep.9073.

- [2] M. S. Wisnujati, "Analysis of Sustainability Economic Sector in Probolinggo District East Java Province-Indonesia," *Agricultural Socio-Economics Journal*, vol. XX, no. 4, pp. 277–284, 2020, doi: 10.21776/ub.agrise.2020.020.4.2.
- [3] Muh. O. Kasmin, H. Helviani, and N. Nursalam, "Identifikasi Komoditas Hortikultura Basis dalam Perspektif Pertanian Berkelanjutan di Kabupaten Kolaka, Indonesia," *Agro Bali : Agricultural Journal*, vol. 6, no. 1, pp. 211–217, Mar. 2023, doi: 10.37637/ab.v6i1.1043.
- [4] Badan Pusat Statistik Kabupaten Kolaka, "Kabupaten Kolaka Dalam Angka, 2023," Kolaka: Badan Pusat Statistik Kabupaten Kolaka, 2024.
- [5] W. Cao, Y. Li, J. Cheng, and S. Millington, "Location patterns of urban industry in Shanghai and implications for sustainability," *Journal of Geographical Sciences*, vol. 27, no. 7, pp. 857–878, Jul. 2017, doi: 10.1007/S11442-017-1410-8/METRICS.
- [6] N. Xu, Y. Cheng, and X. Xu, "Using location quotients to determine public-natural space spatial patterns: A Zurich model," *Sustainability (Switzerland)*, vol. 10, no. 10, Sep. 2018, doi: 10.3390/SU10103462.
- [7] S. W. Mo, K. B. Lee, Y. J. Lee, and H. G. Park, "Analysis of import changes through shift-share, location quotient and BCG techniques: Gwangyang Port in Asia," *Asian Journal of Shipping and Logistics*, vol. 36, no. 3, pp. 145–156, Sep. 2020, doi: 10.1016/j.ajsl.2020.01.001.
- [8] T. Moreda, "Contesting conventional wisdom on the links between land tenure security and land degradation: Evidence from Ethiopia," *Land use policy*, vol. 77, pp. 75–83, Sep. 2018, doi: 10.1016/J.LANDUSEPOL.2018.04.058.
- [9] F. Shen, B. Liu, F. Luo, C. Wu, H. Chen, and W. Wei, "The effect of economic growth target constraints on green technology innovation," *J Environ Manage*, vol. 292, p. 112765, Aug. 2021, doi: 10.1016/J.JENVMAN.2021.112765.

- [10] A. Sahid, I. Amirullah, A. A. Rahman, A. Senaman, and Y. Yusriadi, "The Role of the Government in Supporting the Duties of Local Governments in Makassar City", [Online]. Available: [www.ijstr.org](http://www.ijstr.org)
- [11] Y. Zhai, W. Wang, and L. Zhou, "Green efficiency loss caused by economic growth goals: Evidence from an emerging economy," *Econ Anal Policy*, vol. 81, pp. 983–995, Mar. 2024, doi: 10.1016/j.eap.2024.01.013.
- [12] M. O. Kasmin and Nursalam, "Analysis of the competitiveness of cocoa commodity (*Theobroma cacao* L.) in Kolaka Regency," in *IOP Conference Series: Earth and Environmental Science*, 2019. doi: 10.1088/1755-1315/382/1/012010.
- [13] M. Sanso-Navarro, M. Vera-Cabello, and D. P. Ximénez-De-Embún, "Human Capital Spillovers and Regional Development," *Journal of Applied Econometrics*, vol. 32, no. 4, pp. 923–930, Jun. 2017, doi: 10.1002/JAE.2541.
- [14] L. Wang, S. Li, and Y. Lv, "Influence of local governments on the greening of the manufacturing sector: A perspective on environmental governance objectives," *Heliyon*, vol. 10, no. 1, Jan. 2024, doi: 10.1016/j.heliyon.2023.e23801.
- [15] E. S. Osabuohien, U. E. Okorie, and R. A. Osabohien, "Rice production and processing in Ogun State, Nigeria: Qualitative insights from farmers' association," *Food Systems Sustainability and Environmental Policies in Modern Economies*, pp. 188–216, Mar. 2018, doi: 10.4018/978-1-5225-3631-4.CH009.
- [16] Gunawan, A. E. Cahyono, and A. Santoso, "Local superior commodities, regional specializations and regional economic contributions," *Journal of Distribution Science*, vol. 16, no. 9, pp. 35–41, Sep. 2018, doi: 10.15722/JDS.16.9.201809.35.
- [17] G. A. U. Wickramasinghe, "Fostering productivity in the rural and agricultural sector for inclusive growth in Asia and the Pacific," *Asia-Pacific Development Journal*, vol. 24, no. 2, pp. 1–22, 2017, Accessed: Feb. 26, 2024. [Online]. Available: <https://ideas.repec.org/a/unt/jnapdj/v24y2017i2p1-22.html>
- [18] P. Schroeder, K. Anggraeni, and U. Weber, "The Relevance of Circular Economy Practices to the Sustainable Development Goals," *J Ind Ecol*, vol. 23, no. 1, pp. 77–95, Feb. 2019, doi: 10.1111/JIEC.12732.
- [19] J. Dian, T. Song, and S. Li, "Facilitating or inhibiting? Spatial effects of the digital economy affecting urban green technology innovation," *Energy Econ*, vol. 129, Jan. 2024, doi: 10.1016/j.eneco.2023.107223.

### Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

Muh. Obi Kasmin, Kartomo, and Nursalam has implemented the location quotient, dynamic location quotient and typology klassen analysis. Muhtar Amin, Suparman, and Andi Mariani Ramlan was carried out the data of this research.

### Conflict of Interest

All authors in this article have no conflict of interest in conducting research and compiling this article.

### Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)

This article is published under the terms of the Creative Commons Attribution License 4.0 [https://creativecommons.org/licenses/by/4.0/deed.en\\_US](https://creativecommons.org/licenses/by/4.0/deed.en_US)