Assessing the progress towards achieving sustainable development goals at a city level: Madiun City, Indonesia

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Abstract The progress of achieving sustainable development goals (SDGs) in Madiun City showed that 121 indicators had achieved the national target, 38 indicators had not achieved the national target, and 63 indicators had no data. Amongst the four pillars of sustainable development in Madiun City, the SDGs on the social development pillar are stated to be the most spotlight. On the one hand, the results showed that 20 of 38 indicators had not achieved the national target founded in the social development pillar, but on the other hand, the social development pillar showed the most achieved indicators in Madiun City.

Introduction

Madiun City has a strategic position as the center of regional activities in the western East Java Province. The characteristics of the Madiun City area as an urban area require regional planning that has integrated the principles of sustainable development so that the implementation of development planning in Madiun City can improve the life and level of community welfare sustainably and sustainably in the future. Meanwhile, the principle of sustainable development is measured based on the concept of SDGs that are agreed upon globally to be achieved by 2030 (Osman *et al.*, 2021). All countries in the world have realized the importance of monitoring the progress of achieving SDGs targets at the national, regional, and local levels (Allen *et al.,* 2018; Janoušková *et al.,* 2018; Huan *et al.,* 2021; Yeh *et al.,* 2022). In addition, the united nations' prediction that 60% of the world's population by 2030 will live in urban areas shows the need for attention to sustainability issues and how the

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role of the SDGs to be the main element of ensuring that aspects of sustainability in urban areas have been considered. The study aimed to measure the extent to which the principle of sustainable development to implement at the urban level based on the achievement of the SDGs indicators.

Materials and methods

The study was conducted in Madiun City from January to July 2021. The research began by identifying a list of SDGs indicators for the City government based on Presidential Regulation No. 59 of 2017 concerning the implementation of the achievement of sustainable development goals totaling 222 indicators along with national achievement targets on each indicator. The preparation of a list of 222 SDGs indicators to measure the achievement of the SDGs at the city government level would be the basis for carrying out the data collection process. The data collection techniques used were interviews, questionnaires, and filling in the matrix of SDGs indicator achievements collected from the Madiun City government agencies. The number of government agencies involved in data collection is 23 government agencies in Madiun City. The data obtained is data on the achievement of the Madiun City SDGs indicators which amount to 222 indicators. Furthermore, data analysis techniques were carried out by identifying the achievements of SDGs indicators in Madiun City into three categories of achievements, namely indicators of achieving national targets, indicators that had not reached national targets, and indicators that did not have data. Furthermore, the results of the achievement of the SDGs indicators in Madiun City used descriptive statistics to display the distribution of indicator achievements based on the 17 sustainable development goals and based on the four pillars of the SDGs, namely the social pillar, economic pillar, environmental pillar and the pillar of law and governance.

The data were collected to gather annual data from each SDGs indicator in Madiun City between 2016-2020. The data collection technique consisted of two collection stages using questionnaires and interviews. The first stage of data collection with questionnaires involved a list of SDGs indicators that would be distributed and filled out by 23 government agencies in Madiun City, according to the availability of data they had, and appointing key person representatives at each government agency to obtain information on the progress of questionnaire filling. Data collection with interviews was collected to map and reconfirm data from each government agency. The second stage of data collection with interviews was conducted through individual interviews

representing government agencies and with a focus group discussion format that brought together several representatives of government agencies in one place and at the same time. The data collection stage resulted in a list of SDGs indicators filled with data between 2016-2020. The next stage was the data analysis stage to assess the achievement of SDGs indicators from the data that had been collected. Researchers carried out this assessment by matching the targets of each SDGs indicator set in Presidential Regulation No. 59 of 2017 against the data available on SDGs indicators in Madiun City. This achievement assessment stage would result in three categories: indicators achieved, indicators not achieved, and indicators without data. The final stage used descriptive statistical analysis in the form of a distribution table of SDGs indicator achievement in Madiun City, presented with the average percentage of achievement in each SDGs pillar and SDGs goal.

Results

The realization of the achievement of the SDGs indicator target in Madiun City is illustrated by looking at the distribution of achievements based on the four pillars of SDGs development in each indicator achieved, indicators not achieved and indicators without data (Table 1). The social development pillar has the most SDGs indicators compared to other development pillars, namely 97 SDGs indicators with 60 indicators achieved, 20 indicators not achieved, and 17 indicators without data. In contrast to the pillar of environmental development which had 23 indicators achieved and 5 indicators not achieved but the number of indicators without data amounts to 24 indicators, so it cannot be assessed the achievement of SDGs indicators on the environmental pillar in Madiun City. Meanwhile, the implementation of the SDGs in Madiun City shows that the number of SDGs indicators that achieved with a greater number than the indicators that not achieved in all pillars of development with the average indicators reaching between 40-60%.

The social development pillar was the highest percentage of indicators not achieved with a figure of 20% compared to other development pillars. The pillars of environmental development showed the lowest percentage of the number of indicators not reached by a figure of 10%.

Table 1. The achievement of the SDGs indicators based on the Development Pillars

Development pillar	SDGs Indicator		
	Achieved	Not Achieved	No Data
Social development pillar	60	20	17
	62%	20%	18%
Economy development pillar	24	10	21
	44%	18%	38%
Environment development pillar	23	5	24
	47%	10%	43%
Law and governance development pillar	14	3	4
	66%	14%	19%

Table 2. The achievement of the SDGs indicators based on the Pillars of Social Development

Social development pillar	SDGs Indicator		
	Achieved	Not Achieved	No Data
SDG 1: end poverty in all its forms everywhere	18	6	1
	72%	24%	4%
SDG 2: zero hunger	8	3	0
	73%	27%	0%
SDG 3: good health and well-being	17	7	10
	50%	21%	29%
SDG 4: quality education	11	0	2
	85%	0%	15%
SDG 5: gender equality	6	4	4
	43%	29%	29%

The social development pillar showed the highest number of indicators achieved in SDG 1, namely 18 indicators achieved (Table 2). Meanwhile, the percentage of achievement, SDG 4 was the highest percentage of achievement with 85% with details of 11 indicators achieved, no indicators was not achieved, and 2 indicators without data. In addition, SDG 2 showed high percentage of achievement of 73% with 8 indicators achieved. Meanwhile, SDG 3 and SDG 5 revealed percentage of achievement with not exceeding 50% which is related to health aspects and aspects of gender equality.

The pillars of economic development in SDG 7 cannot be assessed because all SDGs indicators in SDG 7 did not get data (Table 3). Meanwhile, the results of the achievement of economic development in terms of SDG 8 showed that the indicators achieved was percentage of 48% or 9 indicators

achieved and 26% or 5 indicators was not achieved. On the other hand, SDG 10 related to reducing inequality in Madiun City showed that all indicators achieved, namely 3 indicators but cannot be seen as a whole success of their achievement because there were still 3 indicators without data. In addition, in SDG 17 was identified that the partnership in achieving the SDGs in Madiun City had a higher achievement lift than the indicators who not achieved, namely 8 indicators achieved and only 3 indicators were not achieved with 4 indicators without data.

Table 3. The achievement of the SDGs indicators based on the Pillars of Economic Development

Economy development pillar	SDGs Indicator		
	Achieved	Not Achieved	No Data
SDG 7: affordable and clean energy	0	0	2
	0%	0%	100%
SDG 8: decent work and economic growth	9	5	5
	48%	26%	26%
SDG 9: industry, innovation, and infrastructure	4	2	7
	31%	15%	54%
SDG 10: reduced inequality	3	0	3
	50%	0%	50%
SDG 17: partnerships for the goals	8	3	4
	53%	20%	27%

Table 4. The achievement of the SDGs indicators based on the Pillars of Environmental Development

Environment development pillar	SDGs Indicator Classification		
	Achieved	Not Achieved	No Data
SDG 6: clean water and sanitation for all	6	2	10
	33%	11%	56%
SDG 11: sustainable cities and communities	12	2	6
	60%	10%	30%
SDG 12: responsible consumption and production	2	1	2
	40%	20%	40%
SDG 13: climate action	2	0	0
	100%	0%	0%
SDG 15: life on land	1	0	3
	25%	0%	75%

The pillars of environmental development in Madiun City in SDG 11 related to sustainable cities showed the highest number of indicators achieved which compared to other SDGs in the pillars of environmental development with 12 indicators achieved and 2 indicators was not yet achieved (Table 4). In addition, SDG 6 had the second highest number of achieved indicators with 6 indicators achieved relating to clean water and sanitation.

The pillars of legal development and governance in Madiun City are shown in SDG 16 related to peace, justice, and strong institutions where the SDGs indicators achieved amount to 14 indicators or 67% and the indicators not achieved amount to 3 or 14% and there are 4 indicators without data or 19% (Table 5).

Table 5. The achievement of the SDGs indicators based on the Pillars of Legal Development and Governance

Law and governance development pillar	SDGs Indicator Classification		
	Achieved	Not Achieved	No Data
SDG 16: peace, justice, and strong institutions	14	3	4
	67%	14%	19%

Discussion

The sustainable development goals are useful for looking at the problems and achievements of development in urban areas, especially in the aspects of economic, social, environmental, and institutional development (Tomor *et al*., 2019). The results of this study support the achievement of sustainable development at the urban level. Meanwhile, various SDGs indicators with a multidimensional character of development can be developed to measure the status of sustainable urban development, one of which is by producing index figures (Valcárcel-Aguiar *et al*., 2018). The results of the research are useful in mapping the achievement of SDGs indicators in urban areas to be further developed into index figures for sustainable development achievement at the urban level. On the other hand, urban communities have realized the importance of sustainability which is reflected in the emergence of a sharing economy that affects three main dimensions, namely the social, economic, and environmental dimensions (Boar *et al*., 2018). The results of this study

illustrate the same dimension to describe the condition of urban communities because the SDGs indicators also include social, economic, and environmental dimensions.

The recommendation is needed for further research on the factors influence the improvement of the achievement of SDGs indicators in urban areas. The suggestion is needed to develop alternative SDGs indicators whose data may not available in urban areas, so that all SDGs indicators can be seen comprehensively. It comments to be needed sufficient data to support from the aspect of availability and periodic aspects. It summarized that the most prominent urban sustainable development achievements in Madiun City would be concerned on the pillars of social development including health aspects, educational aspects, and aspects of community welfare.

References

Allen, C., Metternicht, G. and Wiedmann, T. (2018). Initial progress in implementing the Sustainable Development Goals (SDGs): a review of evidence from countries. Sustainability Science, 13:1453-1467.

Boar, A., Bastida, R. and Marimon, F. (2020). A Systematic Literature Review. Relationships between the Sharing Economy, Sustainability and Sustainable Development Goals. Sustainability, 12:6744.

Huan, Y., Liang, T., Li, H. and Zhang, C. (2021). A systematic method for assessing the progress of achieving sustainable development goals: A case study of 15 countries. Science of The Total Environment, 752: 141875.

Janoušková, S., Hák, T. and Moldan, B. (2018). Global SDGs Assessments: Helping or Confusing Indicators. Sustainability, 10:1540.

Osman, T., Kenawy, E., Abdrabo, K. I., Shaw, D., Alshamndy, A., Elsharif, M., Salem, M., Alwetaishi, M., Aly, R. M. and Elboshy, B. (2021). Voluntary Local Review Framework to Monitor and Evaluate the Progress towards Achieving Sustainable Development Goals at a City Level: Buraidah City, KSA, and SDG11 as A Case Study. Sustainability, 13:9555.

Tomor, Z., Meijer, A., Michels, A. and Geertman, S. (2019). Smart Governance For Sustainable Cities: Findings from a Systematic Literature Review. Journal of Urban Technology, 26:3-27.

Valcárcel-Aguiar, B., Murias, P. and Rodríguez-González, D. (2019). Sustainable Urban Liveability: A Practical Proposal Based on a Composite Indicator. Sustainability, 11: 86.

Yeh, S. C., Hsieh, Y. L., Yu, H. C. and Tseng, Y. H. (2022). The Trends and Content of Research Related to the Sustainable Development Goals: A Systemic Review. Applied Sciences, 12:6820.