IMPROVING LOCAL ECONOMY THROUGH INTEGRATED WASTE MANAGEMENT IN BANDUNG CITY, INDONESIA (CASE STUDY OF SUKASARI DISTRICT)

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ABSTRACT

In Bandung City, Indonesia, municipal solid waste was a significant problem. However, municipal waste has a good potency if the community can manage the waste. This study aims to assess the relationship between local economics and waste management research and how waste management has been implemented in Bandung City's Sukasari District through fostering the local economy. The method used was a systematic literature review using VOSviewer and Harzing's publish & perish software and documents and resource studies from Sukasari District Office. The results revealed that the waste bank improved household income, which affected the local economy. The study could also contribute to the works of literature in the field of waste management and help other developing-world cities with their waste problems. Furthermore, additional government assistance enhancing the waste bank's operating system will lead to better waste management outcomes.

Keywords*:* Bandung City; waste bank, local economy, Sukasari

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INTRODUCTIONS

Indonesia is one of the world's most populated and largest archipelagic countries, with various management-oriented challenges, especially waste (Supriyadi et al., 2021). Waste is one of the priority issues that must be

addressed in multiple cities in Indonesia. It has become a national problem—as a basis for comprehensive waste management, then raised Law no. 18 of 2008. Based on the law, In waste management, district/city governments have the authority to administer district/city-scale waste management under the norms, standards, procedures, and criteria set by the government (Republik Indonesia, 2008).

Urban trash management is an inherent environmental challenge. Waste is currently a significant issue in the community in Indonesia, especially in big cities such as Bandung (Pratama, 2021; Chazanah & Nandiyanto, 2022). One of the cities with waste issues is Bandung, which has a high generation of solid garbage and ineffective waste management. The waste management system in the city of Bandung should be comprehensively integrated, starting from upstream to downstream. Besides solving the waste problem, it also benefits economically, is healthy for society, and is safe for the environment.

Waste management means all the activities carried out in handling waste since inflicted up to the final disposal. Activities in waste management include waste generation control, garbage collection, transfer and transport, temporary disposal, and final disposal. Urban waste management will be resolved if the community is optimally empowered (Rajendiran, Arumugam, & Subramaniam, 2020).

Community involvement in waste management strategy or implementation is crucial to resolving the current trash issues. This community involvement can be achieved through recycling garbage, mainly inorganic waste, by intensifying existing efforts, establishing waste banks across the country, and processing organic waste with a focus on quick composting and other waste processing methods.

The main problem in recycling is the lack of a separate waste collection system in many countries. Successful waste management requires consideration of foreign experience, mechanisms, and techniques, and public education is also essential (Tulebayeva, Yergobek, Pestunova, Mottaeva, & Sapakova, 2020).

The local community may be involved in waste bank management and should manage their waste to cut waste management costs. The communities also hoped to receive financial benefits by selling recycled waste products. Therefore, this paper will explain how municipal waste management in Bandung city can improve the region's local economy and how Sukasari District manages the waste bank to enhance the area's local economy.

LITERATURE REVIEW

Integrated Waste Management

Waste is the material disposed of as a source of human activity and natural processes that have no economic value and can even have a negative economic value because handling either to dispose of or clean requires a considerable cost (Abdel-Shafy & Mansour, 2018). Waste management is the government's responsibility that is still not optimal because it requires a large budget allocation.

Based on the categories of sources of waste generators are (1) domestic waste, which is garbage originating from settlements; (2) commercial waste, which is waste from commercial services such as shops, markets, restaurants, and offices; (3) industrial waste, that is waste derived from the rest of the production and (4) waste derived from other than those mentioned earlier, such as trash trees, road sweeps and natural disasters (Buenrostro, Bocco, & Cram, 2001). Meanwhile, solid waste can be classified based on its origin: (1) Organic waste or waste produced from biological materials that are either biodegradable or may be broken down by bacteria. This garbage is easily comprehensible via a natural procedure. (2) Waste produced from non-biological materials, such as those used in synthetic products or the mining of resources, is referred to as inorganic waste.

In major cities in Indonesia, about 60% of waste can be transported to the Final Disposal Site (FDS), with primary operations being landfilling. The amount of un-transported garbage is most likely not recorded systematically, as it is usually calculated based on trips of trucks to the landfill. The waste that the community handles independently or scattered waste systematically discharged into water bodies is rarely considered (Chaerul,

Tanaka, & Shekdar, 2007).

Recycling, biological treatment, thermal treatment, and landfilling are the four essential alternatives that should be part of an integrated municipal solid waste management system; they are all necessary but insufficient to ensure effective and sustainable management. In Batna city, Algeria, the suitable treatment for the MSW of Batna is recycling. It is found that the MSW of Batna city Integrated Municipal Solid Waste Management was given, as shown in Figure 1 (Sefouhi, Kalla, & Bahmed, 2014).

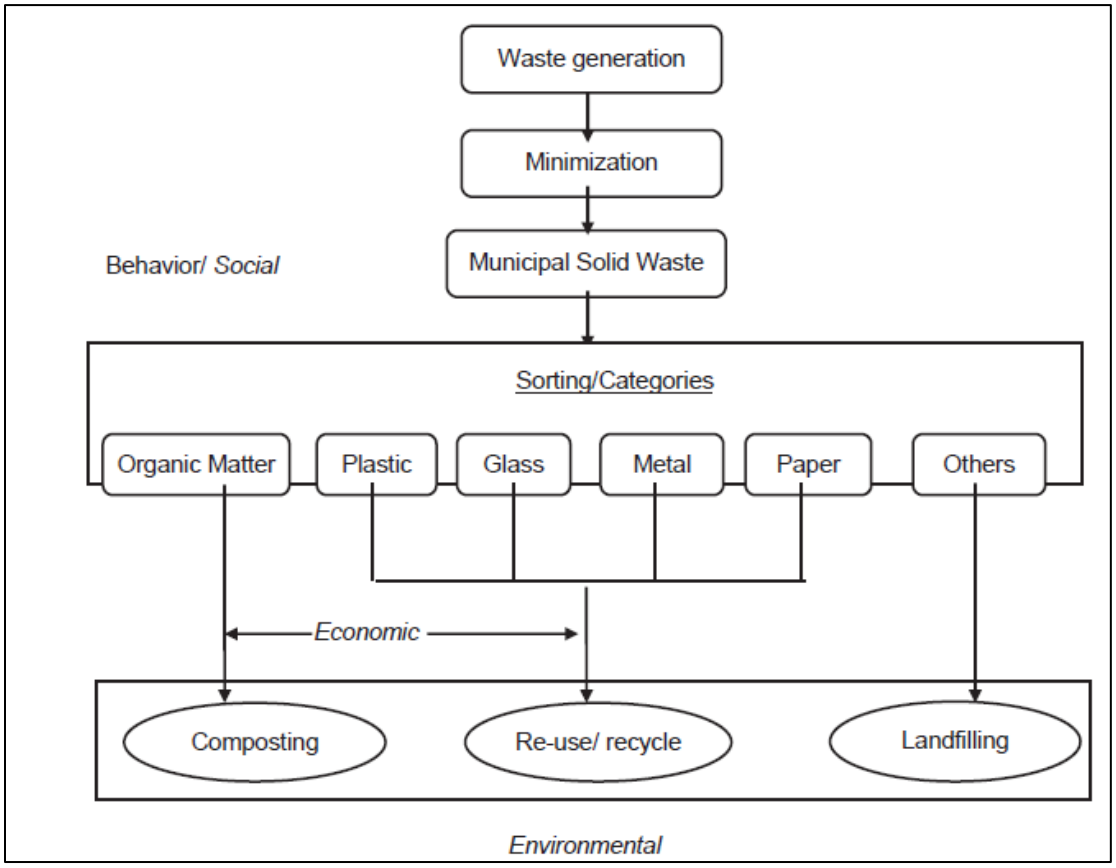

Figure 1: Integrated solid waste management model for Batna (Sefouhi et al., 2014)

Waste handling can be conducted through Community-Based Waste Management, the concept of cooperatives that underpins the community-based waste management method. This strategy aims to alter communal waste management practices regarding source: isolation, recycling, and storage of recyclable items before accumulating. A community would be formed using this method. A project can foster a sense of community by including all individuals' participation in the community. In many projects, the community plays an important role. Organizations in the form of community cooperatives have been established. Community-based waste management as "a waste management system based on the active participation of the community" will have a great motivation with the support of Governments as facilitators. Promoting and executing community-based efforts to empower and enhance their access to environmental resources, particularly land, infrastructure, and services, is crucial.

The municipal government's policy for solving its waste problem is to transport municipal solid waste into a landfill. This way has many risks, mainly due to leachate's potential to pollute groundwater and the occurrence of odors and flies; even in developed countries, it is still being used. Modern waste management uses the principle of 3R (Reduce, Reuse, Recycle) before it is finally transported to the final disposal site. The 3Rs (Reduce, Reuse, Recycle) are the 5Rs in the new recycling hierarchy. Refuse, reduce,

reuse, repurpose, and recycle are the acronyms for the 5Rs. The 5Rs serve as suggestions for living a less wasteful life and more sustainable (Balwan, Singh, & Kour, 2022).

Figure 2 shows the 5R's of the Zero Waste Hierarchy, that consist of the following:

1. The first stage in the 5R process is to refuse what we may not need.
2. The 5R process's second stage is to reduce. Reduced materials are those that are dangerous, wasteful, and non-recyclable. We avoid the waste of resources such as materials, energy, and water by reducing waste.
3. The 5R process's third step is reuse. Waste material can be reused to save money, energy, and resources that would otherwise be needed to create a new product.
4. The 5R process's fourth phase is repurposing. Repurposing entails taking goods designed for one use but can be utilized for another. In the green or environmental community, repurposing is also known as upcycling. It is crucial to remember that repurposing takes precedence over recycling.
5. Recycling is the fifth and final phase in the 5R process. Waste management that entails transforming discarded resources into reusable items is recycling.

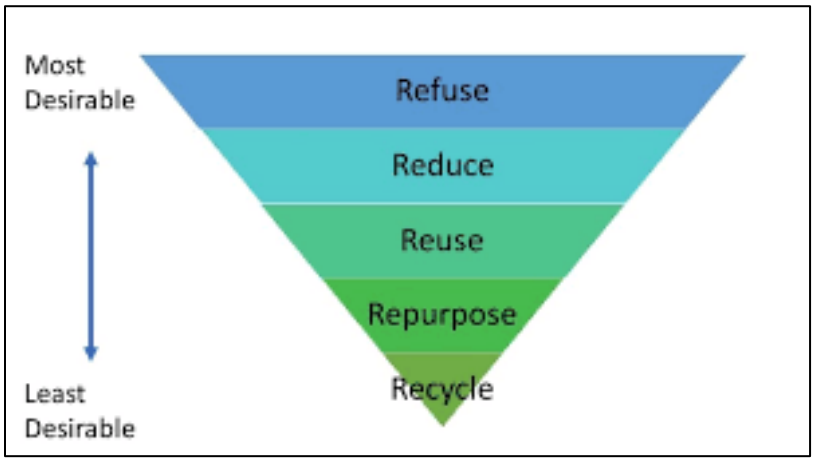

Figure 2: 5R's of Zero Waste Hierarchy (Balwan et al., 2022)

Social acceptance, awareness, economic difficulties, and environmental impact should all be considered. As a result, this holistic strategy that connects society, economics, the environment, and policy-making ensures the efficient implementation of sustainable solid waste management operations (Lakioti et al., 2017).

Waste Bank

One of the efforts to support solid waste disposal is the existence of a waste bank. Waste banks aim to be a sustainable solution to society's waste problems. The community can benefit from waste banks as it reduces existing solid waste and improves the economic quality of society through payment systems. Payment systems are designed to exchange social waste for some payments (Suardi, Gunawan, Arifin, & Iskandar, 2018).

Waste Bank is an alternative waste management model to reduce waste problems and improve its quality and local economy (Soegoto et al., 2022). This management model includes the role of communities/societies in sharing their participation in creating better local economies. The waste management model, both as a customer and as a waste bank manager, emphasizes the positive part of the community and drives it to improve the local economy (Wulandari, Utomo, & Narmaditya, 2017).

The types of waste that can be saved in the waste bank are grouped into (1) paper, which includes newspapers, magazines, cardboard, and duplexes; (2) plastics, which include transparent plastics, plastic bottles, and other hard plastics; and (3) metal, which includes iron, aluminum, and tin. Waste banks can accept other types of waste from savers as long as they have economic value (Menteri Negara Lingkungan Hidup

Republik Indonesia, 2012).

As a community-based environmental policy, Waste Bank has tools that can help to establish community independence. Financial independence comes from making a living from profits, and mental freedom comes from separating and managing waste in the home environment. The instruments are:

- Economic means have value as waste that can be converted into savings and used as a medium of exchange. This device supports a low-income community.
- Social means require a collective interest in the community (Kampong or other neighborhoods) and strong communities as a waste banking mechanism. Regular waste banking programs create social ties and community cohesion to promote democratic governance.
- As a waste banking process, educational tools such as waste separation, collection, and recycling will raise collective awareness within the community and impact green culture.
- Technology tools such as community-based management drive innovations in waste bank development, including effective waste collection and integration with cooperatives (Wijayanti & Suryani, 2015).

Waste banks have been managed in Bangladesh, Algeria, and Indonesia to reduce waste that must be disposed of in landfills. In Dhaka, Bangladesh, informal recycling cannot expand and improve its activities despite the demand for more recyclables. A significant barrier is an access to clean, high-value recyclables. In addition, negative prejudices against temporary workers in recycling play a considerable impediment. An essential aspect of the improvement process is to focus on the involvement of different stakeholders, understanding their needs and perceptions, and coordinating interventions to create ownership and participation among all stakeholders (Matter, Dietschi, & Zurbrügg, 2013).

The Batna, Algeria, the community can play an active part in diverting goods from disposal and lowering waste creation rates. The Batna community must implement waste-reduction programs, including educating citizens about source reduction, emphasizing purchasing practices and product reuse, and reducing the collection frequency to encourage people to reduce waste production, with waste collection occurring twice or three times per week (Sefouhi et al., 2014).

In Semarang and Surabaya city, Indonesia, a waste bank to reduce municipal solid waste volume has been conducted. Community-based Solid Waste Management (CBSWM) is considered particularly ineffective in reducing waste generation in Semarang City due to the small number of active community-driven material recovery facilities (CdMRFs) that have existed for more than two years. CdMRFs have the potential to increase the income of the community. However, to maximize profits and ensure the sustainability of CBSWM, the community needs to increase membership and the weight of waste collected per member. This activity can increase the income of the inhabitants, especially the middle class, who earn an average of $ 9.09 per month, or 5% of the minimum wage in Semarang (Budihardjo, Ardiansyah, & Ramadan, 2022).

A formal recycling department, a waste bank, and a waste management system by an informal department for recycling waste also ended during the Covid-19 pandemic. The pandemic has hit the informal recycling sector the hardest as the prices of valuable waste have fallen. The informal sector has ceased operations due to widespread social restrictions enforced by the Surabaya government. The informal recycling sector's socio-economic challenges include reduced income (Warmadewanthi et al., 2021).

The presence of waste banks has encouraged a change in public awareness that waste has economic value. Furthermore, the community can bring up social entrepreneurship as an innovation by utilizing community functions in Sekejati Sub-district, Buah Batu District, Bandung City (Sufianti & Ramdani, 2020).

Community involvement through waste banks, especially better waste management systems, is a possible way to raise the economic level of the village. In addition, waste banks can enable better waste management and create a sustainable circular economy at the village level (Rachman, Komalasari, & Hutagalung, 2021).

Local Economic Development Potency in Integrated Waste Management

Local Economic Development (LED) is a

conceptual development plan that emphasizes the collective action of the local economic development movement through the mobilization and utilization of local resources, institutional empowerment, and collaborative networks. Local Economic Development (LED) is an alternative to regional development, seeing people as objects and subjects of evolution, defining basic human needs, and focusing on human dignity as development agents. In addition, economic growth is an essential component of LED since economic growth affects a region's residents' level of welfare (Warlina et al., 2022). The development attempts to focus on the economic empowerment of the area and community participation and is accustomed to the principles of sustainable development (Supriyadi, 2012).

Local Economic Development (LED) seeks to utilize existing local resources, namely physical, human and institutional resources. Thus, Local Economic Development (LED) is based on growing local capabilities or endogenous development. In other terms, Local Economic Development (LED) uses local internal factors for local economic development (Bambang, 2015; Mandisvika, 2015).

The inevitable process of generating industrial and household waste is appropriate to create environmentally sound conditions for waste storage and subsequent disposal and ensure long-term waste recycling into raw materials, which requires a management system. The circular economy paradigm should be based on the Ukrainian region's structural and functional support of waste management systems (Kolodiichuk & Kolodiichuk, 2020).

Malaysia has ample potential for recyclable materials, and up to 80% of the generated waste can be recycled and used to reduce overall waste generation. However, inadequate policies and a lack of separation of waste sources hamper increased recycling in Malaysia. Recycling activities may be gradually accepted if procedures and techniques are friendly, as they can reduce disposal costs for local authorities and bring economic benefits (Jereme, Begum, Talib, Siwar, & Alam, 2019).

Waste banks are expected to provide sustainable solutions to society's waste problems. Not only can the community reduce existing solid waste, but payment systems can improve the economic quality of society so that it can benefit from waste banks. The payment system aims to exchange waste from the community for some payments. Factors affecting landfills' sustainability are awareness, knowledge, equipment, support, and infrastructure (Suardi et al., 2018).

Institutional innovation and co-production in Thematic Waste Bank is a waste management model that emphasizes the community's active role in treating organic and inorganic waste and encourages the community to improve the local economy (Zakiah & Widianingsih, 2021).

METHODOLOGY

This study initiative is based in the Indonesian city of Bandung. Bandung is one of Indonesia's major cities, with 2,452,943 people. Bandung has an area of 16,731 hectares; hence, the population density is 147 persons per hectare. Sukasari district was chosen for this case study because it is one of the areas that became a test for the waste bank program in Bandung.

The method employed is a systematic literature review using VOSviewer and Harzings's Publish and Perish Software. VOSviewer's primary objective is to investigate bibliometric networks (Soegoto et al., 2022). This application generates keyword maps for a specific period or citation-based maps of publications, authors, or journals. VOSviewer can create maps based on any network. Therefore, its use is not restricted to bibliometric networks. Bibliometrics includes the administration of document properties and methods. In conducting analysis, word frequency analysis, citation analysis, and combining word analysis with simple document countings, such as the number of publications by author, research team, or nation, are all used (Luckyardi et al., 2022).

In conducting a systematic literature review, we used VOSviewer. The database used the keywords "improving the local economy through integrated waste management." We also used Harzing's publish or perish Software to bring up research that had been done previously, which was related to our study. We applied several provisions in finding research data. We only focused on research published within the last five years or in the 2018–2022 period and research with specific keywords, namely "Improving Local Economy through Integrated Waste Management." After applying these

provisions, we got 999 studies that followed our study. The research topics were then visualized using VOSviewer to determine how critical they were.

The sources for exploring the economic potential of the Sukasari District waste bank are drawn from numerous reports and earlier studies of researchers on organic waste management in the Sukasari District that were conducted in past years.

RESULTS AND DISCUSSION

Network Visualization of Improving Local Economy through Integrated Waste Management

We obtained a network representation of the term "Improving Local Economy through Integrated Waste Management" using VOSviewer (Figure 3). The shown network visualization contains 79 words and is grouped into 9 clusters, with integrated waste management included in cluster 1 with a total connection strength of 12 and occurrences of only 7. This result is small, indicating that the study has not been prevalent. Next, we examine the overlay visualization to determine which years the analysis is typically conducted (Figure 4).

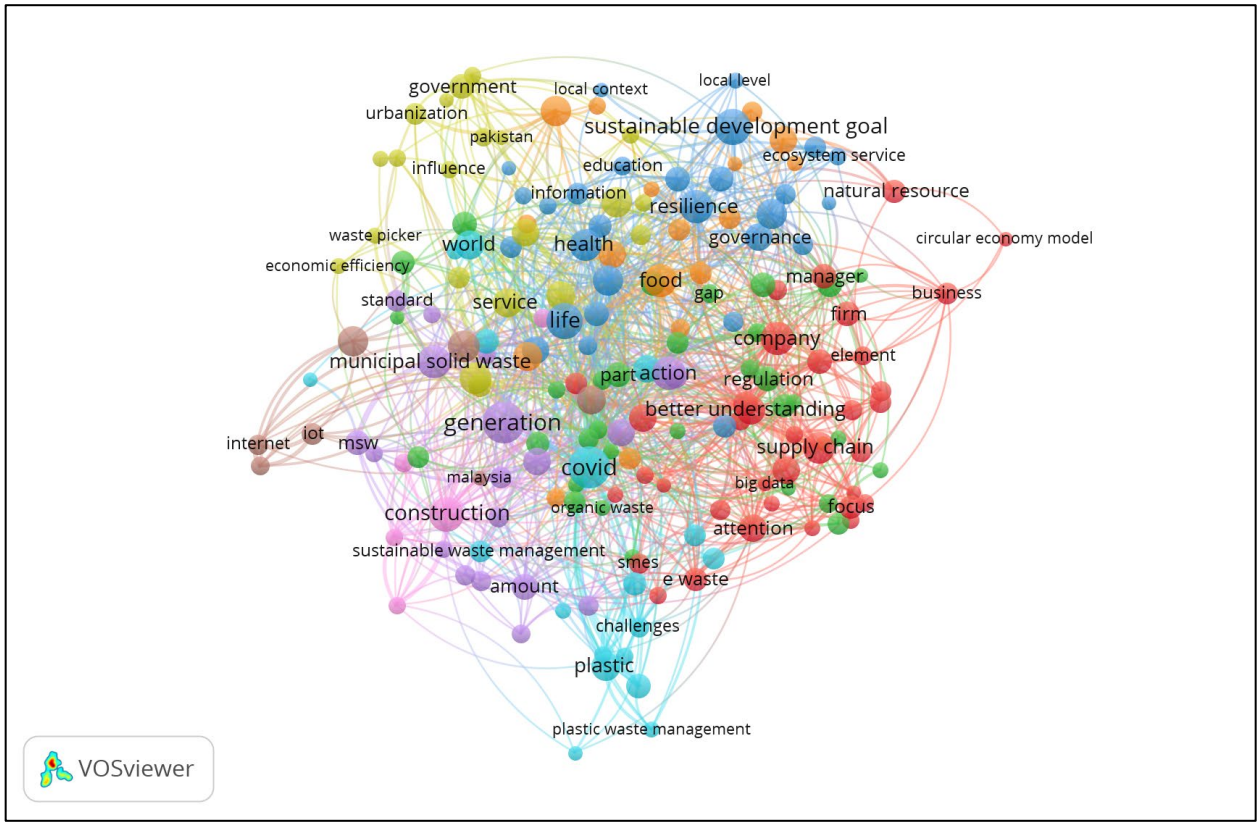

Figure 3: Network Visualization of Improving Local Economy through Integrated Waste Management

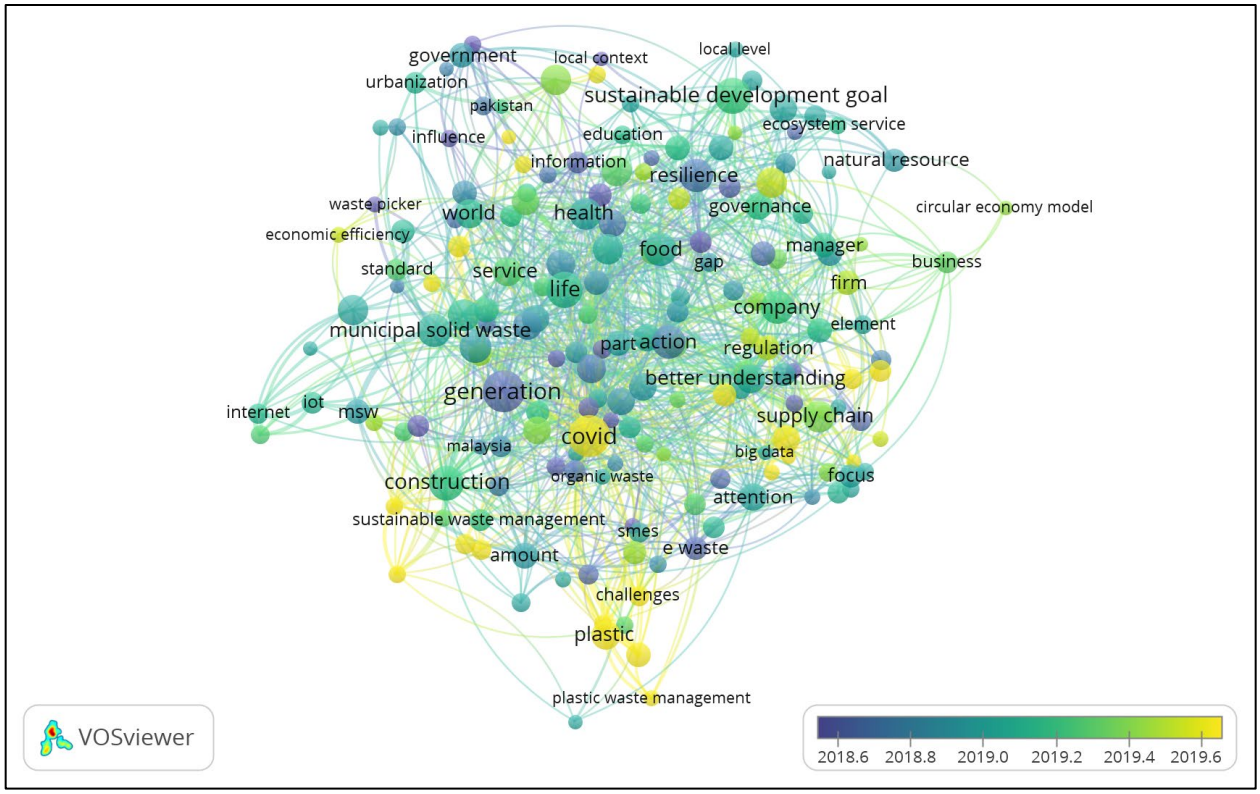

Figure 4: Overlay Visualization of Improving Local Economy through Integrated Waste Management

Figure 4 shows that research on integrated waste management is prevalent in the 2018–2019 period, whereas in 2020-2022, it is still very minimal. This topic can be seen through the brightness of the color in each word. From the word, the brighter the color and approaching the yellow color, it means that the research was carried out in a period coming 2019. Conversely, the darker the color of a term and approaching the purple color means it has been going on for a long time and is being conducted approaching 2018. VOSviewer also provides a density display to see how often the research is carried out by delivering density patterns for each term (Figure 5).

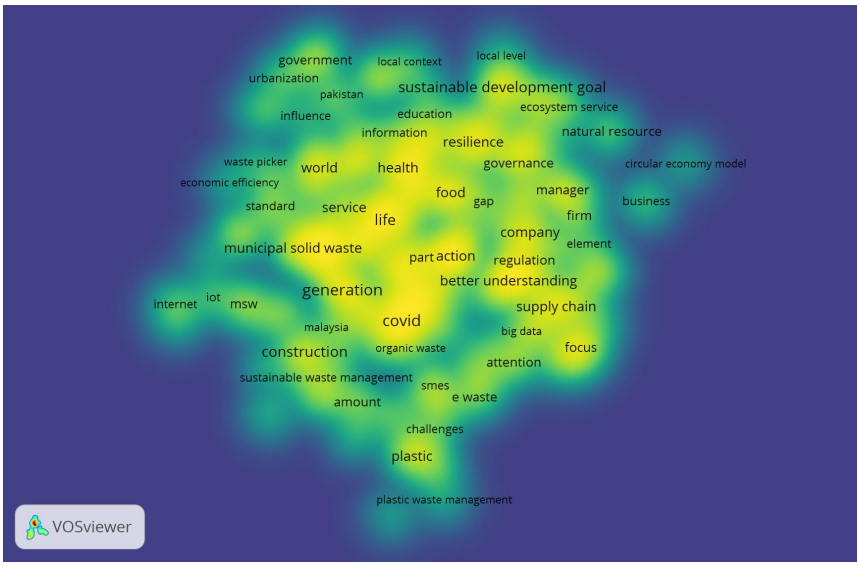

Figure 5: Density Visualization of Improving Local Economy through Integrated Waste Management

Through density visualization, it can be seen that in the period 2018–2019, the research most often carried out is related to health, food, life, solid waste, covid, part action, and supply chain. The brightness and density levels of each term, the larger the diameter of the pattern; it indicates that these terms are often used in research. The word was infrequently used in the research, as evidenced by the deeper color and smaller diameter.

Seven countries relate to the existing research themes based on the data obtained. The countries involved are Pakistan, Zimbabwe, Hong Kong, China, Turkey, South Africa, and India. Of the seven countries related to the research theme, we have made a graph to see which countries participate the most in conducting research. The classification process is carried out based on the link strength of each country (Figure 6).

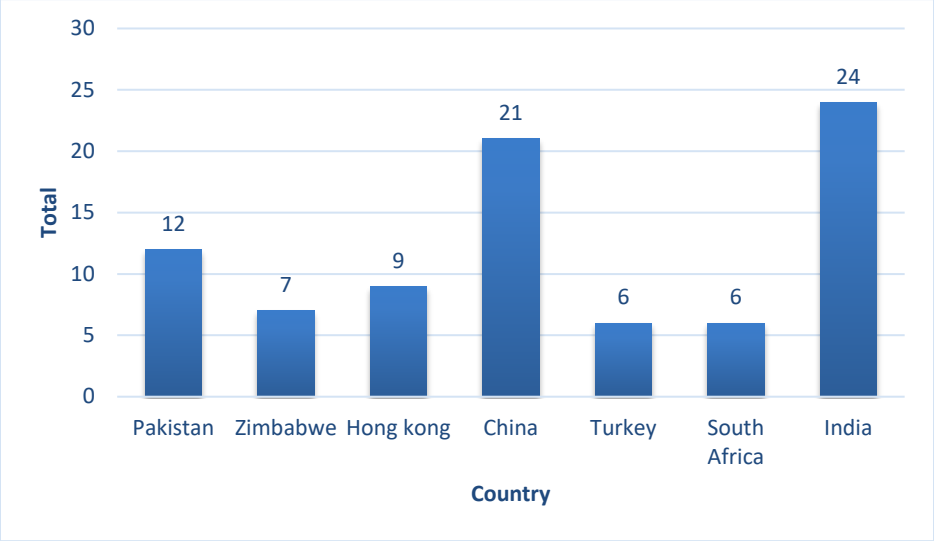

Figure 6: Total Countries Participating in Research

Figure 6 shows that the country with the most research contributions is India, with a total link strength of 24, followed by China, with a full link strength of 21. Pakistan is in third place with a full link strength of 12, then below are Zimbabwe and Hong Kong, with a slight difference of only two link strengths, where Zimbabwe is seven and Hong Kong 9, while Turkey and South Africa are the least, with a total of only six link strengths.

By looking at the data, we found that in Indonesia, there is no research on improving the local economy through integrated waste management, especially in the Sukasari area of Bandung. The systematic literature review results allow us to contribute to the world of research, especially in waste management, by using our research as a basis or reference for further research.

Municipal Solid Waste in Bandung City

Bandung has an area of 167.31 km2 divided into 30 districts covering 151 sub-districts. The population of Bandung City in 2021 is 2 452 943 people (BPS City of Bandung, 2022), with a composition of 1 235 134 male and 1 217 809 female population. Population growth per year in Bandung is 0.45%.

Table 1 shows the waste production in Bandung City in 2021. The total daily production is 1655.28 m3, with the highest production being food waste, as much as 44.51%. The amount of waste that can be recycled includes paper (13.12%), plastic (16.7%), metal (0.9%), cloths (4.75%), and rubber and leather (2.38%), with a total of 37.85%.

Table 1: Types of Waste Production in Bandung City (BPS- Statistics of Bandung Municipality, 2022).

No	Types of Waste	Waste Production per Day (m^3)	Percentage
1	Food waste and debris	736.6	44.51
2	Woods and twigs	65.88	3.98
3	**Paper**	**217.17**	**13.12**
4	**Plastic**	**276.43**	**16.7**
5	**Metal**	**14.90**	**0.9**
6	**Cloths**	**78.63**	**4.75**
7	**Rubber and leather**	**39.40**	**2.38**
8	Hazardous waste	30.13	1.82
9	Others	195.98	11.84
Total		1655.28	100

Table 2 shows the number and location of temporary disposal sites (TDS) in Bandung City. There are 159 locations for temporary disposal sites in the city of Bandung for 30 districts. Meanwhile, there are 151 sub-districts in Bandung. So there may be one sub-district with more than one temporary disposal site.

The increasing population causes an increase in activities, leading to an increase in waste. The problem of urban waste management, in general, is limited equipment, land, and human resources. The Temporary Disposal Sites (TDS) observed conditions had exceeded the capacity, which shows that the community's participation in waste management is still low. Without the involvement of the waste-producing community, all planned waste management programs will be in vain. The problems that occur are related to community participation in waste management, namely as follows:

- Unequal distribution of population.
- Not yet institutionalized the desire in the community to keep the environment clean. No standard operating procedures for community development can be used as an implementation guideline.
- Managers are concerned that community initiatives may conflict with existing management concepts (Kastolani, Darsiharjo, Setiawan, & Paramida, 2019).

Table 2: Number of Temporary Disposal Sites in Bandung City (Open data Kota Bandung, 2019a)

No.	District	Number of Temporary Disposal Sites (TDS)
1	Andir	8
2	Antapani	4
3	Arcamanik	8
4	Astana Anyar	4
5	Babakan Ciparay	7
6	Bandung Kidul	7
7	Bandung Kulon	8
8	Bandung Wetan	7
9	Batunuggal	12
10	Bojongloa Kaler	1
11	Bojongloa Kidul	6
12	Buahbatu	3
13	Cibeunying Kaler	3
14	Cibeunying Kidul	3
15	Cibiru	2
16	Cicendo	7
17	Cidadap	3
18	Cinambo	2
19	Coblong	9
20	Gedebage	2
21	Kiaracondong	7
22	Lengkong	4
23	Mandalajati	4
24	Panyileukan	4
25	Rancasari	4
26	Regol	6
27	Sukajadi	7
28	Sukasari	8
29	Sumur Bandung	5
30	Ujung Berung	4
Total		159

Dinas Lingkungan Hidup dan Kebersihan (DLHK) of Bandung City noted that every day the

amount of waste generated reaches 1,600 tons. About 82% were transported to the Final Disposal Site (TPA). The Head of the Bandung City DLHK Operational Technical Cooperation Section, Deti Yulianti, admitted that she continues to reduce the amount of waste transported to the landfill. The target is that 70% of the total waste will be wasted next year. The way is through processing waste and developing a zero-waste area on a sub-district scale. Now 60 community units carry out a waste sorting system. DLHK will encourage implementing waste-free areas in 60 sub-districts (SinarpagiNews, 2021).

Bandung residents who save their waste in a waste bank will get money equal to the weight or type of waste saved. Cash means that waste has economic value for diligent people in sorting waste. There are three central waste bank locations in Bandung: Jalan Babakan Sari I No. 64, Kiaracondong District; Jalan Sadang Tengah No. 4, Coblong District; and Hollis Street, West Bandung. The types of waste that can be saved in the waste bank are mixed buckets, mineral water bottles, bottled beverage cans, clear plastic, mineral water glasses, paper, newspapers, boxes, mixed iron, aluminum, cans, copper, styrofoam, glass bottles (Herdiana, 2022).

The number of waste banks in Bandung is shown in Table 3. There are 109 waste banks in 109 locations distributed across several kinds of institutions from the city to the districts to the sub-district level. There are also commercial or corporate institutions, as well as educational institutions.

As felt by the community and consumers, the impact of waste banks in Malang East Java is more revenue from rubbish and a cleaner environment. Malang Waste Bank's community economic empowerment projects have increased public income. Although it has not entirely lifted them out of poverty, the surrounding communities continue to support the Malang Waste Bank initiative since it benefits them and the environment (Wulandari et al., 2017).

Table 3: Number of Waste Banks in Bandung City in 2018 (Open data Kota Bandung, 2019b)

Categories of Waste Bank Management	Number of Waste Banks in 2018
Bandung Governmnet Offices	18
Districts	9
Sub-Districts	9
Neighborhood Communities	10
Companies	9
Commercial sectors (hotels, restaurants)	18
Primary Education (Elementary Schools)	7
Secondary Educations (Junior and High Schools)	10
Tertiary Education (Colleges and Universities)	4
Temporer Disposal Sites	8
Bandung Waste Local Entreprises	7
Total	109

Local Economic Development through Integrated Waste Management in Sukasari District

Referring to Figure 1 regarding the integrated solid waste management model, waste management for organic waste by making compost for reusable waste can be sold to the waste bank. So the rest is just sent to the landfill. Sukasari sub-district is a sub-district participating in the *Kang Pisman* (reduce-separate-utilize) program from the Bandung City government. Table 4 shows the number of waste banks in the Sukasari District, and Figures 7 and 8 show invitations for weighing at Ceria Waste Bank.

There are ten units of the waste bank in the Sukasari District. One of these waste banks is the Ceria Waste Bank, which has 99 members. The location of this waste bank is close to the district office. For several other waste bank units, the number of members is not available, while in Sarijadi Sub-district, the average member is 30 people. Ceria Waste Bank is a reasonably active unit, as seen from the invitation via social media,

Instagram, for its members to weigh the waste that can be sold, as shown in Figures 7 and 8.

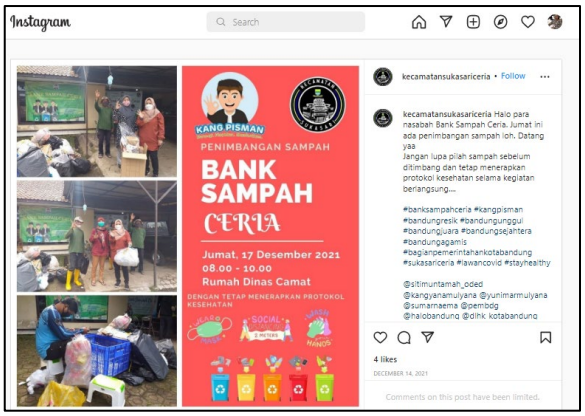

Figure 7: Invitation for weighing at Ceria Waste Bank in December 2021 (Sukasari District Instagram)

Figure 8: Invitation for weighing at Ceria Waste Bank in February 2022 (Sukasari District Instagram)

Ceria Waste Bank in Sukasari can sell waste up to Rp. 7,000,000 in 2019. This value is equivalent to 6.05 tons of waste. Meanwhile, the schedule for weighing waste at the Ceria Waste Bank is once every two weeks. Every weighing, the waste sold fluctuates. For the price list at the Ceria Waste Bank, plastic waste in the form of plastic buckets and used bottles/drinks bottles have the highest selling price at Rp. 1,500 - Rp. 2000 per kilogram. Meanwhile, the used paper has the lowest price of Rp. 100 - Rp. 200 per kilogram (Pemerintah Kota Bandung, 2019).

Kawasan Pengelolaan Sampah Mandiri (KPSM) in Neighborhood Unit 08 in Sarijadi Sub-district, Sukasari District, can manage up to 70 percent so that the amount of waste that is taken to the Final Disposal Site will be less (Citarum Harum, 2021)

Table 4: Number of Waste Banks in Sukasari Sub-District in 2020 (Open data Kota Bandung, 2021)

Sub-Districts	Waste Bank Name	Location	Number of Members (persons)
Sukarasa	Bank Sampah Ceria	Jl. Sariendah No.2	99
Gegerkalong	Unit Hijau Lestari	RW 08 Perumahan Gerlong Tonggoh	NA
Gegerkalong	Unit Hijau Lestari	RW 03 Gegersuni	NA
Gegerkalong	Unit Hijau Lestari	RW 05	NA
Gegerkalong	Unit Hijau Lestari	RW 07	NA
Gegerkalong	Unit Hijau Lestari (Miana 2 Pos 1)	RW 04	NA
Isola	Bank Sampah Hijau Lestari RT 03 RW 01	RT 03 RW 01	NA
Sarijadi	Bank Sampah Hijau Lestari	Jl. Perintis	30
Sarijadi	Bank Sampah KWT Sauyunan	Jl. Sarimanah RW 003	30
Sarijadi	Bank Sampah Anggrek	Jl. Sarijadi Blok 18	30

Waste Bank is an alternative waste management concept that aims to minimize waste while improving the local economy. This management approach incorporates the role of the community/society in the collaborative creation of a better local economy. The waste management approach emphasizes the community's active engagement as a consumer and waste bank manager and motivates the

community to develop the local economy (Wulandari et al., 2017).

CONCLUSION AND RECOMMENDATION

The majority of waste management-related research was done between 2018 and 2019. The most frequently used words in this context are supply chain, covid, part action, health, food, and life. China and India have the most significant number of waste management research subjects. According to the systematic literature review findings, Indonesia is not one of the nations that study waste management, especially concerning economic issues.

By selling recycled waste to the waste bank, 37.85% of Bandung's total waste production can be reused (recycled). This sum develops into a significant potency for the growth of Bandung's local economy. About 82% of the 1600 tons of waste per day still need to be delivered to the final disposal facility, which concerns Bandung's waste management. If all parties are participating, integrated waste management has the potential to boost the local economy. A case in point of integrated waste management that can raise local income is the Sukasari District, which includes ten waste banks, including the 99-member Ceria Waste Bank.

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